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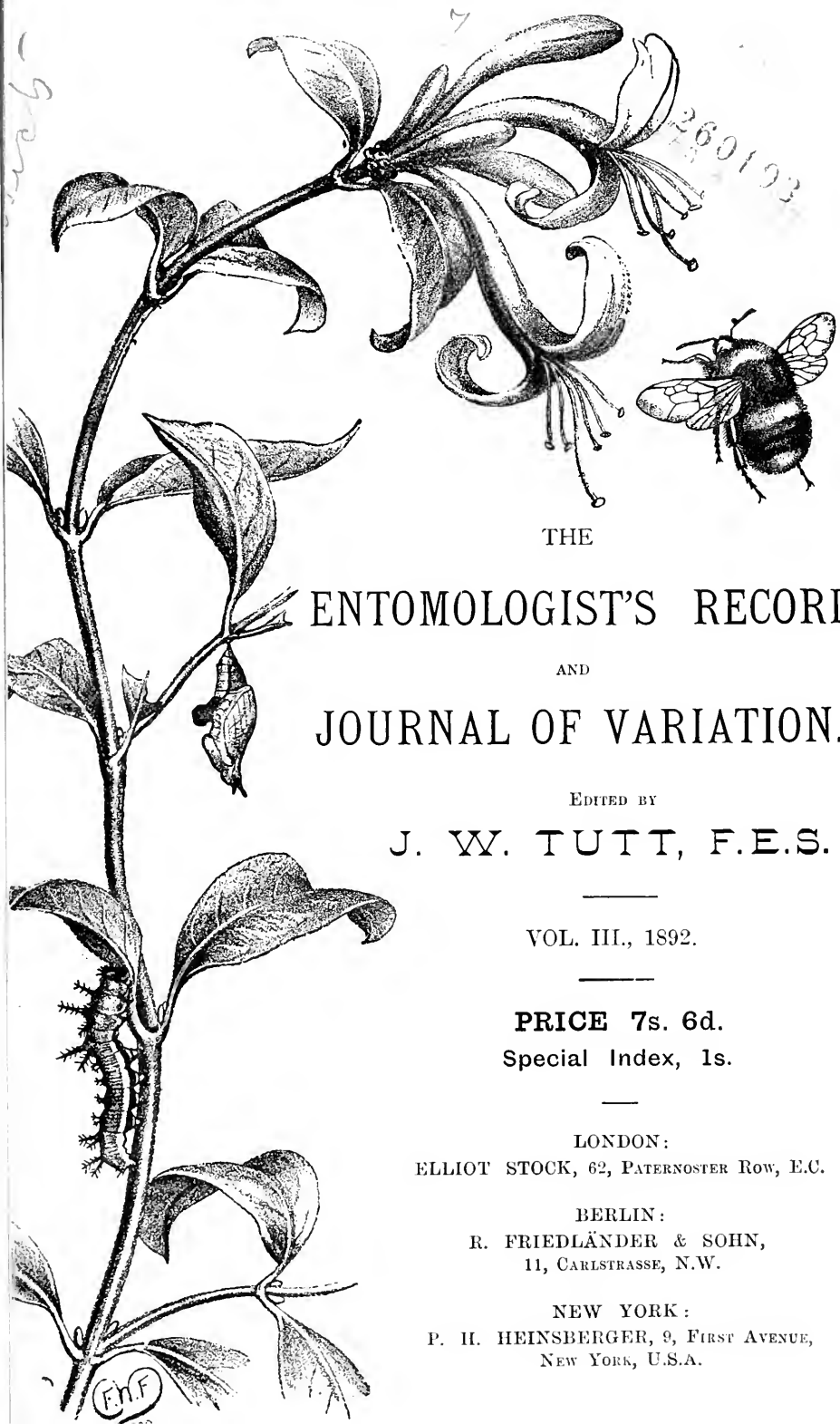

THE

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AND

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EDITED BY

J. W. TUTT, F.E.S.

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PREFACE TO VOL. III.

We have at the conclusion of Vol. III. to again thank our still increasing circle of subscribers for their support.

Our attempts to interest the ever-increasing body of collectors, and at the same time to keep pace with scientific advance, appear to be crowned with a large measure of success. Our *Exchange List*, of which collectors so largely avail themselves, is now much larger than those of all other British Entomological Magazines combined, whilst the scientific papers by well-known contributors, speak for themselves.

Readers will hear with pleasure that Dr. Chapman will write a series of papers "On the Larva of *Arctia caia*," which will be illustrated with two Chromo-Litho Plates. A series of articles on comparatively new and little-known Lepidoptera, illustrated with Chromo-Litho figures, will also appear in Vol. IV.

The *Special Index* to Vol. I. is out of print and cannot be supplied, whilst of that to Vol. II. only a few copies are left. A *Special Index* to Vol. III. (for which we have to thank Miss Kimber) is published herewith. The delay in binding, caused by the rather late production of the Index is to be regretted, but the labour entailed is so great that it could not be done more quickly without serious errors and blunders creeping in.

THE EDITOR.

SPECIAL INDEX.

The Entomologist's Record and Journal of Variation.

VOL. III.

SPECIAL INDEX.

Arranged in order of Species.

DIPTERA.

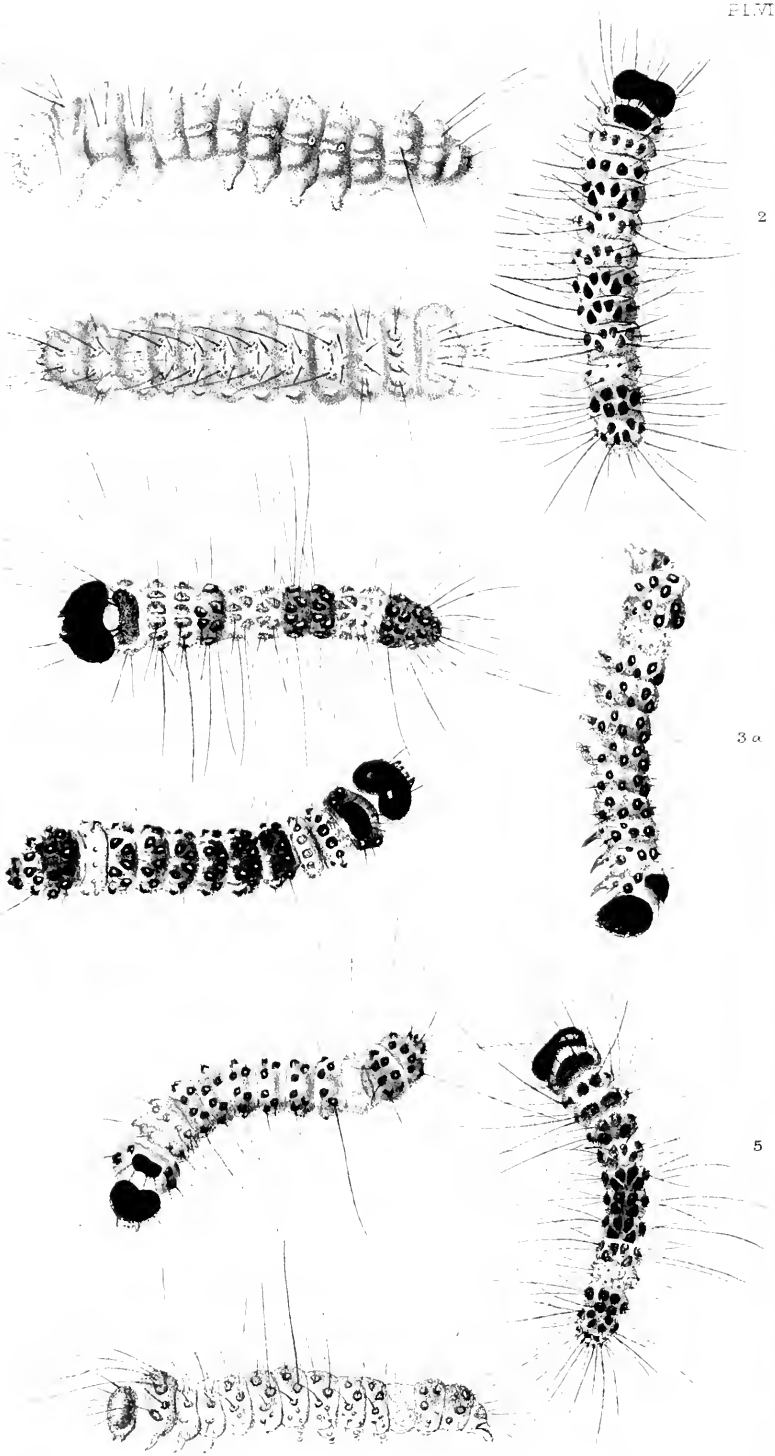
HEMIPTERA.

HYMENOPTERA.

LEPIDOPTERA.

NEUROPTERA.

ORTHOPTERA.



Horace Knight del ad nat

West Newman chr lith

Young Larvae of Acronycta

The Entomologist's Record AND JOURNAL OF VARIATION.

No. 1. Vol. III. January 15th, 1892.

THE GENUS ACRONYCTA AND ITS ALLIES.

By Dr. T. A. CHAPMAN.

(*Continued from page* 251.)

NOTES ON PLATE VI.—These figures show the larvæ of *Acronycta*, Section *Cuspidia*, with the exception of *Cuspidia strigosa* (on Pl. IX.) and *C. aceris* (on Pl. V.), that of *Moma orion* being also included. The young larvæ of *Cuspidia* have a more delicate appearance than those of *Viminia*, due to the tubercles having, not several, but one hair on each tubercle (the anterior trapezoidals of *aceris* and *leporina* have two). They all strongly present the *Acronycta* feature of a "weak" 11th segment, this being always pale, always with smaller tubercles and finer, shorter hairs, lower dorsally, though often a little wider, and with the tendency to a sub-division into an anterior and posterior sub-segment more marked than in any other segment. The "pale" and "dark" segments are in *C. psi, tridens* and *strigosa* the same as in *Viminia, viz.*, 3,4. 6,7. 10,11 pale; in *psi*, 13 is dark; in *tridens* and *strigosa*, pale. In *strigosa*, the dark portion of the dark segments is more decidedly a mere dorsal lozenge, but this is to some extent the case in the other two, not so much so in the remaining species.

In *alni*, 6 and 7 have become dark segments and 10 partially so; *megacephala* is nearly the same, except that 10 is dark, and 3 and 4 are somewhat doubtful. In *aceris* and *leporina*, 10 remains pale, as also does 6; 3 is pale in *leporina*, dark in *aceris*.

With regard to *M. orion*, it will be sufficient here to note that, very different as it is from the others, the "weakness" of

segment 11 is very evident, showing that its supposed affinity with *Acronycta* is confirmed by this curious and special character.

The arrangement of pale and dark segments may be made more intelligible if arranged in this tabular form. Except in *ligustri*, the head is always black, and the 2nd segment is pale, except for the predominance of the dorsal plate and some dark markings.

Arrangement of pale and dark segments in larvæ (First skin, or, newly hatched) of Acronycta.

SPECIES.	SEGMENTS: HEAD.	2	3	4	5	6	7	8	9	10	11	12	13	14
Bisulcia ligustri ...	—	—	—	—	—	—	—	—	—	—	—	—	—	—
All *Viminia* ...	×	=	—	—	×	—	—	×	×	—	—	×		
Cuspidia strigosa ...	×	=	—	—	×	—	—	×	×	—	—	×	—	—
C. tridens	×	=	—	—	×	—	—	×	×	—	—	×	—	—
C. psi	×	=	—	—	×	—	—	×	×	—	—	×	×	=
C. alni	×	×	—	—	×	×	×	×	×	=	—	×	=	=
C. megacephala ...	×	×	=	=	×	×	×	×	×	×	—	×	×	×
C. leporina ..	×	=	=	=	×	—	×	×	×	—	—	×	×	=
C. aceris	×	=	×	×	×	—	×	×	×	—	—	×	×	×

× dark ; = doubtful or intermediate ; — pale.

Acronycta (*Cuspidia*) *leporina*.—This species and *aceris* differ from the other *Cuspidia* in having very hairy larvæ (in last skin). The nature and disposition of the hairs, however, is such as presents no similarity to the hairiness of the larvæ of *Viminia*. In *Viminia*, the hairs resemble those of *Arctia* in being developed in rosettes on the tubercles. In *leporina*, and to a great extent in *aceris*, the tubercles actually disappear, and the hairs that are developed are scattered over the general surface, and are, in fact, a full development of the hair points that cover the general surface in *megacephala* and *strigosa* (and others). *Aceris* does, however, in one or two points, make an approach to *Viminia*, probably, however, as a matter of parallel variation, rather than by continuity of relationship. As to *leporina*, there is only one point at all suggesting affinities to *Viminia*, closer than those of the other Cuspidians, and that is that the newly hatched larva has two hairs on the anterior trapezoidal tubercles. On this point I must call attention to the circum-

stance that under several species I have written as though *aceris* only presented this peculiarity, this is a lapsus requiring correction. It differs, however, entirely, in the arrangement of light and dark segments, and, since *psi*, *tridens* and *strigosa*, which each have only one hair to a tubercle, resemble *Viminia* in the alternation of light and dark segments, and are therefore nearer to them than *leporina*. I incline to regard this duplication of anterior trapezoidal bristles as not indicating close relationship.

The egg of *leporina* (Pl. VIII., fig. 3) differs from those of all the other *Acronyctas*, to what at first sight appears a very important degree, as regards its coloration. There is the outer fringe of clear egg shell, but the inner egg is homogenous in colour; all the others, beginning with *psi* etc., which remain clear, passing through *megacephala*, where the brown coloration only reaches the length of separate dots, to *alni*, *aceris* etc., where the dark colour is more abundant, have some pale areas tending to be arranged in concentric circles of spots. In *leporina* the pale area entirely disappears. The development of the colouring is a very regular and beautiful process, the egg, pale straw colour at first, as the inner egg shrinks away from the shell, develops a chocolate dot at the vertex surrounded by a small reddish circular patch, which is gradually invaded by the chocolate colour, which is still, however, rather bright or reddish; then round the margin of the inner egg appear 5 to 8 reddish spots, the inner chocolate area extends angularly towards these spots leaving for a brief interval between them a circle of pale blotches. Then the dark colour absorbs the whole inner egg, which becomes of an uniform tint, except that the ribbing of the shell, more markedly than in any other species, gives in different lights some very pleasing effects of a silky or pearly lustre.

The egg exceeds one millimetre in diameter, is only about ·35 mm. in height, very variable in the number of ribs, two specimens having respectively 41 and 63, the lesser numbers are the more common; towards the top they are waved into arched lines enclosing distinct hollows, the white reflections from the bottom of which, give the peculiar silky tone above noted. The ribs increase by branching or separate origin, but towards the margin are straight and simple. When first laid, the egg is colourless. The micropyle presents the same rosette of radiating willow-leaf cells as in the other species.

The newly hatched larva (Pl. VI., fig. 5) is 2 mm. long, white,

with the dark segments marked by the dorsum being dark brown, these are 4.5, 7.8.9 and 12, and partially 13 and 14. The head is black, and there is a distinct black plate in the 2nd segment. The anterior trapezoidals have each two hairs with indication of a third, the other tubercles each have one hair; the hairs are long (1 mm.), black, and longest on the front segments. Both hairs and tubercles are much smaller on 11, the tubercles have very decidedly the wedge-shaped outlines due to mutual pressure, and cover nearly the whole dorsum of the young larva. On the dark segments and on the 3rd, the tubercles are black, the supra-spiracular and posterior trapezoidal on 6 are tinted dark, the tubercles of 10 and 11 are nearly colourless as well as the anterior trapezoidals of 6. The tubercles and hairs of 10 are smaller and weaker than the others, though less so than on 11. The 12th segment is high but narrower than 11, and has the crucial arrangement of trapezoidals, whilst on 13 they are reversed.

As the larva grows, there becomes evident a transverse groove between the trapezoidals (like *alni*), or perhaps two transverse level ridges to each segment (carrying respectively the anterior and posterior trapezoidals), ending in a point at the outer end, the posterior being the wider, would better describe the aspect —this is especially obvious on 11. The scutellum of the 2nd carries four hairs along the anterior margin, and four along the posterior, but the two inner of these are smaller, it carries a central marking as if for subdivision. There are only two hairs on the anterior trapezoidals of 3 and 4, that is, these tubercles do not show the usual indication of being double, except by the hairs being in front of each other on 3, and side by side on 4, whilst on the others they have a diagonal disposition (the outer in front).

When full-grown in this (1st) skin, the contrast between 6, 10, 11 and 7.8.9 is very great, the former are smooth, white, glazed, giving a porcellaneous aspect, the hairs are smaller (most on 11), and the tubercles are either white and indistinguishable or much smaller than the large black plates of the dark segments. The 11th segment has the typical lateral projection and dorsal depression, and the division into two sub-segments is more marked than on the other segments. The 3rd segment has become slightly rufous.

The larva invariably selects the underside of the leaf, and, in feeding, leaves the veins and upper cuticle. It sits with a slight bend at the 6th segment, but with no approach to the curl of *alni* or *megacephala*.

The young larvæ are usually to be found in the wild state, several together on adjacent leaves or branches, showing that the eggs, though laid separately, are generally laid in little groups.

In the 2nd skin, the larva presents the same general facies as in the first. In the 3rd and 4th, it has another aspect, having largely lost the alternation of dark and light segments, and gained the long hairs, which are, however, straight, and not very long or thick. In 5th (and 6th) it has the adult plumage of long flowing hairs. This division into three stages is very decided, and not precisely paralleled in any other species. When well grown in the 2nd skin the length is 5–6 mm., head small, black; the dark segments are pinkish or fusco-rufous instead of blackish, the pale are yellow, the tubercles have 4 to 6 hairs. It keeps its full width backwards to the 12th segment, indeed it almost looks broader behind, and is flat on the dorsum, giving a very square outline. The sides are marbled, pale rufo-fuscous and whitish-yellow, the hairs are pale laterally—dorsally they follow the colour of the tubercles. Dorsally, 2nd segment fusco-rufous, tubercles black; 3rd the same; 4 and 5 fusco-rufous, tubercles black—a trace of a subdorsal yellow line; 6th yellow, darker laterally and a little darker to hind margin, tubercles yellow dorsally, laterally rufous; 7.8 and 9 fusco-rufous with black tubercles—a paler line below the posterior trapezoidal; 10 and 11 yellow, tubercles so pale as to be invisible and marked only by weaker hairs; 12, pink, with black cruciform tubercles; 13, rufous, tubercles black; 14, yellow, tubercles black. When half grown, the larva already suggests somewhat the adult aspect, when it curls round so as to make the lateral hairs of 3rd and 6th segments meet.

In the 3rd skin, there are now numerous yellow hairs spreading laterally, some nearly half the length of the larva; they are still, however, the spreading tufts on the tubercles. The skin presents no very marked distinction of light and dark segments, but the difference still exists in the tubercles of 4, 7.8.9 and 12 being black, although their spiracular ones have yellow hairs, also the trapezoidal tubercles of 2.3, 5 and 13 are black—all the rest are yellow. The hairs also of the anterior trapezoidals of 3.4.5, 7.8.9 and 12 are black and stand up tuft-like, especially so on 5, 7 and 12. A black hair or two (but no tuft) exists also on the anterior trapezoidals of 6 and 10, and on the posterior trapezoidals of the dark segments

5, 7.8.9 and 13. Owing to the yellow hairs and those tubercles that are yellow, the general impression is of a yellow larva, but it is really much darker. The dorsum of 2.3.4.5, 7.8.9 and 12 is very dark, nearly black: there is a broad yellow line below the trapezoidals, then a broad purplish band: next a whity yellow line through, or just below the supra-spiracular tubercles; then another purple band, and a whitish line through the subspiracular tubercles. These bands and lines are a little irregular in outline, giving a marbled effect. Under surface fuscous, head black, the post-spiracular tubercle is still distinct, carrying several hairs.

In the 4th skin, the larva is of the same type as the 3rd. It now eats the whole thickness of the leaf. The yellow hairs are 3–4 times the diameter of the larva in length, stretching uniformly to both sides, with black tufts on 5, 7.8.9 and 12. Length 13–15 mm. Head black, with labrum and a ∧ above clypeus yellow. Larval surface yellow, with purple-black dorsal area, darkest on 2.3.4.5, 7.8.9 and 12, fading into yellow area in marbled reticulations. The trapezoidal tubercles on segments named are black, all others yellow or reticulated with chocolate as the rest of the larva, for really the general surface is purple-black or chocolate coloured, with minute yellow circles round the hair points, and these are so large and numerous in the lines of the posterior trapezoidal, the supra-spiracular and subspiracular tubercles, as to result in the impression that the larva here is yellow. The under surface is chocolate coloured. The longest hairs spring from the tubercles, those from the hair points of the general surface are about the larval diameter in length. All the hairs are straight. The anterior trapezoidals of either side rather approximate in the middle line, so that the black tufts appear to be simply dorsal, their double character not being evident without close observation. The black posterior trapezoidals of 7.8 and 9 form very obvious black spots in the posterior trapezoidal pale band. The post-spiraculars are still visible. Some larvæ are so dark, that the pale bands are narrow and only the subspiracular one very distinct, whilst the supra-spiracular tubercles are chocolate tinted. On the other hand, the skin of one larva is so pale as to be almost green, with hairs nearly white—the dark (chocolate) dorsal band being barely visible except at the dark tufts—and with two faint darker lateral bands, the hair points being rather paler.

In the 5th skin, the larva assumes the adult plumage, and, in many, this is the last skin, others assume a 6th skin; this I take to be the normal procedure, but my notes do not state the proportion of each, which is, however, variable. In one instance a whole brood had only 5 skins (4 moults). This differs from the preceding skins in the greater length of the hairs, these being no longer straight, and in the larval skin being yellow or green and by having less or none of the chocolate markings.

(*To be continued.*)

DESCRIPTION OF PLATE VI.

Fig. 1.—Larva of *Acronycta* (*Cuspidia*) *tridens* × 25 diam.; newly hatched.
Fig. 2.— ,, ,, ,, ,, × 18 diam.; fed two days.
Fig. 3.— ,, ,, ,, *alni* × 18 diam.; fed two days.
Fig. 3a.— ,, ,, ,, *alni*, lateral view.
Fig. 4.— ,, ,, ,, *megacephala* × 16 diam.; nearly full fed.
Fig. 4a.— ,, ,, ,, *megacephala*, lateral view.
Fig. 5.— ,, ,, ,, *leporina* × 20 diam.; newly hatched.
Fig. 6.— ,, *Moma orion*, × 30 diam.; dorsal view.
Fig. 6a.— ,, ,, × 30 diam., lateral view.

VARIATION.

VARIATION IN CHAULIODUS CHÆROPHYLELLUS.—This species shows some amount of variation in colour and intensity of markings, a few specimens being almost entirely black, and some with the grey of the type replaced by a sandy brown.—W. FARREN, Cambridge. *November 11th*, 1891.

BOMBYX QUERCUS VAR. CALLUNÆ.—The usual period required in this neighbourhood by *Bombyx quercus* var. *callunæ*, to pass through its different transformations, is two years. The eggs are laid at the end of June or beginning of July, and hatch in from ten to eighteen days according to temperature. The larva during the winter is about an inch and a half long. The full-fed caterpillar spins up in June or July, and, if the weather is very fine, a few insects may occasionally emerge on the moors at the end of August; but the usual time of emergence is about the end of the third week in June in the following year.—JOHN FINLAY, Meldon Park, Morpeth.

MELANIC VAR. OF POLIA CHI.—An almost melanic form of *P. chi* in both sexes has been captured here, this and last season.—G. T. PORRITT. *December 7th*, 1891.

CERASTIS SPADICEA AND C. VACCINII.—The former is a rare insect in Ireland; I have taken it with the anti-marginal yellow streak, but only once without. *C. vaccinii* varies through all moods and tenses, from the uniform mahogany colour, to the pale yellow with strongly-defined markings. Although the distinctions are sufficiently notable, there seem to be often specimens the contour of whose wings makes them not easy to define to which species they belong. The breadth of the wing, the apical angle, and the outer margin are not quite so marked,

and I am sure, therefore, many mistakes are made.—W. F. DE V. KANE, Kingstown. *December 12th*, 1891.

DIANTHŒCIA CARPOPHAGA AND D. CAPSOPHILA.—*D. carpophaga* is, I think, not found in Ireland, so far as I have information. One or two rubbed *D. capsophila* have been shown me as the former, but I had no difficulty in relegating them to the latter species. I hope, shortly, to see the English *capsophila*, which, I am assured, settle the question as to the real identity of the species. If Mr. Barrett, however, has been convinced of their identity, I must prepare to change my opinion, but up to the present the absolute identity of Continental *capsophila* with Irish and Manx forms, seems not easily got over.—ID.

I hold the opinion of Mr. Kane as to *D. capsophila* and *D. carpophaga* being true species. I have caught and bred many hundreds, I may say thousands, of both; and have seen no *carpophaga* so near *capsophila* as those from our own coast, yet there is not the slightest puzzle in picking these out, by any one really knowing the species. I consider we have many species much more difficult to distinguish than these.—H. MURRAY, Carnforth. *January 2nd*, 1892.

VAR. OF VANESSA URTICÆ.—I have a specimen of *V. urticæ* with all the pale markings of the wings of the purest white, which renders it most conspicuous when compared with the typical forms.—H. SHARP, 23, Union Street, Langham Place, London, W. [It would be interesting to learn from Mr. Sharp whether this peculiar var. of *urticæ* was bred or captured. The pigment in this species is excessively soluble, and a natural variety of this kind possesses great interest.—ED.]

VARS. OF BRYOPHILA PERLA AND CUSPIDIA PSI.—I have a pale var. of *B. perla* with the markings scarcely visible and another form of the same species yellow. I have also the pale form of *C. psi* with the fringes of forewings and the tip of the abdomen of a bright rosy colour.—ID. [These forms are all noticed in *The British Noctuæ and their Vars.*, vol. i.—ED.].

VARIETY OF LYCÆNA BELLARGUS.—In the neighbourhood of Seaton (S. Devon), last September, I met with a curious variety of the above. The specimen, a male, is of a pale lavender grey colour, and quite lustreless, and presented a curious contrast while flying to the typical examples, that abounded in the spot where it was taken.—R. M. PRIDEAUX, Clifton, Bristol. [This is var. *pallida*, *Ent. Rec.*, vol. I., p. 11.—ED.]

BLACK VAR. OF COLIAS EDUSA.—The specimen on the upper surface is black, instead of the orange colour of the normal form, with the exception of a small oval yellow spot near the base on the upper margin of hind wings. The colour of the latter is shot with blue. The broad band which is black in the normal form, is in this brownish, which, as seen on the upper wings through a lens, shows rather long yellow scales sprinkled over it. All the nervures are black. The middle area of the forewings on the underside is blackish blue, from the base towards the outer margin runs a broad grey blotch. The colour of the wings on the costa towards the tip is olive green. The black spot normally present is in this specimen, only perceptible on both sides by a deeper black. The underside of the hind wings is olive green, otherwise spotted with the characteristic metallic markings of the *Colias* genus. The body, antennæ, palpi and fringes, like the ordinary form, only instead of yellow, black is more predominant. Size 25 mm. (one forewing ♂).

The above variety was caught on September 25th, in a meadow enclosed by a wood, near Agram, where other *Colias* species occur. It appears to have freshly emerged, and is perfectly developed.—AUGUST ONSEN, Bakacgasse No. 4, Agram, Croatia.

SCIENTIFIC NOTES.

VARIATION IN THE COLOUR OF THE COCOONS OF HALIAS CHLORANA.—I suppose all students of variation have interested themselves in that particular phase of the subject in which certain larvæ appear to have a remarkable foresight, and, according to what their surroundings are or have to be, appear to have a tendency to spin a cocoon of the colour which will protect them best from their numerous enemies. The cocoons of *Eriogaster lanestris* and *Saturnia carpini* are those which have been more generally used for experiment by Mr. Poulton, and others who have followed in his footsteps, and it struck me when at Deal in August, collecting larvæ of *Halias chlorana*, that it would be equally easy to experiment with this species, and far more easy to rear, so that there might be no deaths etc., to modify the success of the experiment. I collected some 600 larvæ, and put them with a quantity of their foodplant into large linen bags of three different colours,—(1) dark slaty black, (2) white, (3) a bag which had once been white but was now very dirty. In about three or four days, some larvæ in each began to spin their cocoons on the sides of the bag, and, much to my astonishment, there certainly was an appreciable difference in the colouring of the three lots, especially in the bags numbered 1 and 2. Those in bag 1 were, with two solitary exceptions (and these were normal), out of just above 20 cocoons, of a somewhat reddish colour, those in bag 2, were of a rather pale straw colour tending to white, with the exception of three that were normal, those in bag 3 were nearly all normal, but there were 2 dark reddish cocoons and two very pale ones mixed up with the normal ones. I at once assumed that, in a state of nature, hereditary influence would be strong enough to produce occasionally paler cocoons than the type, and *vice versa*, although the greater number of the cocoons would be of the dull greyish ochreous tint which appears to be normal. To satisfy myself as to this, I accordingly sleeved some out, and the result obtained so far justified my expectation that I got cocoons of a decidedly darker, and others of a decidedly paler tint than the great majority of these, proving that, even in nature, there is some tendency to variation, and I came to the conclusion that those in the dirty bag (3) were spinning up more according to the normal condition of things in nature, and that the few specimens in bags 1 and 2, which varied so greatly from the general body in those bags, varied simply from an inherent tendency in the species to vary in spite of the surroundings, and that the others, having adapted themselves to their surroundings, had spun darker cocoons than usual in bag 1, and paler in bag 2. Thus far, then, my observations had led me to believe that this particular species could adapt itself within certain limits to its surroundings, and that the theories put forward in this direction were, in the main, correct.

I then began experimenting further. Each larva, when full-fed,

crawled on to the bag and began to spin a network of silk on the linen of which it was composed, before attempting to build the sides of its little boat-shaped cocoon, and I noticed that this basement fabric (if I may call it so) appeared to be invariably white. That is to say, the larva naturally spun white silk. It was suggestive, therefore, that the larva had the inherent power of colouring the silk or not, according as it spun a dark or light cocoon, and that the normally coloured cocoon, as found in nature, was really to some extent coloured, and not simply formed of the silk as originally made by the larva. The question therefore arose, how was the white silk made of a different colour to white, assuming of course that white was the natural and original colour, unmodified by any colouring matter whatever? Certain it was that the larva did in my three bags have the power of colouring this white silk within the limits I have previously suggested and pointed out. How was this effected?

I now took a considerable number of what appeared to me to be full-fed larvæ from each bag, and distributed them equally, about 20 in each, in three large new chip boxes, and here my troubles began. Those from the dark bag (1) produced a great number of fairly dark cocoons not corresponding at all to the colour of the inside of the box, although a comparatively small number did so precisely. Those from the dirty bag (3) were again most normal, and those from the white bag (2) spun some rather pale cocoons which did not correspond at all to my idea of adapting themselves to their surroundings. There were also two purely white cocoons among those from the dark bag, and one in that from the dirty bag. A few larvæ in the various boxes showed that I was also deceived occasionally in my ideas as to their being full-fed, and I was afraid that the removal of some of those larvæ from their surroundings before they had made up their minds to spin was the cause of the failure, and that environment had no influence unless the larvæ were in an active state of making or being about to make their cocoons.

As some of these larvæ had been removed when they were not full-fed, I thought, as I have just mentioned, that the extent of their maturity or otherwise might influence matters. Accordingly I made another experiment, and was most careful to select none but those which had positively commenced to spin. Here my success was most complete, but in a way I had never anticipated. The larvæ appeared utterly unconscious of their new environment (in chip boxes). Those from bag 1 spun a fairly dark cocoon as they assumedly would have done in the dark bag, those from bag 3 were normal, and those from bag 2 were also normal, certainly not so pale as I had expected from the behaviour of the lot from bag 1. Here then I had advanced a step. The colour of the cocoon was already determined when they were ready to spin and was only modified infinitesimally afterwards. Hence the failure of my previous experiment was fully explicable by assuming that some of the larvæ were, and others were not ready to spin.

I now took larvæ *not* full-fed from the dark bag and fed them up in a chip box and got either pale or normal cocoons, showing at any rate that living in the dark bag throughout their existence, except the last few days, did not influence them at all; similar results were obtained from the larvæ in the white bag.

I was now quite satisfied that the larva could respond to its environment

only at the active period of making the cocoon, or the time immediately preceding that period, and that, when the cocoon was begun, its colour was fixed.

I now took a number of comparatively immature larvæ which I knew were not full-fed, although they appeared to be nearly so, and practically starved them into making cocoons. With scarcely an exception the cocoons were pale from whichever of the three bags they were taken.

It now became clear that the colouring of the cocoon was a physiological process, and within certain limits, the cocoon was coloured independently, and probably not at the exact time each strand of silk was woven into the cocoon, and it was equally clear that the larvæ had practically no power whatever to form dark or normal cocoons, if starved for some three to six days before spinning. Therefore the colouring matter was directly connected with nutrition. But how?

I now took a tin and placed larvæ in it, allowing the food to get moist and even to begin to decay, owing to the moisture collecting in the tin. Most of the larvæ died, filled with a black fluid, the few who passed through this process, voided an almost perfectly black excrement and spun an almost black cocoon.

What then was the connection between the colour of the cocoon and the colour of the excrement? They were identical without doubt, and it suddenly dawned on me that it might be that the colouring matter of these cocoons was an intestinal or urinary waste product, and the more I considered the matter, the more certain I became. If I starved my larvæ so that there was no excretory waste, I got white or pale cocoons under almost any condition of surroundings and environment. If they were well fed up to the moment of pupation, and healthy, the cocoons were fairly normally coloured, whilst if there was a tendency induced by external circumstances (especially moisture) to promote excessive secretion, the cocoon became exceptionally dark.[1]

I had now arrived at any rate at a satisfactory explanation of the cause of the coloration, but I was not altogether satisfied how far the larvæ could, in a state of nature, respond to their environment, but I should say it was to a moderately considerable extent, and I found that larvæ kept healthily, in a roomy glass breeding cage, spun cocoons, which were modified considerably in colour, according as they spun up on white paper, open chip boxes, dead leaves etc. in the cage, but this modification did not include a complete response to environment, it was only an approach to it in a most general way.

Yet another experiment. I opened a dozen dark-coloured cocoons, after the larvæ had been at work in them for some 12 hours and were quite invisible, and took out the larvæ. These I put into a dark-coloured box, and each and all spun a second cocoon, thin and fragile, and with one exception, white, pure white, showing that the dark colouring matter had been absolutely expended in forming the first cocoon, with the one exception mentioned, and that the larva, although still capable of spinning the white silk, had no further power or capacity

[1] I found afterwards that the food in my dark bag (No. 1) had a much greater tendency to decay than in the others (probably because I had put it away wet), and I surmise now, that this had something to do with the fact that the first lot of cocoons formed on the sides of this bag were so much darker than the other sets.

to form a second dark cocoon, or in other words, was unable to supply the necessary colouring matter, to darken the silk which it spun.

As to how the larva applies the intestinal waste remaining in its system at the time of spinning, for the purpose of colouring its cocoon, I can only form suggestions. The excretion must be made from the anal orifice, I think, and not from the oral (although the latter is more than possible). The difficulty of accepting the hypothesis that the colouring matter is excreted from the oral orifice suggests itself to me because the normal colour of the silk which is spun as a basement on which to build the cocoon, is apparently always white, and I take it that all the silk spun is, in the same way, white, and that the colouring matter is injected afterwards. If further observation should prove the silk spun is not always white, I should prefer to suppose that the oral orifice was used for the purpose of excretion. If on the other hand, excretion takes place from the anal orifice, the secretion may be poured out in small quantities in very fluid form, after the silk is spun, to darken the parts already formed, in the ordinary manner of fluid intestinal excretion.

I only record one other observation, and that was made when I thought I had finished my observations. I left the larvæ which remained in the bags, to spin up or die as they thought fit, and quite nine-tenths of the cocoons formed by the remnant were paler than one would expect in all the bags, some in the dark bag being quite white, showing that the starvation element was a stronger one in the direction of the formation of a pale cocoon than was the dark environment, in the direction of the formation of a dark cocoon.

In conclusion, my experiments with *Halias chlorana* have satisfied me that, within certain comparatively narrow limits, this species has the power of forming a cocoon which shall respond to its environment; but that the formation of an excessively dark cocoon in nature shows a strong tendency to some form of disease; in which the intestinal excretion becomes very dark; whilst the formation of an absolutely white cocoon, given that the larva is healthy and has a plentiful supply of food, is almost a physical impossibility, although in response to environment it is possible (and probable) that a comparatively pale one might be formed. I also conclude that the colouring matter is an intestinal waste product, the colouring of which produces the variation in the colour of the cocoons, and the total absence of such waste, results in the production of an absolutely white cocoon, and comparative absence, a comparatively white one.—J. W. Tutt. *October*, 1891.

CURRENT NOTES.

The Entomological Society of London suggests dropping the July, August, and September monthly meetings, and substituting three extra meetings in the summer months.

The Title-page to Vol. II. of *The Entomologist's Record*, which could not be printed in time to be published with the December number, will come out with the *Special Index*.

The City of London Entomological Society has taken much more convenient rooms at 33, Finsbury Square. The Council call the attention of Entomologists to the list of papers that are to be read at the

forthcoming meetings. The *Proceedings for* 1891 are ready for distribution to members.

The capture of *Leucania unipuncta* in the Isle of Purbeck by Mr. Eustace R. Bankes, and of *Dasycampa rubiginea* by the same gentleman and others, is a fit ending to the record of rare NOCTUÆ captured in 1891.

Mr. E. Saunders, F.L.S., adds two new Hemiptera to the British fauna. These are *Trapezonotus ulbrichii*, Fieb., "taken by the Rev. T. A. Marshall on the cliffs near Boscastle or Tintagel, Cornwall," and *Myrmedobia distinguenda*, Reut., of which Mr. Saunders "took 3 ♂ and 2 ♀ by beating old lichen-covered larches near Busbridge, Surrey, in July, 1890" (*E.M.M.*, p. 8).

Another change in the proprietorship of the *Entomologist* has taken place with the new year, Mr. South having acquired it from Mr. Leech.

The Annual Meeting of the South London Society on Jan. 28th promises to be a lively one, judging from the suggestions to hand last night (14th).

Prof. J. B. Smith, who spent a fortnight recently studying the NOCTUÆ in the British Museum collection hopes to publish his notes shortly. It does not seem to be generally known that the students' rooms of the Natural History (South Kensington) Museum contain the finest collections of all orders in the world. Specialists frequently go to the Museum, and, having seen the general collection upstairs, come away thoroughly disappointed, whereas if they had asked to go into the students' rooms and signed the visitors' book, they would have come away delighted.

A work on British Diptera, published in shilling parts, is being brought out by Elliot Stock, 62, Paternoster Row, E.C. It is sure to be in the hands of all dipterists, and will make a reliable text-book for those who are just commencing to study this order. Two parts are now ready.

BIBLIOGRAPHY.

ADDITIONS TO THE BRITISH LIST AND CHANGES IN NOMENCLATURE.

LEPIDOPTERA.

Tortrix steineriana var. *dohrniana* (?) added to the British list as *T. donelana*, Carpenter (*Ent. Rec.*, ii., pp. 239 and 264). It is questionable whether the pine-feeding species will not finally prove identical with *T. viburniana*, as Mr. C. G. Barrett informs us that the pine-feeding larvæ will also feed on *Vaccinium*.

Heliozela hammoniella, Sorh., is a prior name of *Tinagma betulæ*, Wood (H. T. Stainton, *E.M.M.*, p. 299; *Ent. Rec.*, ii., p. 252). Dr. Sorhagen's name, being given only on the mine of the larva, as recorded by Mr. Stainton, cannot replace *T. betulæ* in my opinion. It is out of reason to name an insect from a vacated mine. When it is done from a larva, it is rather unsatisfactory, but by whatever name the mine may be called, Dr. Wood and Mr. Stainton certainly first described the species, and their name should stand.

Micropteryx caledoniella, Grif., n. sp. added to the British fauna (A. F. Griffith, *E.M.M.*, p. 300; *Ent. Rec.* ii., p. 252).

Coleophora leucanipennella, Hb., added to the British fauna (C. G. Barrett, *E.M.M.*, p. 302; *Ent. Rec.*, ii., p. 252).

Aplecta nebulosa var. *robsoni*, Collins. Melanic var. (J. Collins, *Ent. Rec.*, ii., p. 264).

Prodenia littoralis, Bois. Bred by Mr. Boden from a larva found in an imported tomato (*Ent. Rec.*, ii., p. 260).

Noctua conflua, Tr., and *N. festiva*, Hb. Differentiated (J. W. Tutt, *Ent. Rec.*, ii., p. 266).

Noctua augur.—Referred to genus *Graphiphora*. *N. fennica* and *N. subrosea*.—Referred to genus *Agrotis*. *N. depuncta*.—British form referred to as var. *mendosa* (J. W. Tutt, *Ent. Rec.*, ii., p. 262).

Luperina luteago var. *barrettii*. Reinstated in genus *Dianthœcia* (W. F. de V. Kane and W. Reid, *Ent. Rec.*, ii., pp. 275, 276).

HEMIPTERA.

Henestaris halophilus, Burn. = *geocoriceps*, Antess. Added to the British fauna (E. Saunders, *E.M.M.*, p. 298).

Lecanium assimilis (*e*), n. sp., on *Aster*, at Colwyn Bay. *L. minimum*, n. sp., on *Areca*, in Cheshire. *Pulvinaria persicæ*, n. sp., on peach, in Cheshire. *Pseudococcus associalis*, n. sp., on *Ribes*, in Yorkshire. *Ripersia tomlinii*, n. sp., on grass roots, in ants' nests in Guernsey. *R. pulveraria*, n. sp., under leaf-sheaths of *Agrostis*, Cheshire (R. Newstead, *Ent. Rec.*, ii., p. 306, *E.M.M.*, p. 334). *Aleurodes rubicola*, n. sp., on *Rubus*, at Blackheath (J. W. Douglas, *E.M.M.*, p. 323).—J. W. T.

NOTES ON COLLECTING, Etc.

NOTES OF THE SEASON OF 1891.—*Scarborough*.—I think the only really fine summer weather I have experienced this year was a fortnight in September spent at Scarboro'—it only rained on two half days during the whole time. I was staying with friends, so did not pay so much attention to entomology as I otherwise might have done; however, by working the hedges on "Oliver's Mount," I managed to secure some very fine specimens of *Peronea schalleriana* var. *latifasciana*. I wonder this has not been raised to specific rank. In one hedge, quite half of the *P. variegana* were var. *cinana*, I secured a fine lot, some of them with the cilia as black as the wings (the usual colour of the cilia being orange), these with some other nice forms of *P. variegana*, a few *P. comparana* and *Cidaria immanata* were the chief imagines I took. I found an odd larva of *Cuspidia leporina* at "Lady Edith's Drive," and on the cliffs north of Scarboro' a few *Heliothis marginata*. *Larentia didymata* swarmed everywhere, as also did *Plutella cruciferarum*, and on the cliffs where colts-foot occurred there also were *Scopula lutealis* and *Platyptilia gonodactyla*.—W. FARREN, Cambridge. *Nov. 11th*, 1891.

The Isle of Purbeck.—In an autumn chiefly remarkable for the extraordinarily bad weather, which more often than not made collecting an absolute impossibility, it is a treat to be able to record the capture of any rarities. My first great stroke of luck was on Oct. 12th, when I took at sugar in our shrubbery a fine specimen of that great prize *Leucania unipuncta* (= *extranea*, Guen.): taking into consideration its condition and all the circumstances, it seems highly improbable that it had flown from any distance, or could have been accidentally introduced in any stage. The night was apparently a most unlikely one for insects, rather chilly compared with the preceding ones, with a

clouded moon and occasional heavy and cold storms of rain, but to my surprise the moths simply *could not* resist the attractions of the sugar, and appeared in far larger numbers than on any other night this autumn. Up till then sugar had been a sad failure, and had produced extremely few moths of any sort or kind, and nothing worth setting with the exception of four or five *Epunda nigra*. I left home on Oct. 15th for nearly a month, but on Nov. 13th—the very first evening on which I tried night-work after my return—I had my second stroke of good luck, and boxed four grand *Dasycampa rubiginea* off ivy bloom in our shrubbery between 6 and 7.30 p.m., and took another on the following night as it was sheltering under an ivy-leaf during a torrent of rain. Although I have been on the look-out for the species for years past, the only specimen I ever met with until this autumn was taken within a few yards of our front door on Nov. 3rd, 1883—eight years ago!—EUSTACE R. BANKES, The Rectory, Corfe Castle. *Dec. 15th*, 1891.

Ruthin, North Wales.—I have just taken a fine *Pœcilocampa populi* at light, the first of that species I ever saw alive; "treacling" during October produced two or three each of *Anchocelis pistacina*, *A. litura*, *Cerastis spadicea*, *Amphipyra tragopogonis*, *Plusia iota*, *Miselia oxyacanthæ* (with one var. *capucina*), and one each of *Agrotis suffusa* and *Gonoptera libatrix*, not a very remarkable record. *Diloba cæruleocephala* was to be had on the lamps.—J. E. R. ALLEN. *Nov. 30th*, 1891.

Clevedon.—Pœcilocampa populi has been tolerably abundant at light with us, though only males have been taken. Insects have not been so plentiful at ivy this autumn. I was surprised the other day to find a ♂ specimen of *Phigalia pilosaria* in my large breeding cage, standing outside in the shade, and which I believe to be from a pupa dug this autumn; is not this unusually early?—J. MASON. *Dec.*, 1891.

RETARDED EMERGENCE.—It is not wise to throw away one's rubbish at the end of the first season; in June last I bred two nice *Cidaria reticulata* from larvæ collected in 1889, these I should have missed had I cleared out my rubbish.—H. MURRAY, Carnforth. *Dec. 10th*, 1891.

HESPERIA LINEOLA AT BURWELL FEN.—Looking at my series of *Hesperia thaumas* a short time ago, I found among them a specimen of *H. lineola* of my own taking, luckily it was labelled, and on referring to the number in my diary found entered among other things, "Aug. 4th, 1890, Burwell Fen, 1 *Hesperia thaumas*," it was the only "skipper" I boxed that day, and as my friend Mr. Jones was with me on the day in question, he at once looked at his own set, and there, sure enough, was another *H. lineola* taken on the same day, and peculiarly the only "skipper" he boxed. There have been two previous records of *H. lineola* on Burwell Fen, one by Mr. Vivian in 1889, and the other by Mr. Tutt this year. I daresay when I go for them next year I shall find plenty, as the two mentioned above were netted at random and kept as nice looking *Hesperia thaumas*.—W. FARREN, Cambridge. *Nov.* 1891.

TRIPHÆNA PRONUBA, DOUBLE-BROODED.—In the third week in August I found a large batch of white ova on a sprig of asparagus seed; they hatched on the 1st of September, and began feeding well. By the end of the week they were a quarter of an inch in length and growing very fast; by the end of the third week they were about three parts grown, and were exceedingly voracious, eating up an armful of asparagus seed in a night; I now began to wonder what they could be, and had

decided that they were an "underwing" larva, but by this time it had become evident they were going to feed up and not hybernate, and I could find nothing written as to "underwings" being full-fed in the autumn. The first week in October the larvæ were full-fed, and I sent some to friends at Cambridge, Ely etc., but they were unable to name them with certainty. When full-fed they went into the earth, some deep down, and some on the surface. The pupæ are in a very large receptacle full of earth, and have not been disturbed in any way. They are kept in a cold, quite unheated, conservatory, almost tantamount to being out of doors, the thermometer having this year already gone down below freezing point several times; I had wondered much what my large brood could be, and having set my heart on their being something good, I determined to *force* a few pupæ, thinking thus to learn their name. On the 28th of November I took the gauze off, intending to get half-a-dozen or so pupæ for my forcing cage, when to my astonishment there was a specimen of *T. pronuba* running about. I wrote to my friend, Mr. W. J. Cross, of Ely, to whom I had given some pupæ, and I found that his also have all come out, the first on the 29th, since which I have bred some scores more, and they are still (December 12th) coming out. I have searched and consulted all the authorities to which I have access, and I can find no mention whatever of *pronuba* being double-brooded, and shall be glad to know if it is generally known that it occasionally occurs.—W. Bond Smith, Potton, Sandy.

Sphinx convolvuli at Reading.—Hearing from Mr. Mason at Clevedon that *Sphinx convolvuli* was about, I tried a large bed of *Nicotiana* in hopes of getting it, but without success. In October, however, luck came so far that two were brought in, one found on a timber carriage, the other picked up by a gardener. Both are good specimens, which is far from usual with things brought in this way. One was a large ♀, but it would not be coaxed into laying eggs, it beat itself to pieces and died.—W. Holland, Reading. *Nov.* 1891.

Time of flight of Celæna haworthii.—When at Simonswood Moss a month ago, we were favoured with the sight of *Celæna haworthii* in some quantity, though formerly we had to content ourselves with odd specimens laboriously extracted from clumps of heather. Before 6.15 p.m. there was not a specimen on the wing, but a few minutes afterwards they flew everywhere, and they *can* fly.—G. A. Harker.

Times of flight of the species in the genus Crambus.—The following are based on my own experiences of the species I have met with in Scotland. *Crambus pratellus*—most abundant for an hour before sunset and after sunrise, can be flushed abundantly during the day time. *Crambus dumetellus*—the same remarks apply to this species. *Crambus cricellus*—in the afternoon and evening (perhaps it might be got in the morning, but I never was near the localities in the early morning). *Crambus furcatellus*—only in the afternoon. *Crambus margaritellus*—in the afternoon and evening before dusk, and sitting on grass during the day. *Crambus pinetellus*—to be found at dusk and after it is dark. *Crambus perlellus*—in the morning and all day. *Crambus* var. *warringtonellus*—the same time as *perlellus*. *Crambus tristellus*—easily flushed during day, flies freely at dusk and before and after it is dark. *Crambus culmellus*—morning, noon and night.—W. Reid, Pitcaple. *October*, 1891.

Mr. Reid's *Crambi* appear to fly mainly before dark; but, in the beginning of August, we found that they flew considerably after dark. From 9 to 10 p.m. we took males of *C. margaritellus*, *C. inquinatellus* and *C. culmellus*, flying very low, from one blade of grass to another, in search of females. It seems to me that this is the only time when it is possible to obtain the ♀. I have never seen them fly, and do not think they could fly very much with such short wings and long (and broad also) abdomina.—G. A. HARKER, Liverpool. *October 18th*, 1891.

ATTRACTIVENESS OF FLOWERS TO MOTHS.—Having for the last season or two been trying to ascertain which flowers may be considered the most attractive to moths, the results may be interesting to your readers. In order to experiment and give each a fair trial, I have had beds sown of over a dozen different plants, amongst them being the greatest acknowledged attractive plants. I have come to the conclusion that the spur valerian is far the most successful one, having taken on its flowers upwards of fifty species of lepidoptera, many of which appear in swarms. This year's captures have been as follows:—*Chærocampa porcellus*, *Urapteryx sambucata*, *Rumia cratægata*, *Odontopera bidentata*, *Boarmia repandata*, *B. rhomboidaria*, *Acidalia bisetata*, *Lizdia adustata*, *Larentia didymata*, *Hypsipetes elutata*, *Melanippe sociata*, *M. montanata*, *Scotosia dubitata*, *Cidaria russata*, *C. immanata*, *Anaitis plagiata*, *Leucania comma*, *L. pallens*, *Xylophasia rurea*, *X. lithoxylea*, *X. polyodon*, *Mamestra brassicæ*, *Apamea basilinea*, *A. oculea*, *Miana strigilis*, *Caradrina cubicularis*, *Agrotis segetum*, *A. exclamationis*, *A. corticea*, *Tryphæna janthina*, *T. orbona*, *T. pronuba*, *Noctua triangulum*, *N. xanthographa*, *Polia chi*, *Euplexia lucipara*, *Hadena dentina*, *H. oleracea*, *H. pisi*, *Cucullia umbratica*, *Plusia chrysitis*, *P. iota*, *P. festucæ*, *P. gamma* and *Amphipyra tragopogonis*.—G. BOOTH, Grange-over-Sands.

ABUNDANCE OF LARVÆ.—Larvæ here, as elsewhere, have been abundant. In the mosses *Cuspidia leporina*, *Notodonta camelina*, *N. dromedarius*, *Drepana falcula* and *N. dictæoides* have been much commoner than usual, as also has *N. ziczac*, *N. dictæa* and *Sphinx ocellatus* on the sandhills.—GEO. A. HARKER, Liverpool. *October 18th*, 1891.

I have found the past summer more productive of larvæ than the imago, and I have taken many good sorts, including *Notodonta dictæa*, *N. dromedarius*, *N. camelina*, *Cuspidia alni*, *C. megacephala* and *Demas coryli*; the latter has been most abundant, I have beaten out of beech and oak, during the last two months, twenty-five dozens of the larvæ, but I never came across more than one moth.—J. N. STILL, 41, Westcliff Terrace, Seaton, Devon. *September 7th*, 1891.

I am glad Mr. Tutt has called attention to the abundance of larvæ of *Spilosoma menthastri* and *S. lubricipeda* this season. In this district they were in extraordinary numbers, the gardens being completely stripped by them even to the rows of cabbages and clumps of horse-radish in the cottage gardens. At the back of the factory here there is about half an acre of waste ground, where for the past few years I have encouraged a fine growth of dock and other plants useful for feeding. There was a perfect army of the larvæ here, and as they grew in size they stripped everything to the ground, leaving the tall stems of dock and willow herb quite bare. It would be interesting to know if they have been generally common.—J. A. COOPER, 1, Sussex Villas, Leytonstone, E. *November 12th*, 1891.

The only thing that appears at all abundant is the larvæ of *Bombyx rubi*. In some places in the park it is difficult to avoid treading on them, the curious thing being that there is no heath there, and they are feeding on grass.—R. B. ROBERTSON, Sketty Park, Swansea. *September 25th*, 1891.

The larvæ of this moth (*B. rubi*) have been unusually abundant this autumn. We have no heath where it abounds; I do not think this is really the natural food of the larvæ, but the common bramble, hence the specific name *rubi*. The larvæ appear, as Captain Robertson remarks, to feed on grass until three parts grown, when they collect in small colonies on the nearest bramble, and are afterwards found rambling in search of winter quarters; I have a numerous batch of the larvæ feeding in a natural condition in a sunny position, being only confined to a certain space of ground; these were picked off the grass culms when about an inch long. I believe it is better to collect them when about this size than wait till they are three parts grown, as when this size they are more likely to be stung, which accounts for failures, to some extent, in breeding the imago. My larvæ at the present time are quite as fine as any to be found in the wild state, they have been fed on bramble, but have also eaten most of the grass in their enclosure.—J. MASON, Clevedon Court Lodge, Somerset. *October 21st*, 1891.

HABITS OF THE LARVA OF EMMELESIA UNIFASCIATA.—I have been taking the larvæ of *Emmelesia unifasciata* in this neighbourhood during the last week of September and the first week of October. Not many years ago this insect was a rarity, and it seems a good example of what is probably the case with many others, that, when their life-history is known, what were previously thought rarities are often found to be generally distributed. A worn imago came to light in August, so, towards the end of September, I searched the *Odontites rubra* (*Bartsia odontites*) in several places in the neighbourhood. In the locality for the insect, near Croydon, searching for it is very wearisome and unproductive (indeed I found none by searching here), so I followed the plan I had found successful before, and cut off sprigs of the unripe capsules, enough to fill a large bag. How the larvæ manage to conceal themselves in, or partly in, the small capsules, is a wonder to me! This I did on several occasions from different localities, and turned the contents of the bag into band boxes with muslin over the top, on my return home. In the course of the next day, or a few days, or even longer, the larvæ attach themselves to the muslin, and I then take them out and put them into a cage with fresh sprays of the foodplant and sandy earth, in which they soon pupate. If taken earlier than the last week in September or beginning of October, it would be necessary to sprinkle some water occasionally over the capsules to prevent their getting too dry, and also to add some fresh food now and then, but this trouble is avoided by taking the larvæ when I mention, when they are nearly full-fed. They make a small neat oval tight cocoon, and many go over a year before emergence. I expect the insect might be taken in very many localities where it is now unknown, if this plan were adopted,—and the larvæ are very easy to rear. The *Bartsia* grows as a weed in most places, at the roadside hedges, and in rough pasture land and waste places.—W. S. RIDING, Buckerell Lodge, Honiton, Devonshire. *October*, 1891.

SPHINX CONVOLVULI AT HOWTH.—In October, I got a specimen of

S. convolvuli at Howth, and earlier in the season an odd specimen of *Emmelesia unifasciata*.—G. V. HART, 14, Lower Pembroke Street, Dublin.

ACRONYCTA (CUSPIDIA) LEPORINA.—May I call attention to my inquiry for information as to the geographical distribution of the varieties of this larva?—T. A. CHAPMAN, Firbank, Hereford.

EUPITHECIA DODONEATA IN IRELAND.—In the *Ent. Rec.*, ii., p. 298, Mr. P. H. Russ records *Eupithecia dodoneata* from County Sligo, and adds that he does not think that it has been previously recorded from Ireland. I should like, however, to point out that in the *Ent. Mo. Mag.*, 2nd series, vol. i., p. 214, there is a note by the Rev. W. F. Johnson, in which he mentions the fact of its occurrence in the Mullmures.—EUSTACE R. BANKES, The Rectory, Corfe Castle. *December*, 1891.

DOUBLE-BROODEDNESS OF CIDARIA SILACEATA.—This insect is undoubtedly double-brooded in this locality, but probably not completely so. I meet with the imagines regularly at the gas-lamps in May and August, and I always record an interval of seven or eight weeks between the appearance of the last specimens seen of the earlier brood, and the first of the later one. The incompleteness of the second brood would appear from the fact, that out of 30 pupæ obtained from ova laid by a female of the spring brood, all emerged in the following August except four; and these, apparently healthy ones, are hybernating as pupæ. There is certainly a tendency here to the seasonal dimorphism referred to by Mr. Tutt, both as regarding the size of the respective broods, and the entirety or the reverse of the broad central band. However, I have some specimens of the second brood with the central band completely broken. The larvæ feed up well and rapidly on *Circæa lutetiana* and *Epilobium montanum*. As I have also reared the species from ova of the second brood which are now pupæ; it will be interesting to compare the imagines resulting therefrom with those that emerge from the four pupæ of the first brood referred to above.—R. M. PRIDEAUX, 28, Berkeley Square, Bristol.

NOTES ON THE DATES OF APPEARANCE OF EUPITHECIA PYGMÆATA.—Mr. Atmore's experience (*Ent. Rec.*, vol. ii., p. 258) regarding this insect is somewhat similar to my own, although I had never considered it really double-brooded, especially from its behaviour in my breeding pots. The following are some dates referring to it in my note-books:—1886—Small and full-fed larvæ obtained from September 4th to the end of the month. The first moth from these emerged on June 14th, 1887, and the next on June 18th. From this date one or two appeared almost every day throughout July and until August 9th. Now and then they missed nearly a week, being most regular from June 27th to July 13th, three being the greatest number bred in one day; altogether I bred 38, and in 1888 I bred about 12 more from the same lot of pupæ, making 50 in all from some 300 larvæ collected in 1886, the rest having been ichneumoned. The 1888 specimens, which had spent two years in the pupal stage, came out from May 31st to June 24th. My dates for the capture of the perfect insect are in 1889, August 4th, seven specimens, and in 1891, June 19th, two specimens. I don't think there is a distinct double brood, although Mr. Atmore's dates—August 26th and September 6th for the imago—would appear to point to it. They certainly seem to be on the wing all the summer, from the

beginning of June to August 9th, and with Mr. Atmore to August 26th and September 6th; whilst I have had full-fed larvæ from September 4th, none of which, however, produced moths the same year. It will be worth while looking for early larvæ when occasion offers.—Wm. Farren, Cambridge. *December 27th*, 1891.

Urtication.—With regard to the inquiry (*Ent. Rec.* ii., p. 296) about "urtication" caused by larvæ and cocoons, I have been affected by those of *Bombyx callunæ*. They do not affect my hands, but if, after handling either the larvæ or cocoons, I rub my face or neck, a very disagreeable stinging sensation is produced, and rubbing only makes matters worse. I have known the hands of ladies and children to become much swollen after carrying larvæ of the same species. The last time I was affected was in the dead of winter when sorting pupæ, and I certainly was not perspiring at the time.—A. D. Connon, Woodend Brace, Aberdeen, N.B. [The only species that has ever affected me in this way is *Liparis chrysorrhœa*, but it is too long ago to give anything like the exact information that Mr. Freer requires. At the time handling the larvæ under any conditions used to produce large blisters over my arms, face, and neck; and only going into the room where the larvæ or pupæ were kept was sufficient to ensure my face swelling to such an extent that I was hardly able to see. A good dip in cold water and a turn in the open air soon put matters straight. I was rather astonished to find symptoms of urtication develop in my son, a boy about ten, when handling larvæ of *L. salicis*. This species never has the slightest effect on me.—Ed.]

SOCIETIES.

City of London Entomological and Natural History Society.—*Thursday, December 17th*, 1891.—The Annual Pocket Box Exhibition, held at the Society's new rooms, 33, Finsbury Square, E.C., attracted a large number of members and friends. It is impossible to give a detailed account of all the exhibits, but some of the most noticeable were the following:—Mr. Allbuary, a perfect albino specimen of *Epinephele janira*, taken at Dover in 1889, and fine bred varieties of *Arctia caia* and *A. villica*. Mr. Cooper, black forms of *Boarmia repandata* from Sheffield, and banded specimens (var. *conversaria*) from the New Forest. Mr. Machin, Scotch forms of *Gortyna flavago*, with southern specimens for comparison, the former being much darker; also *Eupithecia helveticaria*, *Crambus myellus*, *Coccyx ustomaculana* and *Œcophora stipella*. Mr. Sampson, series of *Pseudoterpna cytisaria* and *Calligenia miniata*, and long and varied series of *Hybernia defoliaria* and *Triphœna fimbria*. Mr. Huckett, series of *Argynnis aglaia*, *A. paphia* and var. *valesina*, and *Limenitis sibylla* from the New Forest. Dr. Buckell, a long series of *Triphœna pronuba* from the London district, showing much variation, the most noticeable forms being those with dark anterior wings and light stigmata. Mr. Quail, life histories of many Geometræ, including *Scotosia certata*, *Hemerophila abruptaria* and *Phorodesma smaragdaria*. Mr. Gates, living larvæ of *Melanippe montanata* and cocoons of *Dicranura vinula*. Mr. Battley, a number of microscopic slides illustrating the anatomy and structure of various insects: also, on behalf of Mr. J.

Collins, of Warrington, a beautiful series of *Lithosia sericea*, taken in the Manchester district. Mr. Simes, variable forms of *Smerinthus populi*, also bleached specimens of *Epinephele janira* and *Cœnonympha pamphilus*. Mr. Levett, a series of *Arctia urticæ*, bred from larvæ taken in the Lea valley. Mr. Southey, *Cuspidia alni*, and a specimen of *Deiopeia pulchella* from Southend. Mr. Tutt, two cabinet drawers of the genus *Eupithecia*, exhibiting long and varied series of almost all the British species. Mr. Prout, specimens of *Cosmia trapezina*, bred singly, and as having no chance of obtaining animal food, these specimens were all much smaller than usual; also fine bred forms of *Melanippe subtristata* (*sociata*). Mr. Gurney, specimens of *Phorodesma smaragdaria*. Mr. Hill, a number of species from Rannoch, including *Petasia nubeculosa*, *Cidaria immanata* and dark forms of *C. populata* and *Melanthia rubiginata*. Mr. Bacot, various NOCTUÆ, taken in Epping Forest this year, these included *Gonophora derasa*, *Thyatira batis*, *Dipterygia pinastri*, *Dicycla oo* and *Rusina tenebrosa*. Mr. Turner, a box of foreign Lepidoptera, including some fine South American *Heliconias* and North American Bombyces, with larval parasites. Mr. Clark, *Rumia cratægata*, without the brown markings, a smoky variety of *Abraxas ulmata*, *Stilbia anomala*, from Aberdeen, and the dark var. of *Argynnis aglaia*, previously exhibited. Mr. Bayne, series of *Caradrina blanda* and *Miana furuncula*, from Epping Forest. Mr. Riches, a series of *Abraxas grossulariata* bred from Hornsey larvæ; also in Diptera, *Tabanus bovinus* and *Asilus crabroniformis*; in Orthoptera, *Phrasgonura viridissima*; and in Hymenoptera, *Trichosoma lucorum*. Mr. Elliman, a large number of species taken during 1891 at Tring, Herts, including *Neuria saponariæ*, *Luperina cespitis*, *Cirrhædia xerampelina* and *Noctua rhomboidea*, and the following Coleoptera:—*Myllæna dubia*, *Coryphium angusticolle*, *Phlœophilus edwardsii* and *Epitrix atrope*. Mr. Heasler, a very fine exhibit, consisting of cases of aquatic Coleoptera and Staphylinidæ. Mr. Lewcock, a number of good Coleoptera from Eynsford, Kent, including *Cryptocephalus lineola*, *Cistela luperus*, *Otiorhynchus tenebricosus* and *Toxotus meridianus*. Mr. Cripps, representatives of the following genera:—*Cleonus*, *Hypera*, *Cionus* and *Balaninus*. Mr. Milton, *Pachyta octomaculata*, *Aepus marinus* and *A. robinii*; in Diptera, *Stratiomys riparia*, *S. potomida*, *Gastrophilus nasalis* and *G. equi*; in Hymenoptera, *Sirex gigas*, *Ephialtes tuberculatus* and *Vespa rufa*; in Orthoptera, *Phrasgonura viridissima* and *Ectobius lapponica*; in Neuroptera, *Osmylus chrysops* and *Baetis fluminum*; and in Hemiptera, *Ranatra linearis*. He also exhibited a specimen of *Eubolia palumbaria*, captured by a plant of the Sundew (*Drosera rotundifolia*), and a piece of polished stone, the markings of which resembled a landscape, with trees and hedges.—A. U. BATTLEY & J. A. SIMES, *Hon. Secs.*

SOUTH LONDON ENTOMOLOGICAL SOCIETY.—*Thursday, December 10th*, 1891.—Mr. Adkin exhibited a peculiar var. of *Pieris napi*, showing an almost black band from the costa to the inner margin, and passing through the normal black spots. Mr. C. G. Barrett exhibited some specimens of *Selenia illustraria* bred by Mr. Merrifield, and referred to that gentleman's experiments. Mr. Weir also made some remarks as to the scientific value of these experiments. Mr. Tutt remarked that the dark specimens produced by a low temperature,

were also more or less deformed, and since the darkening and deformity went together, there must be some connection, and he suggested that the cold stayed the complete development of the pigment. Mr. Fenn supported Mr. Tutt's statement as to the darkening and crippling going together. Mr. Adkin exhibited *Petasia nubeculosa*, Mr. Tugwell some melanic specimens of what he considered *Eupithecia satyrata*. Messrs. Barrett, Tutt and Fenn disagreed with this, and *trisignata* and *virgaureata* were suggested as the species. Mr. H. Williams, ♀'s of *Hybernia aurantiaria*, *H. defoliaria*, etc. Mr. Mansbridge sent a note relating to the *Tinea*, which he first obtained from imported guano, and which was referred by Mr. Tutt at the time as probably *Tinea biseliella*, and stating that the name suggested by Mr. Tutt was probably correct. Mr. Tutt remarked that the specimens were larger and brighter than typical *biseliella*, but that he could see no other difference, although he had bred a considerable number, and the species were probably specifically identical. Mr. Tugwell then exhibited a box of Scotch insects collected by Mr. Reid this year, and commented on the wretched season in Scotland, stating that sugar had been utterly useless. Among other species, he exhibited a *Platyptilia* bred by Mr. Reid from the leaves of "ragwort," and the true *Retinia duplana*. Mr. Barrett remarked on the fact that no *Platyptilia* was as yet known to feed on ragwort (*Senecio*), and that the method of feeding on the leaves differed from the method of feeding of other British *Platyptilia*. Mr. Tutt stated that Mr. Reid first brought up the subject in the *Record* "Exchange Club" book, that there the matter was discussed, and that although it was then hinted that this was a new species, it was so like *ochrodactyla* in the perfect state that the matter was allowed to drop until fuller information about the larval stage could be obtained. He also mentioned that he had received similar specimens bred by Mr. Christopher Eales from ragwort, the larva having been taken near Carlisle. Mr. Barrett then referred to *Retinia duplana*, and stated that the true *duplana* was first captured by the Messrs. Salvage, and that those called *duplana* previously were small *R. turionana*. Mr. Fenn asked if they were not what Mr. Warren determined as *R. posticana*, and Mr. Barrett stated that this was so. Mr. Adkin stated that *R. duplana* occurred very early. Mr. Edwards exhibited some rare exotic *Papilios*. Mr. Carpenter, a fine series of *Plusia festucæ* from Cambridge. Mr. C. G. Barrett, a fine lot of varieties belonging to and captured by Mr. Percy Russ, at Sligo (*vide Ent. Rec.*, vol. ii., p. 299). He remarked on the fact that light and pale forms of the same species occurred in the same locality, and instanced *Agrotis cursoria* and *A. valligera*. Mr. Tutt said that it was to be expected in a locality where any variable species was common that extremes would be occasionally met with. At Deal, there were very pale and occasionally black specimens of *A. tritici*, but the very dark ones were rare. At Aberdeen, on the other hand, the black was the commonest form, and at Sligo, by far the greater number were distinctly brown. *A. valligera* and others varied in the same way, but whilst each locality exhibited a general tendency in a certain direction, occasional extreme forms could always be selected.—Ed.

Birmingham Entomological Society.—*December 7th*, 1891.—Mr. Bradley exhibited a box of Lepidoptera taken during the year at Sutton. Mr. C. J. Wainwright showed *Asteroscopus sphinx* (*cassinea*), from Han-

bury Park, and *Calymnia affinis* from Arley. Mr. E. C. Tye, a box full of captures made this year, including *Cherocampa porcellus*, from Sutton, *Lithosia mesomella* from Wyre Forest, *Noctua glareosa* etc., from Sutton. Mr. P. W. Abbott, a box of this year's captures, including *Phibalapteryx lignata*, *Noctua dahlii* etc., from Sutton. Mr. G. T. Baker showed four boxes full of Scotch insects, collected at various times in the Shetlands, Hebrides, Rannoch and Forres, by the Messrs. Salvage.

December 21st, 1891.—Mr. P. W. Abbott exhibited *Agrotis obelisca*, taken by Mr. A. J. Hodges in the Isle of Wight, also *Noctua c-nigrum*, which Mr. Hodges said was often confused with it on the sugar. Mr. R. C. Bradley, *Pyrellia lasiophthalmia*, from Sutton. Mr. G. W. Wynn, two specimens of a NOCTUA, from Sutton, which he had been unable to name, and with which members present could not assist him. Mr. Abbott read a paper on "A fortnight's collecting in the Isle of Wight in 1891." He said that he had had the advantage of the assistance of Mr. Hodges, who knew the ground well. They had worked specially for *Agrotis lunigera*, with which they were very successful; among other good species, they took a very fine and variable series of *Zygæna trifolii*, many being blotched forms; yellow varieties of *Zygæna filipendulæ* were also taken.—COLBRAN J. WAINWRIGHT, *Hon. Sec.* [I have since seen the two specimens mentioned above, which prove to be females of *Rusina tenebrosa*.—ED.]

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY.—*Monday, December 14th*.—Mr. Willoughby Gardner, F.R.G.S., read a paper entitled "A preliminary list of the Aculeate Hymenoptera of Lancashire and Cheshire, with notes on the habits of the genera." The author remarked that although but little had been done in the district in the order Hymenoptera compared with the more favoured Lepidoptera and Coleoptera (of which very full local Faunas had been compiled and published by members of the Lancashire and Cheshire Entomological Society), still much quiet work had been done during a series of years by several observers; it was now very desirable, he said, that those scattered records should be brought together so that they might be permanently preserved in a form that would serve as a basis upon which future information on the subject might be conveniently built up. The writer acknowledged the valuable assistance of the following local workers from whose notes, along with his own, he was enabled to compile his paper, viz., Miss E. C. Tomlin, Mr. J. T. Green, the Rev. H. H. Higgins, Mr. J. R. Hardy, Mr. R. Newstead, F.E.S. and the late Mr. B. Cooke. The paper included a list of 161 species, hitherto recorded in the counties of Lancashire and Cheshire, giving full particulars of localities etc. This out of 373 species at present described as indigenous to Great Britain. The records included notes of the occurrence of such interesting and local insects as *Astata stigma*, *Æscybelus mucronatus*, *Colletes cunicularia*, *Halictus atricornis* and *Æsmia xanthomelana*. In order to afford some information to members of the Society who had not studied the order Hymenoptera, Mr. Gardner gave a running *resumé* of the general habits of the insects of each genus *seriatim*, throughout the paper, illustrating his remarks by specimens of the various species, cases containing nests, "life-histories" etc. Mr. S. J. Capper exhibited a

type collection of Hymenoptera; Mr. Tomlin, of Chester, a collection of Hymenoptera, and specimens of *Hylastes opacus*, Er., *Trypodendron domesticum*, L. and *Myetophilus piniperda*, L.; Mr. Newstead, nests and specimens of *Bombus pratorum*, *Megachile circumcincta*, *Andrena nigroænea*, *Colletes cunicularia*; genitalia and leg of *Crabo palmipes*; Mr. Stott, a specimen of *Chærocampa celerio* on behalf of Mr. H. S Clarke of Douglas, where it was captured this summer; Dr. Ellis, a collection of Coleoptera made in the Spanish Pyrenees; the Library and Museums Committee, nests and specimens of British and Foreign Hymenoptera, and Mr. J. T. Green, a collection of Hymenoptera.

Jan. 11th, 1892.—The annual meeting was held in the classroom of the Free Public Library, William Brown Street, where, although the weather militated against a large attendance, a most enjoyable evening was spent. The president, Mr. S. J. Capper, occupied the chair, and in the course of his annual address referred to the entomological records of the past year, and also gave a series of most interesting personal reminiscences of his experience as an entomologist for over fifty years. This began at an Epping school, where Henry Doubleday did so much work, and helped the schoolboys by naming and describing their captures. The president spoke of the progress of the science since his first acquaintance with it, and the improvements in the mode of capturing and preserving specimens. He referred also to the inauguration of the Lancashire and Cheshire Society, the first meeting of which was held at his house at Huyton, in March, 1887. The president further enumerated the principal achievements of the past session, which, he said, had been at least equal in good work to any previous session. In conclusion, he remarked that it was to the younger members that they now looked for the further progress of the Society—Mr. S. J. Capper, F.L.S., F.E.S., was re-elected president; and the Rev. H. H. Higgins vice-president; Mr. F. N. Pierce, F.E.S. (hon. secretary) and Mr. C. H. Walker (hon. librarian) were re-elected; the new members of the committee being Messrs. George Harker and C. E. Stott.—During the evening the following were exhibited by the members named:—Varieties of British Lepidoptera, the president; varieties of *Eupithecia venosata*, Mr. C. S. Gregson; life History of the bot fly *Gastrophilus equi*, Mr. R. Newstead; *Phycis splendidella*, captured at Wallasey, July, 1891, Mr. H. B. Jones; a fine web formed by the larvæ of *Ephestia elutella*, Dr. J. W. Ellis; and Scotch *Dasydia obfuscaria*, *Noctua sobrina* etc., Mr. C. E. Stott.—F. N. Pierce, *Hon. Sec.*

NOTICES, REVIEWS, Etc.

The Lepidoptera of Bognor. Webster and Webb, High Street, Bognor.—Our local lists are gradually being worked up. This is reprinted from the *Proceedings of the West Sussex Natural History Society*, and is compiled by the present President, Mr. A. Lloyd, F.E.S. Besides the Lepidoptera, lists of the Plants, Seaweeds, Mollusca, and Marine Crustacea, together with notes on the Geology of the district, are to be found, and will undoubtedly be of great service to those who visit this delightful part of our coast.

The Entomologist's Record AND JOURNAL OF VARIATION.

No. 2. Vol. III. February 15th, 1892.

THE GENUS ACRONYCTA AND ITS ALLIES.

By Dr. T. A. CHAPMAN.

(*Continued from page 7.*)

ACRONYCTA (Cuspidia) leporina (continued).—There are two distinct forms of the larva, the southern alder or green form with white hairs, and the yellow northern or birch form. The former is tolerably uniform in the larval surface, being green and nearly free from marking. Length 34 mm.; outline thickest at 7.8 and 9, tapering either way with an arched or rounded margin, especially when sulking, something like *Notodonta dodonœa* or *N. carmelita*, but more truncate at the tail. Colour pale apple-green with no markings, spiracles white with a fine black line, head and legs a trifle paler, labrum and palpi nearly white, darker beneath. The surface is uniformly clothed with long, perfectly white hairs, which stand erect for about 2 mm. of their length, and then bend down parallel to the larval surface for a length of about 5 mm., thus forming a continuous coat or surface at a distance of 2 mm. from the larva. Very inconspicuous, but easily seen when looked for, are certain black hairs, 2 to 3 to each anterior trapezoidal, 1 to each posterior trapezoidal, 1½ to 2 mm. long, a little longer and more numerous on 13 and 14, where they tangle with the flowing white hairs. Sometimes this form has some black markings in head. The yellow form has a yellow larval skin with distinct chocolate bands down back and side, indistinct as to outline, but pronounced as to tint; it is also

olive-brown beneath, the head has much black, and the black tufts on the back are very strong, rising above the level of the yellow hairs, especially are they strong on 5.7.8.9 and 12.

I have had the white form with a good deal of chocolate marking of the skin, and the yellow form tolerably free from it; whilst the degree of development of the black tufts of the conjoined anterior trapezoidals varies very much.

I have not mentioned yet, as I desire to do so with especial emphasis, the peculiar manner in which the long hairs, after being bent down parallel to the larval surface, are arranged. This is exactly as if they had been brushed smoothly, but the remarkable part of the arrangement is that they are always brushed *forwards on the right side*, and *backwards on the left side*. So that we have here an instance of bilateral asymmetry, which is certainly extremely rare throughout all insects. In the white form the brushing is generally most smooth and perfect, in the yellow one there is sometimes a little roughness.

When ready to spin, and some hours before it moves off in search of a site for its cocoon, a change of tint occurs, the skin becomes a dirty olive and the hairs nearly black, except their extreme tips, which change colour but little. The appearance is as if the larva had been well smoked. The larva will sometimes eat a whole leaf whilst the change is taking place. I have had *strigosa* eating several days after the similar change that occurs in that species had begun, but this year *strigosa* began to excavate within a couple of hours of the first change of tint being noticed, in every instance in which the observation was made.

Leporina makes its cocoon by boring a hole into rotten wood, though it will adopt any suitable tube, bramble or elder pith, etc., just like *alni* or *strigosa*. I once found the larva in the wild state making its burrow, this was into the dead bark of an alder, a most ancient tree, with hard cork-like bark nearly two inches thick. A typical cocoon is made by entering a vertical face of rotten wood, the whole excavation being made by the larva, sometimes occupying as much time as 20 hours, and always about half as long again as *alni*, varying of course according to the material. The whole excavation may be in one line, but usually when half an inch deep the burrow turns downwards. The total depth is 1·3 inches (35 mm.), and 0·4 inches (10 mm.) in diameter; the exterior opening of the burrow is closed by a diaphragm of dark felt, consisting of the cast hairs of the larva with a minimum of silk; 10 mm. below

this, another diaphragm made of wood chippings and strong silk occurs, this is a strong structure, and is in fact the top of the cocoon proper, the burrow is often slightly narrowed at this point, the material to form the diaphragm being obtained by a rounding out of the cocoon cavity, and some superfluous chips always occupy the base of the cocoon and occasionally other portions, a trace of silk lines the cavity, and is more abundant at the base, where the chrysalis entangles its anal spines therein. No larval hairs are to be found on the cast skin, or anywhere in the cavity, except in the felt diaphragm closing its mouth. In emerging, the moth makes an inappreciable opening in this, which closes up elastically. In the inner cover there is sometimes a small circular lid, at others a triradial slit.

The pupa (Pl. IV., fig. 1), length 20–22 mm., wings 11, abdomen 9, width 5 mm. to 5th segment, then wider, 6 mm. to 9th segment, then tapering to apex. Projection of spiracles marked. Colour blackish-brown, with darker dorsal line, and paler beneath; wings and legs transparent, dark green nervures distinct as raised ribs on the wing cases. The two hairs at antennal base very minute, wings meet at end of proboscis, separate again, just showing tips of hinder legs. The anal armature is a boss somewhat flattened from above downwards, forming a thin semicircular margin, round the edge of which the ventral hooks are tolerably regularly distributed as a corona, eight in number on each side, the two terminal ones being more important and finely curved in a lyre shape, and the two nearest the base being one above the other. The lower surface of the boss is flattened, the upper rather domed, carrying the two dorsal hooks, projecting upwards, slightly backwards, and also with a double lyre-shaped curve. The boss is dorsally finely wrinkled and pitted, margined above by a transverse depression, above which again is a small rounded wrinkled boss; a special raised line or wrinkle passes down from the transverse groove, between the bases of the dorsal hooks. The pitting of the general pupal surface is only marked along the anterior dorsal margins of the abdominal segments, and the intersegmental membrane is, as in the other species, finely shagreened.

This species remains several years in pupa more frequently than any other, except *megacephala*, a third of a brood will often stay over the second year, and I have had several that emerged satisfactorily after a third winter.

The protection which the full-grown larvæ of *Acronycta* have

from their enemies, owing to their special form and colouring, is a matter that, in its details, has very largely eluded me; I have, in fact, seen very few *Cuspidia* in the wild state. *Psi* and *tridens* are usually conspicuous, but may be otherwise in many circumstances; *strigosa* no doubt closely assimilates to a hawthorn leaf with a bit of brown dead leaf or twig. But, except in the case of *leporina*, I have made no observations that are either new or very definite. But in this case, so odd is the mimicry, and so unlikely to be thought of, except by having actually observed it in the field, that it is very likely that some other species have unsuspected means of protection or concealment. My observations were made and repeated a good many times on the green, white-haired form occurring on alder; this larva sits somewhat curled round, near the middle of the underside of a leaf. Looking down from above it is absolutely hidden, looking up from beneath it ought to be very evident, but this is far from being the case. I have several times missed a larva till I have looked three or four times, and have also fancied I saw a larva when none was there. In looking up from below through the foliage of an alder tree, most of the lower leaves are in the shade of the upper ones, but here and there a gleam of light falls through on to a portion of a leaf, and gives it quite a different tone and appearance, as seen from beneath. A larva of *leporina* seated beneath an unilluminated leaf, precisely resembles one of these patches.

Mr. Poulton thinks the larva gets protection by resembling a cocoon, though I fancy a bird would attack the cocoon as readily as the larva; an ichneumon might be deceived, or at least if deceived, would leave the cocoon alone, and there is a chalcididous parasite that plays great havoc amongst *leporina*.

This may, therefore, for all I know, be the actual means of protection of the yellow larva, that is more frequent on birch and in the north, though I rather fancy that, curled up under a birch leaf, and occupying nearly its whole surface, it more nearly resembles a dead yellow leaf or two with some spinning attaching them to the living leaf, such as *Asphalia flavicornis*, for instance, and other larvæ often leave in great numbers on some birch trees, and the black tufts that sometimes persist in this form, resemble bits of frass and other dark chips that are entangled in such vacated lodgings. It would not perhaps be altogether improper to call such empty domiciles, cocoons, though they are not usually included in the term. I have never myself been mistaken, so far as I know, by passing over

leporina on birch, certainly I have never taken anything else for *leporina*, though I have not unfrequently found the full-grown larva at rest on birch. My difficulty in accepting Mr. Poulton's hypothesis is, that the protection on alder is certainly by a very different resemblance, whilst on birch, I can call to mind no cocoon that it is at all like; indeed the only one at the right season is that of *Ennomos tiliaria*, to which *leporina* larva bears no resemblance. An *Orgyia antiqua* cocoon might occur, but is not common on birch, nor has it the right tint. In any case *leporina* presents a marked instance of a dimorphous larva, each form being suited to different circumstances and almost certainly for purposes of concealment.

The dimorphism of the adult larva wants further investigation as to its geographical distribution, and I shall be glad to hear, from as many localities as possible, as to which form is found, and under what circumstances. As far as my present nformation goes, I regard the white as a southern, the yellow as a northern form, but I also associate the white with alder, the yellow with birch. This may result from the circumstance that here I usually capture the white form on alder, rarely on birch. In Scotland I used always to take the yellow form freely on birch, rarely on alder. I do not know that alder is more common in the south and birch in the north, as an actual botanical fact, both being fairly common everywhere, but certainly they have that relationship in the habitats of *leporina* in which I have hunted. As a basis to elicit further information I may say, that somewhere about Cheshire or Lancashire the white form gives place to the yellow. Does the white extend further north on the east coast? What form occurs in Wales and Ireland? Especially information would be interesting from any locality where both forms occur with equal frequency. The moths from the two forms cross readily, and, in one brood at least, the resulting larvæ were the most richly coloured I have seen, and preserved the black tufts more freely into the last skin than any others I have met with.

(*To be continued.*)

Dr. Chapman's query, *re* the forms of the larvæ of this species, which was published in the last number (*ante*. p. 19), should have been inserted with this part of the paper.—Ed.

CURRENT NOTES.

Last year I appealed to our subscribers to support the issue of a "Special Index" to the *Record*, on scientific grounds. Every copy was sold, and an "Index" to Vol. I. is a desideratum. May I appeal for the support of all our subscribers to that for Vol. II.? It is disappointing when subscribers, who can well afford it, will not support anything that is not an aid to the "mere collector."

The *Journal of the Society of Arts*, for June 12th, 1891, price 6d., should be obtained from George Bell & Sons, York Street, Covent Garden, by every entomologist who is interested in the economic branch of our subject. The paper in it is entitled "History and description of the growing uses of Tussur Silk," by Thomas Wardle, F.C.S., F.G.S., and contains 44 pp. and 36 wood cuts.

Mr. F. DuCane Godman, F.R.S., has been re-elected President of the London Ent. Soc.; Mr. J. A. Clark, F.E.S., re-elected President of the City of London Ent. Soc.; Mr. C. G. Barrett, F.E.S., elected President of the South London Ent. Soc.; whilst Mr. S. J. Capper, F.L.S., has been re-elected (for the fifteenth time, we believe) President of the Lancashire and Cheshire Society.

The Report of the Lancashire Soc. shows a deficit, and the Sec. expresses a hope that members, who have not paid their annual subscription, will pay up and square matters. This condition of indebtedness of entomologists to their societies, is a great drawback to our work, and generally the offenders are not the members who can least afford to pay. Frequently members, who hold high position in one society, are in arrears in another. The official position of such members is much to be regretted, as there is no doubt that they seek position for notoriety, rather than from a love of our subject.

The voting for Vice-President of the South London Ent. Soc. ended in a tie between Messrs. Fenn and South. Mr. South was elected (as the nominee of the Council) by the casting vote of the President. Mr. South, who was not nominated as an ordinary member of the Council, therefore, only just retained his seat.

Mr. J. E. Robson, F.E.S., of Hartlepool, Editor of *The British Naturalist*, comes to London on February 18th, to read a paper on "The Hepialidæ," at the City of London meeting of that date. All entomologists are cordially invited to 33, Finsbury Square, and it is earnestly hoped that a large attendance will be present to welcome him.

The London Ent. Soc. have determined to drop their meetings in July, August and September, and will hold two meetings in February, March and April, on the *second and fourth* Wednesdays in those months. The meeting in May will be on the second Wednesday, in the other months on the first Wednesday.

Mr. F. DuCane Godman regrets the possibility of less scientific work being done in the immediate future, owing to the gathering of large collections in Museums, where there is less chance of the wealthy amateur, with leisure, devoting so much attention to his subject as with a private collection in his own home. Certainly very little useful work is done in Museums. But it appears to us, that the breaking up of our work, so that men become Hesperidists, Pieridists etc., and ignore other branches, is more likely to reduce the sum total of pure scientific work,

apart from the mechanical process of the determination of species, which *dilettanti* entomologists appear to delight in. When these wealthy entomologists spare a few shillings in support of general entomological work, as apart from their own particular hobby, an impetus will be given to entomology, and the suggested retrograde movement will vanish. It would be interesting, for example, to know what steps, direct or indirect, the President of the London Ent. Soc., one of his Vice-Presidents, and at least two or three other members of his Council, take to further the study of British entomology.

Dr. Carlier has published a most interesting "List of the Macrolepidoptera of Balerno, Midlothian" (with notes), in the January number of *The Annals of Scottish Natural History*, with which is now incorporated *The Scottish Naturalist*.

To those of our readers who are general naturalists, the lecture in "Curiosities of Bird Life," by R. Bowdler Sharpe, LL.D., F.L.S. etc., at Steinway Hall, 15, Lower Seymour Street, Portman Square, on February 24th, at 8.30 p.m., should prove interesting.

Mr. South, in the *British Naturalist*, comes down heavily on Dr. Mason's statement, which I used as a quotation in the *Record*, vol. ii., p. 267, and says:—"The words would never have been uttered by anyone who was acquainted with the facts of the case." Mr. South's remarks prove that he is the only interested person who knows nothing of the subject on which he is writing, as he suggests (1) that the name of *conflua* is a M.S. name, which it is not; (2) that Boisduval knew nothing of Icelandic specimens, which he did, as he and Guenée gave "Iceland" as one of the two known localites in the *Noctuelles* in 1852; (3) that Dr. Staudinger first found and wrote about *conflua* in Iceland in 1857, which the publication of the Iceland locality by Boisduval and Guenée, in 1852, shows is equally erroneous. Mr. South's remarks would be interesting if they were not so very inaccurate.

Dr. Chapman contributes a most interesting paper on the "Oviposition of *Adela viridella*," in the *E.M.M.* He appears to have determined satisfactorily that the egg is laid in the midrib of an oakleaf (underneath), the midrib being pierced by the ovipositor, the time occupied being from 20 to 25 seconds. He supposes that as soon as hatched the larva falls to the ground, and that the larval life is passed there.

Herr Hoffman says that "*Amphidasys betularia* ab. *doubledayaria* is spreading all over the Continent. During the last five or six years it has been recorded from near Hanover (1 ♂), from Dordrecht and Grave (Netherlands); from Gotha, Thuringia; from Melle, near Osnabrück; from Aachen, from Rheydt, near Dusseldorf; from Eutin, Holstein." (*E.M.M.*, p. 48).

A most important paper on Coleoptera, entitled "The Coccinellidæ," will be read by Mr. G. A. Lewcock, at the meeting of the City of London Society on March 3rd.

Mr. Coste, who originated in his own mind an idea that Mr. Cockerell believed the genetic relationship of colours in insects was yellow, white and red, after writing several pages to disprove what only existed in his own mind, has written another page to say that he is "glad to learn Mr. Cockerell now agrees with him," etc., when Mr. Cockerell has denied most emphatically that he had ever supposed the genetic relation to be in the direction Mr. Coste criticises.

Mr. J. B. Hodgkinson proposes naming a *Coleophoron* allied to *fuscedinella—metallicella*. Dr. Wood, however, has not yet given an opinion on their distinctness.

The City of London Entomological Society has appointed a literary Committee, who are drawing up a Fauna list for the district comprised in a ten miles radius from Charing Cross. The Lepidoptera and Coleoptera will first be dealt with; but lists of other orders are solicited. The work is already in hand, and Dr. Buckell, 32, Canonbury Square, N., is anxious to receive lists or communications relating thereto, from all entomologists (members of the Society or otherwise) interested in the Fauna of the London district.

Mr. R. H. Meade reduces *Exorista purens*, Rud., and *E. prominens*, Mgn., to varietal rank, considering both varieties of *E. vulgaris* (*E.M.M.*, p. 20).

The Annual Dinner of the South London Society took place on February 9th. It was a very successful gathering.

A series of photographs, with a short account of our leading entomologists, is appearing in the *British Naturalist*. Those of Lord Walsingham and Mr. H. T. Stainton have been already published.

Mr. Theobald, B.A., F.E.S., writing of Stylopized Bees, considers:—(1) The ♀ *Stylops* gains its nourishment from its host by osmosis, and this causes the alimentary canal, in part, to become abnormal. (2) The abnormal canal is forced upon the sexual organs, and renders them, in whole or *part*, abortive. (3) That the ova and spermatozoa are not generally present in infected imagos. (*E.M.M.*, p. 42).

Dr. Sharp (*E.M.M.*), says that the specimen of *Æcanthus pellucens*, taken by Mr. Haworth, by which Mr. Shaw gave the species a place in the British Orthoptera, was stated by Westwood, long ago, to have been misnamed, and that the species is, therefore, not a British insect.

NOTES ON COLLECTING, Etc.

THE PTEROPHORINA.[1]—The PTEROPHORINA, or "plumes" are now generally considered to be an aberrant group of the PYRALIDÆ, but so distinct are they in appearance and structure, that they will probably be always considered as a separate family. Their fragile appearance makes them look difficult to manipulate, and hence many collectors will not study them. This appearance is deceptive, and no group is easier to pin and set than the "plumes." They should always be killed with ammonia, because of the importance of the legs being set, and ammonia leaves them very flaccid after death. The specimens are apt to verdigris, and so black pins should always be used. Most of the species are abundant where they occur, though very local; a few are very rare, but any active collector may get a large number of species his first season, especially in the South of England. Under the Doubleday arrangement the family was divided into three genera—*Agdistis*, *Pterophorus*, and *Alucita*, the first and last genera containing only one British species each. Herr Wallengren first sub-divided the unwieldy genus *Pterophorus* naturally, and his sub-divisions are generally accepted. Quite recently,

[1] Abstract of a paper read at the City of London Entomological Society, January 21st, 1892.

Mr. Meyrick has attempted a new subdivision based on the neuration. One or two of his alterations are satisfactory, especially his use of *Trichoptilus*, Wlsm., and his new genus *Marasmarcha*. His alterations in nomenclature are absolutely useless and unnecessary, as there was no question in any one's mind about the use of the existent names, and his whole system, based as it is on one variant feature of the imago, *viz.*, neuration, is as valueless for stable characters for classification, as was the original classification of all moths by Linnæus by the antennæ. No one character is of use alone, and no characters based on the imagines alone, without a most intimate knowledge of the earlier stages, will ever give us a stable and natural system of classification. The Wallengren arrangement, with but slight modifications, will be used in the table that follows these preliminary notes. The structure of the wings of the species is variable. Those of *Chrysocorys* and *Agdistis* are uncleft. The wings of *Alucita hexadactyla* are each divided into six plumules, whilst in all the other genera, the fore-wings are divided into two lobes, the hind wings into three plumules. The rarest species are *Oxyptilus hieracii* and *Pselnophorus brachydactylus*, their right to be considered as British species having frequently been questioned. *Cnæmidophorus rhododactylus* has been almost exterminated by thoughtless collectors in its old haunts at Chattenden, whilst *Platyptilia isodactylus* has recently been bred in some numbers by Mr. Eustace Bankes, after having been very rare for many years. The two broods of *P. gonodactyla* feed differently, the spring brood in the flower stalks of *Tussilago farfara*, and the second on the leaves of the same plant. The close brotherhood of *Amblyptilia acanthodactyla* and *punctidactyla* is very remarkable, especially their similar habits, etc. *Oxyptilus distans* and *O. lætus* are now recognised as seasonably dimorphic forms of the same species; *O. pilosellæ*, after many years' absence, has recently been taken near Dover by Mr. Sydney Webb. It is also very strange that our *O. heterodactyla* (*teucrii*) is not known on the Continent. Do the Continental lepidopterists (at any rate in part) call this species *hieracii*? The capture of *Trichoptilus paludum* in Yorkshire in 1891 is rather remarkable. Can this possibly be the allied *siceliota*? A species of *Platyptilia* has recently occurred on ragwort in Aberdeenshire and in Cumberland, closely allied to *P. pallidactyla*. Will it turn out to be this latter species, or is it something new to science? A small form of *P. monodactyla*, as was supposed by Mr. C. G. Barrett, was taken by me on Wicken Fen this year in July. In superficial appearance it is more like *Leioptilus*, and its specific identity is open to question. These and many other puzzles have yet to be worked out by those who are attracted to study this interesting family. The larvæ of the "plumes" are generally hairy, and their methods of feeding very diverse, sometimes boring into the stems of plants, sometimes enclosing themselves in flowers, and sometimes feeding on leaves. The pupæ are also generally hairy, and attached by their anal segments, or otherwise spin a slight web in which to pupate. Many of the imagines hybernate, and of other of our species it is uncertain in what stage they pass the winter. The following table may be of service to those who have not previously worked at the "plumes." It gives some of the most important particulars relating to the insects in their various stages. The Roman numerals relate to the months of the year:—

SPECIES.	TIME OF APPEARANCE.			LOCALITY.	FOODPLANT.
	IMAGO.	LARVA.	PUPA.		
Chrysocorys festaliella	v–vi ; vii ; viii–ix ...	ix–x ; vi ; viii	iv ; vi ; vii ...	Gardens, woods, etc.	Raspberry and bramble.
Agdistis bennetii	vi ; vii–viii	iv–v ; vii ...	v–vi ; vii–viii ..	Salt marshes	*Statice limonium.*
Cnæmidophorus rhododactylus ...	vii	v–vi	vii	Woods and hedgerows ...	*Rosa.*
Platyptilia ochrodactyla	viii	vi–vii... ...	vii–viii ...	Roadside banks, fields, gardens	*Tanacetum vulgare.*
pallidactyla=bertrami ...	vi–vii...	v–vi	vi–vii... ...	Hedgerows, banks, fields ...	*Achillea millefolium, A. ptarmica,*
isodactylus	vi–viii	v ; vii–viii ...	vi ; viii ...	Marshes	*Senecio aquaticus.*
gonodactyla	vi ; viii–x	iv–v ; vii ...	v–vi ; viii ...	Banks, fields, waste places ...	*Tussilago farfara.*
zetterstedtii	vii	v–vi	vi	Woods	*Senecio,* sp. (?), *S. nemorensis* (?), *Solidago virgaurea* (?).
Amblyptilia acanthoactyla ...	v (hyb.); vii–viii ; x..	vi–vii ; viii–ix	vii ; ix–x ..	Banks, heaths, chalk hills ...	*Stachys sylvatica, Calluna, Ononis.*
punctidactyla	v (hyb.); vii–viii ; ix–x	vi–vii ; viii–ix	vii ; ix–x ...	Waste land, hillsides, hedges...	*Stachys sylvatica, Aquilegia vulgaris*
Oxyptilus distans...	vi–vii ; viii	vi (?) ; vii (?) ..	vi (?) ; vii (?)...	Old coast sands, coast districts	*Andryla sinuata, Hieracium* (?).
pilosellæ	vii–viii	vi	vii	Mickleham, Dover	*Hieracium pilosella.*
hieracii	vii–viii	vi	vii	... ... [pits	*Hieracium umbellatum.*
heterodactyla=teucrii ...	vii	v–vi	vi	Woods, sandy heaths, gravel	*Teucrium scorodonia.*
parvidactyla	vi–viii	v–vii	vi–vii... ...	Chalk hills	*H. pilosella* (?) ; *T. serpyllum* (?).
Trichoptilus paludum	vi ; viii	v (?) ; vii ...	vi (?) ; vii ...	Marshes and bogs	
Marasmarcha phœodactyla ...	vii–viii	vi ; vii ...	vii	Hillsides	*Ononis arvensis.*
Mimæseoptilus bipunctidactyla ...	v–x	iv–viii ..	v–viii... ...	Fields, meadows, woods, etc...	*Scabiosa arvensis, succisa,* etc.
zophodactylus=loewii ...	vii–ix...	v–vii	vii–viii ...	Woods, etc.	*Erythræa centaurea.*
pterodactyla=fuscus ...	vi–viii	v–vii	vi–vii... ...	Woods, hills, etc.	*Veronica chamædrys.*
Œdematophorus lithodactyla ...	vii–viii	vi–vii... ...	vii	Woods, hills, fields, etc. ...	*Inula* and *Conyza.*
Pterophorus monodactyla ...	v (hyb.); vi–xi ...	vi–xi	vi–xi	Woods, gardens, etc.	*Convolvulus arvensis, C. sepium.*
Leioptilus lienigianus	vi–viii	v–vi	vi–vii... ...	Roadsides, fields	*Artemisia vulgaris.*
tephradactyla	v–vi	ix–v	v–vi	Woods, etc.	*Solidago virgaurea.* [*temisia* (?).
osteodactylus	vi–vii	ix–vi	vi	Woods, etc.	*Solidago virgaurea, Achillea* (?), *Ar-*
microdactyla	v ; vii–viii	ix–iv ; vi ...	iv ; vi–vii ...	Chalk hills, fens, etc.... ...	*Eupatorium cannabinum.*
Pselnophorus brachydactylus ...	vii	vi	vi	... ...	*Prenanthes purpurea, Lactuca mu-*
Aciptilia tetradactyla	vi–viii	v–vii	v–vii	Chalk hills, etc.	*Thymus serpyllum.* [*ralis.*
baliodactyla	vii–viii	vi–vii	vii	Chalk hills, etc.	*Origanum vulgare.*
spilodactyla	vii–viii	v–vii	vii	Gardens, chalk downs, etc. ...	*Marrubium vulgare.*
galactodactyla	vi–vii	iv–vi	v–vi	Woods, etc.	*Arctium lappa.*
pentadactyla	vi–viii	v–vii	vi–viii ...	Gardens, hedgerows	*Convolvulus arvensis, C. sepium.*
Alucita hexadactyla	iv–v (hyb.) ; vii–xi ...	v–vii	vii	Gardens, lanes, etc.	*Lonicera periclymenum.*

The greatest drawback to the study of the group has previously been the want of a suitable and exhaustive text-book, but now that Mr. J. E. Robson, of Hartlepool, is publishing a *Monograph of the Pterophorina* in parts, which contains almost everything at present known about our British species, such an excuse does not exist; and as the price of each part is only 6d., and can be obtained by simply sending the stamps to Mr. Robson, the poorest collector can take up the group with some prospect of rapidly becoming conversant with the species contained in it.—J. W. TUTT. *January*, 1892.

NOTES OF THE SEASON OF 1891.—*Shirley.*—My last outing this year was to Shirley, sweeping for larvæ. In two hours I took over 150 larvæ of *Eupithecia minutata*, *E. nanata*, *Anarta myrtilli*, *Agrotis porphyrea*, etc.—HENRY J. TURNER. *November 19th*, 1891.

Hull.—Sugar has been a failure here. There has only been one good insect taken off sugar this season in this district, to my knowledge, and that was *Agrotis ravida*, captured by Mr. Hame.—J. W. BOULT. *November 3rd*, 1891.

Benfleet.—I have paid one or two visits to my collecting ground at Benfleet. In heads of Sea-aster I found traces of larvæ, but no larvæ of *Catoptria æmulana*; a large number of larvæ of *Semasia rufillana* were found in heads of *Daucus carota*, and many cases of *Coleophora artemisicolella* on sea wormwood. I was not fortunate enough, however, to find *C. vibicigerella*.—F. G. WHITTLE. *December 15th*, 1891.

West Wickham.—I made several visits to West Wickham during the last season, and a list of my best captures may prove interesting to some of your readers:—GEOMETRÆ.—*Ennomos tiliaria* and *E. fuscantaria* (on lamp posts), *E. angularia*, *Boarmia consortaria*, *Tephrosia crepuscularia*, *T. biundularia*, *T. extersaria*, *T. punctulata*, *Ephyra trilinearia*, *Eupisteria heparata*, *Acidalia subsericcata*, *A. emarginata*, *Corycia taminata*, *Macaria liturata*, *Minoa euphorbiata*, *Lobophora lobulata*, *Scotosia dubitata*. CUSPIDATÆ.—*Platypteryx lacertula*, *P. falcula*, *P. unguicula*. NOCTUÆ.—*Cymatophora flavicornis*, *Cuspidia aceris*, *Dipterygia pinastri*, *Epunda viminalis*, *Aplecta nebulosa*, *Anarta myrtilli*, *Abrostola urticæ*. By sugaring *Cymatophora diluta*, *Thyatira batis*, *Acronycta rumicis*, *Agrotis præcox*, *Anchocelis litura*, *A. lunosa*, *A. pistacina*, *Gonoptera libatrix*, *Xanthia citrago*, *X. cerago*, *X. silago*, *X. ferruginea*, *Amphipyra pyramidea*, *A. tragopogonis* and *Catocala nupta*. Sugar proved very attractive during the last fortnight in September, and all common insects absolutely swarmed.—CLIFFORD WELLS, Hurstfield, The Avenue, Gipsy Hill, S.E. [Is not *Agrotis præcox* a strange species to be taken in West Wickham?—ED.]

DEMAS CORYLI, ETC.—Is *D. coryli* double-brooded? I took a ♀ on 20th August. The ova from her hatched early in September, some not half-grown. I started them on beech, but as the leaves are now all off, I am giving them nut. I thought when I took the moth it was a proof of double-broodedness, as they are out here early in June, but from the length of time these larvæ have been feeding (two months!), coupled with the fact that full-grown larvæ were beaten here early in September, I think it must be a case of retarded emergence on the part of the captured ♀, or otherwise only a slight tendency to double-broodedness such as is shown occasionally in some other species. I find the mines of *Phyllocnistis saligna* pretty plentiful about here this year, and bred a nice lot.

I have also bred a long series of *Acrolepia pygmæana* and *Chauliodus chærophyllellus*.—W. Farren. *Nov. 11th*, 1891.

Arctia caia.—As Dr. T. A Chapman asks a question (*Ent. Record*, i., p. 296), whether any one has met with a full-grown larva of *Arctia caia* later than the middle of August, I thought the following notes might be serviceable, and I therefore copy them direct from my diary:—On July 11th, 1889, having a female *A. caia* emerge, I placed the box containing her on the lawn, and a male soon paired with her. On July 12th this *caia* laid about 500 eggs. On July 20 larvæ hatched. On July 25th larvæ first moult. Being away from home after this, I could not keep an account of the successive moults, but on August 22nd I have a note of *caia* spinning and others in their last moult. August 29th, two specimens spinning, others feeding ravenously. On September 7th, last large *caia* spinning; whilst from August 31st to September 7th some 100 or so had spun up. From September 20th to 28th, 95 moths emerged from these cocoons. From these notes it will be seen that I had full-grown larvæ as late as September 7th. I may remark that many of this brood, as also some larvæ obtained from ova laid after September 20th, hybernated in the usual way. Of the July brood, I had about one-sixth that came right through to the imago state by the end of September.—G. A. Birkenhead, Downs View, Penarth, near Cardiff. *December 28th*, 1891. [I suppose these larvæ fed up out of doors and quite naturally, otherwise I am afraid this will be of little use to Dr. Chapman.—Ed.]

Rarities from Aberdeen.—In a contemporary, Mr. J. B. Hodgkinson, unintentionally, no doubt, throws a slight on the whole of the Aberdeen collectors, because one of their number sent up a number of undoubtedly Continental species to be disposed of as British. I happened to be in Stevens' sale rooms on the occasion that these were sent up for sale, and they were described as "taken in Sussex and Aberdeen, by a collector lately deceased." This box contained, among other species, *Lythria purpuraria*, which were set flat and moving on the pin; *Catephia alchymista*, a fine bred specimen, the pale Continental form of *Xylina conformis*, and I dare say all the other species Mr. Hodgkinson mentions. The names were in the well-known handwriting of an illiterate Aberdeen collector, very much alive, and were mostly written in lead pencil. At the time, I called my friend's (Mr. Bellamy) attention to the matter, and suggested that an exposure of the man would do good, and also called other entomologists' attention to the box, and the fact that none of the amateur lepidopterists present bought the box speaks for itself. As Mr. Hodgkinson wants only such rarities, as these and like instances offer to those who do not capture the rarities themselves, he was given a chance of enriching his collection with what those present refused to buy. But this does not make all Aberdeen collectors rogues. The "mysterious statement of *H. satura* having been taken in the far North" did not originate here. Specimens undoubtedly were taken in Aberdeenshire (not in Aberdeen), and one was sent round in the Exhibition Box of the "*Record* Exchange Club," with a full account of the *bonâ fides* of the captor. These are not likely to be for "exchange," at any rate at present, but there appears to be no need to throw mud at a colony of collectors, because one of their number isn't straight. I quite appreciate the righteous indignation of

Mr. Hodgkinson, especially if he considered that he was about to buy the said British rarities "at his own price."—J. W. Tutt. *Jan.*, 1892.

Late appearance of Polia nigrocincta.—About the middle of December, on taking down a breeding cage which had not been looked at for some two or three weeks, and in which I had been breeding, with others, the above-named insect from larvæ collected in the Isle of Man in the spring, I was surprised to find a dead *Polia nigrocincta*, which, from its appearance, seemed not to have been dead more than a day or so. It was in good condition for setting, as though newly killed: this is very late, as it must have emerged in December. My pupæ are all kept in an out-house, which is very cool.—H. Murray, Carnforth. *Jan. 2nd*, 1892.

Retarded Development.—I have just discovered a curious case of retarded development. In August, 1890, a friend brought me half-a-dozen grass stems, to which were affixed as many cocoons of *Zygæna filipendulæ*, which he had collected at Deal—as they were apparently either empty or dead. I left them in a box on my study table for the rest of the season, and eventually put them away in a cupboard. After a lapse of *seventeen* months I have again looked at them, and found:—(1) An ichneumon had emerged from one, and that a fully developed one was also contained in another, but dead likewise. (2) Cocoon No. 3 contained a full-fed hymenopterous larvæ, *alive* and apparently healthy, an ichneumon larva of course. (3) Cocoon No. 4 contained a *living pupa* of *filipendulæ*. Is not this strange conduct for a "Burnet"? I have now placed them on the kitchen mantelpiece, to see what warmth will do.—Harry Moore, 12, Lower Road, Rotherhithe, S.E. *January 16th*, 1892. [This is very remarkable, I have never known anything like it.—Ed.]

Iodis vernaria two years in the larval state.—It may interest some of your readers to know that I have a few of the above named larvæ hybernating the second season, the greater number fed up at the usual time and pupated last June, the remainder are still in my breeding-cage, and in a healthy condition.—T. W. King, Purbrook, Dorking. *December 31st*, 1891.

Erratum.—p. 15, line 19, for *Plusia iota* read *Orthosia lota*.

Societies.

Entomological Society of London.—*Wednesday, January 27th*, 1892.—The 59th Annual Meeting, adjourned from the 20th inst., on account of the death of H.R.H. the Duke of Clarence. Mr. F. DuCane Godman, F.R.S., President, in the Chair. An abstract of the Treasurer's accounts, showing a good balance in the Society's favour, having been read by one of the Auditors, the Secretary, Mr. H. Goss, read the Report of the Council. It was then announced that the following gentlemen had been elected as Officers and Council for 1892:—President, Mr. Frederick DuCane Godman, F.R.S.; Treasurer, Mr. Robert McLachlan, F.R.S.; Secretaries, Mr. Herbert Goss, F.L.S., and the Rev. Canon Fowler, M.A., F.L.S.; Librarian, Mr. George C. Champion, F.Z.S.; and as other Members of the Council, Mr. C. G.

Barrett, F.E.S., Mr. Herbert Druce, F.L.S., Captain Henry J. Elwes, F.L.S., Prof. Raphael Meldola, F.R.S., Mr. Edward B. Poulton, M.A., F.R.S., Dr. David Sharp, M.A., F.R.S., Colonel Charles Swinhoe, F.L.S., and the Right Hon. Lord Walsingham, LL.D., F.R.S. It was also announced that the President would appoint Captain Elwes, Dr. Sharp, and Lord Walsingham, Vice-Presidents for the Session 1892–3. The President then delivered an address. After alluding to the vast number of species of insects and to the recent calculations of Dr. Sharp and Lord Walsingham, as to the probable number of them as yet undescribed, he referred to the difficulty experienced in preparing a monograph of the fauna of even a comparatively small part of the world, *e.g.*, Mexico and Central America, and certain small islands in the West Indian Archipelago, upon which he, with a large number of competent assistants, had been engaged for many years. The examination of the collections recently made in St. Vincent, alone, had obliged him to search the whole of Europe and North America for specialists; and similar collections from Grenada were still untouched in consequence of the number of workers being unequal to the demands upon their time. He observed that the extent of the subject of Entomology was so vast that nothing but a systematic and continuous effort to amass collections, work them out, and preserve them, could place us in a position to proceed safely with the larger questions which followed the initial step of naming species; and it would only be by the steady effort of our Museum officials, not only to work at the subject themselves, but to enlist the aid of every available outside worker, that substantial progress could be made. The President concluded by referring to the losses by death during the year of several Fellows of the Society and other Entomologists, special mention being made of Mons. Edmond André, the Duke of Devonshire, Mr. F. Grut, Mr. E. W. Janson, Prof. Felipe Poey, Sir William Macleay, Mr. H. Edwards, Mr. Robert Gillo and Dr. J. M. J. Af Tengström.—H. Goss, *Hon. Sec.*

Birmingham Entomological Society.—*January 11th*, 1892.—Mr. R. C. Bradley exhibited some Diptera which had been shown at a former meeting as *Pteropœcilia lamed*, with the note that they had been confirmed as that species by Mr. Verrall. They had since, at his request, been again submitted to Mr. Verrall, and he names them as *Toxoneura muliebris*, and remarks that *P. lamed* is not as yet recorded satisfactorily as British. A letter was read from Mr. C. J. Fryer recording *Stenamma westwoodi*, from Warwick. Mr. C. J. Wainwright read a paper on "A Holiday spent in North Cornwall last year," in which he described the results of a good night's collecting on the north coast, during which he took *Plusia orichalcea*, and many good Diptera. The paper was illustrated by photographs and the collections made.—Colbran J. Wainwright, *Hon. Sec.*

City of London Entomological and Natural History Society.—*Thursday, January 7th*, 1892.—Exhibits:—Mr. Hill, *Amphidasys betularia* var. *doubledayaria*, and a specimen with the dark markings transformed into buff—slightly darker than the ground colour. Mr. Jäger, *Vanessa antiopa* from Germany, including a specimen entirely without the blue spots, and another without the blue spots nearest to the tip of the wing. Mr. Prout, a long series of *Cidaria truncata* (*russata*), autumn brood, taken on sugar in the Isle of Wight,

including most of the named varieties. Mr. Battley, life history of *Abraxas ulmata*. Messrs. Quail and Simes, a number of life histories, mounted on the natural foodplants. Mr. Southey, a well marked specimen of *Smerinthus populi*, bred from a dug pupa, having a dirty white right hind wing, somewhat similar to the xanthic varieties of *Epinephele janira*; also a number of preserved larvæ, the hairy species being especially well done. Mr. Goymour, *Polia flavicincta* from Enfield. Mr. Smith, *Xylina petrificata* from Blandford, Dorset, also *Scopelosoma satellitia*, *Hybernia aurantiaria*, etc. Mr. Fox, a number of preserved larvæ. Mr. Riches, a variable series of *Agrotis exclamationis* from Highgate Wood. Mr. Milton, *Aporia crataegi*, taken at Malvern in 1876, and *Plusia orichalcea* from Cambridge; also in Coleoptera, *Calathus micropterus*, *Leiodes glabra*, *L. castanea*, and *Colymbetes exoletus*; and in Diptera, *Eristalis sepulchralis*, *Therioplectes micans* and *Xylota sylvarum*. Mr. Newbery, specimens of *Ilybius fenestratus*. Mr. Heasler, *Choleva spadicea*, from Highgate Woods. He said that this was rather a scarce species, and he had found it very local in Highgate Woods.

Mr. Quail then read his paper on "Preserving larvæ." He stated that the easiest time to preserve larvæ was immediately after the last moult. He killed them in the cyanide bottle, leaving the hairy larvæ there for twenty-four hours. The contents of the body were then extracted by pushing a needle into the anal orifice, and afterwards rolling the larva with a pencil on a pad of blotting paper, taking care not to press too hard, or the colour would be removed. The blowing apparatus consisted of one of the double bellows used with scent diffusers, and a short piece of glass tube drawn to a point, and fitted with a piece of watch spring to hold the larva on the tube. For drying the distended skin he had used an ordinary gas burner with a metal top. Occasionally, the larva adhered to the tube, and it then had to be disengaged with a slightly moistened needle. He then described the difficulties peculiar to certain species. The green colour of *Papilio machaon* and *Saturnia carpini* was easy to preserve, but most of the green species faded, and he had stuffed *Smerinthus ocellatus* with silk to restore the colour. Among hairy species, *Arctia caja* and *Orgyia pudibunda* were fairly easy, if care were taken not to singe the hairs. *O. antiqua*, *Spilosoma lubricipeda* and *Liparis auriflua*, however, were difficult, as the hairs easily came out. *Eriogaster lanestris* exuded a kind of grease towards the end of the drying process, which gave the skin a shiny appearance. The legs of *Stauropus fagi* were apt to scorch; and he had to squeeze out the contents of the body of *Phorodesma smaragdaria*, as rolling would spoil the covering of leaves made by this larva. With pupæ, he had found the best way was to let the imago form, and then slice the back of the pupa off, and remove the contents. The golden spots on the pupæ of the *Vanessidæ* were preserved by this process. The plants, on which the larvæ were to be mounted, were covered with silver sand, and kept in a dry place for a few weeks.

Mr. Battley said that he had found that the contents of the body were better extracted by pressing with the finger, as the pressure could be regulated more easily, also that hairy larvæ such as *Spilosoma mendica* might be blown without rolling, if they died naturally, and

were then left for a day or two to dry. He also drew attention to the importance of not over-distending the skin, and proposed a vote of thanks to Mr. Quail for his paper.

Mr. Simes seconded this resolution, and suggested that the plants should be selected with some partly eaten leaves, so as to show the way the larvæ fed.

Mr. Southey stated that he always starved his larvæ for about a day before preserving them, and killed them by immersion in benzine, in which they should be left until they ceased to move, when they may be taken out, and rolled in the usual way. This system seemed to contract the larva, and prevented the skin from stretching unduly, while it fixed the hairs much more firmly than the cyanide bottle. Mr. Milton and Dr. Buckell also made some remarks on the subject, and the vote of thanks to Mr. Quail was unanimously passed.

Mr. Milton mentioned that he had obtained eggs during the past season of *Saturnia carpini* and *Arctia villica*, and in both cases noticed that those first deposited were fertile, while the others were infertile. Several similar cases were noted of other species. Mr. Battley stated that the eggs of the honey-bee were fertilized as they passed into the ovipositor, and the fertilizing fluid sometimes became exhausted before all the eggs were deposited, the remainder being, therefore, unfertilized. He suggested that this was probably a parallel case to those mentioned by Mr. Milton and others.

Thursday, 21st January, 1892.—Exhibits:—Mr. Southey, a variable series of *Apamea gemina* from Hampstead. Mr. Smith, female specimens of *Lycæna corydon*, showing variation in the amount of blue coloration; also *Melanippe fluctuata* from the Lake district, with the band much more complete than the southern forms. Mr. Quail, variable forms of *Miana strigilis* and *M. furuncula*, from the London district, Wicken, Margate, etc., one of the *strigilis* being the dark form, with a red central band (var. *virgata*). Mr. Battley, various species of *Pterophori*; and a series of *Diurnæa fagella* from several localities, those from districts near the metropolis exhibiting the darkest ground colour. Mr. Simes, a male *Bombyx neustria*, with the two transverse lines confluent on one side. He called attention to a similar variety of *Bombyx rubi* exhibited at a meeting of the Society on 18th September, 1890 (*Ent. Rec.*, vol. i., p. 189). He also exhibited cocoons of this species containing two and three pupæ respectively. Mr. Tutt, two cabinet drawers containing all, except four, of the British species of Pterophorina. Mr. Fox, three larvæ feeding on tomato which had been imported from Teneriffe, where this fruit is extensively cultivated. These larvæ seemed to possess affinities with *Dianthœcia*, and Mr. Tutt thought it probable that they might prove to be *Prodenia littoralis*, Bdv., a specimen of which was exhibited by Mr. Boden at the Society's meeting on 15th October, 1891 (*Ent. Rec.*, vol. ii., p. 260). This insect is common in the Canary Isles, and on the north-west coast of Africa. Two of these larvæ were pea-green, with three darker green longitudinal lines, those on the side being suffused with rusty red. The surface of the body was covered with whitish tubercles, studded with short hairs. Head, pea-green. The third specimen was similar in markings, but had the ground colour whitish green, and the tubercles black. Coleoptera:—Mr. Heasler, a series of *Rhizophagus perforatus*. Mr. Milton,

dark form of *Strangalia armata*, *Helops ceruleus*, *Phalera cadavorina*, and in Hemiptera, *Calocoris sexguttatus*. Mr. Tutt then read his paper[1] on "The Pterophorina."

At the conclusion of the paper, Mr. Simes proposed that a vote of thanks be given to Mr. Tutt for his paper. This was seconded by Mr. Bayne, and carried.

The Secretary then read two letters from Mr. R. McLachlan, F.R.S., relating to Mr. Milton's paper on "Dragonflies," in which the author states that "the genital organs of these insects are placed in the thorax." Mr. McLachlan says :—"There is some great misapprehension here. The real facts are that in the ♂ the genitalia are placed *partly* in the underside of the *second segment of the abdomen*, and *partly* in the underside of the *ninth* segment. In the ♀, the parts are situated as is usual (in the ninth segment);" and in the second letter he writes :—"The opening of the *vesiculæ seminales* is situated in the ninth segment. The penis, with certain excitatory organs, is in the second segment. I am not aware that any direct *internal* connection has ever been found between the two sets of organs, and the belief is, that the ♂ charges the penis by bending up the end of the body to the second segment before pairing, or, during the time the connection is only by means of the anal claspers to the neck of the ♀. This is warranted by certain movements of the ♂ (best seen *before* pairing), observed by several writers, and of which I have myself been a witness. The whole proceeding is very extraordinary. It is only when the sexes are doubled up, as it were, that actual pairing is taking place, which is quite independent of the holding on of the ♂ to the neck of the ♀. It seems very probable that actual pairing takes place several (or many) times between the same pair, or with different individuals of each sex" (*in litt.*, Jan. 13, 1892). Mr. Tutt and Dr. Buckell both drew attention to the great scientific value of the communication and made comments thereon.—A. U. Battley and J. A. Simes, *Hon. Secs.*

South London Entomological Society.—Annual Meeting, *January 27th*, 1892.—The South London Society has something of which to be proud, and with which to be self-satisfied. Their Annual Meeting produced an attendance of members doubling the number present the previous evening at the Annual Meeting of the London Entomological Society. But the regular *habitués* could scarcely help noticing the large number of members present, who are comparative strangers at the ordinary meetings, but who turn up annually to vote, and who carry out in their own persons the old adage of "pull the string, and the figures will move." There was undoubtedly something in the air besides the anticipation of a good address by the President, which by-the-by was amply fulfilled. One recognised that members who were comparative strangers and *dilettanti* entomologists were well in, and there was a probability that some members, even, might have to pay an official visit to the Treasurer before being entitled to vote. Voting then was the secret. The South London Society was polemical again; a chronic condition, which keeps up the vitality and general tone of this Society to a high pitch. The new Bye-laws were already at fault; the Council had tumbled out about the interpretation of some of them, and a certain number of Council members

[1] Printed in another part of this number.

having objected to a full ballot, a strong contingent of the members outside the Council, and a minority in the Council, meant that every candidate should be elected by ballot, and there were thus two camps, perfectly friendly otherwise, but determined to exert their influence against one another to reach justifiable ends. This accounted for the strange faces, this explained the smothered excitement, although there was to be a full ballot, the original Council majority having rescinded a former resolution, its position being untenable. The first trial of strength took place over the election of the Vice-Presidents. Messrs. Jenner Weir and South were the Council's nominees, a fact carefully noted on the ballot-papers, whilst Mr. Fenn was the choice of the outsiders. Mr. Weir's election was deservedly a foregone conclusion. This intelligent lepidopterist was in touch with everybody, but would Mr. Fenn or Mr. South win! Just before the voting commenced, a most amusing scene occurred. One of the officials got up to make an explanation, and began :—"When you strike out Mr. Fenn's name" —— shouts of derisive laughter making him speedily conscious of how the "whip" (which he had probably received) had acted on his mind. The voting took place, and when the scrutineers appeared, the troubled look on one face showed that something serious had happened. It was soon explained. There was a tie. Mr. Weir had practically been supported by every one, whilst the other nominee of the Council (Mr. South) had only just tied Mr. Fenn, thus showing the wisdom of those who pulled the strings in bringing up their reserve forces. The election was soon settled by the President giving a casting vote and declaring Mr. South (as the Council's nominee) duly elected. Mr. Fenn endorses this decision, having simply come to poll to test the power of members to oppose, if they think right, the Council's choice. A "moral victory," as people say in politics, when they are fairly and squarely beaten, had been won by the outsiders. The election of Council was the next proceeding. Here was another question. Messrs. Auld and Henderson had been selected to contest the election against the nominees of the Council, of whom three stood well to the front. Mr. Carrington was a well-known supporter of the new Bye-laws, which no one understands, and Mr. Hawes suffered from being Mr. Carrington's nominee. There is another member of the Council, who shall be nameless, who is bound to provoke keen opposition among the small but previously all-powerful section of the Society, and it was certain that, although a Council nominee, these kind friends would "go" for him. The rest of the members were safe. The result justified all expectations. Mr. Tutt figured with 43 votes, Mr. Henderson 39, Mr. Carrington 38, Mr. Hawes 37, Mr. Auld 33, showing that the vials of collective wrath had been poured out on these five heads. Mr. Hawes and Mr. Auld therefore, one on each side, had to go, whilst Mr. Henderson gets a place, numbers proving how well balanced the sides were. The combined votes *against* Messrs Tutt, Henderson and Auld give an average of $20\frac{2}{3}$ each; and *against* Messrs. Carrington and Hawes $21\frac{1}{2}$; coupled with the election of Vice-President this proves the equality of the two parties. It is often said that large numbers of entomologists take up that science as a recreation. Here is a chance for them! They can play at science, and obtain their recreation in one of the most comfortably

furnished rooms possible to imagine, and if members do not pick up something amusing (of course, from the point of view looked at), and instructive at every meeting, it is certainly their own fault. The new President, Mr. C. G. Barrett, a most impartial member and excellent lepidopterist, was elected by acclamation, and it was no surprise that Messrs. Tugwell, Frohawk, Billups and Fenn got almost every possible vote they could in the ballot for Council. The Society re-elected all the permanent officers, and is to be congratulated on knowing when it is well served. That the Society may have a prosperous year is the earnest wish of every one connected with it!—Ed.

Lancashire and Cheshire Society.—President's (S. J. Capper) Address.—I must ask your indulgence on the present occasion if my remarks to-night partake more of a fraternal conversation than of a Presidential Address. I am induced to do this for several reasons. In the first place, I have already given fourteen annual addresses, and, on referring to these, find that they all, to a greater or less extent, follow the same procedure, *viz.*:—(1) A retrospective review of entomological work accomplished in the previous year. (2) The special work achieved by our Society. (3) Economic entomology, etc. Perhaps this is the kind of address expected from a President, and I know some of our members look forward to this. One, indeed, on a former occasion, flattered me very much by saying he anticipated, in these addresses, to be posted up in entomological events in the same way as he looked to "Whitaker's Almanack" for general information. Mr. Tutt, in the *Entomologist's Record*, a periodical which I hope all present support, and which ought to be read by every entomologist, has, in the December number of last year, given a most exhaustive and interesting article called "The Retrospect of a Lepidopterist for 1891." This he has done so thoroughly that I feel all my past records to have been only feeble attempts in comparison, and that, on the present occasion, I could make no addition to the information he has already given respecting my own special order—the Lepidoptera. I therefore recommend Mr. Tutt's article for perusal to all interested in this matter, and I shall be much gratified if, in so doing, you are at all reminded of your President's addresses in the past. It may be interesting to note the following remarks. Mr. Tutt states "that, from a collector's point of view, the season all round has been a good one for the lepidopterist; that while the Kent collectors and the Scotch collectors have made bitter complaints of the paucity of lepidoptera, there has been a good record from other localities." As regards myself, I never remember the appearance of so many rarities—*Polyommatus virgaureæ*, *Deilephila livornica*, *Sesia formiciformis*, *S. sphegiformis*, *S. scoliæformis*, *Lithosia sericea*, *L. caniola*, *Callimorpha hera*, *Cymatophora ocularis*, *Cuspidia strigosa*, *C. alni*, *Leucania albipuncta*, *Nonagria concolor*, *Pachetra leucophæa*, *Apamea ophiogramma*, *Dianthœcia barrettii*, *Hadena satura*, *Plusia moneta*, *Phorodesma smaragdaria*, *Eupithecia extensaria*, *Cidaria reticulata*, *Botys lupulinalis*, *Phycis hostilis*, *Crambus myellus*, etc. The above is a good record of rarities for one year. My own idea is that very few, if any, of the lepidoptera are really rare, but that it is only from our ignorance of their life histories that to us they appear so. Mr. Tugwell's experience with *Sesia sphegiformis* this past summer, shows how much may be done by "Assembling." At the last meeting of the South

London Entomological Society, he suggested that this method should be tried with *Sesia scoliæformis*, the larvæ of which are now taken in fair quantities at Rannoch. As regards this species, my late friend, Mr. Nicholas Cooke, twenty years ago, told me that he was convinced the species was at Rannoch, as he had frequently discovered traces of the larvæ. I am, however, drifting into my old routine, which is not my intention this evening, but rather to speak of entomology as I remember it in the past—say fifty or more years ago. In doing this, I propose entering into some personal reminiscences, and will commence by saying that I have often thought, whilst watching your interested faces in this room, attracted here by your love of entomology, what a history each could give of his entomological life experience. As regards myself, I cannot remember when I first became interested in insect life, as from my very earliest childhood I remember the delight I took in watching butterflies fly about and in breeding caterpillars. My earliest recollections are associated with rearing silk-worms, and I used to watch them for hours together, devouring mulberry leaves and spinning cocoons. To possess a Puss Moth Caterpillar, and watch its majestic movements whilst feeding, was an indescribable delight. I could not have been more than seven or eight years old when I remember, day after day, going down a country lane in which was always to be found one or more Tiger Moths (*Arctia caia*); the delight of seeing these, and bringing them home alive, keeping the poor things under a tumbler, and attempting to feed them with lump sugar, etc. This in-born, if I may so call it, love of lepidoptera, was greatly developed by my being sent away to a boarding-school at Epping, at a very early age. Epping was the home of Edward and Henry Doubleday. Henry Doubleday, especially, encouraged the schoolboys in their natural history pursuits, and so did our schoolmasters, Thomas Usmer and Richard Abbott. Epping is situated in the middle of the Forest and a very short distance from the school found us in its midst. The usual diversion of a holiday or half-holiday was, about thirty lads, accompanied by their masters or teachers, to go into the Forest, where we were allowed to wander as we pleased, assembling together at a certain hour, at which time a bugle was sounded. Now you can conceive what favourable opportunities these were for collecting. Many boys made collections, but two of us were special rivals. These were happy times. Butterflies swarmed. I have a recollection of seeing the air quite white in a wood from the profusion of *Leucophasia sinapis*, and the undergrowth in the summer was covered with *Argynnis euphrosyne* and *A. selene*. I am now speaking of upwards of fifty years ago. We had no entomological pins, and only primitive setting boards. The usual way to kill a moth or butterfly was to pinch the body under the thorax, which, as you may imagine in a large moth, did not improve its condition. We sometimes for this purpose used bruised laurel leaves, but this mostly only for Coleoptera, etc. We had no difficulty in ascertaining the names of our captures, as Mr. Doubleday would always kindly name them for us. This is, however, a most undesirable method, and there is nothing like studying the specimens oneself, and finding their names from written descriptions. I would here take the opportunity of testifying to the wonderful system of arrangement worked out in Stainton's work on British lepidoptera. I only wish we had been compelled to identify

the species by means of such a guide. I am sure if this had been the case I should, myself, have been much better able to distinguish a species than I am at present. I recommend all young beginners to make use of Stainton's *Manual*; make yourselves thoroughly conversant with all his fixed rules and you will find it facilitate you as much in the determination of a species as knowing the axioms of Euclid helps you with his propositions; however, there was no Stainton's *Manual* at the time I mention, nor were there any books on the subject with the exception of two volumes of the *Naturalist's Library*, one on Butterflies and one on Moths, and Rennie's *Conspectus of Butterflies and Moths*, that were at all within the reach of schoolboys, other books being far too expensive. I have brought with me for your inspection to-night, the copy of Rennie's *Conspectus* I used as a schoolboy. By the grand way in which it is bound, it will appear that it has been but little used; it is, however, the second copy I possessed, as the first was quite worn out by perusal. The grand binding of the present is in consequence of having it recently re-bound as a much valued treasure. Now, for a few minutes, it may be interesting to briefly review its contents. The Diurnals number 108, but of these 24 are recorded as British on doubtful authority, and all of them have since been expunged. Twelve are mentioned as in all probability varieties, and these since have all proved only such. In the genus *Pieris*, for instance, or as Rennie calls it, *Pontia*, he numbers seven species, notwithstanding he does not include *P. cratægi* and *P. daplidice*, the former of which he places in a genus by itself, being the only British representative of his genus *Pieris*, whilst our *P. daplidice* he includes in a genus *Mancipium*. As without these two species we now recognize only three in this genus, viz.:—*P. brassicæ*, *P. rapæ* and *P. napi*, it may be interesting to investigate how he arrives at the seven. He does this, by including in his genus *Pontia*, *P. chariclea*, a variety of *P. brassicæ*; *P. metra*, a variety of *P. rapæ*: *P. napææ* and *P. sabellicæ*, both varieties of *P. napi*; deducting, then, these 24 doubtful ones, and the 12 varieties which were merely so, the list of 1832 consisted of 72 species. We now, as you are aware, acknowledge only 67, with the addition of the new *Hesperia lineola*, having dispensed with *Cynthia hampstediensis* (figured in Humphrey and Westwood's "British Butterflies"), also *Hipparchia ligea*, *H. hero*, *Thecla spini*, *Lycæna chryseis*, and *L. virgaureæ*. It would be interesting to make further similar comparisons, but I must content myself with a few hurried remarks. *Zygæna meliloti* is recorded of rare occurrence in Surrey. Amongst the Sphingidæ we find *Sphinx pinastri* recorded from Scotland, near Edinburgh, also from Sussex, *Deilephila euphorbiæ*, *Sesia asiliformis*, but of course neither *S. philanthiformis* nor *S. scoliæformis*. It is interesting to note how many of the NOCTUÆ, now quite common, since the method of attracting them by sugar has become known, are mentioned as rare or very rare as *Noctua triangulum*, *N. festiva*, *Orthosia macilenta*, *Tæniocampa munda*, *O. ypsilon*, *Anchocelis litura*, *A. pistacina*, *Leucania lithargyria*, *Luperina testacea*, *Hadena adusta*, *Catocala promissa*, *C. sponsa*, etc. It seems now strange to write about times before sugaring was known, and the only method to take some of the NOCTUÆ was to capture them at dusk on the wing, or to find an odd specimen at rest on an old tree or paling. Searching such was an important feature in the

days gone by I am alluding to: and either I had a much better, what the boys at school called an "insect eye" than I have ever had since, or our neighbourhood of Liverpool is not so prolific, but never have I met with the same success in searching trees and palings as we did in our school days. I cannot say how many years ago it is since the method of attracting Lepidoptera by means of sugar, etc., was discovered, but I believe Henry Doubleday was the discoverer. In a yard, adjoining his place of business at Epping, were some empty sugar hogsheads, and one night he was surprised by finding a specimen of *Catocala nupta* regaling itself. This gave the suggestion which has since proved so successful. Speaking of *Catocala nupta* in connection with Henry Doubleday, reminds me of an incident which I well remember. The school at Epping was a Friends' school, and we all used to attend the Friends' meeting, which was mostly a silent one, of about an hour's duration. At one of these Sunday morning meetings, I well remember the consternation occasioned by one of these lovely moths dashing about amongst us, till at last it made a great noise fluttering and tapping against the glass of one of the windows. Very well I remember Doubleday going to the window and capturing the prize, much to the amusement of all present. What has been said about the discovery of the attractiveness of sugar, may be also said of light. Some years ago, an occasional specimen of *Cheimatobia boreata* taken in the daytime in Pettypool Wood, Delamere, was thought to be very rare indeed; but one night some entomologists, visiting the locality with lanterns with the object of sugaring, were astonished to find the undergrowth perfectly swarming with the moth—both male and female. Some years ago, in the company of Mr. Nicholas Cooke, Mr. Greening and Mr. Owen, I had the pleasure of witnessing hundreds of these, mixed with *C. brumata*, at the same locality. A favourite way of capturing insects was to beat or kick the stems of the young trees, holding a clap-net under for the larvæ or imagines to fall into. On several occasions I encountered Mr. Doubleday and his constant companion, Mr. English, thus engaged. Once asked what they were seeking, they reply was—*Notodonta dodonæa*. English was the son of a gardener. After receiving an elementary school education, he served as an assistant in the shop of Messrs. Doubleday, and there imbibed his enthusiastic love of Natural History. He was an ardent collector and a constant companion of Doubleday in his entomological rambles. He went for his master to the "Fen" country, and was the last to take the two species of Lepidoptera for which the district was noted, *viz.*:—*Polyommatus hippothöe* (*dispar*) and *Noctua subrosea*, both now lost to these Isles. For sixpence each I purchased (from English) four specimens of *Polyommatus hippothöe*, the Large Copper, two of which I still possess, the other two I gave away to my friend Mr. Benjamin Cooke. I may, perhaps, here mention that the nets used for capturing our spoil were the large clap-nets made mostly of green gauze. Doubleday and others, however, used white gauze for night work. Such were our schooldays. The few weeks' summer holidays were devoted by myself and brother to collecting Lepidoptera. It was usual for the family to locate, at these seasons, mostly at Dover or Brighton. This afforded us grand opportunities for collecting. Our usual daily pro-

cedure was to wander away after breakfast and spend the entire day collecting, say, in the undercliff between Dover and Folkestone, or similar grand collecting grounds. On leaving school, I had, for a short time, no opportunity of studying entomology. I then settled in Liverpool, and soon after became acquainted with Mr. Benjamin Cooke, who recommended me to send to London for my cabinet and collection. This I did, when I was delighted to be able to give him between thirty and forty species not heretofore represented in his collection. My collection was then in considerable disorder with only a small portion of my insects named; I well remember my surprise at Mr. Cooke naming the whole of them, without reference to books, according to the new nomenclature just published by Mr. Henry Doubleday. His *Synonymic List of British Lepidoptera* was issued at intervals between the years 1847 and 1850. This is still known as Doubleday's *List*, and does great credit to the compiler. The doubtful species recorded as British by Rennie and others, were expunged, and by comparing this *List* with those of France and other European countries it was made almost in unison with those in use on the Continent. The acquaintance of Mr. Benjamin Cooke led to that with his brother, Mr. Nicholas Cooke, also with Messrs. Gregson, Hodgkinson, Greening and others, and some years afterwards with Mr. Alfred Owen. I had, however, no leisure for collecting Lepidoptera. I was led to commence again some years afterwards. Living at Everton, then quite a country district, one morning a white butterfly flew into the window, and was captured. I showed this to my children and told them this was *Pieris brassicæ*, and asked whether I should let it fly or pin it out and commence collecting. The children said pin it out. I did this, and was so delighted with its beautiful appearance that I determined to commence again. A few days afterwards I was taking the family into Wales to spend a few weeks, so I purchased a net, setting boards, and all the paraphernalia required for the sport, and the whole of that holiday was devoted to collecting, in which the children took a lively interest. As regards myself, I never enjoyed anything more, and the taking of a number of *Cynthia cardui*, which had been a rarity before to me, still more increased my ardour. The result was, I purchased a cabinet, which I arranged according to Doubleday's list, to contain every British species, and then set to work in earnest to fill the same. Soon after this, now twenty-five years ago, I settled at Huyton, which provided a grand locality. For some years my gardener had all the trees in the neighbourhood of my house sugared, and each night we together looked them over. Summer holidays were always passed, either with the family at some locality famous for its entomological fauna, or in company with some entomological friend in the New Forest. For weeks together, accompanied by my lamented friend Mr. Alfred Owen, we lived in the New Forest, especially at Brockenhurst, working frequently, collecting and setting our captures for eighteen hours a day. This active collecting continued till the year 1874, when I unfortunately met with an accident from a slip on the top of Penmaenmawr, when in the search for *Acidalia contiguaria*, a species which I had just re-discovered. This accident resulted in a most serious lameness from which I have never perfectly recovered. It was also

the same year that I lost, by death, my loved and valued friend, Mr. Alfred Owen, who, for the last few years, had been my constant companion in all entomological excursions. In 1877 our Lancashire and Cheshire Society was founded, the first meeting of which was held at my house, Huyton Park, on the 26th March of that year. From that time my history is pretty well familiar to you all, and I will conclude these few remarks by expressing the gratification it affords me to record the constant success of our Society. Our last Session has certainly been equal to any of the past, either as regards the Papers read, the discussions and the exhibits, whilst the progress that has been made in the past year towards the compilation of a register of the insect fauna of all orders (Lancashire and Cheshire) is most satisfactory and creditable to all who have been engaged in this undertaking. I cannot help specially alluding to the valuable work achieved in this direction by our late Vice-President, Mr. Willoughby Gardner, the result of which he gave us in his elaborate and most interesting paper on the Hymenoptera of the two counties. This paper, I am glad to say, is now being published in the *British Naturalist*, and will form, I am sure, the foundation of our records in this order. Now, I feel that some of you who were comparatively youngsters when this Society was first inaugurated, are at present the moving spirits of the day, commencing where we old folks leave off. It is to you we look for the development of a Society like our own, and in you is my confidence for its success in the future. Do not disappoint me. [And so say all of us.—Ed.]—F. N. Pierce, *Hon. Sec.*

NOTICES, REVIEWS, Etc.

Transactions of the City of London Entomological and Natural History Society for 1891.—Published by The Society, 33, Finsbury Square, E.C.—This, one of the oldest of our Entomological Societies, consisting, as it does essentially, of real working collectors, has never before been in the financial position of being able to issue a Report of its work. With our poorer Societies this is a great drawback, as much good work is done, and, with the exception of the occasional articles which find their way into the various magazines, nothing lasting comes from this work. Having surmounted the initial difficulty of bringing out its first Report, it is to be hoped that each successive year will see the volume increased in size, and the matter equally interesting. Fairly exhaustive papers on "The genus *Donacia*," "Protective coloration," "The bands in certain Geometrid genera," "The larva of *Triphæna subsequa*," "Habits of *Biston hirtaria*," "The life-history of *Apamea ophiogramma*," "The genus *Noctua*," "Dragonflies," etc., show the nature of the scientific work performed by the Society during 1891, whilst short summaries of many other papers appear. The volume contains some 40 pp. of close print, consisting entirely of scientific matter, and without the waste space generally found in such productions. The Society is to be congratulated on publishing its work of 1891 before the middle of January, 1892, and to other Societies we would most earnestly say, "Go thou and do likewise!"—Ed.

The Entomologist's Record AND JOURNAL OF VARIATION.

No. 3. Vol. III. March 15th, 1892.

SCIENTIFIC NOTES.

Effects of Temperature on the Colouring of Lepidoptera.—The statement, in your "Current Notes," of my paper read at the last meeting of the Entomological Society, conveys the impression that where the temperature experiments described in it had caused darkening this was generally associated with, more or less, crippling and disease. This is not so. The crippling effect observed in some of the specimens exhibited was the result of *extreme* condition, whether of heat or cold, and as such, is probably what might have been expected, though some of the peculiar appearances so caused (of which darkness is not always one) are, I think, deserving of attention. What is remarkable is, that some of the most conspicuous effects obtained in coloration, can be, and are produced, with extreme regularity, by such moderately low temperatures, as to not in any way effect the healthy appearance of the perfect insect. This is proved by many examples of several different species, and especially of *Selenia illunaria* and *S. illustraria*, in which the full effect of intensification of darkness has been produced, the insect being in all respects well developed and symmetrical, and not exhibiting a trace of disease. I have some hundreds of these, belonging to several different broods, those at the moderately low temperature showing conspicuously darker colouring than those at the higher temperatures. In some of the species which I exhibited, there was a considerable proportion that were more or less crippled. But these, as the labels attached showed, had in nearly all cases been subjected to extreme conditions; and, as in these cases much individual variation had ensued, a rather large proportion of them was selected for exhibition. In insects, the colouring of which is greatly affected by moderate temperature, I have found no great variation in those treated alike, the darkness caused by the lower temperature being in general extremely uniform; and accordingly, as stated in my paper, only typical examples of these were shown. They are merely the representatives of large numbers of equally healthy specimens in my possession, many of which were exhibited to the Society at the meeting of March last.—F. Merrifield, Brighton. [I spoke, of course, only of those specimens which I saw, and about which there could be no mistake. When I use the term

"disease" in relation to this subject, I do so in the widest sense, and look upon failure to produce scales and scale pigment equally with ill-developed wing (membranous) structure, as the result of the insect's inability to carry out its normal functions of development. I have discussed the matter at some length in the Introduction to vol. ii. of *The British Noctuæ and their Varieties*, and shall be very pleased if Mr. Merrifield has any further suggestions to offer on the subject.—ED.]

RETARDED DEVELOPMENT OF WINGS IN SPILOSOMA MENDICA.—I have another record of retarded development of wings, which beats that of *Smerinthus tiliæ* (*Ent. Rec.*, vol. ii., p. 54). A female specimen of *S. mendica* emerged (by forcing) at 10.30 a.m., on April 9th, and no expansion took place until 12.30 p.m., on April 11th, when I saw it with its wings over its back, and it finally expanded into a perfect specimen. This leaves 50 hours between emergence and expansion. I may add that it was the only specimen of this species bred within several days of this date, the majority having emerged during March, and any mistake as to its identity, was therefore impossible.—A. U. BATTLEY, 28, Amhurst Park, N.

CLASSIFICATION BY NEURATION.—At the London Entomological Society's meeting of February 10th, Mr. Meyrick read part of a paper (intended, I suppose, for the *Transactions*) on the "Classification of the Geometrina by Neuration." He commenced by noting certain alterations of synonymy. If our synonymy is to undergo another alteration at the hands of Mr. Meyrick, it will, I am afraid, want revising back again very shortly; but it is not of this that I wish to speak. It is of the absolute worthlessness of Mr. Meyrick's scheme of classification, and to raise my voice against the Society publishing work of this kind, which goes out with the stamp and authority of the Society on its face. Some eighteen months ago a paper was printed in the *Transactions* on the "Classification of the Pyralidina," than which nothing could have been more disastrous. The work was based entirely on superficial characters, which had to be defined with logical accuracy, and then anything which satisfied these arbitrary conditions was put into a genus.[1] The result was not far to seek. Species whose larvæ are as far apart as possible, as proved by their earlier stages, are lumped together because they have these characters in common, species so closely allied that their larvæ are almost indistinguishable are widely separated, and even synonyms for the same species get placed in different genera. Nothing so utterly useless since Mr. Butler published his paper "On the genus Acronycta," at least relating to British entomology, has been brought out by the Society, although a few very unsatisfactory papers have found their way into the volumes enriched by the clever work of Poulton and others. But Mr. Meyrick's work stands self-condemned. He commenced by stating that "*Tephrosia biundularia* had seven distinct types of neuration." That is all! and this is the basis on which our moths are to be classified by those who get them up in collections and have never studied their earlier stages. Fancy a classification of Vertebrata on the same lines! The neuration of many species varies

[1] This was, I know, supported by Prof. Fernald, but American Lepidopterists are much in the condition of our Neuropterists, Dipterists, etc. They know perhaps less than one per cent. of the larvæ of their species, and the so-called scientists in America are generally museum species-namers—not biologists.

sexually, and I know at least one species in which Ragonot places the sexes of the same species in different genera. The Linnæan system of antennal classification is a distinct advance on this, although most of the male NOCTUÆ with pectinated antennæ were called BOMBYCES, and their females were placed elsewhere, but once the fact was recognised that this sexual variation occurred, there was less muddle than can possibly exist under this system. The Neuropterists, Orthopterists, etc., back up the neuration system. But why? Because they know nothing of the earlier stages of the insects they study, and are obliged to adopt some superficial character to aid them in determination. This is quite right. Names are a means to an end, and until the actual affinities are known, some such arbitrary attempt at classification must be adopted, whilst each successive potterer at an artificial scheme fondly hopes that *his* will turn out to be a final and everlasting method of arrangement to be adopted by everyone. But Lepidopterists are not in the condition of the collectors of these orders. Some of us do know enough of the earlier stages of our species to get a fair guide as to a natural classification. Then what I ask is—why should we be bound down by the opinions of so-called scientists who study collections and fondly hope they are studying nature, who build up a house of cards of artificial and arbitrary arrangements, and see the law of order peeping out to their enlightened intelligences? Let our museum people name specimens and describe them. This is their natural work, because it is the only one for which they have the slightest training; but for goodness' sake let our biologists classify. I incidentally remarked at the meeting of the Society that the earlier stages should be used as the only means of "natural classification," and was informed that the larvæ also varied according to their environment. What innocence! Fancy a larva varying structurally owing to environment. Did my informant imagine, I wonder, that if I put a NOCTUA larva in water it would suddenly develop gills? I am sorry to write this in connection with a paper written by a man whom I believe to be one of the hardest workers we have, but I believe his efforts are entirely misdirected, and I must raise my voice in opposition to the funds of the Society being spent on such papers as these. If the paper be worth anything let Mr. Meyrick bring it out at his own expense and on his own authority, but I do object, as a Fellow of the Entomological Society, that these papers should go forth, with the approval of the Entomological Society of London stamped on the face of them. I do not suppose for one moment that the views of a Fellow outside the Council will weigh with some of the members of the Council who have acted as censors of the *Transactions* for years, and will probably continue to do so, and who will perhaps feel hurt at the outspoken expression of an usually silent Fellow, at any rate so far as their Society is concerned.—J. W. TUTT. *February*, 1892.

MOISTURE EXPERIMENT.—I made, last spring, a small experiment as to the effect of almost continuous dampness on larvæ. I placed three dozen small larvæ of *Arctia caja* and the same number of *A. villica* under a large hand-light in a cold greenhouse, and kept the atmosphere under the light constantly moist, except for half-an-hour each day when the light was tilted, for the purpose of allowing the accumulated moisture to run off the glass, and to give the larvæ air, and also to dry the food which I had growing in pots, and which consisted of dock, dead-nettle,

groundsel and chickweed. Under this somewhat heroic treatment the whole of the *caja* larvæ gradually died off, one by one, but the *villica* did not do so badly—one or two were accidentally killed and others died—but finally twenty were full-fed and were then removed to an ordinary breeding cage to spin up and pupate. This they did with the exception of three, which died in the attempt. Five emerged cripples, but the remaining twelve were perfect insects—eleven of these did not differ from the ordinary form, but the twelfth turned out a rather curious var., smaller than the type and darker, with the light spots on the fore-wings much smaller than usual, and with a broad black band on the outer margin of the hind-wings, which extended about half-way up the wings, giving the whole insect a peculiar appearance. I have placed the specimen in the Exhibition box, so that my *confrères* of this basket may see it.—T. Maddison. *January 25th*, 1892.

Morphology of the Lepidopterous Pupæ.—I have waited in vain to see some reference made in the Entomological magazines to Mr. E. B. Poulton's paper, read before the Linnæan Society, on the above subject (*Trans. Linn. Soc.*, vol. v., part 5, Aug., 1890). Is it possible that entomologists are still unaware that in the majority of cases discrimination of the sex of pupæ is easy? If they knew it, one would expect to see some notice of the fact in our entomological literature, as it would be a convenience, especially where one obtained pupæ for the purpose of pairing and breeding.—Geo. C. Griffiths, Clifton, Bristol. [I must own my complete ignorance of the existence of this paper, and must say that whilst we have a Society devoted entirely to matters entomological, the scattering of strictly entomological papers in the *Transactions* of the Zoological and Linnæan Societies is much to be deplored, as 99 out of 100 of the Fellows of these Societies are not entomologists, and many entomologists are not Fellows of these Societies.—Ed.]

The Genus Hepialus.[1]—Whilst I do not undervalue the study of the surface markings on the wings of lepidoptera, I think the habits, as well as the structure, are of at least equal importance, and perhaps, in some cases of even greater interest. But the "collection" we are desirous to make, is too often the item of first importance with us, and we study the habits and peculiarities only so far as they will help us to secure a fine series. Common species consequently receive but scant attention, and when in addition to being common, an insect is difficult or impossible to rear from its earlier stages, we get our series filled as satisfactorily as possible, and trouble ourselves no more about it. The "Swifts" come under these conditions; the perfect insects are all common and easily obtained, but the larvæ feed below the surface of the earth,—some of them for at least two years,—and they are so difficult to manage, that few, indeed, have succeeded in rearing them from the egg. It will be most orthodox if I begin my remarks with this earliest stage, the egg. These in all cases are dropped by the female among the herbage as she flies over it. Mr. Buckler mentions the fact in relation to *velleda*. "The eggs were scattered by the parent moth on the ground, amongst the stems of fern (*Pteris aquilina*), during the month of June" (*Larvæ*, etc, vol. ii., pp. 54–55). Of *hectus* he

[1] Abstract of a paper read by Mr. J. E. Robson before the City of London Ent. Soc., February 18th, 1892.

says:—"The eggs are globular, small, and bluish black, and are laid by the ♀ over fern brakes towards the end of June" (*l.c.*, vol. ii., p. 52). Mr. Hellins, in reference to *humuli*, quotes Dr. Chapman (*E.M.M.*, vol. xxiii., p. 164), as to the females "dropping their eggs loosely, and, if captured, continue to do so into the hand or into the box" (*Larvæ*, etc., vol. ii., p. 131). I have confirmed all these observations, and also that the same habit obtains with *lupulinus* and *sylvinus*. In connection with this habit, it should be noticed that the eggs are very small for the size of the insects, and when extended they are perfectly free from any adhesive substance. They consequently soon find their way down to the bottom of the herbage, and when the young larva emerges, it makes its way under the surface as quickly as possible. Though a female, captured whilst ovipositing, will continue to drop her eggs, she flutters her wings all the time as if still in flight, and it would almost appear that she could not deposit them when at rest. The eggs of all the species are white or nearly so, when first extruded; but in a very few hours they turn deep bluish-black. Mr. Hellins thinks it curious that the eggs of *humuli* should turn black, as the young larva is white. If there was anything in this remark, it would apply with equal force to all the species; but the fact is, that the change of colours is of the shell only, and has no connection at all with the larva within, for unimpregnated eggs change in exactly the same way. Mr. Buckler established the fact that *hectus* and *velleda* take two years to mature. In a letter to me, dated June 23rd, 1868, he says:—"I quite despair of rearing any *Hepialus* from the egg, because some of them, if not all, are two seasons in the larval condition, as I have proved with two species, but what these two are is just what I should like to know;—I believe *hectus* and *velleda*,—but, until I can produce the moths am not in a position to give their history." A week later, June 30th, 1868, he wrote:—"I am very much obliged to you for the eggs of *hectus*, but since I penned you my letter I have bred the moth from the larva I had figured, and I will here say that I never had any species so troublesome to manage, or such a trial of my patience. They were in perpetual motion, to coerce them was impossible, for they jumped and ran backward as rapidly as forward." He further says:—"The other species, which I hope may prove to be *velleda*, certainly without the slightest doubt, do take two seasons to come to maturity, as full-fed larvæ can be found, and others not more than a quarter, some one-third grown at the same time, and long before the earliest moth of the species could be out, and the little ones grow very slowly all through the summer and autumn of their second season. I have their history complete enough if I could only breed the moth; but this season I have only one to depend on, and I fear the time is almost past for its emerging." The moth, however, was bred, and the history completed. The Rev. John Hellins, referring to *humuli*, which he reared from eggs, sent him by Mr. Porritt and myself, says they began to hatch on 24th July, were noticed on August 19th, September 13th, and October 26th, and "from the rate of growth observed at these dates, I am inclined to think that one year would suffice for the whole life of these species, the larval stage lasting from August till the next May; but, of course, I cannot speak positively" (*Larvæ*, vol. ii., p. 131). I had considerable personal experience with larvæ of *humuli*

some years ago, and have dug up hundreds of them, but they were always alike in size at the same season. I never found some full-grown, and some a third or quarter-grown, at the same time. Of the other too, *lupulinus* and *sylvinus*, I can find no observations recorded; but the little knowledge I have of the former species, leads me to the conclusion, that, like *humuli*, it passes through all its changes in a single year. *Sylvinus* larvæ I never had. The larvæ of all the species feed on roots and underground stems; but I scarcely think they are exclusively confined to a single plant. Buckler gives bracken (*Pteris aquilina*) only, as the food of *hectus* and *velleda*, and I never found either where bracken did not abound. Owen Wilson, however, adds dandelion root as a food of *hectus*; and it seems a very likely thing for it to feed on. Dock is the only food named by Buckler for *sylvinus*; but I have taken it freely where there is certainly no dock near. Owen Wilson adds dandelion and sorrell. I am disposed to think it must eat bracken also. I have found larvæ of *humuli* at roots of dead-netttle, and in the creeping root of bog-mint. Owen Wilson gives burdock, hop, daffodil, dock, musk-thistle, black horehound, and stinging-nettle. It probably feeds on many others. For *lupulinus*, Wilson gives white dead-nettle, daffodil, black horehound, and plaintain. This larva most certainly feeds on others than these. Mr. Buckler speaks of the great aversion from light evinced by the larva of *hectus*, and the rapid efforts it makes to hide itself. *Humuli* larvæ, though awkward and clumsy in their movements, and without the great activity displayed by those of *hectus*, are equally quick to conceal themselves, and easily penetrate tolerably stiff soil. The larvæ of all the species, whether they live one year or two, feed up in the spring, and when mature they approach the surface, and form a loose cocoon in which the long yellow-brown pupa can move about with great ease, wriggling and twisting itself up and down by means of projecting knobs or teeth on the rings of the abdomen. It is curious to see the pupa of *lupulinus* so move itself, for the cocoon is a long silken tube in which the pupa works itself in either direction and with considerable celerity. When about to emerge they press through the cocoon, and through the surface of the earth. I have seen the empty pupa cases of *lupulinus* sticking in considerable numbers from the surface of a track that had been trodden quite hard. *Hectus* is said to pupate under leaves, or amongst moss. I never found the pupa.

We now reach the perfect insects, and it is to these the greatest interest attaches. Perhaps the most unusual thing in connection with them, is that not one of them has ever been called by any other name except that in ordinary use.[1] The most the "resurrection men" have been able to do for them is to make *hectus* into *hecta*, and *lupulinus* into *lupulina*. What pleasure, therefore, to speak of insects by names that everyone knows! No doubt, the very distinct characters of each have contributed to this, for the merest tyro can never make a mistake about any of the species, or take a "Swift" for anything else. It is, therefore, quite unnecessary that I should attempt to differentiate the species or describe their markings, though I shall have something to say

[1] *Sylvinus* was called *hamma* by Hübner and Freyer, *lupulina* by Hübner, and *flina* by Esper. *Hecta* was called *jodutta* by Esp., *nemorosa* by Esper, *flina* by Geyer.—Ed.

about some of the markings further on. The marked peculiarities of the perfect insects are the long slender abdomina, the long pointed wings not overlapping at the base, and the extremely short antennæ. But the first thing to attract notice in this group is the vibratory, pendulum-like flight of the male *humuli*, which may be seen in the early twilight of a summer evening, swinging leisurely backwards and forwards, as if it had nothing else to do. It seems always to have been accepted that this oscillating flight had something to do with the opposite sex, and a theory was long held that there was a female concealed in the herbage below, and that his motions were made in the desire to attract her notice, much, I suppose, as the males of certain birds and other animals strut and posture to gain the favours of their lady love. Many a fruitless search have I made to discover the hidden female. The slight changes of position he sometimes makes, were assumed to be the result of her motions below, and I have over and over again tried to follow these changes, thinking I should thus be guided to her. The male is generally so intent upon what he is doing, that you may stand close to him. But my search was always in vain, the solution escaped me for many years, and even when Dr. Chapman solved the problem, and recorded as long ago as 1876 (*E.M.M.*, vol. xiii., p. 63) the meaning of this exposed hovering, I, unfortunately, overlooked the record. Accident at length revealed the secret. I was passing through an uncultivated field where *humuli* was unusually abundant. Stopping for a moment to watch them, I saw a female fly to one of the oscillating males, which immediately followed her down. For a moment I did not comprehend what I had seen, but another female rose, and I noticed this time that one came in actual contact with the male, which also flew down after her, and, when I found them on the herbage, they were already paired. Before I left the field I had seen this repeated again and again, and had not the slightest doubt of the meaning of the peculiar motions of the male. This, subsequent observations have fully confirmed. The male *humuli* flies in this conspicuous manner that the female may see him, and his light colour very greatly assists this. Dr. Chapman, in recording what he had seen, expressed the opinion that it must have been noticed before, and, really, when you have once seen it, you cannot help thinking as he did, that it must have been *observed* long ago. The flight of the female at this time is, as he pointed out, very different from her flight when she is dropping her eggs over the herbage, and which, so far as I have seen, is always done later in the evening. There is another matter connected with the flight of *humuli* that has not, I believe, been recorded. That is, the fact that when several males are flying in close proximity, they amuse themselves by bumping together much as flies do around our curtain fringes. I had noticed this once or twice previously, but merely thought they were flying rather close together, and accidentally came in contact; but last summer I convinced myself that it was no accident, but that they were really at play. I was on the railway side endeavouring to take *Acidalia subsericeata*, when I noticed two male *humuli* flying together. I stood and watched them for some time, noticing that they occasionally came in actual contact, but not attaching any meaning to the act; presently, a third male appeared a few feet away. It quickly drew near the other two and then joined them, all flying close together, and two, or some

times all three bumping together and then swinging off again. Then a fourth came down from the top of the bank and joined in the game. They were so intent upon it they allowed me to stand so close that I could have touched them with my hand. At last I netted the four at a single stroke, and, immediately repenting I had disturbed them, I turned them out of the net. One flew away, but the other three actually returned to their play, and I left them there. Sometimes only two would collide, often three, but generally before they parted all four would be in close proximity if not in actual contact. They were rather clumsy, and it seemed as if they needed to swing backwards and forwards once or twice before they could steady themselves sufficiently to direct their flight as they wished. Before I leave this species I would call attention to the fact that it is the only one of our "Swifts" in which the sexes differ in a very marked degree,[1] and, also, that the males occuring in the Shetland Islands, known as var. *hethlandica*, are much more like the female than the ordinary form. So long ago as 1865, Dr. Knaggs called attention to the peculiar form *humuli* assumed in these Islands (*Ent. Ann.*, 1865, p. 98), but little notice was taken of the matter, and it was not until Mr. Meek's collector, some years later, brought a large number of these extraordinary specimens home, and they became generally distributed in our collections, that we began generally to understand what it was to which our attention had been directed. Some said that in these remote Islands the male had assumed the markings of the female, but another explanation of the phenomenon is more probable. All our British species of *Hepialus* are similar in character of markings except male *humuli*, which (except these varieties) is without markings entirely. This indicates descent from one ancestor, and it is more than probable that the sexes of *humuli* once resembled each other, as do the sexes of the other species. The female flying to the male by sight would always see the paler specimens best. Thus, the lighter the colour of the males, or the more silver there was about them, the more conspicuous would they be, and, therefore, more likely to secure partners and produce a lighter or more silvery offspring. This would go on year after year, the silvery markings increasing in extent in the course of generations, until a perfectly white male was produced as we see it now, solely by "natural selection." In the extreme north, where there is longer daylight at midsummer than with us, the female would be able to see better than in our dim twilight, and the paler males would have less advantage. The process of selection, therefore, would be slower, and as the darker males, as Lord Walsingham has shown, would develop more rapidly, still tending to delay the evolution of the perfectly white male. (*To be continued.*)

VARIATION.

VARIATION IN MIDLOTHIAN LEPIDOPTERA.—*Spilosoma fuliginosa*, L.—I have only taken a few specimens of this insect, one of which, captured on June 16th, 1888, had a perfect, though diminutive, left upper wing. Mr. W. Evans has also taken them in the bog. *Panolis piniperda*,

[1] I have always looked on *H. sylvinus* as presenting very marked sexual dimorphism.—ED.

Panz.—During April and May, 1888, this insect was so common on the fir trees of the wood, that Dr. Northcote and myself captured over 100 specimens, varying in tint from bright orange red to greenish-brown or black. Lately it has been less abundant. It has also been taken by Mr. Wilson, Mr. Evans, and is mentioned by Lowe and Logan, *Proc. Roy. Phys. Soc.*, vol. i., p. 3. *Odontopera bidentata*, Clerck. A very common insect in Bavelaw Wood, usually hidden behind the rugosities of the bark of Scotch fir trees; many specimens show a melanotic tendency. Recorded both by Mr. Evans and Mr. Wilson. *Larentia viridaria*, Fb. (*pectinitaria*, Fues.; *miaria*, Bork., Sta). Very common in the wood during July, the specimens varying much in intensity of colour. Taken also by Dr. Northcote, Mr. Evans and Mr. Wilson. *Eupithecia satyrata*, Hb.—Larvæ of this species, common on the flowers of scabious, on Balerno Moor, August 4th, 1884, and August 11th, 1885. Mr. Wilson found the larvæ of var. *callunaria*, Stgr., common on scabious on Bavelaw Moor, September 14th, 1856, and again on September 5th, 1858.—E. W. Carlier (*Annals of Scot. Nat. Hist.*, pp. 42–45).

Vanessa urticæ var.—I have a specimen of *V. urticæ*, which I believe to be the same form as that mentioned by Mr. Sharp in *The Entomologist's Record* (*ante*, p. 8). All the markings, which in the typical specimens are yellow, are in this quite white. It was taken in a field at Bognor, about the middle of July, 1886.—R. C. Paton, 21, Hopton Road, Streatham, S.W. *January 17th*, 1892.

Hybernia progemmaria var. fuscata.—In the exhibition box, I have placed an extreme specimen of *H. progemmaria*. It is many shades darker than so-called *fuscata*. I should fancy it a near approach to those obtained in Yorkshire by Mr. Porritt. I obtained the specimen last spring at Warrington, with half-a-dozen others of nearly the same intensity, together with ordinary specimens of var. *fuscata*.—J. Collins. *February 1st*, 1892. [This male is as dark as the darkest Barnsley males, but not so dark as females obtained by Mr. Porritt, which are absolutely black.—Ed.]

Variation of Arctia plantaginis, etc.—In Aberdeenshire we find *A. plantaginis* everywhere on waste ground, from the sea-side to the tops of our highest mountains. From the sea-level to a little over 1,500 feet, typical specimens only are to be got, with an occasional aberration; from 1,500 to 2,500 feet every intermediate form between the type and var. *hospita* occurs; while over 2,500 feet one can only get *hospita*. While at Braemar with Mr. Maddison last July, we got type, intermediate varieties and *hospita* on the mountains, and it was curious to note how the type was gradually replaced by the variety as we ascended the hill slopes. A great part of our collecting was accomplished at over 3,000 feet elevation, and at this height it was not rare to see *hospita* careering over the broken ground, where its colours harmonised most remarkably with the grey rocks and lichens, and it was a very difficult matter to keep them in sight for any length of time, but a little lower down the hill side we succeeded better, where we had the heather for a background. My total catch was seven good *hospita*, several intermediate and typical forms, and a few of all the different varieties, which may be said to have been in the wars, for they were in a very tattered condition. Intermediate forms with the superior wings

hospita and the inferior wings typical are not rare, but one I captured had the superior wings typical and inferior wings with a pure white ground colour, a very pretty variety indeed. Had we been able to devote more time to this species we might have done more with the varieties, but *Zygæna exulans* was the special insect for which we went to Braemar, and although we worked very hard for them my captures only reached about fifty, while Mr. Maddison's were even less. While here, I also turned up another species which proved exceedingly scarce, *viz.*, *Crambus furcatellus*, of which I only secured about half-a-dozen.—Wm. Reid, Pitcaple.

A. plantaginis var. hospita—I never saw this form in the Lowlands. I have enclosed in the exhibition box three females of *plantaginis* with smoky, yellow and rosy underwings, and would like to know if the same forms occur in the south.—A. Horne, Aberdeen.

Var. of Noctua festiva.—I captured last July at sugar a striking and distinctly marked var. of this protean species. It is of an uniform reddish-ochreous colour, with the stigmata inconspicuous, but with the transverse lines (half, inner and elbowed lines) strongly marked in blackish. There is also an absence of transverse shades, which serve to make the black lines show up more clearly. The pronounced transverse lines on an uniform reddish-ochreous ground, with the faintly outlined stigmata, and absence of transverse shades, make the insect a very pretty one. The specimen has been favourably commented on by the members of one of the baskets belonging to the "*Record* Exchange Club."—J. Collins, Warrington. [The specimen is a very strangely coloured one, I have not seen another like it.—Ed.]

CURRENT NOTES.

It is probable that the old Cambridge Entomological Society will be resuscitated. It is rather a disgrace that one of our Universities, which were previously the centres of Entomological Science, should be so hopelessly behindhand now.

In the last number of the *Ent. Record*, p. 33, I wrote:—"It is also very strange that our *Oxyptilus heterodactyla* (*teucrii*) is not known on the Continent. Do the Continental lepidopterists, at any rate in part, call this species *hieracii?*" The suggestion soon proved true, for whilst looking over some type-specimens of *Pterophori* in Mr. Briggs' collection, which had come from Dr. Staudinger, I immediately detected two *heterodactyla* which had been sent to him for *hieracii*, Zell.

The second volume of *The British Noctuæ and their Varieties* has now, we believe, been sent to all subscribers. If any have not yet received them, we should be pleased to hear. We should also be pleased if those gentlemen, who still owe for Vol. I., sent out last May, and who have not yet acknowledged its receipt, would do so.

Mr. Leonard S. Sellon kindly informs us that the woods about Sils-Maria, mentioned in *The Record*, vol. ii., p. 268, are about 6,500 ft., and not 5,500 ft., as there stated. The village is 6,000 ft.

Mr. H. Goss deserves the thanks of field-naturalists in general, for the determined stand he has made against the War Office annexing 800 acres of the New Forest. Of course, this 800 is only likely to be a first instalment.

Mr. South seems to be mixing the study of Vertebrata with Entomology. Last month, he found one of those continuously recurrent developments, known as "a mare's nest," relating to *Noctua conflua*, Tr. This month a similar development appears to have been discovered relating to a Continental species called *Luperina nickerlii*, Frr.

Mr. Robson received a very hearty welcome at the City of London Society's meeting on Feb. 18th, and read a most interesting paper on "The Genus *Hepialus*." Among other visitors, we noticed Mrs. Bazett, F.E.S., Miss Kimber, F.E.S., Messrs. G. T. Porritt, F.L.S., F.E.S., R. Adkin, F.E.S., A. Robinson, B.A., F.E.S., and many of our leading London lepidopterists.

Mr. G. Elisha, F.E.S., has just concluded, in *The British Naturalist*, the best series of "Practical Hints" for each month in the year ever published for micro-lepidopterists.

A paper on "Coleoptera from Central China and the Korea" has just commenced in the *Entomologist*.

The portrait of Mr. S. J. Capper, F.L.S., appears in the current number of *The British Naturalist*. He is well-known as the father of the Lancashire and Cheshire Entomological Society.

Mr. South's probable error in naming certain larvæ from Notts, as those of *Apamea ophiogramma*, which we pointed out in our "Current Notes," vol. ii., p. 277, has been referred to by Mr. W. H. Harwood, who supposes that the larvæ are those of *A. unanimis*, a surmise which appears very probably correct.

The attention of London collectors is again directed to the notice of the City of London Entomological Society, *re* the compilation of the fauna list, which they have in preparation.

The Hampshire Field Club Papers for the year contain, among a large number of most interesting papers, "The Lepidoptera of Hampshire, Pt. V., Tineina," by the Rev. A. C. Hervey.

Mr. S. E. Cassino, 832, Exchange Bldg., Boston, Mass., U.S.A., is publishing an *International Naturalists' Directory* and solicits the names and addresses of British Naturalists.

What an active condition Entomology must be in! Mr. Reid collects again, by subscription, in Scotland, and Mr. W. Salvage also intends working Sutherlandshire and Inverness. I believe the Shetlands also are to be worked. Both Messrs. Reid and Salvage want a few subscribers to complete.

Another of our best private collections, that of Mr. R. E. Salwey, comes under the hammer this month. The specimens are in first class condition, and contain some remarkably good forms.

We would call the attention of our micro-lepidopterists to Mr. Head's advertisement this month.

It is with the greatest regret that we have to record the death of that ardent entomologist Henry W. Bates, F.R.S., on February 16th. *The Naturalist on the Amazons* was his most extensive, though by no means his only published work.

I was very much disappointed to find that the specimen recorded by Mr. C. G. Barrett from Howth (*E.M.M.*, p. 48), "as an exact representative of the darker Shetland variety," was not *N. conflua* at all, but *N. festiva* var. *grisea*. It was, at the Lond. Ent. Soc. Meeting, com-

pared with *N. conflua* var. *obsoleta*, to which it, of course, bears a superficial resemblance, owing to them being parallel varieties. Mr. Fenn at the meeting suggested that "the removal of the dark scales between the stigmata, tended to make it look like the Shetland examples."

NOTES ON COLLECTING, Etc.

WINTER NOTES.—*Pitcaple, N.B.*—As I still want a few pupæ of *Viminia myricæ* for my correspondents, I went out one day and in a few hours picked up a dozen; the snow was very deep and the cold intense, so I had to give it up. This is the only collecting I have attempted so far.—W. REID. *February 8th*, 1892.

It may be interesting to record that on the 14th inst., happening to glance at an inverted bell-jar in which I keep my pupæ during the winter, I discovered that a female *Dasychira pudibunda* had emerged. The insect has not been forced in any way, but has been kept through the winter in a cold room in which a fire is never lighted. I always keep my pupæ in this room, but have never known an insect emerge so early before.—HENRY A. HILL, 132, Haverstock Hill, N.W.

It is quite astonishing the great amount of cold *P. populi* is able to endure. During the extreme hard weather of last winter *populi* never deserted his post, *viz.*, under the lamp, and on one occasion eight specimens were taken when it was freezing hard, and so slippery that it was nearly impossible to prevent the small ladder from slipping.—JOHN H. STILL. *December*, 1891.

I can fully endorse Mr. Still's remarks regarding the hardiness of *P. populi*. Last winter, 1890, I took several specimens when the thermometer registered nearly 28° of frost. This season has been a more prolific one for them, November 20th being the best night I have had. I took sixteen specimens on that occasion, at the same time I noticed *Cheimatobia brumata*, *boreata*, and *Oporabia dilutata* flying about the lamps in very large numbers. During October the ivy bloom was the most productive I have ever known it, the usual common autumnal species being excessively abundant thereon, with a fair percentage of *C. vetusta*, *exoleta*, and *Epunda nigra*.—G. A. BOOTH. *December*, 1891.

ACRONYCTA (CUSPIDIA) LEPORINA.—With reference to Dr. Chapman's paper in the *Record* for this month, the following may be of interest. In this district the larva of *A. leporina* is, to my knowledge, only found on birch, and the white form is quite as common as the yellow. As to *O. antiqua* not being common on birch, here it is frequently beaten out in all its stages, in very large numbers, at the same time as *A. leporina* is taken, and appears to prefer birch to anything else.—GEO. A. HARKER, Liverpool. *February 19th*, 1892.

THE "RECORD" EXCHANGE CLUB.—It is now two years since we started our "Exchange Club," and it may do us no harm to expose some of our weaknesses and success. When we first started, we numbered thirteen baskets, each with twelve members (including myself) and two other boxes called the "Waste box" and the "Exhibition box" respectively. Sufficient members were quickly got together, and as a great number of these were unknown to me, even

by correspondence, there was a great deal of difficulty in arranging that members, who could be of the greatest use to each other, should be in the same basket. However, this was arranged in a fashion, and the baskets began to circulate. After two or three rounds something like an idea as to the entomological capacity of the various members could be formulated. There were first of all the men who did badly but who could not do better; secondly, the men who did badly, and might have done better; thirdly, those who did satisfactorily as far as their specimens were concerned, but continually grumbled at their own generosity and the other members' want of it; and lastly, those who did well, and tried to make the system a success. The first class were soon hopelessly out of it, and as soon as they felt that they were useless in the basket, resigned. The second class simply reflected the lowest type of collector. As an example of this class I call to mind one man who cleared out everything on every occasion the basket came to him, and when I cut him out wrote to me that he had taken *pyrophila*, *myricæ*, etc., common this year at Aberdeen, and I want to make some return for what I have taken." Needless to say he never had the chance. Perhaps there have been some dozen men of this type, but I have generally got rid of them by dropping them altogether. I have had to quietly get rid of two or three quite recently. No one feels any compunction about dropping such as these. With the third class it is different. They begin by doing you a favour in joining. They don't see that they should be bound down by any rules. They put in good insects themselves and other people's insects aren't always quite so fine. They never get anything out of the basket they want (*but* they always take as many or more specimens than any one else). They cannot understand why people don't put in enough of a sort to make a series. They are quite willing to be in the "Club," but they certainly shall not put in their rarest things. So-and-so is ill, and so-and-so has nothing left fit for exchange, don't you think we had better rest? I have no time to write notes this round, and so on *ad nauseam*. What delightful people these are in a basket! I sometimes think them worse than the second class above. The fourth class are the leaven of the whole business. Men who collect nothing too good for the baskets; who discuss any subject, with which they are familiar, at length in the note-books; who are always ready with information for the use of their fellow-members; who send their choicest specimens by post for exhibition; who study the convenience of other members to every degree. It is invidious to particularise, but Mr. Webb as an exhibitor; Messrs. Fenn, Farren and Richardson, as kindness personified in giving information, and Mr. Holland as a type of generosity with his specimens, cannot be excelled. I might mention fifty other members who have given me nearly equal help in my attempt to run the show and helped me in the difficulties I have had to encounter. Sometimes I am disposed to throw up the whole affair when some individual makes himself particularly obnoxious, but I feel satisfied that the principle of exchange adopted is the true one and the mutual help in other matters is beyond cavil.

Some strange experiences are met with. One member never by any chance put in more than eight specimens, and every round suggested retiring because the boxes were so empty. I find, too, on reference

to the books that this same member took out twenty per cent. more specimens than he sent round besides those of his own that were returned to him. Another member writes:—"I have lots of dups. by me of good species, but I shall not send them round till I get something as good." This collector never sent a perfect or well-set specimen round once, and I dropped him. Another writes in a book to hand a few days ago:—"I never got an insect from the boxes worth putting into my cabinet." In four rounds this man has signed for 117 specimens, and I will guarantee the condition from the names on the boxes from which he took most of them. What a gratuitous insult to other members who are nearly all more scientific lepidopterists and better collectors than himself.

Our waste box has been the greatest failure. The name was a misnomer. It was meant to contain fine specimens of such species as any straightforward collector would understand were not altogether suitable for exchange. It has, in most instances, become a receptacle for the most veritable rubbish, put into it by collectors who ought to know better, and give their fellow-members credit for the possession of a small amount of common sense. I invariably burn all "rubbish" in these boxes. The Rev. Mr. Hewett and Mr. Collins are our most advanced practical exponents of the proper use of the "waste" box. Would that those men who give us three-winged *filipendulæ* and broken *pennaria*, *gemina* without scales and worn *didyma*, would once for all understand that the presence of their rubbish is an insult, and that they are wasting their generosity on the desert air.

The "exhibition" box is in some baskets a grand success. Our class No. 3 above, although rarely trusting their own beauties to the tender mercies of the post, give unstinted admiration to the beautiful exhibits very frequently made. I consider every member in a basket should acknowledge the kindness of an exhibitor even if his natural shyness prevent him admiring it because it is not his own. However, most do now, although at first the most stolid silence was sometimes observed.

I suppose there is a period in the early part of almost every collector's career when the sordid love of possession is one of the ruling reasons for collecting, but in Natural History pursuits many soon get beyond this. Of course those who do not, do us a great deal of harm, and are more than useless in our ranks. They have nothing in common, either with the amateur who does his little to help in unravelling the facts around him by careful observation, or the professional who gets his living by obtaining material for others to use.

There is a good deal of clannishness among lepidopterists in those districts where they most do congregate, but the individual nature peeps out more in our note-books than is possible elsewhere, and then the clannishness disappears. Scotch collectors are generally supposed to be close. Our Scotch members practically disprove this in every way, and never complain; probably the greatest amount of unnecessary complaint comes from some of the enthusiastic Londoners, who don't think the postage worth paying unless they can get two or three score insects each turn, although, of course, they are quite ready to give their *quid pro quo* in return.

We have still nine baskets circulating, of which one only can be

stigmatised as really "weak." There are still members who write no notes of interest, and who look on the matter perhaps as a mere matter of exchange, but they are very few, and I am firmly convinced that many men have been led to record useful observations, which they would never have dreamed of submitting directly to any magazine, but which have been freely discussed in the semi-privacy of the Club note-book.

Our membership is generally full, sufficient collectors being introduced to the baskets by friends, but if any fairly efficient collector would like to join, I shall be very pleased to receive his name and will let him know when there is a vacancy he can fill, but he must understand that, although he is free to exchange privately as much as he pleases, he must reserve sufficient duplicates for the basket through the winter months.—J. W. Tutt. *February 5th*, 1892.

Pselnophorus brachydactylus.—In your excellent paper on "The Pterophorina," *Ent. Rec.*, vol. iii., p. 33, you appear to throw a doubt on the right of *Pselnophorus brachydactylus* to be considered as a British species. You may perhaps not be aware that I possess and have had for about forty years, the first specimen recorded of this species taken in England. This was captured in Norfolk, a fact that was at the time well known to Stainton. I had it placed in my hands at the time by a friend of mine, who was, I believe, the captor. His name was Furr. He died, and it has been with me ever since.—J. Jenner Weir, Beckenham. *February 19th*, 1892.

I believe the first specimen of *Pselnophorus brachydactylus* that was captured to be in the possession of Mr. Jenner Weir. The second specimen was taken at Carlisle by a local collector from whom I bought it for 2d., with a number of *Platyptilia pallidactyla*. It was sent on to Stainton to be named, and is now, I believe, in the Rev. Henry Burney's collection.—J. B. Hodgkinson. *March*, 1892.

Single-brooded species in the North of England.—*Cidaria silaceata* in this locality in a state of nature is distinctly single-brooded. I never have taken an imago of *Cidaria silaceata* later than the beginning of July, and bred specimens always emerge about three weeks before I take any of the same specimens on the wing in a state of nature. I keep the larva and pupa of *C. silaceata* in a cold frame, and, as I have said before, I have only once had two insects emerge at the end of August. I have been wondering if Mr. Robson keeps his pupæ indoors. I think he must, to have insects emerging on 22nd November. Another species which is distinctly single-brooded in this neighbourhood, and that is *Selenia bilunaria* (*illunaria*), the imago emerges in May, and there is no July brood in this locality.—J. Finlay, Meldon Park, Morpeth. *January 12th*, 1892.

Apatura iris.—I saw several specimens of this species here at the beginning of August, and I think it is probably not very rare here. *Thecla betulæ* and *Limenitis sybilla* also occur.—E. W. Bowell, Sissinghurst Vicarage, Staplehurst, Kent.

Prionus coriarius.—In September last, I took a specimen of this beetle on a tree in Epping Forest. Mr. Mutch kindly identified it for me.—J. McGechie, 59, Grenville Road, Hornsey Rise, N.

Notes from Chinnor.—Last season was a very good one here for moths, but bad for butterflies. Sugar was very attractive, my best

takes being *Noctua stigmatica*, *Agrotis ravida* and *Xanthia aurago*. Common species were in abundance. Butterflies were comparatively scarce. *Hesperia comma* occurred very sparingly this past season, whilst *Lycæna corydon* failed to appear at all close to Chinnor. I, however, found it by thousands a few miles off, and noticed that the females outnumbered the males by at least 20 to 1. "Assembling" was going on vigorously, but the usual case was reversed. There the males attracted the females. It was amusing to see a male paired; whilst around on the grass-stems were scores of females, at rest, with their bodies in an unmistakably "calling" attitude. My two lads and my wife, who were with me, also remarked this singular phenomena, and certainly during a long entomological experience at home and abroad, I had never seen such a thing before. I suppose the scarcity of males obliged the females to search for partners.—A. J. SPILLER, Chinnor. *February 6th*, 1892.

BREEDING INSECTS.—Having been fairly successful during the last two seasons in rearing larvæ by the sleeving method, a few notes on that subject may not be out of place. I have tried several different plans with the object of saving time in feeding, etc., but have discarded all in favour of sleeving. Some years ago I made several large boxes, averaging three feet square, with perforated zinc sides and sliding tops, leaving the bottom quite open. These were then placed on some good soil, with young trees planted inside. However, they turned out a grand failure—in one case I lost over two dozen *Cherocampa elpenor* through moles. The greatest drawback to this plan were the aphides (green fly), which, in a very short time, swarmed, and as they could not be fumigated or otherwise destroyed without injury to the larvæ, the plan had to be given up. The sleeves are best made of black book muslin, which is less conspicuous than white, besides looking moderately clean until finished with. I generally put the ova out about a fortnight before they are due to hatch, sometimes as many as 300 in a sleeve a foot long. When selecting a branch a good look-out must be kept for earwigs or green fly,—a smart shake will dislodge the former, but if there be much fly, a fresh branch should be taken, as it will cause a great deal of trouble afterwards to change the sleeve, especially when the larvæ are in the young stages. If the branch is bare of foliage the tip can be tied back towards the base. Sometimes it will be found necessary to use several twigs together, on account of insufficient foliage, in which case it is important to have them well wrapped with fine string at the base previous to putting on the sleeve, otherwise very young larvæ will escape between the adjoining twigs. The best way to fasten the end overlapping the branch is to give it a twist previous to tying. When a change is required cut the sleeve right off and take its contents under cover, open the bottom and pull the branch out on a clean newspaper; a number of larvæ, if small, will be left inside on the muslin. These need not be removed, and then it leaves those only on the twigs to deal with. Pull a twig from the stem, and commencing at the top, clip off the larvæ into a jam pot. By taking a small piece at one time, the whole is rapidly gone over and thoroughly examined. Some larvæ will be found attached to the thicker wood, and if not disposed to come off readily, it is best to pass a sharp penknife underneath, leaving them on the bark. When

changing small larvæ that attach themselves by webs, it is better to hold the branch in the left hand horizontally, giving it a smart knock on the top with the scissors, when they will detach themselves, and may then be easily cut off, a score or so at a time and guided into the jam pot. By repeating the process several times the branch is soon cleared. If the brood is a large one, it will be found advantageous towards their last stage to transfer them altogether to a roomy box and finish feeding by hand. If a few branches are cut off and inserted into damp soil in a small pot it will last quite fresh for three or four days. If the brood is a small one, and not requiring soil, with ordinary attention as many as 60 may be successfully pupated in a sleeve, say, 15 inches by 7 inches in diameter, taking *Selenia illustraria* as an example for size. The folds and creases of the muslin seem well adapted for the purpose of pupating, the majority choosing such positions in preference to the twigs and leaves. Even larvæ with strong jaws, such as *Cerura vinula* and *C. bifida*, will readily spin up in a sleeve without evincing a disposition to escape, at least, that is my experience, with other collectors it may prove different.—H. ALDERSON, Hilda Vale, Farnboro', Kent.

SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON.—*Wednesday, February 10th*, 1892.—Mr. Thomas W. Cowan, F.L.S., F.G.S., of 31, Belsize Park Gardens, Hampstead, N.W.: Mr. Wm. Farren, of Union Road, Cambridge; Mr. Philip de la Garde, R.N., of H.M.S. Pembroke, Chatham; the Rev. J. A. Mackonochie, B.A., of St. Botolph's, Lincoln; and the Rev. A. Thornley, of South Leverton Vicarage, Lincolnshire, were elected Fellows of the Society. Mr. E. Meyrick exhibited a number of specimens of *Euproctis fulviceps*, Walk., taken by Mr. Barnard, showing the extraordinary variation of this Tasmanian species, all the males of which had been "sembled" by one female. The males were represented by various forms ranging from black to white, which had all been described as distinct species. Dr. Sharp, Mr. Hampson, Mr. McLachlan, Colonel Swinhoe, Mr. Elwes, Mr. Tutt, Mr. Poulton and Mr. Jacoby took part in the discussion which ensued. Dr. Sharp exhibited samples of pins which he had tried for preventing verdigris, and stated that silver wire was the best material to use, as insects on silver pins remained intact, whilst those on gilt pins were destroyed by verdigris. Mr. G. T. Porritt exhibited a series of species representing Huddersfield forms of *Polia chi*, including nearly melanic specimens, found there during the last two seasons. He said these forms had not hitherto been observed elsewhere. Mr. Tutt exhibited a series of *Hadena pisi*, comprising specimens very grey in tint, others of an almost unicolorous red with but faint markings, and others well marked with ochreous transverse lines. Three distinct forms of *Hadena dissimilis*; red and grey forms of *Panolis piniperda*, and a dark form of *Eupithecia fraxinata*; also a specimen of *Sciaphila penziana*. With the exception of the last-named, which was taken in Anglesey, all the specimens were taken or bred by Mr. Tunstall in the neighbourhood of Warrington. The Rev. Dr. Walker exhibited specimens of *Arge*

titea, *A. lachesis*, *A. psyche*, *A. thetis*, and other species of the genus from the neighbourhood of Athens; also specimens of *Argynnis phœbe*, taken in Grenada in May, 1891. Mr. W. Farren exhibited a series of specimens of *Peronea variegana* var. *cinana*, and *P. schalleriana* var. *latifasciana*, from Scarborough; *Eupœcilia vectisana*, from Wicken Fen; and *Elachista subocellea*, from Cambridge. Mr. G. A. J. Rothney sent for exhibition a number of species of ants collected by himself in Australia, in May and June, 1886, which had recently been named for him by Dr. Forel. The collection included:—*Iridomyrmex purpurens*, Sm., *I. rufoniger*, Lowne, *I. gracilis*, Lowne, *I. itienerans*, Lowne, *Ectatomma metallicum*, Sm., *E. nudatum*, *E. mayri*, *Aphœnogaster longiceps*, Sm., *Polyrhachis ammon*, Fab., *Myrmecia nigriventris*, Mayr, and *nigrocincta*, Sm.; *Leptomyrmex erythrocephalus*, Fab., and a variety of *Camponotus rubiginosus*, Mayr, from Brisbane; also a few species from Honolulu, and a species of *Monomorium*, which Dr. Forel had not yet determined, and which he believed to be probably new. Mr. C. O. Waterhouse read a paper entitled "Some Observations on the Mouth Organs of Diptera," which was illustrated by numerous diagrams. A long discussion ensued in which Mr. Champion, Mr. McLachlan, Mr. Jenner Weir, Mr. Slater, Mr. Poulton, Mr. Distant, Dr. Sharp, Mr. Hampson, Mr. Elwes and Mr. Barrett took part. Mr. E. Meyrick read a paper entitled "On the Classification of the Geometrina of the European Fauna." Mr. Hampson, Mr. Elwes, Mr. McLachlan, Colonel Swinhoe, Mr. Tutt and Mr. Distant took part in the discussion which ensued.

Feb. 24th, 1892.—The President referred to the loss the Society had recently sustained by the death of Mr. Henry Walter Bates, F.R.S., who had twice been its President; and he also read a copy of the resolution of sympathy and condolence with Mrs. Bates and her family, in their bereavement, which had been passed by the Council at their meeting that evening. Mr. Frederick C. Adams exhibited a monstrous specimen of *Telephorus rusticus*, taken in the New Forest, in which the left mesothoracic leg consisted of three distinct femora, tibiæ and tarsi, apparently originating from a single coxa; he also exhibited specimens of *Ledra aurita*. Mr. G. A. James Rothney sent for exhibition a series of specimens of two species of Indian ants (*Myrmicaria subcarinata*, Sm., and *Aphœnogaster* (*Messor*) *barbarus*, L., var. *punctatus*, Forel), which had recently been determined for him by Dr. Forel. He also communicated notes on the subject, in which it was stated that *Myrmicaria subcarinata*, Sm., was not uncommon in Bengal, and formed its nests by excavating the earth round trees, and throwing it up in mounds of fine grains. The author also stated that both sexes of this species swarmed early in the "rains," from about July 7th to July 10th. Of the second species—*Aphœnogaster barbarus* var. *punctatus*, Forel—Mr. Rothney observed that it, like the bee, *Apis dorsata*, seemed to have a great partiality for the gardens and buildings of the old Mogul Emperors in the North-West Provinces and in the Punjaub, the bee disfiguring the arches and roofs with its huge nests, and the ant frequenting the gardens and steps. The Hon. Walter Rothschild communicated a paper entitled "On a little-known species of *Papilio* from the Island of Lifu, Loyalty Group." The paper was illustrated by a beautifully coloured drawing by Mr. F. W. Frohawk, of

the male, variety of the male, female, and underside of the species.—H. Goss, *Hon. Sec.*

City of London Entomological and Natural History Society. —*Thursday, February 4th*, 1892.—Exhibits:—Mr. Tutt, some very fine forms of *Cirrhœdia xerampelina*, which he had received from the Rev. Joseph Greene. These included some fine examples of the var. *unicolor*, Stgr., which he said was common in parts of Germany, and also in Southern France, where it occurred in equal numbers with the type; he stated that the common British form was the var. *centrago*, Haw. He also exhibited *Hadena pisi* and *Panolis piniperda* (red and grey forms), and a melanic var. of *Eupithecia fraxinata* captured by Mr. Tunstall, near Warrington. Mr. Clark, four specimens of *Mixodia rufimitrana*, taken by Mr. Eustace Bankes in Dorset. Mr. Battley, a number of species taken in Epping Forest, including a very small specimen of *Pieris napi* ♀, *Trichiura crataegi*, etc. Mr. Bayne, a series of *Lithosia aureola* from Epping. Mr. Simes, *Vanessa polychloros*, *Dicycla oo*, etc., from Epping Forest. Mr. Sykes, *Polia flavicincta*, *Xanthia ferruginea* and other autumnal species from Enfield. Mr. Nicholson, two varieties of *Pararge ægeria*, the only specimen that emerged from a large brood. One of these was without the eye-spots on the forewings, while the other had the light and dark markings blotched into one another. Mr. Tutt expressed an opinion that the variation was due to disease, and was probably caused by the food being insufficient or innutritious. Mr. Milton, a number of species from Epping Forest, including *Eurymene dolobraria*, *Dicycla oo*, *Halias quercana*, etc.; also in Coleoptera, *Telephorus abdominalis*, *Hydroporus 5-lineatus*, *Pogonocherus fasciculatis*. Mr. Burrows, *Carabus granulatus* from Wanstead, and a series of *Bembidium 4-guttatus* from Mitcham. Mr. Heasler, *Ischnoglossa rufopicca*, taken under rotten beech bark at Loughton, and *Mycetoporus lucidus* from *Boleti* at the same locality. Mr. Riches, *Testicella scutellum*, and other species of slugs. Mr. Boden, various fossils from the Gault clay at Folkestone.

The Secretary read a resolution recently passed by the Council, announcing their intention to compile a list of the fauna observed within a radius of ten miles of Charing Cross, and impressed upon the members the necessity for their co-operation. Mr. Bayne then read his paper.[1]

At the conclusion of the paper a hearty vote of thanks was accorded Mr. Bayne.

Thursday, February 18th, 1892.—A very full meeting came together to welcome Mr. Robson, who had come from Hartlepool to read a paper. Exhibits, Lepidoptera:—Mr. Raine, living larvæ of *Hepialus humuli*, also a large collection of preserved larvæ. Mr. Southey, bred series of *Notodonta ziczac* and *N. camelina* from Hampstead Heath. Mr. Tutt, fine forms of *Agrotis nigricans*, also *A. tritici* and vars. of *Xanthia aurago*, belonging to Mr. Chittenden and taken in Kent, and Continental types of *Agrotis helvetina*. He also exhibited a *Setina*, taken by Mr. Freer at Tintern, Monmouth. Mr. Tutt thought that it was *S. aurita* var. *ramosa*, of which he possessed specimens from the Engadine. Mr. Battley, a young larva of *Apamea ophiogramma*, about a quarter of an inch long, which he had found at the roots of ribbon grass in his garden. He stated that this species hybernated as a very

[1] An Abstract of this paper will be printed.—Ed.

young larva inside the stems of the grass. Mr. Robson, a var. of *Bombyx rubi* with the lines forming the band confluent at the inner margin, three vars. of *Dianthœcia conspersa* from Hartlepool; also a banded form of *Melanthia bicolorata* with the band extending right across the wing. A banded form of *Acidalia degeneraria*, very similar to Millière's var., and other interesting species. Mr. Prout, a series of *Agrotis nigricans* from the Isle of Wight. Mr. Quail, a drawer of *Hepialidæ* to illustrate the paper. Mr. Bacot, a number of *Hepialidæ*, including a very light form of *H. humuli* ♀. Mr. Clark and others also exhibited the genus *Hepialus*. Coleoptera:—Mr. Heasler exhibited *Homalota splendens* and *Cleonus sulcirostris* from Mitcham. Mr. Lewcock, a long series of *Silpha atrata*, showing the pale forms from Orkney, and the var. *subrotundata* from Ireland. He pointed out that in the latter var. the margin of the elytra was very broadly developed, while in the Orkney specimens the margin was in all respects similar to the type form. Mr. Lewcock also exhibited two pairs of *Mesites tardyi* from Dublin. Referring to this species, he said that in the male the antennæ were inserted near the apex of the rostrum, while the female had the antennæ inserted nearer the base. The apex of the rostrum also was thickened in the male, and the reverse in the female. Messrs. Cripps, Burrows and Southey also exhibited Coleoptera. In Odonata, Mr. Simes exhibited (on behalf of Mr. Wattson of Clapton) a number of living larvæ and pupæ of *Libellulidæ*, *Æschnidæ* and *Agrionidæ*. Mr. Robson then read his paper (*ante*, p. 52).

Mr. Tutt, in moving a vote of thanks to Mr. Robson, said that he quite agreed with that gentleman in placing structure before wing markings as a basis of classification; he, however, dissented from Mr. Robson's opinion that *humuli* showed the greatest sexual dimorphism in the group, and pointed out that though the sexes in *humuli* differed greatly in colour, the shape of the wings was similar in both sexes, whilst in *sylvinus* and *lupulinus*, although there existed no great colour difference, the shape of the wings of the two sexes differed very much. Mr. Lewcock seconded the vote of thanks to Mr. Robson, and stated that he had seen *H. velleda* commonly at Farnham, in the hop gardens. Mr. Quail stated that he had taken *H. sylvinus* ♀ at sugar. Mr. Simes, referring to Mr. Robson's opinion that the white colour of *humuli* was not required in the Shetlands so much as in the South, because of a longer daylight in these latitudes, asked how the advantage indicated would accrue, if, as was to be expected, a dusk-flying species varied its time of flight in proportion to the amount of light. Mr. Robson, in reply, stated that in the Shetlands, where it never got really dark in the summer, the species was essentially a day-flier: he added, further as his experience, that insects flew at regular times, and not in accordance with the amount of light. Messrs. Simes, Battley and others, were of opinion that the flight depended on the amount of light—insects flying earlier on dark evenings and later on light ones. The vote of thanks to Mr. Robson was then carried unanimously.

Fauna List.—The Council of the City of London Entomological and Natural History Society have decided to compile a list of the fauna of the London District. The departments of Birds, Lepidoptera, and Coleoptera are already in hand, and notes will be welcomed from all naturalists. Contributors are requested to observe the following

rules:—1. The London District is understood to mean a circle of about 10 miles from Charing Cross, that is, lying within the following points:—Enfield Station, Ponder's End Station, Chingford Station, Woodford Bridge, the point where the main road to Romford crosses the G.E.R. at Brookham (half way between Ilford and Chadwell Heath), Ripple Castle, Abbey Wood Station, Pope Street Station, Chislehurst Station, West Wickham Station, South Croydon Station, Carshalton Station, Sutton Station, Worcester Park Station, Kingston Bridge, Twickenham Station, Hounslow Station, Southall Station, Harrow Station (L. and N.W.R.), Edgware Station (G.N.R.), New Barnet Station. Districts included in this area: Epping Forest south of Chingford, Plumstead Marshes, Shooter's Hill Wood, Shirley Common, Richmond Park, Wimbledon Common, etc. Districts outside the area; Epping Forest north of Chingford, including Bury and Hawk Woods, Lords' Bushes, Abbey Wood, Chislehurst Common, West Wickham, Stanmore Common, Hadleigh Wood, etc. 2. The locality and date should be stated where possible, but no records previous to 1st January, 1880, should be given. 3. The generic and specific names should be stated in all cases. Lists may be sent in to:—

Mr. J. A. Clark, 48, Broadway, London Fields, N.E. (Birds.)
Dr. F. J. Buckell, 32, Canonbury Square, N. (Lepidoptera.)
Mr. H. Heasler, 17, Danby Street, Bellenden Road, Peckham, S.E. (Coleoptera.)

Thursday, March 3rd, 1892.—Exhibits:—Lepidoptera:—Mr. Battley, typical forms of *Pieris rapæ* and *P. napi*, and an intermediate form taken at Cheshunt. The underside of this insect was very slightly "veined," though the upper surface presented the characteristics of *P. napi*. Mr. Clark, preserved larvæ of *Orgyia gonostigma*, *Dasychira fascelina* and *Lasiocampa quercifolia*; the latter being taken on the Hackney marshes last year. Mr. Tremayne, *Hybernia rupicapraria* and *Scopelosoma satellitia* from Epping Forest. Mr. Bayne, series of *Cheimatobia brumata* and *C. boreata*, also a specimen of *Taeniocampa populeti* var. *intermedia*, from Norfolk. Mr. Riches, series of *Arctia lubricipeda* and *A. menthastri*, also a dark var. of *Ennomos angularia*, and a suffused form of *Melanippe fluctuata*. Mr. Southey, a series of *Himera pennaria* from the Highgate Woods, including a very small female. Mr. Milton, *Deilephila galii*, said to have been taken at Swanley, last year; also *Endromis versicolor*, *Moma orion* and *Plusia festucæ*.

Coleoptera:—Mr. Burrows, *Loricera pilicornis*, *Dromius quadrimaculatus*, *D. meridionalis*, *Stenus bimaculatum*. Mr. Lewcock, a number of *Coccinellidæ*, on behalf of himself, Mr. Sharp, of Chester, Rev. W. F. Johnson (Armagh), and Mr. H. G. Cuthbert, of Dublin, Messrs. Heasler, Elliman and Cripps also exhibited series of *Coccinellidæ* to illustrate the paper. Mr. Lewcock then read his paper on "British *Coccinellidæ*."[1]

In noticing the variation of this group, Mr. Tutt remarked that some species had black specimens with a red dot on each of the elytra, whilst others were red and had a black dot. These dots, however, were not interchangeable, the black dot being constant in position and spreading to form the black specimens, leaving, however, a small

[1] An abstract of this paper will appear.—Ed.

portion of the ground colour (posterior to the original black dot), to form, as it were, a red dot, which was, therefore, not in the same position, nor did it replace the original black dot. Messrs. Heasler and Cripps stated their experience corroborated Mr. Tutt's; Mr. Lewcock, however, was of opinion that the red spots frequently replaced the black. On the motion of Messrs. Tremayne and Tutt, a vote of thanks was accorded to Mr. Lewcock for his paper.

Mr. Clark announced that a specimen of the Dunlin (*Tringa variabilis*) had been shot on Tottenham Marshes by Mr. Skertchley. He also announced the decision of the Council to charge members 1s. for second copies of the *Transactions* for 1891, and non-members, 2s.—A. U. Battley and J. A. Simes, *Hon. Secs.*

South London Entomological Society.—*Thursday, February 11th*, 1891.—Mr. J. Jenner Weir read some very interesting notes on "protective resemblance," as exhibited in the habits of *Cymothôe theodota*, *C. cænis*, *C. theobene* and *C. æmilius*, the latter species exhibiting an extreme divergence in the coloration and size of the different sexes. Mr. Farren made an interesting exhibit of vars. of *Peronea variegana*, the specimens being very black in colour, and stated that almost 50 per cent. of the specimens captured in the particular locality near Scarbro', from which these were obtained, were of this form; a fine series of *P. schalleriana* var. *latifasciana* from the same locality, *Eupœcilia vectisana* from Wicken, and *Elachista subocellea* from the chalk near Cambridge. He stated that Mr. Tutt had, apparently, the same species from the chalk at Cuxton, in Kent. Mr. Farren asked for remarks, *re* his *vectisana*. Mr. C. G. Barrett said that this "Fen" form of *vectisana*, with a central band, was very remarkable, and so dissimilar from the more unicolorous salt marsh form that it was somewhat difficult to suppose them identical, although that was his opinion. He stated that the specimens appeared to be like a moth which he had long since received from Prof. Zeller. Mr. Fenn also remarked on this exhibit. Mr. Billups exhibited a Noctuid larva, found feeding on a tomato, imported from the Canary Islands. Mr. Tutt stated that it was probably *Prodenia littoralis*, a species bred last year by Mr. Boden, and referred to the recent exhibit of three similar larvæ at a recent meeting of the City of London Society. Mr. W. Austin, of Folkestone, exhibited the beautiful vars. of *Lycæna bellargus*, previously noticed (*Record* ii., p 273). Mr. Tutt, exhibited for Mr. Tunstall, the *Hadena pisi*, *H. dissimilis*, *Panolis piniperda*, *Eupithecia fraxinata*, and *Sciaphila penziana*, which are mentioned in the Report of the City of London Society, for February 4th. He also exhibited the insects in the Exhibition Box of No. 2 basket of the *Record* Exchange Club. They consisted of a dark var. of *villica*, bred by Mr. Maddison (a note concerning which appears in another column), *Amblyptilia punctidactyla*, belonging to Dr. Riding, a very dark *Hybernia progemmaria* var. *fuscata* belonging to Mr. Collins, of Warrington, the suffused form of *Hyria auroraria*, *Orrhodia vaccinii*, one of which showed the concave outer margin supposed to be typical of *O. ligula* (generally but erroneously called *spadicea*). Mr. Williams, a varied series of *Cosmia trapezina*, one of a blackish-grey coloration with only the transverse lines paler. Mr. Adkin, two fine vars. (♂ and ♀) of *Nemeophila plantaginis*; the hind wings dusted with black scales to such an extent as to obscure the

normal colour. These were a part of a brood similarly affected, bred from Hailsham. He also exhibited typical specimens for comparison. Mr. Weir exhibited a splendid series of *Pieris napi* from various parts of the world, some of the varieties being as large as *P. brassicæ*. He also read some interesting notes on the variation of the undersides of *napi* in its various broods, and pointed out some remarkable facts relating to the sexual variation in this direction. A paper was then read by Mr. W. Wallis Kew, on "The Dawn of Memory in the Animal Kingdom," and dealt with the facts related, and assumptions made by various authors as to the ability of certain lower animals, principally Mollusca, to return to their homes under satisfactory and unsatisfactory conditions, but he made no attempt to argue out the feasibility of supposing these animals capable of an attempt to reason. Mr. Dobson called attention to the fact that Mr. Kew had not dealt with the possibilities of "reason" occurring in the lower animals, and stated that it was difficult to differentiate "instinct" and "reason," and that he considered the illustration brought forward as probable attempts at memory were but simple instinctive processes. Mr. Tutt agreed with Mr. Dobson that it was impossible to differentiate between instinct and reason, and suggested that the line could not be drawn between the instinctive faculty and the lowest possible development in reasoning power. Even in the lower Vertebrata, instinctive faculty could be trained into what could possibly be called a first attempt at reasoning faculty. Mr. Tutt then went at length into the nervous structure of the Mollusca, and the facts relating to the special differentiation of sensory nerve centres and motor nerve centres, and stated that although improbable, it was quite possible that any specialised nerve centre which was the seat of any special sense, might be utilised for the reception of external impressions, so as to be a means of enabling an animal to actually use some very small amount of discretionary power, but at the same time urged its utter improbability. He then referred to the essential structure of the nervous system in the lower Vertebrata, and believed here, memory in an exceedingly elementary form which could be increased by special training, was necessarily present. He referred to the necessity of a biological training as apart from superficial observation on the study of such a subject as this. The President made some remarks, and a most successful meeting came to an end.—Ed.

Lancashire and Cheshire Entomological Society.—Mr. W. E. Sharp read a paper entitled "Some remarks on the Hydradephaga of the District," illustrated with specimens and large coloured diagrams. The author referred to the general classification of the Coleoptera, and pointed out that in the genus *Dytiscus* the whole physiology was to adapt them to less resistance in swimming. He then gave a *resumé* of the records of local species, of which 74 species had been recorded out of 129 known to be indigenous to the British Isles; only four genera being unrepresented. The President exhibited fine varieties of *Ennomos angularia*; Dr. Ellis, *Pulvinaria camellicola* (a rare species of *Coccus* from camellia trees); Mr. Collins, 4 specimens of *Deilephila galii*, bred by him from 22 larvæ taken on *Epilobium angustifolium*, at Warrington in 1889, the specimens were small and were the only perfect ones bred, and a variety of *Noctua festiva*, with distinct black transverse lines on

a uniform ground colour; Mr. Schill, *Hydrous angustior* from Milan, flying round electric light; Mr. Stott, a collection of local Hydradephaga; and Mr. Pierce, *Agrotis candelarum* from Saxony, and its British var. *ashworthii*.—F. N. Pierce, *Hon. Sec.*

Birmingham Entomological Society.—*February 1st.*—The Secretary read the annual report of the council, which showed the number of members to be about the same as at the last annual meeting; and the Treasurer presented his annual report, showing a balance in hand of £4 18s. 4d. The following officers for the ensuing year were elected:—President, Mr. W. G. Blatch, F.E.S.; Vice-President, Mr. G. H. Kenrick, F.E.S.; Treasurer, Mr. R. C. Bradley; Librarian, Mr. A. Johnson; Auditors, Messrs. Herbert Stone, F.L.S., and A. Stone Wainwright; and Hon. Sec., Mr. Colbran J. Wainwright; Messrs. G. T. Bethune-Baker, F.L.S., F.E.S., and G. W. Wynn, were elected as remaining members of the council. Mr. C. Runge showed cocoons of *Trochilium apiformis*, containing larvæ, which he had dug out of poplars near the roots, at Arley.

February 8th.—Social Meeting.—By invitation of the council, the members and a few friends met at the Grand Hotel, Birmingham, to spend a social evening. A number of interesting books and insects were shown and discussed, and music was kindly provided by a few members and friends.—Colbran J. Wainwright, *Hon. Sec.*

NOTICES, REVIEWS, Etc.

The British Noctuæ and their Varieties, Vol. II., by J. W. Tutt, F.E.S., published by Swan, Sonnenschein & Co., Paternoster Square. Price 7*s.*—Some two years ago, circulars were sent to some of our leading lepidopterists, stating that, if sufficient names were obtained, a work on "The British Noctuæ and their Varieties" would be published. Newman's *British Moths* is twenty years old, and Stainton's *Manual* thirty-four years, so that nothing complete on any family of the macro-lepidoptera had appeared for some time. Some 200 lepidopterists at once responded, including the Rt. Hon. Earl Waldegrave; the Rt. Hon. Lord Walsingham, Ex-Pres. of the Ent. Soc. of Lond.; Mons. Oberthür, Ex-Pres. of the Ent. Soc. of France; Herr Snellen, Ex-Pres. of the Ent. Soc. of Belgium; Mr. H. T. Stainton, F.R.S., Editor of the *E.M.M.*; Mr. J. Jenner Weir, F.L.S., one of the Editors of the *Entom.*; Mr. J. E. Robson, F.E.S., Editor of the *British Naturalist;* Mr. G. T. Porritt, F.L.S., Ex-President of the Yorkshire Naturalists' Union; the Presidents of the City of London, Lancashire and Cheshire, Birmingham, West Sussex, and other Societies, etc. After some delay, owing to the publishers, the first vol. was brought out in May last, the second appeared last week, the third (and last on this family) is well in hand. There must be a considerable number of young lepidopterists who did not have circulars at the time, who may be willing to subscribe for the only work on the Noctuæ which attempts to bring our knowledge up to date. If so, the author would be very pleased to have names and addresses. Those who subscribe direct to him for the whole work, get it for 5s. 6d. per vol., instead of 7s.—Ed.

The Entomologist's Record AND JOURNAL OF VARIATION.

No. 4. Vol. III. April 15th, 1892.

THE GENUS ACRONYCTA AND ITS ALLIES.

By Dr. T. A. CHAPMAN.

(*Continued from page* 29.)

ACRONYCTA (*Cuspidia*) *aceris*. — This species is usually associated with *leporina*, on account of both having hairy larvæ, but the egg colouring, the different distribution of pale segments in the newly hatched larva, and the method of pupating, make it most probable that this aspect of the full-grown larva is a resemblance, not due to a close relationship, but is a case of similar structure independently developed in allied species. The arrangement of the hairs also differs very markedly in the two species. In both, the hairs of the general surface are well developed, but in *aceris*, the tufted distribution is largely due to a special development of the hairs of the tubercles, only slightly paralleled in *leporina* and not occurring in any other British species.

The egg (Pl. VIII., fig. 4) is large, 1.1 mm. in diameter, rather flat, ribs numerous—usually 70 to 75—but sometimes as few as 50. When first laid it looks very like that of *psi* or *tridens*, but is a little more opaque. As the inner egg shrinks and leaves a colourless margin, it assumes a rich chocolate colour with pale straw-coloured spots, which are rather large and somewhat irregular in distribution and shape, being frequently almost angular rather than circular, and often run together into streaks and blotches, but suggesting a never-attained type of a central spot, and three rings surrounding it, of which the inner is imperfect and encroaches on the central spot and the outer is marginal, the intermediate one

consisting of the largest spots frequently joined together into portions of a circle. The number of spots in each circle would be perhaps 6, 12 and 15 respectively where each row is most regularly developed. The micropylar spot is small, and surrounding it, the ribs join together in a wider area than usual of confused and irregular ridges, not settling down into regular ribs till half way to the margin.

The newly-hatched larva (Pl. V., fig. 10) is fully 2 mm. long, the head is black early, but the rest of the larva pale, the dark segments being marked by the dorsum being reddish-rufous; as it begins to feed, however, it becomes much darker. There is a black plate on segment 2. Segments 5, 7, 8.9, 12 and 13 (and partially 4) have the dark dorsal areas (dark segments). The tubercles on these segments are white when the larva is just hatched. When the colour matures after some hours, the general tone is fuscous, 3 is paler, there is a large white area on 6, and 10 and 11 are white, the tubercles are black even on these pale segments, larger on the dark ones, angularly flattened against each other, but on 11 much smaller, circular, and separated from each other. On 12 they are cruciform and trapezoidal reversed (as usual) on 13. The tubercles each carry one long hair, about twice the diameter of the larva in length, the anterior trapezoidals each have two; four on those of 3 and 4, and three on those of 12. The skin is finely dotted all over except on whitest portions; on 3 and 4 the trapezoidals are fused. The divisions of the segments into two sub-segments carrying each the anterior and posterior trapezoidals are very evident in this species. The head carries long hairs. The larva sits curled into a note of interrogation (?) form; it sits beneath the leaf and eats the lower parenchyma between the veins.

In the 2nd skin, it sits coiled in a circle with the head against the 12th segment, and this is its attitude at rest till it is full-grown. In this skin, it still leaves the veins and upper cuticle. The colour is a very deep brown (black at first glance) with some white markings. It has white marks on 2, 3 and 4, tending to form a dorsal line and circles round the tubercles, but most marked laterally on 3. Segment 6 has white marbling concentrated into rings round trapezoidals and supra-spiracular. On 10 and 11, these rings are so large that the segments might be called white, with a dorsal and sub-dorsal dark line, especially as the tubercles are pale, and on 11 nearly white. The segments are swollen with deep

incisions; 11 is still flat and low, and 12 high. Dorsal hairs black except on 6 and 11 and partially on 10. On 5, 7.8.9 and 12, they are longer (diameter of larva), blacker, and more numerous. Many hairs on the lateral tubercles are white, all the tubercles have several or many hairs, there is a distinct indication of a white line through sub-spiraculars and a less marked one through supra-spiraculars—both plainest towards the incisions.

In the 3rd skin, the larva is distinctly white and black as if in mourning. There is a faint dorsal white line on 3 and 4, whilst 6 has longitudinal white lines on line of posterior trapezoidals, below supra-spiracular and on line of sub-spiracular. On 10 and 11 the trapezoidals are white on a white area, leaving a narrow dorsal line black; the supra-spiracular trapezoidals are also on a white line. At the incisions there are indications of white lines on supra- and sub-spiracular levels on most of the segments. Each segment has also a minute white central dorsal spot. The post-spiracular is small but distinct; all the other tubercles have numerous hairs, those of 6, 10, 11 and the lateral ones white. The hairs are plumose confined to tubercles and about diameter of larva in length. It now sometimes eats the whole thickness of leaf.

In the 4th skin it presents some resemblance to the full-grown larva, and one has an opportunity of tracing to some extent the origin of the more abundant plumage of the later skins. Already they exist in strong tufts, brushed forwards and backwards from the centre of each segment over the next one and with a white dorsal dot on a black area exposed on the top of each segment; the skin of 10 and 11 is pale, but the rest seems dark brown or blackish; but the skin is little visible as the hairs grow from its general surface as well as from the tubercles, the whole aspect of the larva is now that given by the hairs; the hairs are 6 mm. in length on the anterior and posterior segments laterally, compared with 12 mm. the length of the larva, not quite so long elsewhere. The forward-pointing brown tufts spring chiefly from the anterior trapezoidals, those of the posterior are yellow; the yellow hairs, directed backwards behind the dorsal lozenge, spring from the general surface of the skin apart from any tubercles. When well grown, the pale areas on sides of 10 and 11, and the creamy colour on sides of 13 and 14 are quite evident, on 10 and 11 the ground colour is light chocolate, but the area around hair points creamy white. The remains of a distinc-

tion into dark and light segments also exists in the hairs on the dorsum; on 3.4.6, 10.11.12 and 13 being white or yellow; whilst they are dark on 5.7.8.9; the forward tufts as already noted, being darker than those brushed backwards. Two larvæ in this skin are larger than the others and their hairs are brown and yellow (of the others blackish and dirty white). These attained their last skin in one more moult, the majority took another moult (5 moults), the 6th skin being the last (I have here a note that *aceris* does not eat its cast skin, whilst *leporina* does do so).

In the 5th skin, the larva is substantially similar to the 4th, but takes yellow and brown as the colour of the hair bundles. just as the more forward ones in 4th skin did; still their colours are a little brighter, *viz.*, light yellow instead of deep yellow, and the brown has a pink tinge. Their heads are also larger. The longest hairs in 5th skin are 7 mm.; of the forward larvæ in the 4th, 6 mm. The tufts are 2 mm. long in the forward larvæ, rather more in the normal 5th. In all, the dorsal diamonds are now much as in last skin. When the "forwards" moulted into 5th (their last) skin they were much smaller than their brethren, now well grown in 5th (their penultimate) skin, but their heads were much larger, *viz.*, that of the adult larva. There seems no need to describe the full-grown larva, but a few points may be noted; the ground colour of the larva is chocolate or black, but each hair has a minute creamy white circle round its base, and these by their greater or less development, tend to form two lateral lines and rings round the tubercles. The tubercles are still very evident, the three dorsal ones black, the others partially yellow. They give rise to yellow hairs, but the great dorsal flame-like brushes arise from the general surface, over considerable areas in front and behind the posterior trapezoidal tubercle.

The 6, 10 and 11 segments are still distinctly paler than other segments in some larvæ. The 2nd segment is hardly visible dorsally in ordinary attitudes of the larva, but it is not so nearly obsolete as it is in *Moma orion*. It possesses a black dorsal plate, fringed with yellow hairs, but quite obscured by the greater tubercles and longer hairs of 3 which overhang it. The hairs of 3 and 4 are mainly from the tubercles, trapezoidal and supra-spiracular, which are very large and porrected. The lateral (supra-spiracular ?) tubercles of 2 are large.

(*To be continued.*)

SCIENTIFIC NOTES.

THE GENUS HEPIALUS (*continued from p.* 56).—The males of *hectus* fly in a somewhat similar fashion to those of *humuli*, backwards and forwards, like a pendulum, but there is this difference between them: *Humuli* generally selects an open place, and exposes himself as much as possible, flying generally three or four feet from the ground. *Hectus*, on the other hand, will commence his motions on the sheltered side of a bush or large fern, or in some other secluded spot. He flies a shorter distance, too, before he turns, and altogether behaves in a quieter and more retiring manner than does his bigger brother. Mr. Barrett was the first to detect the manner in which the male *hectus* attracts his partner. He found it flying freely at Canaster Wood, and as he wanted some specimens for the museum, he took as many as he could during the few minutes it remained on the wing, in all forty males and four females. The remainder of the passage had better be given in his own words:—"To the fortunate circumstance of taking so large a number perfectly fresh, I attribute the discovery of a fact which I have not seen recorded—that this species, when in fine condition, diffuses a very decided perfume, almost exactly the same as the perfume given off by the larva of *Papilio machaon*, when the forked tubercle is extended, and more like that of ripe pineapple than any other perfume of which I know. I noticed it faintly when turning the moths out of the pill-boxes, but when a number were pinned into a box it became very noticeable indeed. It was confined to the male moth, and seemed especially to come from the curious bladdery termination of the aborted hind legs, but of this I am not positive. It certainly does not continue to be observable when the moths get worn. I suspect that it has some connection with the curiously inverted habits of the sexes in *Hepialus*, and seems to attract the females" (*E.M.M.*, vol. xix., pp. 90–91). Subsequently (September, 1886), Mr. Barrett returned to the subject:—"I have again noticed the very distinct and even powerful perfume of pineapple given off by the male *Hepialus hectus*, and now think that it is connected with rather abnormal sexual habits in this species. One evening, in June, they commenced flying very early (about half-past eight o'clock) in broad daylight, and on capturing some males, which were quite freshly out, I noticed the perfume very distinctly. Presently, while watching two males oscillating in their peculiar manner in a little space enclosed by two or three bracken fronds, I saw a female flying along, when she entered the space, she *flew against* one of the males, buzzed about a little, and then settled on one of the bracken fronds, where she hung with quivering wings. Instantly the male began to search for her, not, apparently, assisted by vision, but buzzing blindly up and down and around the spot until he came in contact with her quivering wings. This proceeding was so surprising that I watched further, and presently another female went through a similar performance, and then a third, the males in each case being within a very small space regularly oscillating until discovered and interrupted. Yet the males were not plentiful at all, and bracken was, of course, very abundant, and the female, coming from a distance, had, apparently, no reason for flying into the little space occupied by the males, unless, as seemed evident,

drawn into that direction by the scent. I certainly did not see any female fly past one of these oscillating specimens. A somewhat similar habit has been recorded in the case of *Hepialus humuli*, where also the female flew actually *against* the oscillating male; and I feel no doubt that this curious reversal of the usual order of things takes place in each species in which the males, instead of flying in search of their partners, oscillate over a limited space" (*E.M.M.*, vol. xxiii., p. 110). Since then I have frequently seen this species pair, and the female has a curious manner on these occasions. Mr. Barrett describes it as "buzzing about." I have spoken of it elsewhere as a "tumbling, shuffling sort of flight." But this is only assumed when she comes within the range of the diffused odour. Previously, and also when dropping her ova among the bracken, she flies steadily enough. But though the oscillating flight of the males is now explained in this satisfactory way, there are some other points that are still puzzling. When they are at all plentiful, the males may occasionally be found on tree trunks, I never felt satisfied that this was selected as a place of rest; perhaps they merely climb up when emerging from the pupa, though they are generally rather too high up for that. Besides, I have occasionally found *sylvinus* on palings, and that is a species as given to concealment as *hectus*. I have also been unable to satisfy myself as to the meteorological or other causes which affect the flight of this insect. One night, as Mr. Barrett mentions, they will fly in daylight; I have seen them with the evening sun shining on them as they flew, the females appearing at the same time; another night, they will swing away for half-an-hour, and their sweethearts will never appear; a third night they will fly quite late; and on a fourth they never put in an appearance at all. Sometimes, when they fly, they seem to come out all at once as though they came out at a signal. One night, I remember being in the wood; there was not an insect to be seen, then a single *hectus* appeared, and before I had boxed it, the place was alive with them. I could net five or six at a single stroke, and got over fifty in the twenty or twenty-five minutes they continued on the wing, about a quarter of them being females. Then they disappeared as suddenly as they had appeared. I was anxious to obtain specimens showing silver marks on the hind wings, and went again the next evening at the same hour. I could see no difference in anything. The weather was as fine, the wind in the same quarter, but I never saw a specimen. At other times they will come out at intervals for, perhaps, over an hour, and not appear in large numbers at all, this is what might be expected, but their sudden appearance in enormous numbers, and equally sudden disappearance, or their absence on apparently suitable nights, are not very easy to explain. A third item that has puzzled me is that when sweeping the herbage, when I have often taken them *in cop.* I have twice found a second female in the net, as though she had been attracted to the male after he had paired with another. From one of these females I obtained eggs that proved infertile. In these two species the manner of flight is the same: the males swinging backward and forward till they attract the females, the one by sight, and therefore flying in an open and exposed place, and being light and shining; the other by scent, the diffusion of which is assisted by the motion, and the insect, therefore, flying in a sheltered nook where the faint odour

is not lost. Should the scent-producing power of *hectus* ever be lost, either entirely, or at some particular locality, a result might be expected like that which has already been obtained in *humuli*. The specimens most easily seen, those, for example, with more silver on their wings, would be more easily observed by the females, would be more certain to secure partners, and would tend to produce a more silvery race, which in always increasing ratio, would go on until males were produced entirely silver on both wings, like those of *humuli*. Specimens of *hectus*, with faint traces of silvery markings on the hind wings, are not very uncommon, and they occasionally occur with the spots well defined. With the tendency for the silvery markings to become larger, another factor would also come into operation. As the female would require to see the male, it would follow that, the larger the specimen, the more easily would it be seen. Thus the larger males, also, would be more certain to find partners, and produce larger offspring, this double action constantly at work, *hectus* would both increase in size and become more and more suffused with silver, until an insect would eventually be evolved, not only silvery like *humuli*, but as large in size. It is not difficult, therefore, to see how two species may spring from one ancestor. (*To be continued.*)

CURRENT NOTES.

Messrs. Farren, Jones and their friends are to be congratulated on the energetic way they have acted with regard to the Cambridge Entom. Society. In the University there must always be a large number of men who are naturalists, and in the University towns really powerful Societies ought to be formed and maintained with ease.

Mr. Merrifield re-read his paper "On the effects of artificial temperature on the colouring of *Vanessa urticæ* and certain other species of Lepidoptera." The discussion which followed was to a great extent abortive owing to the President calling on certain members to speak whether they knew anything of the matter or not. At least four or five gentlemen attempted to discuss the subject, who, it was clear, had never read Mr. Merrifield's papers, and valuable time was frittered away. The remarks of Messrs. Adkin, Weir and Fenn, who are always *au fait* with what is going on, were interesting and to the point. One gentleman unfortunately became personal in his remarks.

Mr. E. Saunders has added *Tryphlopsylla pentactenus* to the British fauna. Male and female specimens of this flea were obtained from the Noctule bat in Cambridge. Mr. Champion describes a specimen of *Xylophilus* in his collection as *X. brevicornis*, Perris, and adds the species to the British fauna. Mr. Barrett drops his *Anacampsis sparsiciliella* as a variety of *A. anthyllidella* (*E.M.M.*).

Mr. Coles records a black variety of *Homaloplia ruricola* from the chalk-hills at Portsdown, Hants (*E.M.M.* p. 81). A similar specimen was recorded in the Nov. No. of the same Magazine.

The localities for *Bagous petro* in Fowler's *British Coleoptera*, vol. x., p. 288, are all wrong except the Askham Bog locality. The other localities refer to *B. petrosus*. The Rev. W. W. Fowler also points out (*E.M.M.* p. 81) that he has included at least two species under

the name of *B. frit.* He proposes abolishing the name *frit* and calling the *Bagous* with long tarsi *B. longitarsis* and that with short tarsi *B. brevitarsis.*

We have to congratulate the Rev. G. M. A. Hewett on his little pamphlet entitled "Bug-hunting." It is written in his usual racy and interesting style. The collector who cannot learn something from this must be very advanced indeed, and to those who want something in popular style nothing better can be conceived. The notes are divided into "Appliances, Breeding, Setting, Beating, Odds and Ends" etc. It is written essentially for the Winchester college "boys" (dare we call them so?), but "boys" of an older growth will find much information if they write to Messrs. Wells, College Street, Winchester for "Bug-hunting."

Another excellent article by our friend Mr. C. Fenn, called "Notes on Collecting Tortrices (The pole system)," appears in the *E.M.M.* for the current month.

We are pleased to see that the theories advanced in the introduction to *The British Noctuæ and their Vars.*, vol. ii., to account for variation in colour as the result of surplus energy, more or less developed in the pupal stage, is likely to receive general support. The idea was supported by Mr. Jenner Weir at the South London Entomological Society on March 10th, and certain species of *Satyridæ*, etc., exhibited in proof.

It is with the greatest regret that we have to announce the death of Mr. Francis Archer, one of the original members of the Lancashire and Cheshire Entomological Society, at Liverpool. He was an excellent all-round naturalist, a man of kind and genial disposition, and his loss will be especially felt in Liverpool, where his worth was so well known.

The monthly portrait in the *British Naturalist* is that of Miss Eleanor Ormerod. A portrait of the late Mr. H. W. Bates is given with this month's *Entomologist*, and one of the late Mr. Francis Archer with the current number of *The Naturalist.*

At the usual fortnightly meeting of the Aberdeen Natural History Society on March 15th, Mr. W. Reid, F.E.S., read a paper on the "Crambi of Scotland."

We should be pleased if any of our readers could give us, from foreign books or otherwise, descriptions of varieties of our British species of Noctuæ, not mentioned in vols. i. and ii. of *The British Noctuæ and their Varieties.* We also particularly want the references to *Micra paula* as a British species.

The Annual Exhibition of The South London Entomological Society will be held at the Bridge House, London Bridge, S.E., on the 5th and 6th of May. On the 5th it will be open from 7 to 10.30 p.m.; on the 6th from 1 to 10 p.m. Tickets for admission may be obtained from Mr. Barker, F.E.S., 147, Gordon Road, Peckham, S.E.

NOTES ON COLLECTING, Etc.

Ammonia, Verdigris and Black Pins.—In Mr. Tutt's paper on the *Pterophorina* (*Ent. Record*, vol. iii., p. 32) he says:—"They should always be killed with ammonia because of the importance of the legs

being set, and ammonia leaves them very flaccid after death. The specimens are apt to verdigris, and so black pins should always be used." Now, I never kill with ammonia myself, simply because I have a theory that all specimens strongly impregnated with it are apt to corrode the pins, whatever kind are used. Those who are in the habit of using ammonia will probably say I am under a misapprehension, but I have found that certain species which never corrode my pins do corrode the pins of some of my correspondents, and I should much like to have the opinion of a practical chemist on the subject. As to black pins, after long experience I have come to the conclusion that for the purpose of preventing verdigris, they are perfectly useless. I regarded them as a delusion and a snare when they were first introduced, because it seemed to me that japan varnish would certainly be soluble in the acrid fatty matter which some species unfortunately contain, and on writing to a pin manufacturer whom I know, I found he was quite of my opinion; moreover, he said that in order to get the varnish on, it would be necessary to subject the metal to so much heat that all the "temper would be taken out of it, which would cause the pins to bend easily and to turn up at the points. The only way I know to prevent verdigris, is to extract the fatty matter—by immersion in benzoline or otherwise—before the pins have become green. I operate on large numbers of specimens every winter, and thus save many that would otherwise be utterly spoiled. Very likely the varnish may protect the metal to a certain extent for a limited time, just as gilding does, but it is a mere question of time. I use black pins myself, simply because I cannot afford to be wiser than the majority of other people—for some collectors still say, "Do not send me any black pinned specimens"—but when I remember how much more easy and pleasant it was to pin some insects—the smaller Hymenoptera for instance—with pins that had points, I cannot help grieving over the success of mis-directed enterprise.—W. H. HARWOOD, 2, Brooklyn Villas, Colchester. *February 22nd*, 1892.

The experience of Mr. Harwood is, I admit, probably far beyond mine, on this important subject; but still, I have set so many specimens during the last twenty years, that I cannot get away from actual facts. First, with regard to the action of ammonia on pins. It is, I suppose well-known, that ammonia readily affects the metal and forms chemical compounds with it. Place a few white pins and a few black ones in a box, and then pour a drop of liquid ammonia into it. A few minutes, and the white pins are quite green, and shortly after the black pins also, especially if badly japanned. But, do insects absorb sufficient ammonia to affect the metal, and secondly, if so, do they not part with the absorbed ammonia, on exposure, too rapidly to affect the pin? I have some 1,000 specimens of Pterophori in my collection, and scarcely a single black pin has corroded, and all my specimens have been killed with ammonia. Those that have come from correspondents on white pins are very different, and are gradually getting thickly coated with verdigris, and the insects are posturing at all angles. My Tineina are, generally, as free from verdigris, and so, comparatively, are my Tortrices. Of course, insects on some black pins do verdigris. Tayler's pins have such large heads, but compared with Kirby, Beard and Co.'s pins, the bad pins are probably less than 1:20. In fact, 25 50

per cent. of Kirby, Beard's pins are often useless, 2 to 3 per cent. of Tayler's would leave a wide margin, but they are so ugly that Kirby, Beard's are generally used in preference. Besides, Kirby, Beard's pins used to be cheaper than Tayler's, and hence used to be more largely bought, but now the same price is, I believe, charged for the (from my experience) inferior pin. I agree most heartily with Mr. Harwood in all he has to say about the bad points and absence of temper in the metal, but there can be no doubt that a much inferior metal is used in the manufacture of japanned pins than in the ordinary white ones; and when all is said and done, I think all Micro collectors (especially the younger men) will continue to risk spoiling a few specimens by the absence of points to their pins and their manufacture from soft metal, rather than have to make a new collection entirely every seven or eight years in some of the more important genera of the "little fry." With some of the larger Macro-Lepidoptera it is, I confess, merely a matter of time, but then such species as *Macrogaster arundinis* and its namesake in *Nonagria*, have enough fat in them to verdigris anything; but is it not better, even then to stave off the evil day as long as possible?—J. W. Tutt, Westcombe Hill. *March*, 1892.

Are black pins really better than white for Micros? I have always used white pins because the black ones are so liable to bend. Both kinds verdigris, though I suppose the black are better than the white in this respect. I so often bend the pins (black) of insects sent me, and this is so very trying when it happens, that I have never felt any temptation to use the black ones myself.—A. Robinson. *Feb.*, 1892.

The Lepidoptera of Epping Forest.[1]—As it is rather difficult to indicate localities by the use of the names of the different parts of the Forest, which many of us probably do not know, I think it will be advisable to divide the Forest into sections. In the first, which I propose to call the Chingford section, are included the Forest proper, between Chingford and High Beach, and the district to the south and west of this portion, as far south as Larkswood, taking in Chingford Church, Chingford Hatch, etc., and part of Sewardstone, but not, of course, encroaching on the Lea Valley. This strip of country is studded with woods, and in earlier times, I suppose, was all forest land. Coming again to the Forest proper, after crossing Chingford Plain, we pass through a wood of pollard trees, mostly hornbeam and oak, interspersed with sloe bushes, and broken by marshy glades. The general level of this wood (according to the maps in Mr. E. N. Buxton's book) is 200 feet above high water mark. It, however, rises to 300 feet at the S.W. corner. After walking about a mile, or a mile and a half, we cross Fairmead Bottom and come to the first beech woods. These are on higher ground. The second section, between the road from the "Robin Hood" to High Beach Church, and thence on to Sewardstone and the "Wake Arms," we will include under the name of Monkswood. This stretch of the Forest is of a far more varied character than the first named. We pass through a belt of polled trees, beech, hornbeam and oak, then heather studded with pollards, birches, holly, sallow, etc. After a mile or so, we reach Monkswood proper, a wood composed of splendid beech trees, with a few old oaks scattered

[1] Abstract of Paper read before the City of London Entom. Society on Feb. 4th, by Mr. A F. Bayne.

amongst them, and broken by glades with heather and sallow. This section has a good many ponds and open marshy spaces. In this division, I will also include Jack's Hill, on the right of the road from Loughton to the Wake Arms, the character of the wood being similar. Monkswood proper stands at about 300 ft., and the Wake at 370 ft. On entering the next section, which I will call the Wake Arms section, we pass through an extent of open heather studded with clumps of birches. This continues until we reach Epping Thicks, which resemble somewhat the Chingford Wood, but have more beeches, and which extend to Epping Town, two miles beyond the Wake Arms, Ambersbury Banks, near the Epping Road, stand at 381 ft., and the end of the Thicks at 369 ft. Epping Lower Forest lies to the north of the town, and much resembles the first section (Chingford). It will be seen, from the figures quoted, that there is a general rise of the country between Chingford and Epping.

As to the geology of the Forest, there is not much to be said. The formation is tertiary, consisting of London clay, capped in places with gravel, sand, and brick-earth.

With regard to localities sugared. We sugared in 1890 in only one spot, last year in two. Both of these belong to the Chingford section, and large trees just outside the woods were sugared.

Now as to collecting generally. The first moth to appear is *H. rupicapraria*, at light, and flying at dusk. In February and March, searching the tree trunks seems to be the best mode of working. *Hybernia leucophœaria* and *Phigalia pilosaria* (*pedaria*) are both common in the Chingford section. On the 7th March, 1891, a single specimen of *Nyssia hispidaria* was taken on an oak trunk in the same section. It sat in a crevice of the bark, nine or ten feet from the ground, and one *Amphidasys prodromaria* (*strataria*) was found on the 29th of the same month in the Wake Arms section, also on an oak trunk. In March, *Hybernia marginaria* and *Anisopteryx æscularia* appear at light commonly. Last year the former continued on the wing from the end of February until the first week in May. Sallowing opens usually about the beginning of April. In Monkswood, *Tæniocampa stabilis*, *gothica*, *cruda* (*pulverulenta*), *instabilis* (*incerta*), and hybernated *Scopelosoma satellitia*, *Orrhodia vaccinii* are common, while *T. munda* and *gracilis* and *Pachnobia rubricosa* are occasionally met with; *rubricosa*, however, was plentiful in 1890 on sallow bushes, near Chingford. A pair of *O. vaccinii*, *in copulâ*, fell into the sheet one night in April last. Our best sallowing night last year was the 15th April. After a very fine day the sky clouded over slightly. The wind was N.W., light, and the moon about half full. The moths continued coming on till about one o'clock, and then seemed to stop suddenly. About the middle of the month *Larentia multistrigaria* is common at dusk, flying over the heather in Monkswood and *Selenia illunaria* (*bilunaria*) throughout the Forest. After the sallows are over, the sloe bushes begin to blossom. Flying to this attraction in the Chingford Wood, *Eupithecia pumilata*, *Cidaria suffumata*, and *Anticlea badiata* are plentiful, and about a dozen and a half *A. nigrofasciaria* were netted in 1890, but none in 1891. In the glades *Cilix glaucata* (*spinula*) and *Hemerophila abruptaria* are to be found. Tree trunks during the month are not usually productive

of much more than an occasional *Xylina lithoriza* (*areola*). In May the larvæ of *Geometra papilionaria* are to be taken on the birches in the Monkswood and Wake Arms sections. The best way to find them is to search the branches of the smaller birches, as recommended in the *Ent. Record*, i., p. 23. They are rather difficult to see, as they greatly resemble the birch catkins. They rest stretched out stiffly, generally at the end of the twig. Among the butterflies *Lycæna argiolus* may be taken rather plentifully, on sunny days in Monkswood and Epping Thicks, while *A. euphrosyne*, *Euchlöe cardamines*, *Nisionades tages* and *Syrichthus malvæ* are to be found throughout. Flying in company with the butterflies in the Monkswood section, are swarms of *Ematurga atomaria* and *P. petraria*, with an occasional *Phytometra ænea* (*viridaria*). (*To be continued.*)

PLATYPTERYX SICULA.—I must mention the capture of four larvæ of *Platypteryx sicula* on September 12th, by a former collector, Mr. Grigg, and myself; and having searched for the moth in vain in the early summer, it is very gratifying to find that the species is still existing in its very circumscribed locality. The difficulty of obtaining it is, however, very great, as the trees have grown up very much since the days when Mr. Grigg and others were so successful.—GEO. C. GRIFFITHS. *November 30th*, 1891.

CARADRINA SUPERSTES.—The specimens of the above, captured by Mr. Hodges, are very interesting to me, never having seen the species alive,—and it would be valuable to collate the number of undoubted specimens known to have been taken here, with the localities where they have occurred. It bears such a superficial resemblance to *C. blanda*, that I daresay it is often overlooked on the sugar for that species, and this is more likely from the way the insects of this genus rest without exposing the hind wings.—C. PENN, Lee, Kent.

I have had no difficulty in distinguishing *C. superstes* on the sugared flowerheads, even in the excitement of capture, from *our form* of *C. blanda*.—A. J. HODGES.

ATTRACTIVENESS OF FLOWERS.—One of the noticeable facts of the past season in these parts (South Devon), appears to be the unusual absence of visitors on flowers, in most years so attractive; such as the scented tobacco (*N. affinis*), red valerian, rhododendrons, honeysuckle, cherry-laurel, raspberry blossoms, lavender, etc. With the exception of a very few common butterflies and *Plusia gamma*, on sunny days no lepidoptera were seen to visit them (though frequently watched at all hours). It was the same with barberry and laburnum flowers in the spring, and the number of insects on sallow was but small. Yewberries, though in abundance this autumn, were left untouched when fully ripe, and at ivy, though there was a scattering of insects, few were visible feasting, and most of those obtained had to be shaken off the plants.—WILLIAM S. RIDING. *December 22nd*, 1891.

HECATERA SERENA.—With us, this species feeds on various species of *Picris*, and is most common on railway banks, etc. The larva is abundant, but is so terribly infested with ichneumons that I have given up attempting to breed it, the results being only about four or five per cent. The moth occurs on palings, and at sugar and flowers at dusk. I daresay it will feed on most *Compositæ*. My larvæ have been obtained by sweeping at dusk and in the afternoon. Sowthistle would,

I should say, be too juicy a provender for them.—C. FENN. [The larvæ were very abundant last autumn when we were sweeping for *Dianthœcia irregularis* larvæ at Tuddenham last August.—ED.]

LARVÆ BEATING IN SPRING.—To those not knowing the fact, it may be interesting to learn, that night-beating for larvæ, especially after 10 p.m., is the most productive means of capture possible, and many larvæ are obtained of species which do not always come to sugar, such as *Noctua ditrapezium*, *Aplecta tincta*, *Triphœna interjecta* etc. I once beat out of the birches and sallows at Tilgate, over 500 larvæ in one night, between 10.30 p.m. and 1 a.m. and amongst them were 16 *N. ditrapezium*, 20 *Triphœna fimbria*, 8 *A. tincta*, with *Plusia iota* and *Boarmia repandata* commonly, and any quantity of *Noctua baja*, *brunnea*, *triangulum*, *Triphœna janthina*, *Aplecta nebulosa*, etc. Where the var. *conversaria* of *B. repandata* is ever taken, it should be searched for at night about the end of April, along the rides and hedges; the pale larva is then easily found and may be beaten into an umbrella, but it is of little use searching for it in the daytime. In confinement they will eat anything, but I have always found them most common on hawthorn, blackthorn, nut and birch, in the order named.—C. FENN, Lee, Kent.

SETTING THE FORELEGS OF AGRIOPIS APRILINA.—If injection with oxalic acid were adopted as a method of killing lepidoptera, the difficulty referred to (*Ent. Rec.*, ii., p. 295) would not, I believe, be met with; nor would mechanical force have to be used to overcome the intense stiffening resulting from the use of cyanide of potassium. I have a considerable series of this species with all the forelegs extended in front, and have never had any difficulty in setting them.—R. PRIDEAUX.

USE OF NAPHTHALIN.—A method of using the above, that I have adopted for some years, occurs to me as possibly worth recording. Naphthalin melts at 80° C. and the fusion may readily be done in a test tube over a spirit lamp. If a small brush be inserted in the test tube, and the liquid applied hot to the sides, corners, or crevices of pocket, postal or relaxing boxes, etc., it hardens immediately where applied, does not knock about the box, and is most efficient in keeping boxes so treated, free from mites.—R. M. PRIDEAUX, Clifton, Bristol.

XYLINA CONSPICILLARIS.—Do the specimens of *Xylina conspicillaris*, taken in England, differ in any way from Continental specimens? My British specimens are all of the same type; two came from old Benj. Standish, Darenth Wood captures; 5 bred by the late E. Horton, of Worcester, and one from Mr. Edwards of the same place.—J. B. HODGKINSON. [I believe there is no difference whatever. A full account of the variation of this species is to be found in *The British Noctuæ and their Varieties*, i., pp. 69–71.—ED.]

APORIA CRATÆGI.—Has this partly extinct species occurred again? If so, in what county?—ID. [The last record should be well known to Mr. Hodgkinson. It is in the *E.M.M.*, vol. xxiv., p. 131, and is vouched for by Mr. Webb. Mr. Edmonds has sold a large number of pupæ of late, but no one supposes they are of British origin.—ED.]

XYLINA ZINCKENII.—I recently had two foreign specimens of this species offered to me to purchase. They were nothing like the specimens which were sold with Mr. Warren's collection.—ID. [Probably as the

former "were nothing like" the latter, they were not the species at all. There is, however, some variation in the species; one named var. is called *somniculosa*, whilst *zinckenii* also is a variety, *lamda* being the type.—Ed.]

Lepidoptera of Sidmouth, S. Devon.—I should like to supplement Mr. Majendie's list of the Lepidoptera of Sidmouth. During the last three years I have been collecting there with my brothers during the month of August and first week in September. Among the Rhopalocera I may mention that the second brood of *Leucophasia sinapis* was fairly common last year. I took as many as 16 in three-quarters of an hour; we have only taken 2 *Thecla betulæ*. Among the Heterocera, larvæ of *Notodonta ziczac*, *N. dictæa*, *Ptilodontis palpina*, *Dicranura bifida*, *D. furcula*. Noctuæ—*Thyatira batis* (larva), *Hydrœcia nictitans*, *Axylia putris*, *Tryphœna interjecta*, *Noctua plecta*, *N. C-nigrum*, *N. triangulum*, *Amphipyra pyramidea*, *A. tragopoginis*, *Stilbia anomala*. Geometræ—*Ennomos fuscantaria*, *Eupisteria heparata*, *Acidalia scutulata*, *A. subsericeata*, *Lygdia adustata*, *Emmelesia affinitata*, *Ephyra punctaria*, *Eupithecia castigata*, *E. virgaureata*, *E. rectangulata*, *Gnophos obscurata*, *Lobophora sexalisata* and *L. hexapterata* (larvæ), *Melanippe procellata*, *M. galiata*, *Coremia propugnata*, *Cidaria picata*, *C. ribesiaria*, and *C. testata*. No doubt Mr. Majendie may have omitted some of these insects, because he considered them too common, but I think that it makes a list more complete, when even the commoner species are included.—Clifford Wells, Hurstfield, The Avenue, Gipsy Hill, S.E.

Bombyx rubi.—Does the larvæ of this species throw off the black velvety mantle that is worn in October? My nephew, when collecting the larva of *Melitæa artemis*, brought me a fine full-fed larva, as brown as that of *Bombyx quercus*, which I pronounced it to be. However, I was surprised when a large male *rubi* emerged. Some fifty years ago I used to breed this species easily. I had at that time a good chance. I put them in a place where the temperature, night and day, was from seventy to eighty degrees, in a large box with plenty of loose moss, and fed them on garden or other roses through November, and when the outside supply failed, continued on plants growing indoors. They fed up well, pupated, and came out generally in January and February.—J. B. Hodgkinson.

Sphinx convolvuli near Croydon.—I captured a magnificent specimen (evidently just emerged), of *Sphinx convolvuli* at rest, upon a paling, very close to the Old Croydon Racecourse, on my way to sugar in Wickham Wood.—C. Wells, Hurstfield, The Avenue, Gipsy Hill.

Coleoptera in Herefordshire.—*Pachyta octomaculata* is far from rare in Herefordshire, and in the Black Mountain district it is quite common. Other *Longicornia* which occur here are *Prionus coriarius*, *A. moschata*, *Callidium alni*, *Clytus arietis* and *C. mysticus*, *Astynomus ædilis* (imported, no doubt), *L. nebulosus*, *P. pilosus*, *S. scalaris* and *populnea*, *Rhagium bifasciatum*, *Toxotus meridianus*, *Strangalia armata* (very common), *L. tomentosa*, *Grammoptera tabacicolor* and *G. ruficornis* (both common), and *T. præusta*.—E. W. W. Bowell, Staplehurst, Kent. *January 18th*, 1892.

Smoking for Insects.—I think that lepidopterists in this and other districts would do better if they "smoked" for their insects, especially

the smaller ones. I know that in June and July, I could have taken thousands of specimens in a day on the sandhills here if I had had time to set them. Before I tried "smoking" I could only get, say, five or six *Gelechia temerella* in a morning; with the "smoke" I could get fifty in an hour, and the same with other *Gelechiæ*. I use old rags or brown paper, or, in fact, any paper made into touch-paper with saltpetre melted in water and dried again. A whiff or two of this, sent among the roots of the grass, etc., will make most things move.—T. Baxter. *November 13th*, 1891.

SOCIETIES.

Entomological Society of London.—*March* 9, 1892.—Professor C. Stewart, President of the Linnean Society, exhibited and made remarks on specimens of *Cystocœlia immaculata*, an Orthopterous insect from Namaqualand, in which the female is far more conspicuously coloured than the male, and the stridulating apparatus of the male differs in certain important details from that of other species. A long and interesting discussion ensued, in which Dr. Sharp, Mr. Poulton, Mr. Distant, Mr. H. J. Elwes, Colonel Swinhoe, and Mr. Hampson took part. Mr. Elwes exhibited specimens of *Ribes aureum*, which were covered with galls, as to the nature of which the Scientific Committee of the Horticultural Society desired to have the opinion of the Entomological Society. Mr. Fenn, Mr. Tutt, and Mr. Barrett made some remarks on these galls. Mr. Elwes also exhibited a large number of species of Heterocera, recently collected by Mr. Doherty in South-east Borneo and Sambawa. Colonel Swinhoe, Mr. Hampson, and Mr. Distant took part in the discussion which ensued. Mr. Barrett exhibited a series of specimens of *Noctua festiva*, bred by Mr. G. V. Hart, of Dublin, which represented most of the known forms of the species, including the Shetland type, and the form formerly described as a distinct species, under the name of *Noctua conflua*. Mr. Fenn and Mr. Tutt made some remarks on the specimens. Mr. W. C. Boyd exhibited a specimen of *Dianthœcia barrettii*, taken at Ilfracombe last summer. It was remarked that Mr. W. F. H. Blandford had recorded the capture of *D. barrettii*—which had, until recently, been supposed to be confined to Ireland—from Pembrokeshire, and that its capture had also since been recorded from Cornwall. Mr. Tutt exhibited specimens of *Polia xanthomista*, from Mr. Gregson's collection, which had recently been sent to him by Mr. Sydney Webb. They included, amongst others, a specimen much suffused with yellow, and resembling Hübner's type and Gregson's type of var. *stitices*, which Mr. Tutt stated was practically identical with Treitschke's *nigrocincta*. He remarked that certain localities appeared to produce different forms of this species, responding largely to their environment as far as colour is concerned, and were thus protected by resemblance to their surroundings. Mr. G. A. James Rothney exhibited and read notes on a large collection of Indian Ants which he had made in Bengal between 1872 and 1886, comprising some 90 species. He stated that 18 of these species had been described by Dr. Mayr in his paper entitled "Ameisen Fauna Asiens," 1878: he also said that Dr. Forel had recently identified several other new species in the collection, and that there were about

ten species and one new genus which Dr. Forel had not yet determined. Mr. H. Goss exhibited, for Mr. T. D. A. Cockerell, of Kingston, Jamaica, several specimens of palm leaves, from the garden of the Museum in Kingston, covered with *Aspidiotus articulatus*, Morgan. The leaves appeared to have been severely attacked, the scales entirely covering the upper surface in places. Mr. Cockerell had pointed out, in a letter dated 16th Feb. last, that the species is notable for the sharp division between the thorax and abdomen; and that he had formerly distributed it under the name of *Aspidiotus rufescens*, but had since satisfied himself that it was identical with *A. articulatus* from Demerara. He added that the species fed on a variety of plants, and was known from Demerara, Jamaica, and Barbados. Mr. F. D. Godman contributed a paper by the late Mr. Henry Walter Bates, with an introduction by himself, entitled "Additions to the Longicornia of Mexico and Central America, with remarks on some previously-recorded Species." The Rev. A. E. Eaton communicated a paper entitled "On new Species of Ephemeridæ from the Tenasserim Valley.

March 23, 1892.—The Secretary read a letter from the City of London Entomological and Natural History Society, on the subject of a proposed Catalogue of the Fauna of the London District. The assistance of Fellows of the Society in the compilation of the Catalogue was asked for. Mr. G. C. Champion exhibited a number of new species of Longicornia, from Mexico and Central America, recently described by the late Mr. H. W. Bates, in his paper entitled "Additions to the Longicornia of Mexico and Central America, with remarks on some previously recorded species," read at the last meeting of the Society. Mr. S. Stevens exhibited three very rare species of NOCTUÆ, viz., *Noctua flammatra*, *Leucania vitellina* and *Laphygma exigua*, all taken by Mr. H. Rogers, at Freshwater, Isle of Wight, in the autumn of 1891. Mr. F. C. Adams again exhibited the specimen of *Telephorus rusticus*, in which the left mesothoracic leg consisted of three distinct femora, tibiæ, and tarsi, originating from a single coxa, which he had shown at the meeting on the 24th of February last. The specimen was now reversed, to admit of the better examination of the structural peculiarities, upon which Dr. Sharp, Mr. Champion and Mr. Jacoby made some remarks. Mr. Osbert Salvin exhibited a series of mounted specimens of the clasping organs in the male of several species of *Hesperidæ*. Dr. Sharp exhibited, for Mr. F. D. Godman, a collection of Orthoptera, recently made in the Island of St. Vincent, West Indies, by Mr. H. H. Smith, the naturalist sent to that Island by Mr. Godman in connection with the operations of the Committee appointed by the British Association and the Royal Society for the investigation of the Fauna and Flora of the Lesser Antilles. It was stated that the collection had recently been referred to, and reported on by, Herr C. Brunner von Wattenwyl and Professor J. Redtenbacher. Mr. J. W. Tutt exhibited and remarked on a series of various forms of *Orrhodia vaccinii* and *O.* (*spadicea*) *ligula*. Mr. C. G. Barrett exhibited and made remarks on a series of specimens —including some remarkable varieties—of *Bombyx quercus* and *Odonestis potatoria*. A long discussion ensued as to the probable causes of the variation exemplified, in which Mr. Tutt, Mr. Jacoby, Mr. Poulton, Mr. H. Goss, Mr. Salvin, Mr. Bethune-Baker, Dr. Sharp, and Mr. Distant took part. Mr. G. A James Rothney sent for exhibition a

number of specimens of *Camponotus compressus*, *C. micans*, *Œcophila smaragdina*, *Sima rufonigra*, *Solenopsis geminata* var. *armata*, and other species of ants, from Calcutta, together with certain species of *Aphidæ* kept by them for domestic purposes; also certain of their enemies and parasites. He also communicated a short paper on the subject, entitled "Notes on certain species of Calcutta ants, and their habits of life."—H. Goss, *Hon. Sec.*

South London Entomological Society.—*March 24th*, 1892.—Mr. Merrifield re-read his paper "On the effects of artificial temperature on the colouring of *Vanessa urticæ* and certain other species of Lepidoptera." Mr. Merrifield said that at the time he commenced his experiments, in 1887, Mr. Edwards, in America, and Prof. Weismann, in Germany, had shown that the colouring and markings of some butterflies were affected by temperature in the pupal stage. Their experiments had been on seasonally dimorphic species, and tended to show that temperature so applied, only operated on the summer-pupating form, causing it to assume, or make a near approach to, the winter-pupating form, but that the winter-pupating form could not thus be made to assume the other form. Weismann's explanation of this was that the winter-pupating form was the older one, and that the application of cold (and indeed of other agencies) to the summer pupa caused it to "throw back" to the ancestral form. His (Mr. Merrifield's) experiments showed results which, while by no means inconsistent with this theory, indeed in some respects supporting it, showed something more, and indicated a general effect of temperature upon the colouring of both the seasonal forms of some dimorphic species, and of some single brooded species. A distinction was to be drawn between the single brooded and the seasonally dimorphic species, as to the way in which temperature operated. In the seasonally dimorphic species, no doubt each individual, when it came into separate existence, had an innate tendency to lead one or other of the two lives, *viz.*:—either to feed up quickly, and come out as a perfect insect after a few months, or to feed slowly, and come out after passing the winter in the pupal stage. But either of these tendencies might be diverted into the opposite one by certain external agencies, of which temperature was a principal, but not, he believed, the only one. Considering that one of the differences between two seasonal forms was often that of size, it seemed clear that the question which of the two destinations the individual should follow must, in the main, be decided before the period of full growth was reached, *i.e.* before the end of the larval period; and therefore such of the markings and colouring as were proper to either seasonal form exclusively, would thus indirectly be affected by circumstances operating during the larval, or even the oval stage, *viz.*, by those circumstances which decided to which of the two seasonal emergences the perfect insect should belong; and the earlier experiments before adverted to, showed that similar results might, to some extent, be obtained by external agencies in the pupal stage. But it had now also been established that temperature applied in the pupal stage to either seasonal form of some seasonally dimorphic species, and to some single-brooded species, materially affected the colouring, and, in some species, the markings; the markings, apparently by long-continued exposure in the early part of the pupal period to a very low temperature (such as

33° F.); the colouring by a very moderate difference of temperature during a later period, which, in the case of the *Selenias* and some others he had localised as that which separated the inactive central period of pupal life, from the very late period when the colouring of the perfect insect had begun to show. In *illustraria*, the natural difference of markings, as well as of colouring, between the two seasonal forms, was strong, and he had obtained a close approximation to either form, with ease and regularity, by temperature applied to the pupa at the right time. In *illunaria* and *lunaria* there was not so much difference in markings, but there was, especially in the former, a very conspicuous difference in colouring, and in both broods of both these species similar results ensued, with practical invariableness. It was the same, but not so regularly, with the single brooded *E. autumnaria*. In *V. urticæ*, the results were in the same direction, but not so considerable, a temperature of 50° to 60° appearing to develop the greatest intensity, especially of the dark parts and the blue crescents, a relatively low temperature (47°) causing a general increase of darkness, some specimens approaching the northern var. *polaris*. In *C. caja* a moderately low temperature caused the general ground colour of the forewings to be darker, and that of the hind wings to be less yellow, and the dark spots on them to spread, and increased in a striking degree the length and breadth of the black abdominal bars. *B. quercus* and its var. *callunæ* showed slighter results in the same direction. Many more experiments, and on many more species belonging to widely-separated families among the Lepidoptera, should be tried before sufficient materials could be accumulated for a satisfactory explanation of these temperature effects; but in the meantime he ventured to suggest that some of them were due to the circumstance that a particular temperature was more suitable to health and vigour than any other was, and tended consequently to produce larger size and greater intensity of colouring and markings, but that this would only account for a small part of the effects produced, especially in the seasonally dimorphic species, and in those he had operated on there seemed to be what, in the absence of further knowledge, might be called a direct tendency in a low temperature to cause darkness of markings. Mr. Merrifield exhibited a large number of examples of the temperature effects produced. Mr. Fenn, after a few preliminary remarks, bearing testimony to the labour, patience and extreme care displayed in working out these experiments, for which great praise was due, and also to the slight delicacy he felt in opposing Mr. Merrifield, after the trouble that gentleman had taken in coming so far to read his paper before them, proceeded to say that in a long experience of breeding Lepidoptera, extending over more than thirty years, he had found that when treated in a natural manner the proportion of abnormal varieties bred to be under one per cent. He divided variation into two sections, *viz.*, natural and unnatural or artificial. With regard to the former, that might again be divided into three nearly equal causes, heredity, moisture and natural selection; he gave the reasons for each, with examples. Respecting the latter, Mr. Fenn held that an examination of most of our extraordinary varieties would show that the variation in question was caused by some form of disease, some weakening of the vitality or constitution of the insect, either in the larva or pupa state, not of

course by any specific complaint; and this appeared not only in markings but also in many instances in the shape of the wings, which usually altered in the direction of breadth. When these causes operated in nature it was a result in one case of a want of succulence in the food, for in very dry seasons when plants were scorched up, a tendency was shown to the production of small imagines, and the same resulted from semi-starvation when a sufficiency of food was unattainable. These conditions resulted in lessening the size of the imago, the density of the scaling, etc. Alpine species were often deficient in this latter particular, and this, it was inferred, was caused by continued exposure to severe weather and to insufficient nutrition. Examining Mr. Merrifield's experiments in accordance with these views, Mr. Fenn assumed that all the specimens exhibited would be found to belong to the artificial group for these reasons. Most of the species experimented on were double-brooded, and the experience we possess in breeding Lepidoptera shows us that although we may hasten a summer brood yet we cannot turn the spring form into the summer one, the reason being that the extra development of the insect in the larva or pupa state has determined the imago, and that we cannot put back the hands on the clock of nature or reverse what has been already done. Mr. Merrifield himself admitted this. There was another point to which he would direct attention, and that was the temperature necessary to alter the colour of the insect—87° to 57°, and whatever may have been done by artificial means, in a state of nature the lower even of these temperatures was amply sufficient to put all our autumnal, winter and spring species entirely out of its influence, for, to quote Mr. Merrifield, "I find that three days (and, I presume, nights) are all that are sufficient to effect this change." Now a period of three days from September to April or part of May, when the temperature never fell below 57°, is at the least unusual, if not almost unknown, in this country. In Mr. Merrifield's paper, published in the *Transactions of the Entomological Society*, I find that with regard to *S. illustraria* 60° to 73° is sufficient to produce the change in the direction of heat, and this makes it a matter of impossibility for the spring brood of *illustraria* in a natural state to be affected at all. Respecting the single brooded species, *E. autumnaria* is one insect particularly relied upon. In 1884, being fortunate enough to take three ♀ examples of this insect at Deal, two of which deposited eggs; by keeping the broods separately, and by judiciously crossing them, the strain was kept up for several years. Hundreds of the imago were reared, and Mr. Fenn submitted a very long series bred under purely natural conditions in which even greater extremes of variation were apparent than in any of those artificially treated by Mr. Merrifield, but by far the greater proportion followed the coloration of their parents. With regard to the range of temperature necessary to affect *autumnaria*, 73° to 80°, it might be assumed that either of these temperatures was quite unusual for a period of three days and nights at the time when *autumnaria* was bred in confinement (August) or taken at large in September, yet we bred either dark or pale *autumnaria* following in a great degree the colour of the parent moths. It was pointed out how many of the specimens exhibited showed a tendency to crippling or deformity, plainly indicating that their constitutions had been tampered with in some previous state, and this was

held to be the cause of the variation observed, for variation it undoubtedly was, unnatural variation. In this direction the *V. urticæ* were a strong case in point. In conclusion Mr. Fenn stated that the deduction he drew from these experiments and from comparing the results with his own experiences, were as follows, *viz.* : Such variation as shown by Mr. Merrifield is practically impossible in a state of nature unless we assume it to be the result of disease, and as such a condition would weaken the brood to a great extent, it would all the more rapidly disappear, and in any case would fail to compete with healthy broods in the struggle for existence. However, he said, we may differ with regard to these experiments, we must all admire the way in which they have been carried out, and he begged to propose a very hearty vote of thanks to Mr. Merrifield for his paper. After Mr. J. Jenner Weir had made some remarks bearing on the cause of such colour variation as was referred to by Mr. Merrifield, and its relation to surplus energy, several members (called on by the President) spoke at, rather than about the subject, and it seemed very doubtful whether some of them had read Mr. Merrifield's papers relating to his experiments. Mr. Adkin got back to the question, and gave an account of some *Vanessa urticæ* bred by him, which tended to support Mr. Merrifield's facts, especially with regard to the development of the blue lunules. Mr. Tutt stated that he had already suggested explanations of many of Mr. Merrifield's results in his pamphlet on *Melanism and Melanochroism in British Lepidoptera*, and within the last few weeks in the Introduction to vol. ii. of *The British Noctuæ and their Varieties*. Mr, Tutt maintained that on broad grounds there was no doubt that heredity and other factors inherent in the species explained some of the results, whilst exposure to moisture and other ordinary climatic changes helped to explain others. But there was at the same time no doubt that temperature did more or less affect the coloration. The question at issue was now reduced to its narrowest possible compass, and he asked, How does temperature affect the coloration of lepidoptera? Is the action direct or indirect? He had no doubt himself that such result was entirely indirect, and that its action was due to its influence on the constitution of the pupa, the pupa being taken by Mr. Merrifield as the stage in which the most vital changes in colour were affected. Mr. Tutt pointed out from Mr. Merrifield's own showing that "the larva must by no means be overlooked" in the question : but, restricting himself to the pupal stage, he would attempt to explain how the changes on Mr. Merrifield's experiments were brought about. He would distinguish particularly between the butterfly, *Vanessa urticæ*, and the moths, *Selenia*, etc. In the first case, crippling was so apparent, that no one could argue for a moment that "disease," or a failure to carry out the normal processes of development, might not be a potent factor, and there was no doubt it was. Shortly, he assumed, that when the larva was full-fed it had a certain amount of "surplus" energy stored up, which, elaborated under suitable conditions, would become the normally coloured pigment. Prevent by artificial condition (temperature, etc.) the proper elaboration and consequent formation of this pigment, and the result would follow that the imago would exhibit the result of such action on emergence. But the ground colour of *V. urticæ* is essentially black. Therefore the failure to

develop pigment would tend to darken the general colour by throwing up the dark ground colour; and as Mr. Merrifield's specimens exhibited at the same time, not only a failure to develop pigment, but also a failure to produce the normal membranous structure of the wings, it became apparent that the cause of one failure was the probable cause of the other. He therefore assumed that the action of temperature was indirect, and that the result was directly due to the insects being unable to carry out their normal functions during development. With regard to the moths it was different. They had essentially two colours in their organism, so to speak. In *Selenia illustraria* these were purple and reddish-ochreous, due to seasonal dimorphism, the pigment ranging from reddish-ochreous, through red to purple; in *Bombyx quercus* yellow and red-brown, due to sexual dimorphism, the females being yellow and the males deep red-brown. In these species, too, simple chemical experiments showed that the ground colour was white. But here again the changes in colour, brought about by temperature, were directly due to the normal elaboration or non-elaboration of the pigment-forming material and only indirectly with the temperature that prevented this elaboration. It was also not so intimately connected with failure in membranous development. The genetic sequence of the colours in *illustraria* was yellow, red, purple. A rapid development under high temperature produced the ochreous or red form, whilst a longer and slower development was necessary for the development of the purple coloration, so that a more complete usage of the pigment-forming material could be made. This genetic sequence in the development of colour, as occurring in nature, he said he had dealt with at length in the Introduction to vol. ii. of *The British Noctuæ* before referred to; and he cordially supported the vote of thanks proposed by Mr. Fenn to Mr. Merrifield for his kindness in coming forward to read the paper. Mr. Dobson stated that on one occasion he had a large number of larvæ of *Notodonta dictæoides*, these were exposed to a very high temperature (naturally), and pupated under this high temperature, the result was that the pupæ were ill-developed, the resulting moths malformed and cripples. Mr. Merrifield agreed with many of Mr. Fenn's observations, and thought most of them consistent with the results obtained in the course of his experiments as reported by him. He would not expect to get such great differences in colouring by the application of temperature alone as might be found in ordinary collections where the different varieties were the result of a combination of many influences and chiefly heredity. His object had been to test the effect of temperature by itself, and with that object he had operated on broods as uniform in all other respects as could be. It was almost always absolutely necessary in experimentation to apply more or less artificial conditions in order to isolate the insect experimented on from the mixture of causes always found in the operation of nature. But his moderately low temperatures were, in fact, often the natural outdoor temperature, and though for "forcing" he had generally used a temperature of about 80°, he had reason to think that there was little or no difference in effect where the temperature was several degrees lower, so as to approximate to what was often experienced for several days together in summer. In any case there could be no doubt that in the species principally operated on by him, temperature alone,

applied in such moderation as in no way to affect the healthy appearance of the insect, produced, with great uniformity, conspicuous differences in colouring. There were other species in which in general no considerable effect was produced unless the temperature was so extreme as to cause crippling or imperfect development in a considerable proportion of the subjects treated.—Ed.

City of London Entomological and Natural History Society. —*Thursday, March 17th*, 1892.—Exhibits, Lepidoptera :—Mr. Hodges, varieties of *Polia flavicincta*, from Portland and Guernsey, and some fine banded forms of *Agriopis aprilina* from Durham. Mr. Gates, a living specimen of *Melanippe montanata*, bred from a larva previously exhibited on December 17th, 1891. Mr. Gurney, freshly captured specimens of *Amphidasys prodromaria*, *Thigalia pilosaria*, etc. from Epping Forest, at Wood Street. Mr. Prout, bred series of *Coremia unidentaria* and *C. ferrugata*. Mr. Nicholson, bred specimens of *Hemerophila abruptaria*, second brood. He pointed out that these were smaller and darker than the spring brood. Mr. Sykes, a specimen of *Leucania impura*, approaching the var. *punctilinea*, Tutt, taken at Enfield. Messrs. Clark, Tutt, Hodges, Battley, Southey, Milton and Dr. Buckell exhibited their series of the genus *Hadena*. Coleoptera :—Mr. Heasler, a specimen of *Plinthus caliginosus* taken at Greenwich. Mr. Milton, various beetles, and in Hymenoptera, *Abia fasciata*, *Cerceris arenaria*, *Gorytes mystaceus* and *Ammophila lutaria*. Mr. Tutt then read his paper on "The genus *Hadena*." He pointed out the nearness of *Hadena* to the *Apamidæ* and stated that, of our British species in the genus, *H. porphyrea* reached its western limit and *H. peregrina* its northern limit in our Islands, and that, therefore, both species must of necessity always remain rare here. The various forms of each species were dealt with seriatim, and Mr. Tutt remarked that although *H. protea*, *H. dentina* and *H. pisi* exhibited a fair amount of variation, the genus was not generally a variable one in the imago state. He said that this was fully made up, however, by the variation in the larvæ. *Rectilinea* he was inclined to place in a separate genus as Staudinger had done. Reference was made somewhat fully to the American vars. of *H. trifolii*, especially vars. *albifusa* and *oregonica*. Mr. Battley, in proposing a vote of thanks to Mr. Tutt, called attention to the extreme variability of the larvæ of *H. oleracea* and *H. trifolii*, and to the resemblance of some of the latter to the larvæ of *Mamestra brassicæ*. Mr. Lewcock seconded the vote of thanks. Dr. Buckell had found the larvæ of *H. pisi* common on Hampstead Heath, but stated that the imago did not appear to come to sugar. Messrs. Milton, Southey and Tremayne continued the discussion, and the vote of thanks was passed unanimously. Mr. Tutt, in replying, stated that he had taken *H. pisi* on sugar in 1891, from the end of May to the middle of August, but it did not come so freely as might be expected from the abundance of the larvæ.

Erratum.—*Ent. Rec.*, p. 67, line 12, for "four specimens of *Mixodia rufimitrana*, taken by Mr. Eustace Bankes, in Dorset," read "bred by Mr. E. Bankes, from larvæ taken in Hampshire."

Birmingham Entomological Society.—*March 14th*, 1892.—Mr. R. C. Bradley showed several species of *Culex*, taken at Sutton. Mr.

G. T. Bethune-Baker showed a large number of *Scopariæ*, from St. Helena, which differed from all other *Scopariæ* in the possession of deeply serrated antennæ; some of the specimens too being almost black. Mr. Baker said that even from the mainland of Africa, nearest to St. Helena, he knew of no *Scopariæ* with the same characteristics. Mr. G. H. Kenrick read a paper:—"Some considerations on insects confined to small areas." He touched briefly upon self-evident causes of localisation, mountain chains, etc., and then entered more fully into the causes of the presence on our coast lines, in the fens, woods, etc., of many species only found in those restricted districts in our country, though found in similar ones on the Continent. He remarked that it was strange to find so many species restricted to so small an area as our "fens" for example, and showed that those "fens" represent a very wide extent of country, all fen, extending over the German Sea to, and including, Holland, and of which our Lincolnshire and Norfolk Fens, and those in Holland, are all that is left. The insects inhabiting this wide extent of country are now, to a considerable extent, crowded in to the few surviving spots, and hence we get many peculiar species in a small area; he believed the same applied to coast species, our coast line having once formed a part of a very much more extended Continental coast line; to wood species, our woods being the remains of former extensive forests, etc. He concluded by pointing out many much more complicated questions of distribution and localisation, of which he could offer only slight explanation, and which he said opened out a wide and interesting field for study. A discussion followed, in which the Rev. C. F. Thornewill, Messrs. G. T. Bethune-Baker, R. C. Bradley and C. J. Wainwright joined.—COLBRAN J. WAINWRIGHT, *Hon. Sec.*

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY.—*March 14th.*—Messrs. H. Locke, of Birkenhead, and G. Norel Deville, of Crosby, were elected members. The President referred to the loss the society and naturalists generally had sustained by the death of Francis Archer. Mr. William Webster, of St. Helens, read a paper entitled "Was Shakespeare an Entomologist?" The author stated he had examined the works of the poet, and found 207 references to insects, and, as far as could be ascertained, mention of 30 kinds of insects, and showed, by numerous quotations, that Shakspeare not only possessed a fair knowledge of entomology, but that he was a philosophical observer of nature. Mr. Willoughby Gardner, F.R.G.S. read a short note on the "Popular names of insects about Shakspeare's time," some few of which still existed in country places. Mr. Webster exhibited *Papilio zalmoxis*; the President, Messrs. Stott, Harker and the Hon. Secretary, long and variable series of *Noctua festiva* and *conflua*; Messrs. Harker and Jones, British and Continental forms of *Lycæna icarus*.—F. N. PIERCE, *Hon. Sec.*

CAMBRIDGE ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—*February 17th.*—A meeting of six old members of the Society was held at the house of Mr. Jones, 59, Trumpington Street, to discuss the possibility of setting the Society going again, the last meeting having been held March 8th, 1889. The advisability of altering some of the existing rules was discussed, one item being the changing the name of the Society from "The Cambridge Entomological Society" to "The Cambridge Entomological and Natural History Society." As several

members of the University were desirous of joining, and the Anniversary Meeting had always been held in February, it was decided that the next meeting should be the Anniversary Meeting; and that all gentlemen willing to join, should be invited to attend for the purpose of being elected members, and to take part in the subsequent business of electing officers for the year, and considering the proposed alterations of the rules.

February 26th.—Anniversary Meeting. Mr. G. H. Bryan, M.A., President, in the Chair. In the absence of Mr. Theobald, Mr. Farren acted as Secretary. Messrs. A. M. Moss, A. Rashleigh, H. S. Fitzroy, W. Morrow, C. Woodhouse, M. White, C. Wells, W. H. Powell, H. T. P. Smith, W. C. Feetham, H. Eltringham, R. Ll. Hodgson, A. S. Shrubbs, and G. Watkinson, were elected members. The proposed alterations in the rules were made; and the officers for the ensuing year were elected as follows:—President, Mr. A. M. Moss; Vice-President, Mr. G. H. Bryan, M.A.; Hon. Sec. and Treasurer, Mr. Wm. Farren, F.E.S.; Hon. Librarian, Mr. Alfred Jones. As other members of the Council—Messrs. C. Woodhouse, C. Wells, and H. Eltringham.

March 11th.—Mr. A. M. Moss (President) in the Chair. Messrs. W. G. S. Malim, H. C. T. Langdon, and H. V. Bull, were elected members. Mr. F. V. Theobald, F.E.S, sent for exhibition two cases of Diptera: one showing the life history of the "Daddy long-legs" (*Tipula*), *T. oleracea*, *T. gigantea* and *T. lutescens;* the other being a case of *Tabanus bovinus* and *asilus*; also a box of living specimens of "the corn and rice weevil," *Calandra granaria* and *orgyæ*. The Secretary read some notes on the exhibit by Mr. Theobald, in which it was stated that the larvæ of *Tipula*, known as "leather jackets," are very injurious to grass, corn, and root crops. *Tabanus bovinus*, the specimens exhibited, were from Switzerland, where they attack the horses to a dreadful extent, are also common in parts of England, notably the New Forest, Sussex, etc. *Calandra* (corn and rice weevil) are very destructive to stored wheat, barley, oats, and rice, and to some extent maize, especially abundant in Calcutta wheat; but also coming from other parts. The weevil lays its eggs one on each grain, and the young larva bores its way in, where it assumes the pupal state. Mr. Farren exhibited a long series of *Noctua festiva* with a row of the small Scotch forms, erroneously described by Newman as *conflua*; and for comparison some of the true *conflua* from Shetland; a series of *Arctia mendica*, including some of the peculiar Irish forms, and a number of specimens, descendants of Mr. Porritt's celebrated Huddersfield ones, and the exhibition box of No. 3 basket of the "*Record* Exchange Club," which contained *Noctua festiva* and *N. conflua*, a most remarkable variety of *Teniocampa gothica*, and some micros. He also exhibited the *wing bone* of a ♀ Pochard (*Fuligula ferina*), having a marvellously healed fracture of the humerus; and pointed out a fragment of shot imbedded in the bone. Mr. Jones read a paper on "Killing and Setting Lepidoptera." A discussion ensued, chiefly on the several methods of killing; Mr. Jones and Mr. Farren strongly recommending the use of ammonia in preference to cyanide. A vote of thanks to the author for his interesting paper, concluded the meeting.— Wm. Farren, *Hon. Sec.*

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THE GENUS ACRONYCTA AND ITS ALLIES.

By Dr. T. A. CHAPMAN.

(*Continued from page* 76.)

ACRONYCTA (Cuspidia) aceris (continued).—I have some notes on the arrangements of the hairs beneath the effete skin previous to moulting. How the tufts are laid across the dorsum to the opposite side, interlacing with those of the other side, either hair by hair or in small bundles,—how the lateral bundles pass beneath the larva and interlace below with those of the other side, and so on,—but I have no observations at all solving the difficult question that has often puzzled me in hairy larvæ, how the hairs get into these positions. One would suppose that they must grow from their points of origin, but how do they in the confined space between the two skins, pass so smoothly to the other side and interlace with the others accurately, with no trace of ever pushing one another aside irregularly?

The white diamonds have four hair dots across their middle and two near their posterior angles, the latter carry minute pale hairs, otherwise they are free from hairs or marking or hair dots. The lateral tubercles are still important as hair carriers, and in this respect are not much differentiated from the surrounding skin, but the trapezoidal tubercles have become much less important than in previous skin and have to be sought for. When disturbed, the larva curls round into a solid ring, with the head buried in the hollow of the 10th and 11th segments, yet the larva retains a very firm hold of

the leaf, though at first sight one would suppose the legs to be in the interior of the ring, as in other larvæ when curled up. This is a very similar result, though attained in a somewhat different manner to that which is met with in *Viminia*, which curl up, yet somehow hold on by the anal prolegs. The larva always rests underneath the leaf, and is conspicuous even among *Acronycta* as being subject to the attacks of *Tachinæ*. The remarkable and handsome arrangement of hairs and the dorsal diamonds make a very attractive larva, yet, from having hardly ever met with it myself, I have failed to interest myself in this species so much as in some of the others. If it occurs in the west of England, it must be very rare, nor does it extend far north. Horse chestnut seems to be its favourite food in England, though it also occurs freely (when it does occur) on sycamore, and less so on maple. I have met with it on oak, and believe that it is occasionally found on various other foodplants.

In pupating *aceris* differs from the other *Cuspidiæ* in not burrowing into rotten wood or otherwise excavating a cavity or burrow. It likes to get behind a loose chip of wood or bark, or into a mixture of wood chips and dead leaves and will spin up among dead leaves, in moss, etc. A cocoon formed among wood chips has first a wide outer area of loose spinning, then a distinct cocoon of rather loose texture, about $1\frac{1}{2}$ in. by $\frac{3}{4}$ broad, consisting of a very pale brownish (nearly white) silk, with the hairs of the larvæ and numerous wood chips interwoven. Inside this, and on one side continuous with it, is the inner cocoon, of tough white silk, dense and firm, with wood chips included in its thickness; the toughness is equal to, if not greater than that of *menyanthidis* or *rumicis*. This inner cocoon is $1\frac{1}{4}$ in. $\times$ $\frac{1}{2}$ in. Internally it is lined with white silk, but is rough and irregular rather than smooth, as the interiors of cocoons usually are. I have also had cocoons made in moss, which were almost exactly of *Viminia* type, but these were sent me and had, I fancy, been deprived of the outer envelope and were only the inner true cocoons.

The pupa (Pl. IV., fig. 2) is 22–25 mm. long, 13 for wings, and 9 for free abdomen, width 7 mm., fairly equal to 9th segment, then tapering to extremity, but with decided angular ribbing at spiracular lines. The colour and texture is the brown chitinous of the *Cuspidiæ*. The rich brown has darker lines at the margins of segments, especially of 4, 5, 6 and 7, also a dark dorsal line widened in places, as if it were the

black line which, in the larva, encircles the lozenges. This is unmistakable on 11 and 12. The 9th and 10th segments often have projections representing the prolegs; in some pupæ these are so distinct as to suggest a continuance of the larval structure. No hairs are found except those at the base of the antennæ, and of these, *only one* is certainly made out. The proboscis and intermediate legs fall short of the length of the wing cases, and the extremities of the hind legs come into view. The boss carrying the anal armature forms a less projection than in other species, and would, but from analogy with them, be regarded rather as merely the rounded end of the pupa slightly produced. It is, however, abundantly and finely wrinkled and has a full armament of spines. These consist, as in the other *Cuspidiæ*, of a dorsal and ventral series. The dorsal set are here subject to a multiplication (or rather division), that hitherto we have seen affecting only the ventral series; on either side there is one strong spine, the largest of all and three weaker ones of about $\frac{3}{4}$rds its length. The ventral set consist of 9 or 10 on either side, very crowded together, somewhat longer than the shorter dorsal hooks. The dorsal hooks bend downwards, but the ventral ones present in all directions. The hollows on the dorsum of the abdominal segments, which apparently exist in all the species of the *Cuspidiæ*, and which I have more fully described in some of them, are here especially evident in the 5th segment. The cast larva skin is nearly free from hairs, which are left entangled in the outer cocoon. The pupa varies, however, a good deal. In not a few there are on some segments markings that appear to be a persistence of the diamonds on the larval dorsum, and the persistence of larval prolegs though commoner in this than perhaps in any others, is really exceptional. The dorsal hooks are at times single and may have one, two, or more slighter companions, the ventral set may be as few as five. The boss is at times more marked than as above described. The hooks are very curved and entangle themselves in the silk of the cocoon as to be often broken rather than be set free for examination, although the pupa does not take so firm a hold of the cocoon as one would expect from so abundant a supply of hooks.

It is not unusual for this species to pass a second year in the pupa state.

(*To be continued.*)

SCIENTIFIC NOTES.

THE GENUS HEPIALUS (*concluded from p.* 79). — The males of the other three British species of this genus fly in a very different manner to those already spoken of. *Lupulinus* is much the commonest species of the three, and the males may be seen hunting for the females in early twilight with a most erratic flight just above the herbage, darting hither and thither, turning and twisting about in all directions and with great rapidity. Common as the species is, and closely as I had watched it for some years, I never saw the act of pairing till last summer. This was described in detail in the *E.M.M.*, vol. xxvii., p. 197, and I had better quote the account written at the time, than re-describe from memory. "On the evening of June 3rd (1891), I saw a newly emerged female crawling up a grass stem. It was just then eight o'clock; and at the same moment a male approached with its usual rapid, irregular flight. It flew within a foot of her, but did not take the slightest notice, and was evidently unconscious of her proximity. When she was half-way up the stem she commenced to vibrate her wings; first there was a preliminary flutter or two, and then a steady, long-continued vibration, which lasted without intermission for ten minutes. A male then approached. It flew in its usual quick erratic manner until within about three feet of where she sat. The rapid flight was instantly checked, and it commenced to fly backwards and forwards, advancing very slowly as it did so, evidently searching for her; when within a foot I netted it, and in doing so slightly disturbed her; the vibrations of her wings ceased, and after a short pause she commenced to crawl further up the stem. I feel sure it was the net that disturbed her, and not any consciousness of the approach of the male. As she climbed up, she gave a quick flutter or two, then moved up a little, another flutter and a further progress upward, until she seemed satisfied, settled herself comfortably on the stem, and began again with the rapid vibrations of her wings. This was kept up for rather over twenty minutes before another male appeared. It flew in the same way, rapidly but erratically, until within three or four feet, and then slowly backwards and forwards, advancing as it did so until it found her. There cannot, I think, be the slightest doubt that the female diffuses a faint attractive odour, and that the vibration of the wings assists to diffuse it. This diffusion judging by the distance at which the males changed their mode of flight, does not appear to be effective more than three or four feet from where it emanates. The night in question was absolutely calm, perhaps with a little wind it might have influence to a greater distance." The males of *Hepialus sylvinus* fly in a similar manner to those of *lupulinus*, and it would be reasonable to assume from this that their mode of attraction is the same. A solitary and far from complete observation which I recorded in 1887 (*E.M.M.*, vol. xxiii., p. 214) may be quoted here. "I had sugared some parts on the railway side, and was wandering about in the twilight, looking for nothing in particular, when my attention was drawn to a large moth fluttering in a peculiar manner on a stem of grass: it seemed as though it was trying to escape from something that held it

fast; thinking some large spider, or other predaceous creature had hold of it, I lit my lantern, and then saw it was sitting on the stem vibrating its wings with such rapidity, that I could not possibly see what the species was. I watched it closely, and presently a small moth, unheeding the glare of my lantern, flew to it. I needed to be very quick to secure it before they paired. The vibratory motions of the wings ceased as soon as the other touched it, and I saw it was an extra large female *sylvinus*. For nearly ten minutes she remained motionless, then, after a preliminary flutter or two, the motions of the wings recommenced, and presently another male flew up; this time they were too quick for me, and the pairing was accomplished." I have quoted this after the observations on *lupulinus*, though it was made first, but it was less complete, and having only a dim light, I could not notice minor matters so well as in the later observations made in bright daylight. As far as it goes, it fully confirms the observations of last year. In August, 1890, I noticed a number of males of *sylvinus* flying to a particular spot; it was almost bare of herbage, and as each came up, they seemed to push themselves down on the sand, then fluttered about a little, and flew away. One or two flew a little distance, came back, and went through the same motions again, pushing down on to the sand, and fluttering about. I took quite a number, without stirring from the spot, and might have taken many more. I imagine a female had emerged there, perhaps the evening before, and that traces of the scent still remained. I marked the exact spot, and went again the following evening. One or two specimens came up, but they did not appear to be so eager nor so certain as the previous night; they hovered about for a moment or two, but never went down to the turf, and it was clear the scent was about exhausted, but that a trace of it still remained. *Hepialus velleda* males fly with wonderful rapidity, so quickly indeed, that they are most difficult to take on the wing when hunting the females. I have never seen them pair, nor observed the mode of attraction; but there is no reason to suppose it will be any different from *lupulinus* or *sylvinus*, and that the female when she emerges will sit on a stem, and flutter her wings to assist in diffusing the odour.

It would be foreign to my purpose to refer to the habits of any of the exotic *Hepialidæ*, some of which are of great size; but indeed, I have no knowledge on the subject, nor do any records appear in any of our English works to which I have access. Mr. McLachlan (*E.M.M.*, vol. xxiii., p. 215) mentions *Hepialus pyrenaicus*, of which he says :—"The male is somewhat similar to that of *lupulinus*, but the female is nearly apterous and utterly incapable of flight; any collector, however, so fortunate as to obtain a virgin ♀, can secure as many males as he may desire. They "assemble" just as in the case of certain *Bombyces*, etc." It would be interesting to know the habits of the genus in other places, and especially whether any of them hover like *humuli* and *hectus*.

I have now accomplished my task, and have laid before you such details of the habits and peculiarities of the British species, as I have been able to find recorded, or have myself observed. I told you I had no theory to advance, nor anything new to introduce. I can only hope that some of you may not have read, may not have observed, or do not remember some of the facts I have brought before you to-night.—J. E. Robson. *February*, 1892.

The British Coccinellidæ.[1]—The insects comprised in this group are essentially of the highest interest and importance to agriculturists, florists, and mankind in general, from the fact that in their larval and pupal stages they feed on the pests termed *Aphides*. In those portions of the country devoted to the cultivation of hops, the *Aphides*, or "Fly" as they are sometimes called, do a vast amount of injury to the plantations, and the quality and quantity of the hop crop often depend on the repressive measures adopted to rid the vines of their tiny but numerous enemies. Yet, in spite of all precautionary measures, the *Aphides*, owing to their marvellous power of reproduction, continue year after year to flourish and multiply. As destroyers of *Aphides* the Ladybirds are undoubtedly the best servants possessed by the agriculturist, as not only do they derive their sustenance from the *Aphides*, but they also destroy many more than are required for actual feeding purposes. It will thus be seen that the part played by the Ladybirds is of incalculable value, and that the species should in all stages be protected from wanton destruction.

Number of Species.—In Dr. Sharp's *Catalogue*, 1871, the division *Coccinellidæ* comprised twelve genera, containing altogether forty-one species. In the *Catalogue* issued by Fowler and Matthews at the commencement of 1883, some thirteen genera were enumerated, and the species then known numbered forty-five. In the same year, however, Dr. Sharp brought out a revised edition of his *Catalogue*, wherein the group was rearranged under sixteen genera, although the number of species remained the same as in Fowler and Matthews' *Catalogue*.

For many years British coleopterists laboured under the great disadvantage of not having a good handbook on this branch of Entomology; but in 1887 the first volume of *The Coleoptera of the British Islands* was issued by Canon Fowler. In 1889, the third volume, which contains the *Coccinellidæ*, made its appearance. The entire work is now completed. The alterations in the arrangement of the genera and species of the *Coccinellidæ* were numerous. We find in Canon Fowler's work that the group is now divided into two divisions, *viz.*, *Coccinellidæ-Phytophagæ*, containing but a single species, and *Coccinellidæ-Aphidiphagæ*, comprising fifteen genera, and containing forty-two species. The total number of British species, despite the fact that a new species of *Coccinella* is incorporated in the group, is thus reduced to forty-three. This is accounted for in the following manner:—by transferring *Alexia pilifera* to the *Endomychidæ;* by classing *Exochomus nigromaculatus* (*auritus*) as doubtfully British; and by reducing *Scymnus limbatus* and *S. scutellaris* to the position of varieties only. As most of our species are sufficiently recognisable by the markings of the elytra, it is scarcely necessary to go into the matter of structural differences.

Coccinellidæ Phytophagæ.—The only species in this division, now called *Subcoccinella 24-punctata*, L., was formerly known in our lists as *Lasia globosa*, Schneid. The insect is very local. Unlike the other members of the British *Coccinellidæ*, it is a plant feeder, and can be obtained in considerable numbers by using the sweeping-net in the

[1] Abstract of paper read at meeting of City of London Entomological and Natural History Society, March 3rd, 1892, by Mr. G. A. Lewcock.

localities where it occurs. I have found both larva and beetle on clover and other plants at Chattenden, Kent. Mr. Battley brought me some specimens from Southend; Mr. Newbery obtained it near Southampton; Mr. T. W. Hall captured a few specimens, singly or in pairs, in Hertfordshire, and also near London; Mr. A. Ford finds the species common in the Hastings district. Many other localities are given in Canon Fowler's work, but those enumerated above are quite sufficient for the purposes of this paper.

COCCINELLIDÆ APHIDIPHAGÆ.—The term *Aphidiphagi* was first used by Latreille, as referring to the carnivorous habits of the species included in this division of *Coccinellidæ*. It may be as well, however, to mention that in Kirby and Spence's *Entomology* it is stated that the larva of *Coccinella hieroglyphica* "eats the leaves of the common heath (*Erica vulgaris*) after the manner of Lepidoptera." Of this point I have not been able to satisfy myself, but judging from the structure of the mouth organs, etc., I believe it to be similar in habits to the other species of the genus. *Life history*.—The perfect insects pass the winter in a state of hybernation, hiding behind bark of trees, in odd cracks and corners generally. On the approach of spring the beetles come out, and the females may be found in suitable localities depositing their eggs, usually on the underside of leaves or on the stems of plants, trees, etc., which are infested with *Aphides*. Sometimes a number of eggs are deposited together, but more often the parent beetle distributes them over several plants. The young larvæ appear in a few days, and are mostly of a slaty-blue colour, but this varies according to the species. In the majority of cases, however, some traces of the wing-pattern are more or less discernible. The larvæ immediately commence their attacks on the *Aphides*, devouring and slaughtering them indiscriminately. It is somewhat interesting to watch the Ladybird larvæ at feeding times, and note their method of operation. On one occasion while experimenting with larvæ of *Coccinella 11-punctata* in my garden, I witnessed the destruction of twelve *Aphides* by a single larva in about five minutes. It was on a July afternoon, and I was endeavouring to get the former species to feed on the *Aphides* clustered on some scarlet-runner beans. I placed a larva on a leaf which contained a goodly number of *Aphides*. It immediately roused itself like an animal scenting prey. First one *Aphis* was caught up in its jaws, given a sort of shaking, then dropped, as if the flavour was not of the right sort. Other *Aphides* became victims in the same way, when the Ladybird larva moved off to a new hunting-ground. The experiment of trying to rear the larva of *C. 11-punctata* on the garden *Aphides* proved eventually an utter failure, and I was only able to obtain a couple of starved specimens from about 50 or 60 larvæ, and these, I believe, were nurtured from the carcases of their brethren in confinement. To resume the subject, the larva, on reaching the full-fed stage, fastens its tail to a leaf, generally choosing the upper surface, the body attaining an upright position, and it then changes to pupa. The duration of the pupal stage seldom exceeds six days, when the beetle emerges quite perfect. At first the elytra (or wing cases) are of an uniform white, but in a short time, however, the dark markings begin to appear, and in a few hours the wing-cases are of the proper pattern and colour. *Variation*.—It is well known to most coleopterists that the Ladybird

species in many instances vary so exceedingly in the colour and markings of the elytra as to give one a deal of trouble in determining the name of the species to which it belongs. The most variable of the group undoubtedly are *Adalia bipunctata*, *Coccinella* 10-*punctata*, and *C. hieroglyphica*. Other species also vary considerably, but not to the same extent as these three. The type form of *A. bipunctata* has red elytra with a black spot on each side. Sometimes (perhaps owing to the disarrangement of the black pigment by moisture as it pupates) the black spots spread over the elytra, leaving two red spots visible near the apex, and at the humerus. Then again the black markings take the form of a cross, and in some varieties the pattern is indescribable. In *C.* 10-*punctata* we have endless varieties, the most pronounced being black with testaceous humeral spots. In some instances, we find an entire absence of black markings, or the dark are replaced by white markings. Some specimens have a coronet of spots on the thorax, but this feature is not wholly confined to *C.* 10-*punctata*. In *C. hieroglyphica* the type form has five distinct black markings on the elytra, and between this and the black form there are many gradations. A specimen in the exhibit (captured at Esher) has black elytra with four red spots. A second (from West Wickham) somewhat resembles it, but has also a red border to the elytra. (*To be continued.*)

Development of Imago within Pupa.—I find that *Valeria oleagina* matures before winter, and passes the winter as an imago, within the pupa shell, like the *Tæniocampas*. This habit has some bearing, or at least, it is illustrated in some of its physiological aspects, by the instances recorded of a moth not developing its wings for many hours after emergence. Will no one rear some common *Tæniocampas* in quantity, and tell us all about this curious habit? what other species possess it?—T. A. Chapman, Firbank, Hereford.

Classification by Structure of Imago.—I feel so sure that Mr. Tutt's remarks on my system of classification (*ante*, p. 50) are prompted by a genuine interest in science, and desire for the truth, that I have no doubt he will allow me space to point out quite briefly where he has unintentionally mis-stated the facts of the case. In the first place, my system is not based on neuration, but on the structure of the imago, of which, of course, neuration forms a part only. The whole of the structure is noted and made use of wherever available. Secondly, my papers, referred to by Mr. Tutt, consist solely of an immense body of facts, wholly founded on original observation, and in large part new (being the structural characters which I have observed in each species, and often in a very large number of individuals of each species); and of a small number of conclusions drawn from these facts (namely, the ordinal grouping of these species in genera and families). These conclusions may, of course, be wrong; I, at least, have never laid claim to infallibility; but unless it can be shown that a large proportion of the structural facts are false (which is not alleged), I submit that the accumulation of so large a body of scientific facts cannot be regarded as "utterly useless;" and I feel sure that Mr. Tutt will, on this showing, willingly withdraw the epithet. Thirdly, I would point out that Mr. Tutt's use of the term, "superficial," is not in accordance with its general acceptation in science; where it is employed to denote all such characters as are not structural, such as colour, markings and habit. The

characters I employ are solely structural, and the meaning of the passage therefore requires explanation. Fourthly, the comparison with Mr. Butler's paper "On the genus *Acronycta*," appears to me extremely unfortunate, since, in attempting to break up that genus, and distribute it amongst several different families, Mr. Butler was guided solely by these remarkable differences in the earlier stages, of which Mr. Tutt so strongly advocates the importance. No one who is guided by the structure of the imago has ever proposed to break up *Acronycta* on that ground; and if Mr. Tutt, or any other reader, will take the trouble to compare the neuration of the species of *Acronycta* with one another, and with the families in which Mr. Butler placed them, he will easily see why. Fifthly, with regard to the statement that synonyms for the same species are placed in different genera, Mr. Tutt quoted what he supposed to be an instance of this at the February meeting of the Entomological Society, *viz.*, *Platyptilia similidactyla*, Dale, which name he stated to be truly applicable to *Alucita lithodactyla*, Tr.; but I then pointed out to him that the species for which I had used the former name was in no way related to *A. lithodactyla*, and that, although my use of the name might be erroneous, I expressly stated, in the introduction to my paper, that I had not entered at all into synonymy or correction of specific names, and had simply employed the name in general use (*Trans. Ent. Soc.* 1890, 432); the authority followed here, being Staudinger's *Catalogue*. If any other instance can be alleged I will explain it. Sixthly, in regard to such a species as *Tephrosia biundularia*, showing seven distinct forms (not types) of neuration, it should be understood that in any given species or genus those characters which have been found to be variable have not been used for definition; this species was mentioned by me as an example not of characters which I had used, but of characters which I had *not* been able to use. The characters which are variable in this species are found to be constant in *Eucosmia undulata*, for instance. Mr. Tutt has described many variations of colour and markings in species, yet he has never proposed to wholly reject colour and markings as a means of distinguishing species. Seventhly, Mr. Tutt says "Fancy a classification of Vertebrata on the same lines!" It is unnecessary to fancy one, as any text-book of Zoology will give the very thing. All classifications of Vertebrata which I have ever seen proposed in modern times are actually founded on the identical lines which I have adopted, namely, on the structural characters of the adult animal. Embryology is indeed considered to give valuable information as to the line of descent of an animal, and embryological characters have occasionally been employed for leading divisions (as the placenta in Mammals), though this is exceptional; but the special value of embryological characters is due to their being protected from the influence of external environment, which is not the case with the characters of the young after birth. The generic characters of Mammals are usually drawn mainly from the bones and teeth, which may be regarded as quite analogous with the neuration and palpi of *Lepidoptera*. But I am exceeding my proposed limits, and must abstain from a discussion of the general question of the relative value of characters.

One word on behalf of Prof. Fernald, whose knowledge Mr. Tutt has under-estimated. So far from Prof. Fernald being a mere Museum

student, I happen to know that the bulk of his work is biological; he has a series of glass-houses, and three assistants constantly employed to carry on his observations of the life-histories of insects, and I could mention other American entomologists equally fortunate. And, finally, if I may be pardoned for a personal reference to myself, has not Mr. Tutt assumed too hastily my complete ignorance of larval stages? This is hardly just, considering that I have been a practical collector in all quarters of the globe for 25 years, 15 of these being spent in England. If, as I suppose, Mr. Tutt has studied British species only, the number of species with whose earlier stages I am practically acquainted must largely exceed those which he knows; the information obtainable from others is at the disposal of us both. If biologists are to classify, as Mr. Tutt wishes, why is an unfortunate biologist like myself to be prohibited because I happen to know a little about structure as well? I venture rather to hope that English Lepidopterists may be stimulated to take up the study of structure, in which they are commonly reputed to be behind the students of every other science, and even behind the lepidopterists of every other country.—E. Meyrick, Ramsbury, Hungerford. *March 26th*, 1892.

I have the greatest pleasure in printing Mr. Meyrick's note. In fact, I should have been rather disappointed had he not answered my criticisms. Mr. Meyrick is quite correct in saying that his system is based on the structure of the imago, but I maintain that the neuration is the main feature relied on. If we look at the tabulation of the families (*Trans. Ent. Soc. of London*, 1890, p. 436, and 1892, pp. 56–57), I think that it will be conceded that there is little but neuration considered, and that my suggestion as to the broad basis of classification is just, and when we read of the other characters in different genera, similar descriptions in the same words, and almost the only differentiation remains with the neuration, I think we may safely conclude that the system is essentially based on the neuration. I quite agree that Mr. Meyrick's facts may, some day, prove to be useful, but it is the ordinal grouping in families and genera which merits our attention, and, in some cases, appears to me to be utterly erroneous. From the former point of view, I should be sorry to say that Mr. Meyrick's careful and praiseworthy accumulation of facts are "utterly worthless," but I do certainly think that the system of classification based on these facts is of no actual value. The term "superficial," was a partial *lapsus* for "variable," but at the same time I consider most of the characters taken from the external structure of the imago superficial, compared with the more constant and trustworthy ones derived from the larvæ and pupæ. With regard to Mr. Meyrick's reference to Mr. Butler's paper (*Trans. Ent. Soc. Lond.*, 1879, pp. 313–317), I feel sure Mr. Meyrick can hardly have read it. If Mr. Meyrick refers to this paper he will see that Mr. Butler, after referring to, and casually examining (?) the blown larvæ of the *Acronycta*, then examines the neuration of the imago, and really founded his distribution of the species on these characters, and this fact remains, although he appears to have entirely misapprehended that side of the subject. On this, he finally transferred *Viminia rumicis* and *V. auricoma* to the *Arctiidæ*, *Cuspidia leporina* and *C. aceris* to the *Liparidæ*, *C. megacephala*, *C. psi*, *C. tridens* and *C. strigosa* to the *Notoaontidæ*, whilst *C. alni* and *Bisulcia ligustri* were left in the Noctuites,

so that it must be clearly understood that Mr. Butler was not "guided solely by these remarkable differences in the earlier stages" in his "attempt to break up the genus," but positively by the neuration, which, from his point of view, was sufficiently near to those families to which he proposed transferring them, for his purpose. Dr. Chapman has proved most conclusively that Mr. Butler's examination (if it may indeed be called as much) of the larvæ led him into ridiculous error, but his paper shows, at the same time, that it was his idea of the neuration which confirmed his notions, and led him into the fatal position which has made entomologists smile whenever they hear of Mr. Butler's subdivision of the genus *Acronycta*. As to *Œdomatophorus lithodactyla*, it is not a matter of what Mr. Tutt "supposes," but it is an actual fact that *similidactyla*, Dale = *lithodactyla*, Tr. Of course, if the use of the name is admitted by Mr. Meyrick to be erroneous, there is an end of the matter, as he will correct it, but it is of no use allowing a palpable error to go on because Wocke did not know better. I think Mr. Meyrick will find that *Eupithecia abietaria* and *E. togata* are synonymous (I know they are treated as distinct in the Continental catalogues, but these, unfortunately, are very unreliable), and these are placed in different genera (*Trans. Ent. Soc. Lond.*, 1892, pp. 66–68). I quite agree with Mr. Meyrick, *re* his remarks on *T. biundularia*, but I remember Mr. Meyrick stated most positively that some 60 or 70 specimens of this species had been examined, whilst, of other species, only one or two, and it immediately occurred to me whether the neuration of the species (apparently permanent) would have varied to an equal degree had a corresponding number of specimens been operated on. I think, from my own knowledge, that I can safely answer yes! and Mr. Meyrick's work itself bears out the suggestion in the 15 pp. of examples of variation in neuration in *Trans. Ent. Soc. Lond.*, 1892, pp. 126–140. Mr. Meyrick also refers to my own work. Colour and markings are useful, in a general way, to discriminate species, but we should fail hopelessly in certain species until we recognised them by *all* their characters, including colour and markings. Neuration (which is another variable factor) might be of occasional use to distinguish species, but would fail alone in certain cases, as do colour and markings. Besides Mr. Meyrick does not select these variable factors in the imago to discriminate species, but to classify a group, and give us natural affinities. The consequence is that his system generally fails most absolutely. Mr. Meyrick's reference to the ordinary classification of Vertebrata is misleading. These are not classified on one character alone, but on a combination of many. We use a character like dentition, as we do colour, antennæ, etc., in lepidoptera, to tell us quickly where we should expect the creature to fall, not to determine its actual position. To do this we examine all its characters. I do not quite agree with Mr. Meyrick that the palpi of lepidoptera are altogether analogous with the teeth of mammals, the former are limbs, the latter simply epidermal structures, nor, except in a very indirect way, are the bones analogous with the neuration. I know nothing of the knowledge of American micro-lepidopterists besides that which can be gathered from their published works, and I maintain that the life-history of very few of their species appear to be known, or, if known, published. The butterflies have been well worked out, but Scudder and Edwards have not

based their work on the structure of the imago; they have worked out the affinities, in many instances, from the larvæ, their genera sometimes being based entirely on such. If Prof. Fernald is so well situated as Mr. Meyrick suggests, it will be very regrettable should he attempt to classify and arrange the American micro-lepidoptera on characters of the imago, and overlook, as Mr. Meyrick's diagnoses show that he has done, the earlier stages entirely. I sincerely trust I have done no injustice to Mr. Meyrick, or hurt his personal feelings, but I only assume Mr. Meyrick's ignorance to the larval stages to the extent that he has failed to use them, and I must confess that being a collector for 25 years in all parts of the world does not commend itself to me as an absolutely necessary qualification for classifying insects, and although Mr. Meyrick is not quite correct in supposing that I have studied British insects only, and although he may (?) be practically acquainted with the earlier stages of a larger number of species of lepidoptera than myself, yet this greater knowledge is valueless as far as the entomological world in general is concerned, as he has the knowledge hidden away, and has failed, so far as I can see, to make the slightest use of it, although in his note above he would appear to imply that he has. I suppose we are all biologists in a way, but there are differences in degree, and I am afraid that Mr. Meyrick's examination of nervures, palpi and legs are as unavailable as my studies in nervures, colour, wing-markings and imago structure generally, to get any very useful idea of classification, which I would leave to those deeper biologists who make exact studies of the eggs, larvæ, pupæ, and their anatomy, and support the general conclusions arrived at by these studies, by the examination of the more superficial imago structure, on which Mr. Meyrick entirely relies. He may know a little or much about the structure of the larvæ, etc., but he does not refer to them in any of his diagnoses. I quite agree with Mr. Meyrick's final wish, but hope that those who study structure will not make the palpi, legs, neuration, etc. (all characters which frequently vary, even in the sexes of the same species, like the size and shape of the wings), their goal, but study the subject from the point of view of the ovum, larva and pupa, in connection with which will be found most of the useful and reliable characters necessary for a classification which will satisfy those whose scientific minds love order, and who want to see some comparatively stable system adopted.

So much in reference to Mr. Meyrick's remarks above. I would now go further and take one or two examples to illustrate my objections. This will make my position clear to British lepidopterists who do not care to investigate the matter further. Mr. Meyrick writes:— "It will be well to mention here some of the general rules of classification. No genus, family, or higher group is tenable, unless distinctly separable from all others by points of structure, which, whether singly or in conjunction, are capable of accurate definition.[1] If a systematist is not able to define by a clear and not simply comparative character the distinction between two genera, he is bound to merge them together; thus, to say that in one the cell is short and in another long, is no sufficient definition;[2] to say that in one the cell is less than one-third

[1] I suppose this is meant only to apply to the imago condition. If so, why?

[2] Is this not purely imaginary, or can Mr. Meyrick give us one of our existent genera thus defined? If Mr. Meyrick traces Guenée's application of our generic names, I think he will find no such absurd differentiation.

of the wing in length, and in another more than one-third, is sufficient, if found constant and clearly perceptible; but in practice it would probably be a very bad character,[1] as probably some species would be transitional. Even where transitional forms are not known, it will always be necessary to use judgment as to whether the distinction employed is of such a character as to be likely to hold good in the event of the discovery of additional species. But even where there is a good and definite point of distinction, it does not follow that the genera are to be maintained;[2] where genera are small and numerous, it becomes intrinsically undesirable to multiply them, and in such a case, if two small genera agree in nearly all structural characters, resemble one another superficially, are apparently closely connected genealogically, and finally are capable of accurate definition and distinction as a single whole, then they ought in general to be united. Many structural characters are variable, either in different specimens of the same species, or sometimes in a transitional series of closely allied species. I hope shortly to give a paper on the classification of the European *Geometrina*, and shall then give some remarkable, and, I believe, unprecedented statistics of the variation of structural characters, but many instances will be found in the following genera. The same point of structure will often be found available as a good and reliable distinguishing character in one instance, and not in another; this can never be determined except by actual consideration of the particular circumstances. Nor can it be said beforehand what characters are likely to be good; perhaps the most suspicious are tufts of hairs, especially when developed as secondary sexual characters, when they are often 'unreliable'" (*Trans. Ent. Soc. Lond.*, 1890, p. 430). Mr. Meyrick's ideas may be sound, and if the genera which he has united, did agree in nearly all structural characters, did resemble one another superficially, were apparently closely connected genealogically, and finally, were capable of accurate definition and distinction as a whole, there would perhaps not be much harm done; but do *roboraria* and *wavaria*, *dubitata* and *blandiata*, *dolobraria* and *fasciaria*, or *subnotata* and *vidalbata* fulfil these conditions? If so, how? Is a genus with a dozen "ors" in it "accurately defined and distinguished"? Having now considered this paragraph, we may consider how it works out. Mr. Meyrick makes a genus with fixed characters; he finds a moth or two fits into it. He finds another species which agrees pretty well with everything but the palpi, and he adds "or" to his characters and admits this species; he finds another agreeing pretty generally, but failing in another character, another "or" is added, and so on; *e.g.*, of *Diastictis*, Hb., he writes:—"Face with appressed scales *or* short ridge *or* tuft of projecting scales. Palpi moderate, porrected *or* subascending, rough scaled. Thorax *sometimes* crested posteriorly, *more or less* hairy beneath. Femora glabrous *or* rarely slightly hairy; posterior tibiæ in ♂ *often* dilated, with all spurs present. Fore-wings in ♂ with fovea,

[1] Nothing shows the absolute lengths to which those who are simply students of the characters of the imago may have to resort for a character, if, as Mr. Meyrick practically admits, such a case as this is possible.

[2] It would be interesting to know what is to determine this, and how Mr. Meyrick has settled it. From Mr. Meyrick's statement it would appear that a character, which would be accepted to break up a large genus, might be ignored, even if of equal value, to unite two small ones.

sometimes surmounted by a small gland; 10 (nervure) *sometimes* anastomosing with 12, *often* connected with 9, 11 out of 10 towards *or* above middle, *or* if lower anastomosing with 12, *or* often absent." Now by this arrangement and under this diagnosis Mr. Meyrick classifies *brunneata* (*pinetaria*), *vauaria* (*wavaria*), *roboraria* and *consortaria* as belonging to this genus. Fancy, *wavaria* and *roboraria*, *pinetaria* and *consortaria* in one genus! This is, of course, due to the *ors* above, which, I should think, might have been multiplied by Mr. Meyrick with a little skill so as to include the whole European fauna in one genus. By means of similars "ors" *luteolata* (*cratægata*) is included in the same genus with *notata*, *liturata*, *alternata* and *clathrata*, whilst *fasciaria*, *margaritata*, *pulveraria* and *dolobraria* get united in *Metrocampa* with an exceptionally good supply of "ors." The "ors" in *Hydriomena* allow the inclusion of the following British species:—*ocellata*, *simulata variata*, *juniperata*, *sagittata*, *fulvata*, *dotata*, *picata*, *mata*, *siterata*, *sordidata*, *trifasciata*, *truncata*, *immanata*, *silaceata*, *corylata*, *suffumata*, *cæsiata*, *flavicinctata*, *dubitata*, *badiata*, *nigrofasciaria*, *rubidata*, *berberata*, *cucullata*, *albicillata*, *adæquata*, *unangulata*, *minorata*, *tæniata*, *unifasciata*, *alchemillata*, *affinitata*, *decolorata*, *albulata*, *procellata*, *bilineata*, *fluviata*, *polygrammata*, *lapidata*; rather a strange mixture those who know the larvæ and pupæ will probably think. There is still another important point. The usage of these "ors" sometimes admits almost anything, and their application allows species to go in several genera. Take for example, *Hydriomena* and *Xanthorhoe*. The only positive difference in these genera appears to be "Antennæ in ♂ ciliated, rarely dentate or naked" in *Hydriomena*, and "Antennæ in ♂ bipectinated, apex usually simple" in *Xanthorhoe*; but the latter character, I should say, is almost included in the "ciliated" of the former species. As a result of this fine distinction, the species are separated in a marvellous manner. *Variata* gets into *Hydriomena*, *firmata* into *Xanthorhoe*; *unangulata* in the former, *montanata* and *fluctuata* in the latter, *polygrammata* and *lapidata* in *Hydriomena*, *lignata* in *Xanthorhoe*, and so on. A few other peculiarities are as follows:—*Ocellata*, *variata*, *sagittata*, *sordidata* (*elutata*), *immanata*, *cæsiata*, *dubitata*, *badiata*, *albicillata*, *adæquata* (*blandiata*), *decolorata*, *fluviata*, *polygrammata*, etc., are all included in the same genus; *reticulata* and *prunata* are separated from *silaceata*; *vitalbata* and *tersata* are lumped with *togata*, *sparsata*, *subnotata* and *scabiosata* into *Eucymatoge*; *coronata*, *debiliata* and *rectangulata* are separated from the great mass of *Eupithecie*, whilst the *tenuiata-isogrammata* group remain. Our five species in *Lobophora* get distributed over three genera, and it appears impossible to explain what the generic distinctions are. *Candidata* is in the same genus as *filigrammaria*, but separated from *luteata*. *Brumata* and *boreata* are sandwiched between *blomeri* and *cambricaria*, with *adustaria* following the latter. *Vittata*, *limitata*, *plumbaria*, *undulata*, *bipunctaria*, *multistrigaria*, *didymata*, *ferrugata*, *firmata*, *montanata*, *fluctuata*, *olivata*, *viridaria*, etc., are all lumped into the genus *Xanthorhoe*, and separated from their allies in *Hydriomena* by eight genera. The closest British allies to *æscularia* are *parthenias* and *notha*, which are true Geometers according to Mr. Meyrick. *Perochraria* and *ochrata* get transferred to different genera, as also do *subsericeata*, *inornata* and *aversata* on the one hand from

remutaria on the other. *Straminata* is separated from its variety *circellata* by thirteen species, of which *perochraria*, *humiliata* and *dilutaria* are three. *Rubiginata* (*rubricata*) gets into the same group as *remutata*, *immutata*, *immorata*, etc. Our six *Ephyras*, *mirabile dictu*, are not separated, although under another generic name, nor is a striking species like *roboraria* placed in the midst of them. *Temerata*, *taminata*, *obscuraria*, *obfuscaria*, *pictaria*, *petraria*, and *lineata* (*dealbata*) form another very unnatural genus, whilst *rupicapraria* has a genus to itself between *citraria* and *trepidaria*, the genus in which the latter is placed being derived, according to Mr. Meyrick, from the genus of the former, which I dare say is correct, so far as evolution leads us to suppose that all these genera are derived the one from the other. Again, *trepidaria* in *Psodos* separates *rupicapraria* in *Theria* from *leucophæaria*, *marginaria*, *defoliaria* and *aurantiaria* in *Hybernia*, and these are followed by genera containing *zonaria*, etc. I cannot find some of the British species at all, *e.g.*, *ruberata*, but it may have been transferred to the TORTRICES or TINEINA. Now all this may appear very clear and natural to Mr. Meyrick, but to those who, like myself, have not educated themselves up to this point, it is a fearful mixture to be taken in small doses as infrequently as possible. In short, the whole system is something to be pondered over by those entomologists who are anxious that the Entomological Society of London should settle the matter for ever and aye, as if any society in the world had yet an infinitesimal portion of the material necessary to produce even a slight approximation to a natural classification in any one group. At any rate it appears to me that Mr. Meyrick might learn much concerning a natural system from Guenée, and his paper is a proof that his work is not much in advance of that of Linnæus, which was done 150 years ago.—J. W. TUTT. *April*, 1892.

CURRENT NOTES.

Each year the South London Entomological Society outdoes itself at its annual exhibition, and this year is no exception to the rule. Among the lepidoptera the exhibits of so many members stand prominently forward that it is difficult to select what is really best. Mr. Henderson shows a very fine drawer of *Tephrosia crepuscularia* (3 broods), the distinction between the broods being very marked, and the third brood presenting its usual character of pigmy size. Messrs. Croker and Simes, life-histories of a large number of species, all well mounted, that of *Phorodesma smaragdaria*, its larva in its natural dress, being conspicuous. Mr. Barker, an interesting drawer of *Lycænidæ*, and Mr. Mera, very beautiful series of *Arctia caia* and *Angerona prunaria*; Mr. Adkin, a large part of his fine collection, and a drawer of Rannoch species of the highest interest. His series of Irish *Spilosoma mendica* are especially worthy of mention. A long row of exceedingly clean and well-arranged drawers belonging to Messrs. Machin, Wellman, Tugwell, and J. A. Clark, are full of interest, and attract the working collector. Mr. Wellman's *Cidaria russata* and *immanata*, Mr. Clark's *Lælia cænosa*, black *Psilura monacha* and *Spilosoma menthastri* var. *walkeri*, and Mr. Tugwell's suffused *Venusia cambricaria*, dark *Strenia*

clathrata, from Basingstoke, and *Boletobia fuliginaria* attracting, perhaps, most attention. Mr. Farren exhibits a magnificent series of *Bryophila* var. *impar*, and a grand lot of the various species of *Anticlea*. Mr. Barrett, a fine lot of *Agrotis cursoria* and *Odonestis potatoria*, including yellow forms, whilst, at the same time, a box of varieties of Diurni from Messrs. Russ, Sydney Webb, Robson, Rev. Joseph Greene, Drs. Wheeler and Mason are, perhaps, the most bizarre lot of insects ever collected into so small a space. Mr. Nussey, a fine lot of *Lycænæ* and *Hesperidæ*; Mr. South, another very extensive exhibit, amongst which *Lycæna alexis*, *Cidaria russata*, *Noctua festiva* and *N. conflua* (the two latter very distinct, as arranged in series) are, perhaps, the pick, whilst the same gentleman's Tortrices, Pyrales, and Pterophorina are most interesting. Mr. Jäger his fine drawer of "Tigers," including *Callimorpha hera*. Messrs. Billups, Lewcock and West make a grand show of Coleoptera, Hymenoptera, Hemiptera, etc., between them; and Messrs. J. Jenner Weir and Edwards exhibit some fine exotics, the cases exhibiting mimicry between the females of certain *Papilionidæ* and *Nymphalidæ* being especially interesting. But, perhaps, the greatest entomological treat was provided by Mr. Leach, whose cases of Palæarctic BOMBYCES and NOCTUÆ were exceedingly fine and interesting, and opened one's eyes to the vagaries of certain species under different conditions, when studied from the point of their geographical distribution. Mr. Tutt exhibited *Hydræcia nictitans* and the sub-species *H. paludis* and *lucens*, *Cuspidia alni* and *C. psi*, long series of vars., and a drawer of varieties of *Teniocampa gothica*; Dr. Sequeira, two drawers of picked lepidoptera, etc. There were many other exhibitors who made most interesting exhibits. Perhaps it is going out of the way for an Entomological Magazine, but certainly Mr. J. A. Cooper's birds' eggs were quite a feature of the exhibition, and the attention the exhibit drew was quite deserved by its excellence.

The first part of Mr. C. G. Barrett's work on the British Lepidoptera has been at last published. It has been generally expected that the letterpress would be good, and the plates more or less unsatisfactory. The latter is certainly the case, and not only is the colouring poor, and in some certainly bad, but the larvæ have been apparently drawn and coloured from "blown" specimens, and, of course, are most unnatural, and bear no comparison whatever with those drawn by Sepp, Rösel and Hübner 100 to 150 years ago. The letterpress is generally correct, although the nervures of the female of *Aporia crataegi* are said to be blacker than those of the males, and the species in general is considered not to be variable. As a matter of fact it varies, perhaps, next to *Pieris napi* rather more than any of our British *Pieridæ*. The explanation in the introduction that the plural of "ovum" is "ova," etc., shows that the work is characteristically suitable for beginners. There appears to be but little in the first part which is not in Newman, except some general statements on variation which occupy usually as much or more space, as the notes on the species in general. We certainly had hoped for something on the lines of Scudder's big work, and must own to being grievously disappointed. Certainly on the present lines there is but little encouragement for collectors of a few years' standing to buy it, and we can only hope that the author will soon reach the smaller "fry," where his intimate knowledge will be far beyond that of the

average collector. From the amount of letterpress in Part I., and at the rate of a part per month, some 300 parts will be wanted, and 25 years will probably be occupied in completion. Much more letterpress must be given per number, if the author is ever to reach that part of his work which is sure to be most valuable.

The *Irish Naturalist* is a new "monthly journal," devoted to "general Irish natural history," which we welcome with pleasure. The first number contains articles by Prof. Johnson, D.Sc., Prof. Cole, F.G.S., Rev. W. F. Johnson, M.A., A. G. More, F.L.S., etc., and as it has been accepted as the organ of several of the Philosophical Societies and Field Clubs in Ireland a good circulation should be quickly assured.

Mr. J. Alston Moffatt contributes a very interesting paper on wing structure, entitled "A microscopical examination of an unexpanded wing of *Callosamia promethea*," to the *Report of the Ent. Soc. of Ontario* for 1891, pp. 32–35. It is in reality an extended account of his paper, *Ent. Rec.* vol. ii., pp. 274–275, and he refers to Dr. Buckell's and Mr. Fenn's papers on this subject. The *Report* has a large number of facts of the highest interest and value on economic entomology.

For the students of the *Coccidæ*, Mr. T. D. A. Cockerell, Curator of the Museum, Kingston, Jamaica, has prepared mounted specimens, and will send sets (10 specimens in each) on application. They should be of the utmost use to agriculturists.

It would be interesting to the members of the "Lancashire and Cheshire Entomological and Natural History Society," after having heard Mr. Webster's paper (*ante* p. 95), to read a paper by the Rev. Thomas W. Fyles, on "The Entomology of Shakespeare," given in the *Annual Report of the Fruit Growers' Association and Entomological Society of Ontario*, 1890, pp. 78–87.

Mr. Thomas Hutchinson, of Leominster, publishes a list of Herefordshire Lepidoptera, which will, we believe, be embodied in the *Transactions of the Woolhope Club*, and, thanks to Dr. Wood, it appears to be more complete in Micro-lepidoptera than any local list yet published. Mr. Hutchinson notes that 510 species of Macro-lepidoptera out of 811, and 669 species of Micro-lepidoptera out of 1262 occur in the county. It is the particular home of *Xylomiges conspicillaris* and *Eupithecia consignata*, and such species as *Cuspidia alni* and *Pachnobia leucographa* occur here frequently, the latter in abundance.

NOTES ON COLLECTING, Etc.

CACOECIA EXCESSANA, Wlk., FEEDING ON LAUREL.—Within the last three years, records have appeared of the larvæ of several species of British Lepidoptera feeding on common laurel (*Cerasus lauro-cerasus*). The last case was reported by Mr. Bignell (*Entom.*, xxiv., 18), who found a colony of the larvæ of *Phalera bucephala* feeding on a laurel hedge at Portsmouth. In this district, I have observed colonies of the larvæ of *C. excessana*, feeding, last season and the present one, on laurel fences. This native species is practically omnivorous, and has, for several years, attacked apples in different parts of the country, but,

unlike *Carpocapsa pomonella*, it attacks only the outside of the fruit. After considerable experience with both species, I have not yet seen *excessana* penetrate to the core of the apple, and consume the pips, as is the general habit of *pomonella*. The larva of the former conceals itself, like other species of the group, under a dead, contracted leaf, which it attaches to the skin of the apple, and, living under its shelter, eats out shallow furrows, or sometimes good-sized patches on the surface, but never, according to my experience, deep in the flesh. It, however, destroys the fruit, and renders it unsaleable. I have lately found these larvæ feeding on several other, both indigenous and introduced, plants.—W. W. Smith, Ashburton, N.Z. *Jan. 2nd*, 1892.

Delay in Pupa.—Four pupæ of *Brephos notha*, had last year completed a second winter in the pupa state, and were very nearly thrown out as useless, because they had changed colour, from brown to black, a change often implying decay, but which I took to mean partial development of the imago, from some cause arrested, probably by death. These have, however, just produced four imagines, after being in pupa three winters. *Petasia nubeculosa* has also emerged, after passing five winters as a pupa.—T. A. Chapman, Firbank, Hereford. *March 28th*, 1892.

Pselnophorus brachydactylus.—With regard to the notes on this species (*Ent. Rec.*, iii., pp. 33 and 63), *vide Scottish Naturalist*, iv., p. 246, 1877–78, where I record the capture of two specimens near the mouth of Glen Tilt, Perthshire. One was taken by the late Sir. T. Moncreiffe (see *Sc. Nat.*, vol. ii., p. 203), and is, I suppose, still in his collection. I think the other was taken by Mr. W. Herd, who has probably still got it. There is no doubt about the species, but I did not know that it was quite so rare.—F. Buchanan White, Perth.

The Lepidoptera of Epping Forest (*continued from p.* 84).—Tree trunks during the month (May) are very productive. In the Monkswood portion, *Demas coryli*, *Dasychira pudibunda*, *Arctia mendica* and *Tephrosia consonaria*; in the Chingford section, *Cidaria corylata*, and throughout the Forest, *Nola cristulalis*, *Cuspidia psi*, *Amphidasys betularia*, *T. biundularia*, *Eupithecia abbreviata* and *Coremia propugnata* are to be found. Of these *D. pudibunda*, *C. psi*, *T. biundularia*, *C. propugnata* and *C. corylata* are abundant. The *psi* are usually light coloured, but occasionally var. *suffusa* is met with. *T. consonaria* may be taken in some numbers, but is very local. *N. cristulalis* (which sits head downwards) is not very common, but is well distributed. They have been seen sitting on beech, hornbeam, birch and oak, and are rather conspicuous on the two first named trees. One larva was crawling over a beech trunk on July 25. Of *A. betularia*, *Arctia mendica*, and *E. abbreviata*, only a few have been picked up each year. One specimen of *Eupithecia dodoneata* was taken on the 19th May, 1890, at rest on an oak trunk in the Wake Arms section. Light during the month is usually only productive of a few *E. vulgata*, and *Eubolia certata*. Beating is, perhaps, an even more productive mode of collecting at this time of the year than searching the trunks. The four "hooktips" are sometimes plentiful, *Drepana cultraria* occurring in Monkswood, *lacertinaria* and *falcataria* in the Monkswood and Wake Arms sections, and *binaria* throughout. The males of *cultraria* flit about in the sunshine commonly, and on the

31st May, 1891, *binaria* was flying in some numbers in the glades near Fairmead. Among the GEOMETRÆ, *Venilia maculata*, *Ephyra punctaria*, *Bapta temerata* and *taminata*, *Melanippe montanata*, *Coremia unidentaria* and *ferrugata* in the Chingford section, and *Melanthia ocellata*, *Ephyra linearia*, *Acidalia remutaria*, *Asthena candidata*, and *Lomaspilis marginata* in the Monkswood and Wake Arms divisions are to be knocked out. *E. linearia* is often quite a nuisance. *Eurymene dolobraria* and *N. pulveraria* have been taken in the Chingford and Monkswood sections. Among the footmen *Lithosia aureola* (*sororcula*) may occasionally be disturbed near Chingford, or seen flying late in the afternoon. One specimen of *E. porata* fell to the beating stick in the same locality. At dusk, *Hepialus lupulinus*, *Apamea basilinea*, *Noctua plecta*, *Iodis lactearia*, *Emmelesia albulata* and *decolorata* and *L. adustata* are to be found in the Chingford Forest. *E. decolorata* and *L. adustata* are only taken sparingly, the others are common. (*To be continued.*)

SPRING NOTES.—*Liverpool.*—At Knowsley, on April 10th, I got black *Diurnea fagella*, and the following day at Crosby found *Nyssia zonaria* abundantly.—J. E. ROBSON. *April 16th*, 1892.

Reading.—The weather changed to cold just when the sallows were attracting moths rather freely. *Endromis versicolor* had also begun to emerge, but have stopped again.—W. HOLLAND. *April 16th*, 1892.

Carlisle.—I have taken a specimen of *Nyssia hispidaria*, which I believe is new to the district. I also took a pair of *Calocampa exoleta*, *in copulâ*, on March 26th, whilst *Larentia multistrigaria* and *Tortricodes hyemana* are now out in abundance.—C. EALES. *March 30th*, 1892.

Wanstead Flats.—I took two specimens of *Tæniocampa opima* after several fruitless journeys on Wanstead Flats.—A. W. MERA. *April 25th*, 1892.

Stony Stratford.—I took a freshly-emerged male *Spilosoma lubricipeda* on February 13th, some 30 yards from a small furnace. Probably it had spun up near.—W. FODDY. *March 7th*, 1892.

Isle of Man.—Moths have been somewhat abundant at the sallows lately. On the evenings of the 9th and 10th inst., I visited some bushes in the neighbourhood of Lezayre. Both nights were bright, moonlight, and rather cold; but, notwithstanding this, insects swarmed. *Tæniocampa gothica* and *T. instabilis* were the commonest species to be met with, and these varied to a most extraordinary degree, and are in splendid condition. I also took some beautiful specimens of *T. stabilis* and *Anticlea badiata*. I might mention here that I have never found *T. stabilis* until this year.—H. SHORTRIDGE CLAKE, 2 Osborne Terrace, Douglas.

Epping.—All fine species of the genus *Hybernia* occur in considerable numbers in Epping Forest. *H. leucophæaria* we get both very light and fine dark forms, and there is also a very pretty dark banded form, the ♀ can be found on fences and tree trunks in the daytime. *H. rupicapraria*, until this season, I thought a local species in our Forest, but with the assistance of my friend, Mr. F. B. Harvey, I have taken it on every whitethorn hedge between London, Epping, Enfield, etc., which we searched; the ♀'s, about an hour after dark, are found at the bottom of the hedges, later on, about the middle and interior, and still later, on the outside and top of the hedges. Those ♂'s taken within

the Forest are a shade darker than those from outside. *H. aurantiaria* occurs commonly, both light and mottled forms, and *H. defoliaria* is very plentiful, as is also *H. marginaria*, of which I have some fine dark forms, as well as very light, from the same trees. The ♀ of the last three species can be found plentifully on tree-trunks after dark by the use of a lantern.—Ambrose Quail, Stamford Hill, N.

Theydon.—On Saturday, at Theydon Bois, I took *Brephos parthenias*. The first one I saw about 1 p.m., drying its wings, and by 2 p.m. they were flying freely. I also took two *Asphalia flavicornis*.—A. U. Battley. *March 28th*, 1892.

Rugeley.—*Asphalia flavicornis* has been fairly abundant. I took *Thecla rubi* on April 10th. *Saturnia carpini* has also been very common this year.—R. Freer. *April 14th*, 1892.

Poole.—Since April 1st, *Taeniocampa gothica*, *T. instabilis*, and *T. stabilis* have been plentiful at sallows, together with an occasional *T. munda*, *T. cruda* and *Orrhodia vaccinii*. *Eupithecia pumilata* has appeared in some numbers. Though I have worked hard for *Dasycampa rubiginea* in last season's locality, I have failed to find another specimen.—J. H. D. Beales. *April 11th*, 1892.

Reading.—On April 21st, at 4.30 p.m., I took a ♀ *Endromis versicolor* which laid a large batch of eggs; on April 29th, at 2.30 p.m., a pair of *Notodonta chaonia*, the ♀ also obliging me with ova. *Eupithecia abbreviata*, *E. irriguata*, *Lobophora lobulata*, *Tephrosia crepuscularia*, *T. punctulata*, *Micropteryx purpurella*, *subpurpurella*, *unimaculella*, etc., have occurred, some in abundance.—E. Bazett. *May 7th*, 1892.

Societies.

Entomological Society of London.—*April 13th*, 1892.—Mr. R. McLachlan exhibited specimens of *Anomalopteryx chauviniana*, Stein, a Caddis-fly remarkable for the abbreviated wings of the male, the female having fully developed wings; he alluded to the *Perlidæ* as including species in which the males were frequently semi-apterous. Dr. Sharp inquired if Mr. McLachlan was aware of any order of insects, except the Neuroptera, in which the organs of flight were less developed in the male than in the female. Mr. C. G. Barrett and Mr. H. J. Elwes cited instances amongst the *Bombycidæ* in which the wings of the male were inferior in size and development to those of the female. Dr. Sharp exhibited specimens of both sexes of an apparently nondescript "phasmid" insect allied to *Orobia*, obtained by Mr. J. J. Lister in the Seychelle Islands, together with *Phyllium gelonus*. He also exhibited specimens of both sexes of an Acridiid insect, of the group *Proscopides*, remarkable for its great general resemblance to the *Phasmidæ*, though without resemblance, so far as is known, to any particular species. In reference to the *Phyllium*, Dr. Sharp called attention to the fact that the similarity of appearance of parts of their organisation to portions of the vegetable kingdom was accompanied by a similarity, amounting almost to identity, of minute structure. He said that it had been stated that the colouring-matter is indistinguishable from chlorophyll, and that Mr. Lister had informed him that when in

want of food, a specimen of the *Phyllium* would eat portions of the foliaceous expansions of its fellows, although the *Phasmidæ* are phytophagous insects. The resemblance to vegetable products reached its maximum of development in the egg; and Mons. Henneguy has observed that when sections of the external envelope of the egg of *Phyllium* are placed under the microscope no competent botanist would hesitate to pronounce them to belong to the vegetable kingdom. Dr. Sharp also stated that in some species of *Phasmidæ* it was easy to obtain the egg by extraction from a dried specimen. Mr. Barrett exhibited, for Major J. N. Still, a specimen of *Notodonta bicoloria*, which had been captured in a wood near Exeter. Major Still had stated that the captor of the specimen was unaware of the great rarity of the species. Mr. Barrett also exhibited, for Mr. Sydney Webb, some remarkable varieties of *Argynnis adippe* and *Cœnonympha pamphilus*: also two specimens of *Apatura iris*, and two of *Limenitis sybilla* in which the white bands were entirely absent. Mr. E. B. Poulton gave a lecture "On the denudation of the Scales in certain Species of Lepidoptera," and illustrated it by a large number of photographs shown by means of the oxy-hydrogen lantern. Mr. G. F. Hampson, Mr. Elwes and Mr. Poulton took part in the discussion which ensued.

April 27th, 1892.—Robert McLachlan, Esq., F.R.S., Treasurer, in the chair. Mr. C. G. Barrett exhibited, for Mr. Sabine, varieties of the following species:—*viz.* one of *Papilio machaon*, bred by Mr. S. Bailey, at Wicken, in 1886; one of *Argynnis lathonia*, taken at Dover in September, 1883; one of *A. euphrosyne*, taken at Dover in 1890; and one of *A. selene*, taken at St. Osyth, in 1885, by Mr. W. H. Harwood. He also exhibited a long series of *Demas coryli*, reared by Major Still from larvæ fed exclusively on beech, which he said appeared to be the usual food of the species in Devonshire, instead of hazel or oak. Mr. Barrett also exhibited, for Mr. Sydney Webb, a number of varieties of *Arge galatea*, *Lasiommata megæra*, *Hipparchia tithonus* and *Cœnonympha pamphilus*, from the neighbourhood of Dover. The Rev. J. Seymour St. John exhibited a variety of the female of *Hybernia progemmaria*, taken at Clapton in March last, in which the partially developed wings were equally divided in point of colour, the base being extremely dark and the outer portion of the wing very pale. The Rev. Canon Fowler made some remarks on the subject of protective resemblance; he said his attention had been recently called to the fact that certain species of *Kallima* apparently lose their protective habit in some localities, and sit with their wings open, and that Dr. A. R. Wallace had informed him that he had heard of a species of *Kallima* sitting upside down on stalks, and thus, in another way, abandoning its protective habits. Mr. W. L. Distant referred to certain species of South African butterflies, which, when at rest, were protected by their resemblance to the plants on which they reposed, or by their resemblance to the rocks on which they settled, but which frequently abandoned their protective habit and sat with open wings. Mr. Barrett, Mr. McLachlan, Mr. Jacoby, Mr. Champion, Mr. H. Goss, Canon Fowler, and Mr. Frohawk continued the discussion. Mr. Goss informed the meeting that, in pursuance of a resolution of the Council passed in March last, he and Mr. Elwes had represented the Society at the recent Government inquiry, as to the safety and suitability of the

proposed Rifle Range in the New Forest, held at Lyndhurst by the Hon. T. W. H. Pelham, on the 20th, 21st, 22nd and 23rd inst., and that they had given evidence at such inquiry, and addressed a large meeting of War Office officials, Verderers and Commoners.—H. Goss and W. W. Fowler, *Hon. Secs.*

City of London Entomological and Natural History Society. —*Thursday, April 7th*, 1892.—Exhibits: Lepidoptera—Mr. Gates, a living specimen of *Hadena pisi*. Mr. Southey, a long and variable series of *Hybernia defoliaria*. Mr. Bacot, a series of *Hybernia progemmaria*, including var. *fuscata*, also an asymmetrical form of *Arctia caia*. Mr. Clark, *Brephos parthenias* and *Amphidasys prodromaria* from Epping Forest. Mr. Battley, ova, young larvæ and cocoon of *Leucoma salicis*. Mr. Simes, a life-history of *L. salicis* and a variable series of *Hybernia leucophæaria*. Mr. Smith, a series of *Selenia bilunaria*, showing considerable difference between the spring and summer forms. Mr. Gurney, a series of *Lithosia quadra* from the New Forest. Dr. Sequeira, a case of Rhopalocera from Central Africa. He remarked that several of these specimens much resembled British species, one in particular being almost identical in markings with *Polyommatus phlæas*, but having tails to the hind wings. Mr. Milton, *Asthena blomeri* from Clevedon. The exhibits in Coleoptera were as follows:—*Sina longicollis* and *Grammoptera ruficornis* by Mr. Milton. Mr. Heasler exhibited *Chilocorus similis*, *Bythinus curtisi* and *Agathidium varians*.

Mr. Battley then read his paper on the "Life-history of *Leucoma salicis*," stating that the ova were deposited from the 12th to the 15th of July, 1890, in large clusters, and enveloped in a tough substance, having the appearance of froth. They were globular in shape, and at first bright green in colour, changing to lead colour before hatching, which took place on 27th July. The young larvæ, leaden black in colour, with a rusty tinge on the back, fed in a state of nature on various species of poplar (*Populus fastigiata*, *nigra*, *balsamifera* and *tremula*) and willow (*Salix alba* and *fragilis*). They began to stop feeding at the beginning of August, and having cast one skin, retired for hybernation at the end of the month. They then formed whitish cocoons, of a firm but transparent texture, under the bark of their foodplants. At the end of April, 1891, they began to feed again, and soon cast their second skin, the third and fourth being shed about 20th May and 8th June. They now assumed their full-fed markings, the colours, however, being not quite so bright. About 19th June they cast their skin for the fifth and last time, and were full-fed by the end of June. Newman says that it "spins a web on the trunks of the poplar, or on the ground," but Mr. Battley stated that he had always found them spin up among the living leaves.[1] The pupa is black, thickly covered with yellow hairs. The imagines emerge from the middle to the end of July, and are very common in most parts of the Lea valley in the neighbourhood of their foodplants, the males coming to gas lamps about midnight.

In the discussion that followed, Mr. Mera stated that the time of flight was about midnight, but he had occasionally seen it on the

[1] The larva always spins up in this way at Deal, where the moth is abundant.—Ed.

wing at dusk.[1] Mr. Burrows stated that he had found cocoons of this species formed upon the trunks of trees, but thought that the larvæ were compelled to spin in this way, as they had almost defoliated the trees. Mr. Simes called attention to the peculiar yellow blood of the species, and the glands of the thorax. A vote of thanks was then accorded to Mr. Battley for his paper. Mr. Riches stated that he had seen a freshly-emerged specimen of *Spilosoma menthastri*. Mr. Southey stated that he was breeding *Biston hirtaria* from pupæ that had gone over two winters. A discussion also took place upon the distribution of *Gonopteryx rhamni* near London—Wimbledon Common and Highgate Woods being cited as good localities for the species.

Thursday, April 21st, 1892.—Exhibits: Lepidoptera—Mr. Battley, five specimens of *Taeniocampa instabilis* from various localities in the north of London, two being of a very light colour. Mr. Huckett, two specimens of *Selenia illustraria*, bred from larvæ taken last autumn. He stated that the imagines bred from these larvæ closely approached the æstival form. Mr. Tremayne, *Amphidasys prodromaria*, from Epping Forest, *Cidaria miata*, *Asphalia flavicornis* and *Dasychira pudibunda*. Mr. Clark, a series of *Dasystoma salicella* from Epping Forest. Mr. Hill, a ♂ specimen of *Dasychira pudibunda*, quite freshly emerged, having a large area in each wing denuded of scales; these areas were strikingly symmetrical on either side of the insect. Mr. Smith, *Asphalia flavicornis* and *Tephrosia crepuscularia* from West Wickham. Mr. Southey, a series of *Crocallis elinguaria* and *Ennomos angularia* from Hampstead, one ♂ of the latter species having the tips of the anterior wings suffused with purple. Coleoptera:—Mr. Heasler, *Cnemidotus impressa*, *Hydroporus erythrocephala*, *Philydrus melanocephalus* and *Berosus signaticollis* from Mitcham. Mr. Battley advised those members possessing any ribbon-grass in their gardens, to search for the larvæ of *Apamea ophiogramma* now; he added that during February these larvæ had wandered from the ribbon-grass and attacked carnations. He also recorded that he had heard the nightingale in Larkswood, Epping Forest, on April 19th. Mr. Simes announced that he first observed the swallow on April 8th, and the sand-martin and spotted flycatcher on April 18th.

Thursday, May 5th, 1892.—Exhibits: Lepidoptera—Mr. Fox, a living pupa and one imago, bred from the larvæ found by him feeding in tomatoes, and exhibited before the Society on 21st January (*Ent. Rec.*, p. 40). The imago seemed to possess affinities with the genera *Habrostola* or *Heliothis*. Mr. Clark, a very fine series of *Brephos parthenias* from Epping Forest. Mr. Prout, a long and very variable series of *Bryophila glandifera* from Sandown, including most of the forms mentioned by Mr. Tutt in his *British Noctuæ and their Varieties*. Mr. Bacot, a fine series of *Taeniocampa gothica* from Epping Forest and Rayleigh. Mr. Tremayne, a series of *Papilio machaon* from Wicken. Dr. Buckell, a series of *Phigalia pedaria*, bred from pupæ from Epping Forest; one ♂ showing a tendency to melanism, brought about, as in the case of ♀ *Biston hirtaria*, by imperfect development of the scales. Also an example of *Taeniocampa stabilis* from Epping, having the stig-

[1] The moth flies freely at dusk at Deal. It appears to remain on the wing until late.—Ed.

mata confluent on one side, but distinct on the other. Mr. Simes, a series of *Erastria venustula* from Essex, and *Dianthœcia carpophaga* from the Isle of Man; also a number of young larvæ of *Liparis similis*, which had been bred from ova. Mr. Gates, *Dicranura vinula* and *Hadena pisi* from Barnes. Mr. Bellamy a very fine and variable series of *Tæniocampa instabilis*, and a very dark form of *T. gracilis*; also *T. cruda* and *Pachnobia rubricosa*. Mr. Milton, a series of *Bupalus piniaria* from Clevedon and Scotland; *Cidaria corylata* from Rannoch and the London district; also a cocoon of *Saturnia pavonia*, containing two pupæ; also in Coleoptera: *Pediculus vestimentis* and *Chrysometra banksi*. Mr. Heasler, *Hydroporus pictus*, *H. angustatus*, *Agabus conspersus* and *A. agilis*. Mr. Smith mentioned that two specimens of *Thanaos tages* and three examples of *Anthocharis cardamines* had been taken at Dorking last Saturday (April 30th).—A. U. Battley and J. A. Simes, *Hon. Secs.*

Erratum.—*Ent. Rec.* p. 67, 8 lines from bottom, for "Hampstead Heath," read "Highgate Woods."

Lancashire and Cheshire Entomological Society.—*Monday, April 11th*, 1892.—Mr. J. E. Robson, F.E.S., of Hartlepool, Editor of the *British Naturalist*, read a paper entitled "Melanism and its theories." After reviewing the various theories put forward by previous writers to account for the tendency of the colour of certain species to darken, he stated that it was his belief that no single theory could account for the phenomenon of melanism now going on; and, while agreeing with Lord Walsingham that the dark colour of insects in cold[1] and snowy regions was due to that colour being most suitable, he also considered that the increase of smoke and dirt, obscuring the rays of the sun near large towns, would also tend to produce melanism by the laws of "natural selection." The paper was illustrated by numerous examples of melanic forms of Lepidoptera and Coleoptera, including Mr. C. A. Briggs' very dark *Sphinx ligustri*, Mr. Capper's black *Boarmia cinctaria*, and *B. roboraria*, and Mr. Robson's very dark *Arctia menthastri*, *Odontopera bidentata* and *Chortobius pamphilus*; but the little box that attracted most attention contained side by side Mr. Briggs' fine variety of *Arctia caia* with faint buff-coloured markings on the forewings with black *bicolor*-like spots occupying the centre; the hind-wings being entirely red, and Mr. Capper's variety of the same species, the forewings of which are immaculate with the exception of one black spot near the centre, the hind-wings being normal. Mr. Newstead exhibited types of *Prosopophora dendrobii*, Doug. (a MS. name only), a very remarkable Coccid from Demerara, descriptions of which will shortly appear in the *E.M.M.* Mr. Collins, on behalf of Messrs. C. R. Billups and J. Dutton of Warrington exhibited a ♂ and ♀ of *Dytiscus dimidiatus* captured in the "Fens" in 1891, after having been lost sight of for eight years, and *Silpha atrata* var. *subrotundata* taken on the East and S.W. coasts of the Isle of Man, in February, 1892.—F. N. Pierce, *Hon. Sec.*

[1] Lord Walsingham has practically withdrawn from this position, as facts, apart from theories, prove that the countries in cold and snowy regions do not usually have dark local races, *vide Ent. Record*, etc., ii., p. 3, see also Scudder's paper on the subject in his great work, pp. 1285–1288.—Ed.

The Entomologist's Record AND JOURNAL OF VARIATION.

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SCIENTIFIC NOTES.

THE BRITISH COCCINELLIDÆ.—(*Continued from p.* 104.)

HIPPODAMIA, Mulsant.—This genus contains two species. *H.* 13-*punctata*, L., is usually found in marshy places, among reeds, etc., and is not common. The only record I have is by Rev. W. F. Johnson, whose specimens are exhibited. He takes it "on water-plants, etc., near marshy places." The localities given by him are Armagh, Belfast, and Dublin. *H. variegata*, Goeze (*Cocc. mutabilis*), is easily recognized by its oblong shape, and in having a row of spots arranged somewhat in form of a semicircle across the elytra. The spots are often confluent, and at times only faintly present. The larva seems to feed on *Aphides* frequenting low herbage. I obtained my series chiefly at Sheire (Surrey), but have also met with it at Rainham (Essex) on banks of the Thames. Mr. W. E. Sharp (Chester) writes me that "*C. mutabilis* is very common on the rough star-grass of the sandhills on the coast." Canon Fowler states that it is not recorded from the northern counties of England or from Scotland.

ANISOSTICTA, Duponchel.—Our single species, *A.* 19-*punctata*, is found chiefly among reeds and aquatic plants. The species is common in localities near London. On one occasion Mr. Cripps and myself bagged over 100 specimens at a small marsh in Esher. It can also be obtained freely at the ponds of Walthamstow, Loughton, etc. Mr. T. H. Hall "for some years past found them plentifully and in variety by sweeping tufts of decaying reeds in the shallows on Barnes Common." Mr. Ford states that it is scarce in Hastings district. Mr. W. E. Sharp (Chester) records one capture only.

ADALIA, Mulsant.—Three species are included in this genus by Canon Fowler, *viz.*, *A. obliterata* and *A. bipunctata* (formerly of the genus *Coccinella*), and *A. bothnica*, a species new to Britain. *A. obliterata*, L., has an M-like marking on its thorax, and is usually found in fir plantations. It is generally distributed in South of England, but not common. I have captured it at Esher, Sheire and Farnham (Surrey). Mr. T. H. Hall took some under bark about ten years ago in Bradley Wood, Derby. Mr. Ford says it is "somewhat common, but local, in Hastings district." Rev. W. F. Johnson records it from Armagh, and Mr. H. G. Cuthbert captured it in Dublin district

during autumn of 1891. *A. bothnica*, Payk., has a variety named *crucifera*, Weise. A single specimen of this variety has been captured by Dr. Power at Moss Morran, Scotland, and for this reason Canon Fowler incorporates the species in the British list.

A. bipunctata, L.—This beetle may be found almost everywhere—in our gardens, parks, fields, river banks, and indeed in any place where herbage or trees grow. In choice of prey it is undoubtedly the least dainty of the Ladybird tribe, as it will devour nearly every species of *Aphides* which infest our fruit trees, flowers, and food crops. In the vicinity of hop grounds, it is surprising what immense quantities of *A. bipunctata* are to be met with. I remember on one occasion while visiting Farnham (Surrey) that the insects swarmed in great numbers in the windows, houses, and churches in that district. Other Ladybird species, such as *Coccinella 10-punctata* and *C. 7-punctata*, were also present, but not in such profusion as *A. bipunctata*. The whole of these three species will devour the "Hop Aphis" (*Phorodon humuli*), but the last is by far the most useful in hop plantations. The migratory habits of the two-spot Ladybird are so well known that it is needless to enlarge on the subject. Suffice it to say, however, that the Ladybirds appear to follow the swarms of *Aphides*. Nevertheless, there is just one fact in connection with this subject that may be worthy of note. In 1888 Professor Riley, the eminent American entomologist, specially reported on the life-history of the "Hop Aphis," and confirmed the statement made by Mr. Francis Walker (in 1848) that the Aphis migrates in the autumn from the hop to the wild or cultivated plum (where the eggs are laid), and then back again to the hop plant in the spring. Owing to this statement certain cultivators rather lost their heads, and it was suggested that the plum tree, wild and cultivated, should be exterminated. What I should like to impress upon cultivators is this: Supposing that the plum trees be condemned in order to deprive the "Hop Aphis" of its hybernating refuge, how are we to prevent immigration of the *Aphides*? Probably, after we have sacrificed one of our best fruits, the number of *Aphides* in hop plantations would be found as great as ever. The subject certainly requires much further investigation before such drastic remedies are resorted to. It must also be borne in mind that hop cultivation has ever been precarious, and that the plants are largely affected by the weather; therefore, given genial weather and proper cultivation,[1] the hop plant, aided by the Ladybirds, would doubtless recover from the attacks of *Aphides*, and a good crop would be the result.

Mysia, Mulsant.—*M. oblongo-guttata*, L. (formerly *Coccinella oblongo-guttata*), is one of the large species which devour the *Aphides* frequenting fir trees. It is local rather than common. It occurs at Esher, Farnham, and other parts of Surrey; Delamere Forest and fir woods in Cheshire district (W. E. Sharp); Hastings; and fir plantations generally.

Anantis, Mulsant.—Our species, *A. ocellata*, L., is the largest of the British Ladybirds. When alive, the black spots on the elytra are surrounded by white or yellow rings, which become indistinct after

[1] The meaning intended by this term includes burning the dead bines and general rubbish of the hop grounds. In America, repressive measures form part of the cultivation of potatoes.—G. A. L.

death. This beetle may be found in similar localities to *A. oblongoguttata*, and frequently in company with it. (*To be continued.*)

ENTOMOLOGICAL PUBLICATIONS BY THE LINNÆAN AND ZOOLOGICAL SOCIETIES OF LONDON (*ante*, p. 52).—In your editorial note, in reply to my mention of Mr. Poulton's paper on the "Morphology of the Lepidopterous Pupa," you take exception to the publications of entomological papers in the *Transactions of the Zoological and Linnæan Societies*. It seems to me, however, that there are several good reasons for this, and that they are not very far to seek. In the first place, the Entomological Society is not as wealthy as the Linnæan and Zoological Societies, and could not possibly take all the papers on entomological subjects which would be offered, if the above-named societies did not accept such papers. The Entomological Society's subscription is a very moderate one, and if more of our entomologists joined it, its publishing power would attract papers which now go elsewhere. A second reason is that the Linnæan and Zoological Societies would have no right to the names they bear, if they excluded one important section of the animal kingdom; for be it observed, that one series of the Linnæan Society's *Transactions* and *Proceedings* is devoted to Zoology, and the other to Botany. By this breadth of field they are able to take in branches which have no society specially to bring them forward—Conchology, for instance. Another reason, and the one which particularly applies to the paper in question, is that the Entomological Society's *Transactions* are in octavo form only, whilst the Linnæan and Zoological Societies publish theirs in quarto. This, in a paper such as Mr. Poulton's, is of paramount importance, as it is illustrated by numerous and highly enlarged figures, quite unsuitable for an octavo page. Beside 14 woodcuts in the text, the paper has two plates, bearing respectively 32 and 34 figures, varying from the natural size of the object represented, to a magnification of 50 diameters. Until a very large accession of Entomologists to its ranks, enables the Entomological Society to bring out some of its publications in quarto, such papers as this, to say nothing of those requiring the figures of large insects, Westwood's *Castniidæ* or Butler's *Revision of the Sphingidæ*, for example, must continue to find their way to the Linnæan or Zoological Societies' *Transactions*, and while this is so, may we hope that our Editor will keep himself informed of such papers, and from time to time bring those he considers of interest under the notice of the readers of the *Record*.—GEO. C. GRIFFITHS, 43, Caledonia Place, Clifton, Bristol. [Mr. Griffiths is right. I have repeatedly drawn attention to the fact that our entomologists do not support the Entomological Society of London, so largely as they should. I did not think, when I penned my editorial, of the all round loss we should sustain, were the sister societies not to help in the publication of our work. I was only thinking of the inconvenience the distribution of such papers is.—ED.]

HEPIALUS HUMULI.—Now *Hepialus* is to the front, I may mention an observation, that I do not think I have recorded or seen mentioned by others. In two successive years, I saw what I took to be NOCTUÆ hovering about the summits of one or two elm trees, some 50 or 60 feet from the ground. I managed to capture one by watching for one descending to a lower level, and found it to be *humuli* ♂; and then

was able to identify the manner of flight, and to observe some ascending from a neighbouring meadow, where *humuli* was on the wing, and I think I also recognised ♀'s, though these might have been some NOCTUA or other. *Ulmus* and *Humulus* are botanically nearly related.—T. A. CHAPMAN, Firbank, Hereford. *May*, 1892.

HEPIALUS LUPULINUS.—I have been reading the first part of Mr. Robson's paper on "The genus Hepialus," in the *Record*, and can fully endorse some of his remarks; but it is curious what a mass of ignorance exists about some of our very commonest insects. As to *H. lupulinus*, no doubt the larva of this species will eat the roots of very many plants. If one goes into a grass meadow when the species is "out," the imagines may be seen flying by scores just below the tops of the grasses, at the roots of which the larvæ feed. I know little of their earlier stages, beyond the fact that the ♀ *sows* her eggs, as she hovers, among the herbage. The larvæ feed in a long vertical silken tube, in which they are tolerably active, and the pupa is formed in the same tube. I have seen the pupa sticking out of these tubes in hundreds where the turf has been cut and piled up, about the time the larva is full-fed. As I said before, I daresay the larva is not over particular as to diet. Few abundant species are. I have found it at the roots of mint and thyme abundantly, also at those of strawberry commonly, and at the roots of many other plants; but I have little doubt that its true food is the roots of coarse grasses. The pupa (with the hairs omitted) figured by Buckler, is very representative, and the larva certainly reminds me very considerably of what I know as the larva of *lupulinus*.—C. FENN. *May*, 1892.

PROTECTIVE RESEMBLANCE, ETC., IN CUSPIDIA (ACRONYCTA) LEPORINA.—Dr. Chapman's interesting account of *Cuspidia leporina*, in the February number of the *Record*, has enlightened me considerably. I have taken both the green-white and yellow-black form on Cannock Chase, and have always looked on the latter as a "seasonal form," since I have always found the yellow one in late autumn, sometimes as late as the end of October, and have been accustomed to look on it as being analogous to the brown form of *Notodonta dictæa*, which never puts in an appearance until the poplars begin to lose their foliage, and which then rests on the small branches, whereas the green form rests on the edges of the leaves. The yellow larva of *leporina* is of much the same tint as that which the birch leaves assume in the autumn. But, however late I have taken *leporina* from alder, I have always found it to be the green form. I have taken the larvæ from birch, alder and poplar (*Populus nigra*). It is most common on birch, and least so on poplar, from which tree I have only taken the yellow form. In the country district around Cannock Chase, I have only found it on alder. My resultant imagines have been both *leporina* and var. *bradyporina*. With regard to "protective resemblance," I cannot think that *leporina* possesses any, beyond that resulting from its superficial resemblance to green or yellow leaves, from its habits (always resting on the under side of a leaf), and from its hairy coat. I am aware that birds will eat hairy larvæ; but it seems fair to assume that they prefer smooth ones when they can get them. The hairs and spines of larvæ are probably the remains of an epidermal stinging apparatus, such as is still found in certain exotic larvæ, and in a modified form in our own *Porthesia*

similis and *P. chrysorrhœa*, and as it is likely that all hairy caterpillars once possessed these weapons of defence, it seems reasonable to suppose that hairs and spines, will, even at the present time, confer on their possessors a certain immunity from the attacks of their enemies, and I might add that hairy larvæ, as a class, are much more conspicuous, and show fewer signs of "protective resemblance" than their naked brethren. Concerning the distribution of the two forms, I might mention that when I was at Banaire, N.B., last autumn I beat a few birch trees, and got two larvæ of *leporina* from one tree, both were of the green-white form. I got no others.—RICHARD FREER, Rugeley, Staffs.

VARIATION.

HYRIA AURORARIA VAR.—Of the pink or crimson form of *H. aurorariа*, I usually get a few each season. The species does not occur at all freely, and I have only taken about eighteen specimens in two years. I occasionally get red and yellow specimens like those obtained in the south; but the crimson ones are typical of the species here.—J. COLLINS. *February*, 1892. [My typical specimens (red and yellow) are labelled New Forest, Sandwich, Wicken, Hartford and Chippenham, the more unicolorous from Witherslack and Heysham Moss. Those from Thorne Moor appear to be intermediate, but nearer the type.—ED.]

VARIATION OF LEPIDOPTERA IN ABERDEENSHIRE.—If by the red form of *Hadena pisi*, Mr. Tutt means insects like those sent round by Dr. Buckell from North London, I can say emphatically that this form is never found here. *H. adusta*—I never saw pale forms of this species, neither have I seen them unicolorous black; reddish specimens with rather darker markings are not rare, but our most common form is the dark variegated one. I have (or had) a most curious suffused brownish specimen, without any markings, and I once saw another; but on the whole, striking varieties are rare. *Phigalia pedaria*—This species varies much about here, some very pale and others very dark, but never as dark as the Hull specimens; ours are also not unicolorous, the markings are always more or less distinct.—W. REID, Pitcaple, N.B.

VARIATION OF LEPIDOPTERA AT WARRINGTON.—*H. pisi*—I have representatives of the four forms[1] enumerated, and of the red unicolorous form I bred one last year; it is the rarest here of the four. *H. adusta*—I take dark variegated forms most frequently of any, and never saw an unicolorous black specimen. I also get them reddish brown, with transverse lines yellowish, and stigmata whitish, which would most nearly approach the type.—J. COLLINS, Warrington.

VARIATION OF H. PISI.—I have bred this species from Barnes Common, Surrey, and also from Wanstead Flats, Essex, but only the two red forms, the Surrey ones inclining to be more mottled than those from Essex.—A. W. MERA, Forest Gate.

VARIATION OF ODONESTIS POTATORIA.—Last year I bred several good and striking varieties of *Odonestis potatoria*, among the more

[1] 1. Red ground colour; (*a*) unicolorous, (*b*) variegated. 2. Purple ground colour; (*a*) unicolorous, (*b*) variegated.

conspicuous being a male with the coloration of the female, and a female with the coloration of the male. I have seen many notices of the former variety, but not of the latter. I shall be glad to learn whether any collector has had the same fortune as myself.—T. WILLSON, 22, Halford Terrace, Richmond. *February 3rd*, 1892. [There are several records in our old entomological literature, and most of our larger collections contain such. I took a perfectly yellow male of this species at Wicken last year, and a Dundee collector gave me a dark male-coloured female some years since.—ED.]

TÆNIOCAMPA POPULETI var. NIGRA.—Last spring, Dr. Chapman sent me some ova of *T. populeti* which had been laid by a dark ♀. There were about a dozen to begin with, from which I bred nine, all dark; two were especially so, as dark as ordinary *Rusina tenebrosa*, and neither brown nor grey, the markings hardly visible. Three others had similar tendencies but were not of so decided a colour, and the remaining four were also dark, but suffused with a red brown colour about the middle of the wings. There was not one of the ordinary grey type.—E. W. BOWELL, Sissinghurst Vicarage, Staplehurst, Kent. *April*, 1892.

ARGYNNIS SELENE VAR.—I have a specimen of *A. selene* taken at Brockenhurst in 1890 which is somewhat analogous to the vars. of *V. urticæ* mentioned by Mr. Sharp (*Ent. Rec.*, p. 8), and Mr. Paton (*Ent. Rec.* p. 57). All the brown markings on both upper and under sides are replaced by white, while the black and silver markings remain intact. The specimen was in fair condition and so could not have been "worn," to have this appearance. Has any theory been started to account for this failure of the pigment cells? Does it bear any analogy to "albino" specimens of blackbirds, mice, rabbits, etc.—A. W. S. FISHER, The College, Winchester. [The failure of pigment development is somewhat fully discussed in the "Introduction" to *The British Noctuæ and their Varieties*, vol. ii.—ED.]

ASPHALIA FLAVICORNIS VAR.—A curious specimen of *A. flavicornis* emerged yesterday (March 18th) in my cage, bred from larvæ obtained in the New Forest. There are hardly any signs at all of the usual transverse lines, but a large number of black scales are suffused over the green ones, especially near the base and apex. But, most curious of all, there are two longtitudinal black streaks on the costa, about a quarter of an inch in length and slightly curved, the concave side being towards the costa. There is nothing else unusual about the specimen, except its small size, just under 1″ 3‴.—ID. [Does not this resemble the northern type, described in *British Noctuæ*, etc., vol. i., p. 5?—ED.]

VAR. OF NOCTUA RUBI.—Whilst sugaring one evening last July, at Askham Bog, near York, I took from amongst a number of typical specimens, a pale yellowish ochreous form of *Noctua rubi*, in fine condition. In the collection of Mr. T. Allis, in the York Museum, I notice that there are two specimens of this form.—W. HEWETT, York.

SEASONAL FORMS OF PIERIS NAPI.—In the *Entomologist's Record*, etc., for March, p. 69, there is an account of the exhibition, at the meeting of the City of London Entomological Society, of an intermediate form between *Pieris rapæ* and *P. napi*, in which it is stated that "the underside of this insect was very slightly veined, though the upper surface presented the characteristics of *P. napi*." This is an exact description

of the ordinary appearance of the females of the summer emergence of the latter insect, of which I possess a very large number. It is much to be regretted that in most cabinets that I have examined, the widely different forms which appear in spring and summer respectively, are not placed in separate rows. In my youthful days, the distinction was always made, because the spring emergence was called *P. napi*, and the summer *P. napæ*.—J. JENNER WEIR, Chirbury, Beckenham, Kent.

ARCTIA PLANTAGINIS VARS.—Mr. Wm. Reid's note (*Ent. Record*, vol. iii., p. 57) on *Arctia plantaginis*, in Scotland, is very interesting. It seems that in Scotland, at altitudes over 2500 ft., the variety *hospita* takes the place of the typical form, and that the latter is not to be obtained so high up. In Switzerland, we get both forms flying together at considerable elevations. I have taken both forms in the Upper Engadine at about 7000 ft., and they seem to be very common there. I also obtained one specimen somewhat like *hospita*, but with the black markings much more predominant, giving the insect a very dark appearance. In "The Lepidoptera of Granbünden," the type is said to occur at over 8000 ft. elevation, and to be "characteristic of our alpine meadows," besides occurring lower down. With regard to var. *hospita*, it says, "principally in the Alpine region, but also abundant as low as 3000 ft.—LEONARD S. SELLON, Davos-Dörfli.

DARK VARIETIES OF DIURNÆA FAGELLA.—Of what I take of this species at Swansea, about 10 per cent. are black in various degrees, and these are all taken on a few elm trees in the Park—standing in a little patch by themselves, the other trees, which are isolated, only producing the ordinary grey type. I do not know whether this is a case of "natural selection," as mentioned in Mr. Tutt's paper on "Melanism and Melanochroism in British Lepidoptera," as the trees of this group are rather stunted and very much exposed to the weather, the bark being very black, making it extremely difficult to distinguish the black ones at rest.—R. B. ROBERTSON, Swansea. *April*, 1892.

CURRENT NOTES.

This month's *British Naturalist* contains a portrait of that veteran entomologist, J. W. Douglas, who is happily still amongst us and still actively engaged in entomological pursuits.

Two most interesting scientific papers appear in the current number of the *British Naturalist*—"The Secondary Sexual Characters of the British Coleoptera," by Dr. Ellis; and "Butterfly Life before leaving the Egg," by the Rev. H. H. Higgins.

An excellent article on "Our rush-feeding Coleophoræ," from Dr. Wood, appears in the *E.M.M.* By different characters connected with the structure of their ovipositors, he subdivides what we have before known as *murinipennella* and *cæspititiella* into five species:—(1) *sylvaticella* (flies in May), larva on *Luzula sylvatica*; (2) *alticolella* (flies in July), larva on *Juncus lamprocarpus*; (3) *murinipennella* (flies in May), larva on *Luzula campestris* and *L. multiflora*; (4) *cæspititiella* (flies in June), larva on many kinds of *Juncus*; (5) *glaucicolella* (flies in July), larva on many kinds of *Juncus*, particularly *J. glaucus*.

Mr. Edward Saunders combines *Orthyotylus ochrotrichus* and *O. propinquus* as one species under the former name.

Mr. Newstead adds the following to our lists:—*Pulvinaria persicæ*, n. sp., from peach trees at Knutsford, Cheshire; *Signoretia luzulæ*, Dufour, from Ince, Cheshire, on *Luzula campestris; Pseudococcus socius*, n. sp., on black currant, from Wakefield, Yorks; *Ripersia pulveraria*, n. sp., on *Agrostis vulgaris* at Sandiway, Cheshire; *Ripersia tomlinii*, n. sp., on grass roots in ants' nests, from Moulin Huet, Guernsey. He also mentions *Lecanium minimum*, n. sp., on Areca and Abutilon, but does not say whether it is British. *Eriococcus fraxini* is transferred to the genus *Ripersia*.

Two new English species of *Homalomyia* have been added to the British list by Mr. Verrall—*H. corvina*, n. sp., and *H. kowarzi*, n. sp. (*E.M.M.*, p. 149).

Mr. Meade unites *Metopia rufitarsis*, Moigen, with *M. rubritarsis*, Ztt. under the latter name (*E.M.M.*, p. 153).

Mr. Blatch adds *Arena octavii*, Fauvel, to the Coleoptera of Britain. One specimen was captured at Weymouth and another in a dead gull at Ilfracombe.

The prices of our rare British lepidoptera are still maintained. At the sale of Mr. Naish's collection seven specimens of *Chrysophanus dispar* produced £16 8s., one male brought £3 3s., and a female £4 10s. Four *Lycæna acis* were sold for 18s.; eight *Lælia cœnosa* for £3 17s. 6d.; seven *Agrotis subrosea* for £6 12s. (one fine example fetching £2 10s.); and two *Cleora viduaria* £1 1s.

It is with regret that we record the death of Dr. Carl A. Dohrn on May 4th, at Stettin, at the age of 86. He was one of the honorary members of the Ent. Soc. of London, and was exceptionally strong as a coleopterist, of which order he had a very extensive collection.

We are publishing a pamphlet (24 pp.) on *Secondary Sexual Characters in Lepidoptera*. Price 1s. The points dealt with comprise "Antennæ," "Wings" (absence, etc.), "Scent Glands," "Scale Patches," "Venation," "Legs," "Colour," etc.

The Burton-on-Trent Natural History and Archæological Society publish a volume for 2s. (Bemrose and Sons, Limited, 23, Old Bailey, London), full of the most interesting matter to naturalists in general and entomologists in particular. Dr. Mason and Mr. Harris have a very complete list of "The Micro-lepidoptera of Burton-on-Trent and Neighbourhood," extending to 14 pp. and worked out in good style. The Presidential Address of Dr. Mason, entitled "The Functions of a Local Natural History Society, with special reference to the study of plant galls," is a most instructive essay, and must be read to be enjoyed; whilst the other articles, "The Irish Aran" (7 plates), by Dr. Mason; "Notes on a Salt Marsh at Branston" (1 plate), by J. E. Nowers and J. G. Wells; "Trout and Grayling," by G. Morland Day; etc. are most interesting.

Entomologists collecting in Epping Forest are complaining of the great destruction of the bracken and heather, and even of the trees caused by forest fires. It would seem that the cottagers believe that they have a grievance with regard to some questions of common rights, and it is the strong opinion of some persons that the fires are lighted to attempt to intimidate the Forest authorities. On Sunday, May 1st,

there were 13 fires within a short distance of the Wake Arms. The rangers and police seem quite unable to put a stop to this. One man, however, has been apprehended and committed for trial at Chelmsford, and there are rumours afloat of clever and daring captures of entomologists carrying lanterns while working the sallows. It is to be hoped that the Commissioners will take more vigorous steps to stop this scandal, either by increasing the Forest staff or in some other way. The offer of a reward of £25 would seem to have had no effect. As the heather is now, however, changing its colour from brown to green, it is to be hoped that the new growth will soon cover and hide the unsightly black spaces with a new garment of green.

NOTES ON COLLECTING, Etc.

NOTES OF THE SEASON.—Many will remember how in 1877 the entomologists of the southern counties of Britain and some of the northern ones were startled by the appearance of *Colias edusa* during May. I took specimens myself in the gardens of St. Mark's College, Chelsea, and they were frequently to be met with in some numbers even in the main thoroughfares. Although in nothing like the profusion of 1877, *Colias edusa* has this year again put in an appearance, and considering its rarity during the last few years, there appears to be no doubt that the specimens are immigrants. Records from all the counties along the south and south-east coast have come to hand, the var. *helice* occurring with the type. I have seen no specimens in London, but the suburban district of Lee and Eltham has been visited by the stranger. Prophecies rarely come off, but certainly everything points to an *edusa* year on the south coast. But *edusa* is not the only visitor. Several specimens of *Deiopeia pulchella* are recorded from Kent, Hampshire, Sussex, etc., and there appears to be no doubt that this well-known rover has extended its more recent wanderings to our shores. Countless numbers of *Plusia gamma* arrived in England about Tuesday, May 24th, when, suddenly, the moth occurred in swarms all over Kent, and probably elsewhere. They are still (June 7th) in vast numbers on every piece of waste ground. With these were *Stenia hybridalis*. It is strange that these two species nearly always occur in excessive abundance together. Last but not least, comes that cosmopolitan species *Cynthia cardui*. Everywhere in Kent the thistles are being literally covered with eggs, 22 eggs were found on one small leaf on Whit-Monday. So far, these are all well recognised migratory species, and as all have a second brood when they do arrive here in the spring, it is to be hoped that our southern lepidopterists will render a good account of the rarest of them. By the by *D. pulchella* is not hard to rear, I believe, if any one has pluck enough to keep a hen for eggs. The great capture of the season so far, however, is *Ophiodes lunaris*, taken by Mr. Austin at Folkestone. Most of our recognised rarer British species are putting in an appearance in numbers. The lovely weather appears to have brought out insects which have been lying over for generations. Even the growlers acknowledge that they have a good beginning at last.—J. W. TUTT.

Kinloch Rannoch, N.B.—Insects are out in fair numbers here now

my catch on Saturday was 62, and was composed of the following :—*Lobophora lobulata* and vars., *Asteroscopus nubeculosa*, *Brephos parthenias*, *Semioscopus avellanella*, *Depressaria ciniflonella*, *Asphalia flavicornis*, etc. —Wm. Reid, F.E.S. *April*, 1892.

St. Anne's-on-Sea.—We have commenced the season in earnest now, and so far it certainly promises to be a very good one. The sallows have been unusually productive ; *Tæniocampa gracilis* swarmed on them at night, *T. opima* was fairly common, whilst there were several *T. gothica*, *stabilis*, *instabilis*, and *Pachnobia rubricosa*. A specimen of *Calocampa exoleta* and one *Agrotis suffusa* also turned up. The larvæ of *Dasychira fascelina* are more than usually abundant, and are nearly full-fed. I got the first *Dicranura vinula* on April 22nd : is not this rather early? *Bombyx quercus* (*callunæ*), *B. rubi*, and *Arctia fuliginosa* larvæ and pupæ have also turned up in the course of our collecting. We are having splendid weather for entomology, and the nights have been very favourable compared with last year.—Holmes Baxter. *April 25th*, 1892.

Tring.—I venture to think that the following dates of first appearances that I have noticed this season may be of some interest to your readers : *Hesperia malvæ*, April 23rd ; *Tephrosia consonaria*, April 26th ; *Nemeobius lucina*, April 30th. A *Stauropus fagi* emerged from pupa kept in a cold room on April 7th. In this locality I usually find lepidoptera appear later than at Epping, Kent, and Surrey localities. —E. Geo. Elliman, Westcroft, Tring. *April 30th*, 1892.

Leicestershire.—I have made several visits to the sallows this season, and a list of my captures may be interesting to some of your readers :—*Knighton*, April 6th : *Tæniocampa gothica*, *T. stabilis*, *T. instabilis*, *T. pulverulenta*, *Hybernia progemmaria*, *Anisopteryx æscularia* in profusion. April 7th : *Calocampa vetusta* (1), *Pachnobia rubricosa* (1), *T. munda* (1), *T. stabilis*, *T. instabilis*, *T. gothica*, *T. pulverulenta*, *Aniclea badiata*, *Hybernia progemmaria*, *A. æscularia*. April 9th : *C. vetusta* (1), *T. gracilis* (4), *T. munda* (2), *T. populeti* (1), *T. instabilis* in quantity ; *T. pulverulenta*, *T. stabilis* and *T. gothica*, together with a few var. *pallida*. April 10th : *T. gracilis* (2), *T. munda* (1), *T. instabilis* (6), *T. gothica* (6), very cold north-east wind and moonlight. April 21st : *T. munda* (1), *P. rubricosa* (1), *T. instabilis*, *T. stabilis*, *T. pulverulenta* and *T. gothica* in quantity ; *A. badiata* (2), *Selenia illunaria* (2), *Cidaria silaceata* (1), warm night ; south-west wind ; cloudy. April 23rd : *P. rubricosa* (2), *T. instabilis*, *T. stabilis*, *T. pulverulenta*, *T. gothica* in quantity ; *A. badiata* (3), *C. silaceata* (1), south-west wind ; warm and cloudy ; *T. instabilis* were the black and dark chesnut forms ; *T. pulverulenta* were variable, *T. stabilis* and *T. gothica* ordinary forms, with the exception of *T. gothica* var. *pallida* (1). I found the catkins of the osier generally much less productive than the common sallow (*Salix caprea* ?). I got any quantity of *T. pulverulenta*, *T. stabilis* and *T. gothica* at sallow, but *T. instabilis* in comparatively small numbers ; yet at the osiers *T. instabilis* was by far the commonest species. *T. gracilis* I have not found away from the osiers.—Frank Bouskell, Lansdowne Road, Stoneygate, Leicester. *May 3rd*, 1892.

Devon Coast.—During the last six weeks we have had in this neighbourhood continual brilliant sunshine with hardly a drop of rain. The last week has been hot and sultry, and the entire absence of any wind

has made the gas lamps unusually productive. My captures on three lamps situated on a road overlooking the cliffs, with a considerable amount of undergrowth and forest trees and ornamental timber round about, on four evenings commencing at 10 o'clock and ending at 11.30, when the lamps were turned out, may be of interest, not on account of rarities but on that of the number of species taken :—*Nola cristulalis, Lithosia complanula, Euchelia jacobææ, Dasychira pudibunda, Arctia caia, A. villica, Spilosoma fuliginosa, S. lubricipeda, S. menthastri, Pterostoma palpina, Notodonta dictæa, N. ziczac, N. chaonia, Demas coryli, Viminia rumicis, Xylophasia rurea, Mamestra brassicæ, Apamea basilinea, A. gemina, Grammesia trigrammica, Rusina tenebrosa, Agrotis exclamationis, Noctua plecta, N. rubi, N. baia, Tæniocampa gothica, Dianthœcia conspersa, D. carpophaga, D. cucubali, Hadena pisi, H. thalassina, Habrostola tripartita, H. triplasia, Plusia gamma, Rumia luteolata, Selenia bilunaria, Odontopera bidentata, Hemerophila abruptaria, Acidalia marginepunctata, Cabera pusaria, C. exanthemata, Numeria pulveraria, Lomaspilis marginata, Larentia viridaria, Emmelesia affinitata, E. decolorata, Eupithecia venosata, E. consignata, E. castigata, E. virgaureata, E. nanata, E. vulgata, E. subnotata, E. exiguata, E. coronata, Lobophora carpinata, Melanthia ocellata, M. sociata, M. montanata, M. galiata, M. fluctuata, Anticlea badiata, Coremia ferrugata, C. unidentata, Triphosa dubitata, Cidaria truncata, C. immanata, C. suffumata, Anaitis plagiata, Pterophorus gonodactyla, P. pentadactyla.*—JOHN N. STILL, Seaton. *May 27th.* [The dates at which some of these species have been captured is rather startling, notably *Eupithecia subnotata, P. pentadactyla* and *Cidaria immanata.* The larva of *pentadactyla*, should be small in May, and the eggs of *C. immanata* not long hatched.—ED.]

Christchurch.—I have just learnt from my friend Mr. Brameld that a specimen of *Deiopeia pulchella* was taken by his son on May 30th, flying in a field not far from the harbour; it is in such fine condition that it must have only just emerged from the pupa. I also know of another taken on the same day and in the same neighbourhood. Many of our readers may recollect that I reported a specimen in the *Entomologist*, 1886, as taken May 18th, 1878, and was at the time impressed with the idea that it was a strange time of appearance, also its faded condition when captured caused me to suggest hybernation; this, however, was not thought to be the case, but a long discussion arose during the summer as to whether this species is permanently established in Great Britain or not.—J. M. ADYE. *June 5th*, 1892. [I do not think these specimens are British born, but immigrants like the *Colias edusa, Plusia gamma, Cynthia cardui* and other species which, absent last autumn, are now most abundant on our south coast.—ED.]

Eastbourne.—I caught a good specimen of *Deiopeia pulchella* at Eastbourne on the 30th May, and another was taken by a friend of mine at Dungeness on the 1st June. It is a very good specimen except that it has lost the point of one of its antennæ. They are both females. —R. B. POSTANS, 14, King's Road, Eastbourne.

Gosport.—A specimen of *Deiopeia pulchella* was captured here under very peculiar circumstances. The specimen differs in the disposition of its red markings from those in both Morris' and Newman's works.—W. H. MACKETT, St. Matthew's Schools, Gosport.

Berkshire.—My friend A. L. Budge captured a hybernated specimen of *S. convolvuli* at honeysuckle last evening. Is it not very unusual for this insect to hybernate in the perfect state?—J. H. D. Beales, West Woodhay Rectory, Newbury. *June 6th*, 1892.

Folkestone.—I captured a fine specimen of *Ophiodes lunaris* at Folkestone at sugar on May 30th. *Colias edusa* has also appeared here in good numbers. I have taken one var. *helice*, and have heard of several others being taken.—W. J. Austen, 2, Radnor Street, Folkestone. *June 3rd*, 1892.

Wallasey.—Having heard that *Nyssia zonaria* had been taken on the Wallasey sandhills at Easter, I and two friends resolved to go in search of it on Saturday, the 23rd inst., feeling that if we secured a dozen or so among us we should do well. Although on our arrival a drizzling rain was falling, we got to work immediately and from the very first found the species exceedingly abundant, in fact as many as 10 or 12 could be picked up without moving from one spot. The females were in the majority and literally swarmed. The males were in many cases very conspicuous, resting flat on the short herbage; others were to be found low down on the stems of the coarse grass. A splendid series was secured by each of the party, including several very fine dark and light forms. Several *Mesotype lineolata* and one *Dicranura vinula* completed a successful trip.—R. Tait, Jun., Cheetham Hill, Manchester.

Monmouthshire.—It being a particularly dark, muggy night on the 13th of May, I thought I would try the lamp. I use one I have had made for the purpose: it gives a good light, is 9 feet high, and easily carried. At 9.30 I put it up on a piece of ground covered with gorse, broom, and young growth, backed up by a dense wood. It rained all the time I was out, at first gently, but gradually got worse, and at 10.20 I had to retire wet through, but in that short time I took *Cuspidia alni* (1), *Notodonta dictæa* (3), *N. ziczac* (2), *N. camelina* (4), *N. palpina* (2), *Chesias rufata* (5), several *Numeria pulveraria*, *Thyatyra batis*, *Tephrosia crepuscularia*, *T. biundularia*, *T. pendularia*, *Ephyra linearia*, *Melanippe unangulata*, and *Hadena dentina*, while *Panagra petraria*, *Melanthia ocellata*, *Eubolia plumbaria*, *Anaitis plagiata*, *Coremia ferrugata*, and other common Geometræ fairly swarmed round the lamp. I went out again on the 26th of May near the same spot. It was 10 o'clock when I put up the lamp and I stayed until 12. It rained most of the time, and moths came more freely while it did so. I took *Cuspidia alni* (1), *Notodonta trepida* (2), *N. trimacula* (2), *Halias prasinana* (1), *N. ziczac* (4), *Epione advenaria* (1), *N. camelina* (2), *N. palpina* (4), *Smerinthus ocellatus* (2), *Demas coryli* (2), *Plusia iota* (1), *Selenia lunaria* (3), many *Thyatyra batis*, *Rusina tenebrosa*, *Noctua plecta*, *Grammesia trigrammica*, *Dicranura vinula*, *Drepana falcataria*, *Numeria pulveraria*, *Corycia temerata*, *Ephyra annuluta*, *Hadena pisi* and *Noctua rubi*. *Spilosoma menthastri*, *S. lubricipeda*, *Odontopera bidentata* and *Dasychira pudibunda* came in such numbers as to be perfect nuisances to me. The hot days we have had at intervals since the last week in March has had the effect of bringing out the imagines of many species much earlier than usual. I took *T. punctularia* the last week in March; *Anthocaris cardamines* on the 4th of May; *Cuspidia alni* and *N. camelina* on oak trunks on the 9th May; *E. advenaria* on the 15th May;

Cidaria testata on the 8th May ; *Ino statices* on the 16th May ; *Abraxas ulmata* on the 18th May.—A. NESBITT, Llandago.

Winchester.—This year has so far been extraordinarily good here. Almost everything has been commoner than usual. Trunk hunting has been especially productive, yielding *Nola cristulalis*, *Tephrosia crepuscularia*, *T. consonaria* and *T. punctulata* in plenty, while a few *Notodonta chaonia*, *Demas coryli*, *Stauropus fagi*, *Bisulcia ligustri*, *Eurymene dolabraria* and *Boarmia consortaria* have turned up. *Acontia luctuosa*, *Dianthœcia conspersa*, *D. carpophaga*, *Notodonta dictæa* have been taken by other means. On the wing, *Lycæna argiolus* was locally common, and *Nemeophila plantaginis* is now swarming; *Callimorpha dominula* is hardly out yet, but the larvæ were not quite as common as usual. Sugar has been excellent, producing *Cuspidia alni* (a few), plenty of *Bisulcia ligustri*, a good many *Cymatophora or*, several *Charicleа marginata*, and a few each of *Hadena thalassina*, *Thyatyra batis*, *H. pisi*, *Agrotis cinerea*, *Euplexia lucipara*, *Apamea basilinea* etc., most of which have fallen to the bag of Rev. G. M. A. Hewett. Of larvæ, *Scotosia rhamnata*, *S. vetulata*, *Iodis vernaria*, and *Dyschorista ypsilon*, have been common, while a few *Catocala sponsa*, *Geometra papilionaria* and *Lasiocampa quercifolia*, and one *Trichiura cratægi* have also been taken. Hybernated *Cynthia cardui* are remarkably abundant. Has any one noticed this elsewhere? Last, but by no means least, two specimens were taken (on the 30th and 31st of May) of that prize of prizes, *Deiopeia pulchella.*—A. W. S. FISHER, Winchester.

THE LEPIDOPTERA OF EPPING FOREST.—(*Continued from page* 115.)

In June a few good larvæ have been met with. Several full-fed *Halias bicolorana* have been found crawling over oak trunks in the Monkswood section. Last year, on the 20th, one larva of *Thecla betulæ* was beaten at the very first stroke from a sloe bush, but though a great many bushes were beaten afterwards, the only further result was a good sprinkling of the larvæ of *Nola cucullatella*. The larva of *Diloba cœruleocephala* is common on sloe at Chingford, and that of *P. cytisaria* may be taken in the Monkswood section. Beating is fairly productive. *A. luteata* from small maples near Chingford and in Epping Lower Forest, *Larentia pectinitaria* in Monkswood and beyond, and *Boarmia repandata* throughout are the principal fresh emergences. The tree trunks have not yielded much beyond those mentioned as occurring in May, except *Aplecta nebulosa*. One specimen of *Emmelesia affinitata* was found on a fence near Epping last year. Among the butterflies *Argynnis selene* is common in the Wake Arms section about the middle of the month. Many day-flying moths are also on the wing. *Bombyx rubi* was plentiful on the 21st June, 1891, in the last mentioned locality, and *Nemeophila russula* a week later. The former flies very rapidly over the heather early in the afternoon, but seems to steady down later, and can be caught fairly easily about 6 o'clock. One female was found sitting on a sprig of heather. *N. russula* is trodden up from the heather. It flies rather high, and if there is any wind many are lost. It is very local. *Eubolia palumbaria* is common north of High Beach, and one *Euclidia mi* was taken last year. *Ino statices* may be found in some of the fields bordering the Chingford Forest. At dusk, in the Chingford section,

the principal species captured have been *Eupithecia exiguata*, *Cidaria russata* (*truncata*), *Acidalia aversata*, *M. bicolorata*, and *Metrocampa margaritaria*, *Noctua rubi*, *Xylophasia rurea*, *Rusina tenebrosa*, *Zanclognatha grisealis* and *Hepialus humuli*. All these, except *R. tenebrosa*, are plentiful. Sugaring is commenced during the month, and among the earliest visitors are, *Thyatyra batis*, *Leucania lithargyria*, *Xylophasia polyodon*, *X. lithoxylea* and *hepatica*, *Dipterygia pinastri* (*scabriuscula*), *Apamea gemina*, *Miana fasciuncula* and *strigilis*, *Agrotis exclamationis*, *Noctua augur*, and *Euplexia lucipara*. All these, except *X. hepatica*, *D. pinastri* and *A. gemina* are common. The var. *æthiops* of *strigilis* outnumbers the type, and an intermediate form is taken, but only in small numbers. Both the red and brown (var. *cana*) forms of *fasciuncula* occur. A nicely mottled form of *hepatica* (var. *characterea*) is sometimes found.

July.—Among the butterflies two specimens of *Argynnis paphia* have been captured near Chingford, the last in 1889, and another of the larger Fritillaries, supposed to be *aglaia*, was seen in Monkswood last year. Among day flying moths *Zygæna filipendulæ* is abundant in some of the fields bordering the Forest. Two of the best insects to be taken this month, by beating, are *Phorodesma bajularia* and *Acidalia inornata*. The males of the former fly at dusk, but are very difficult to get in good condition, being usually pinkish-brown instead of green. It seems to be distributed equally throughout the Forest. Two specimens of *Eucosmia undulata* were disturbed by the beating stick on the 25th July, 1891, one in the Monkswood and the other in the Wake Arms section. *Cidaria testata* is common in Monkswood, among the sallows. At dusk *Plusia iota* and *pulchrina* may be found, while *chrysitis* is, in some years, almost a nuisance. *Angerona prunaria* flies in some numbers in the Chingford Forest. It is on the wing from sunset until long after dusk. Among the footmen *Calligenia miniata* flits about at dusk, or it may be beaten in the Monkswood and Wake Arms sections. It is the only species in the family which has been taken in any numbers —seven were netted one evening. One specimen of *Lithosia mesomella* was trodden up on the 25th July, 1891, in the last-named locality. *Lycophotia strigula* flies over the heather in Monkswood, and *Chortodes arcuosa* in the damp fields round the Forest and in the glades. *Pericallia syringaria* emerges during the month, and may be netted in all the sections, although not very frequently anywhere. Among other species noticed have been—in Monkswood—*Halias prasinana*, *Acidalia bisetata*, *A. dimidiata*, and *E. alchemillata*. In the Chingford section—*Caradrina morpheus*, *C. alsines*, *Z. tarsipennalis*, *Hypena proboscidalis*, *Urapteryx sambucaria*, *A. imitaria*, *Timandra amataria*, *Hemithea strigata*, *Cidaria dotata* and *fulvata*; and throughout the Forest *H. hectus* and *Hypsipetes sordidata*. Of the above species *A. bisetata*, *C. morpheus*, *H. proboscidalis*, *H. strigata*, *C. dotata* and *pyraliata*, *H. hectus* and *H. sordidata* are common. *U. sambucaria*, *A. imitaria*, and *T. amataria* fly along the glades and hedges, and are plentiful at times. One specimen of *T. amataria* was found at the end of August, 1889, which, I suppose, must have belonged to a second brood. *E. alchemillata* has only occurred once, *C. alsines* twice. On tree trunks *Cuspidia aceris* and *megacephala*, *Cidaria immanata* and *picata* are to be found in the Chingford section; the three first-named are common,

the last is rare. On fences, *A. virgularia* and *E. pumilata* are abundant, and one specimen of *A. trigeminata* was taken on the 5th July last year near High Beach, while on some of the walls on the outskirts *Bryophila perla* is very plentiful. At sugar, one *Dicycla oo* was captured in July, 1891. Of other species, *Leucania impura*, *Agrotis segetum*, *Calymnia trapezina*, *Apamea didyma* and *N. triangulum* are very common. *Gonophora derasa* was abundant last year. A good many *Axylia putris* were boxed in 1890, but none in 1891. *Noctua festiva* and *brunnea*, *Calymnia diffinis*, *Apamea unanimis*, *Mania maura* and *Dyschorista ypsilon* are fairly frequent visitors, but the two last are more plentiful in the Lea Valley. *Caradrina blanda* is rather rare; some are dark. *Leucania pallens* is abundant; one var. *rufescens* was caught in Monkswood in 1892. Two specimens of *Mamestra sordida* have been taken—one each year. In July, 1890, one *H. quercana* was attracted to the sugar, and in 1891 another specimen was beaten from an oak in the Chingford section. Another visitor to sugar in 1890 was a fine *Cossus ligniperda*. (*To be continued.*)

ENTOMOLOGICAL PINS.—I quite agree with Mr. Harwood in what he says regarding pins in the *Record* for April. The best pin still is the old gilt or silvered one of Tayler & Co. These pins are perfect in temper; but still they have two faults, their large heads, and liability to verdigris. The last fault is the serious one. Kirby, Beard & Co.'s pins have better shaped heads, but are of worse metal and make; but even in these we discover the badly made ones before we have pinned our insects, and reject them without any harm being done. All these pins are coated by electricity, with the thinnest possible film of metal, too thin to be of any use. Black pins are worse. These are unsightly from their colour; they are too soft, nor have they served the purpose they were puffed to serve, unless that purpose was to fill the pin maker's pocket—they may have done this—but time shows that they have not prevented verdigris. I have insects here, on black pins, with as flourishing, branching, green trees of verdigris growing out of their thoraces, as any of those TORTRICES I was looking at the other day in the South Kensington Museum. Whether on black or white pins, I fear a collection of pinned TORTRICES would be the same as these if kept as long. Mr. Tutt's *Pterophori* prove nothing, unless he shows how long his, and his correspondents' specimens have been pinned; for black pins have not been in use many years, but there is no knowing how long those insects on white pins have been pinned. Mr. Tutt says, "There can be no doubt that a much inferior metal is used in the manufacture of japanned pins, than in the ordinary ones." But there is no need to assume as a certainty that all the makers systematically use inferior metal for black pins, when there is a simple, true explanation of the matter in the fact that heat is applied to the pins for the japan to be put on and harden. This heating takes the temper out of the pins, and the result is, they turn up at the points, or double up suddenly, close up below the moth. Probably, as many moths are ruined from this doubling up of the pin alone, as by the verdigris in the old pin, and they are certainly destroyed much more quickly, and still we have the verdigris left to finish off many more. I have never used black pins because I foresaw that they would be softened in the process of varnishing, and I communicated my ideas on

the subject to other entomologists at the time. However, anxiety to escape from verdigris made many adopt them; advertisements and fashion led the rest. Dr. Sharp's silver-wire would be safe from verdigris, but it will not take a point. To pin a *Lithocolletis* with an ordinary sharp fine pin, is not easy to do successfully; but to prick a hole first, and then *screw* in a piece of blunt silver-wire, sounds hopeless. The silver-wire is rather dear too, and we shou'd still want ordinary pins as well, which would mean still more trouble and expense. Steel pins, as offered now, appear to be made of a hard kind of steel with some amount of manganese in it, and this, from its nature, would rust quickly. Steel pins might be a success if they were coated with a good thick coating of tin, by the ordinary method of tinning, the steel selected having only sufficient hardness to render it of the usual pin-metal temper after being heated in the process of tinning. A non-corrosive pin metal might be made of an alloy, if not too expensive. Antimony and tin, for instance, might be tried, in proportion, perhaps of about 1 to 100, tin to give the toughness, antimony the hardness. If pins could be made of this, they would not require coating. Would German silver be likely to do for a pin metal? These are only suggestions. The perfect entomological pin has yet to be invented, and if someone versed in metals would set his brains to work to invent a *good* one, he might find it pay well, and he would certainly deserve our lasting gratitude.—W. HOLLAND, Reading. *April*, 1892. [Perhaps Mr. Holland is right, but not altogether so. Some of my *Pterophori* have stood for eight or nine years now, and those on white pins apparently no longer. I still think the japanned pin staves off the evil day. The whole of Mr. Holland's paper is most instructive and suggestive.—ED.]

We have naturally been much interested in the correspondence in the *Entomologist's Record* in connection with your paper on the subject of "Ammonia, Verdigris and Black Pins," and would like to be permitted to say that the reason japanned pins are softer than the silvered ones, is on account of the process of japanning being done at a high temperature. This has a tendency to soften the wire and causes the pin to be less elastic. We are now manufacturing entomological pins black bronzed, which is done in solution and does not soften the pins. The difference between our entomological pins and those of other makers is that by our process of manufacture the head is formed first and the point ground true with the head. In the ordinary process the point is ground first and the head made afterwards with the result of great injury to the point in the heading process. The only objection to our entomological pins that we have ever received, is in respect of the size of the heads, but these cannot be reduced by our process of manufacture. Is it not possible for the collector to cut the heads off with a pair of pliers after impaling the insect?—D. F. TAYLER & Co., Limited, Birmingham. *May 5th*, 1892.

I think the No. 8 pin is suitable for almost all the NOCTUÆ, with the exception of a few of the very largest, and if the black pin is considered the best why not everyone use it in the future. What looks worse than to see a series of good insects set with all sizes and all colours of pins, and one insect perhaps touching the drawer, whereas the next one appears as if it wanted to come through the glass. I

have seen a lot of good insects of recent capture set with the commonest of pins.—R. DUTTON, York.

If comparatively short and stout pins be used, the points are generally much better. No. 10 is a splendid pin (black) (Kirby, Beard and Co.). I have not had much experience with Micros, but No. 17 seems fairly good as far as I can find. No. 16 is too weak a point, and No. 15 too long.—HENRY J. TURNER.

I like a pin of a decent length, though not awkwardly long. A pin so short that the head only just projects above the thorax, is so difficult to get hold of, even with forceps. I like No. 10 for the smaller Geometers, and I do not think it is too big for the larger TORTRICES. It is very annoying when the point turns or the pin bends, and spoils a good insect. No. 17 is very bad in this respect. I have never used No. 15, but should think it would be a suitable pin for the larger Geometers and I would suggest:—For NOCTUÆ, No. 8; for large GEOMETERS, No. 15; small ditto, No. 10; for PYRALES, CRAMBITES, etc., No. 10; for large TORTRICES, No. 10; small ditto, No. 18.—GEORGE BALDING.

STEGANOPTYCHA SUBSEQUANA AND TINAGMA BETULÆ.—*Steganoptycha* (*Coccyx*) *subsequana* is said to differ from its near ally *pygmæana*, Hb., in having black lines in the ocellated spot, and in the specimens of *subsequana* that I have taken, these black lines are always present. The other species I have not seen. *Tinagma betulæ* occurred amongst birch in this county last summer in June and July.—N. M. RICHARDSON.

ARCTIA CAIA.—With reference to my note on the appearance of *Arctia caia* in *Ent. Rec.*, iii., p. 36, and of the Editor's remark at the end of it, the larvæ were kept in a small room upstairs in the house, with the window wide open all day long. I am sorry I neglected mentioning this, as no doubt it is a matter of great importance. The boxes I kept them in were well ventilated, indeed some were covered with leno, so they had plenty of fresh air, being also placed pretty close to the open window.—G. A. BIRKENHEAD, Downs View, Penarth, near Cardiff.

APORIA CRATÆGI.—In further reply to Mr. Hodgkinson's note, I may say that the seven specimens mentioned in the *E.M.M.*, vol., xxiv., p. 131, as being taken at Sandwich in 1887, are not the last record of the capture of this species in Great Britain. On the 9th June, 1888, my nephew, Mr. H. M. Briggs, took a specimen at Ramsgate, which was recorded in *The Entomologist*, vol. xxi., p. 184, and also in *The Young Naturalist* for that year.—C. A. BRIGGS, 55, Lincolns Inn Fields.

ZEUZERA PYRINA (ÆSCULI).—Some notes upon the life-history of this species may be worth recording. I find it prefers branches and young trees of about eight inches in circumference; in trees of larger growth, elms for instance, it affects the upper branches of about that circumference. I have rarely found it in the trunks of large trees, in which fact it differs from its relative, *Cossus ligniperda*, which principally affects the trunks. On the other hand, I have taken them from branches of not more than two inches and a half circumference, and from elm, sycamore, pear, lilac and plane. In the autumn of 1889 I observed two little larvæ just commencing to burrow, and noted that after going a short distance in the wood, they cover the entrance with a kind of drumhead, which effectually conceals it; this head is occasionally opened to

eject the frass. On May 6th, 1890, the larvæ were again at work, and still continued to cover the entrance to the burrow, which in a short time becomes very much larger, until, when full-fed, it is large enough to allow the pupa to emerge partly from the burrow, which is then about ten inches in length. I have found the full-fed larvæ in the autumn, but have not been able to find them in the spring, and am inclined to think they pass two winters in that state, and pupate early in the spring. I recently cut down a branch, from which a specimen emerged in July, 1887; from outside appearance the branch looked quite solid, the only sign of the emergence that remained was a jagged circular piece out of the bark, the wood had grown over and completely covered the large hole made by the larva, but the burrow up the centre of the branch still remained, and the branch was in consequence quite weak. We can well understand from this why branches will break off in a strong wind.—AMBROSE QUAIL, Stamford Hill, N.

NOTES ON ZEUZERA PYRINA.—1891 was not a *pyrina* year. I did not see a solitary imago, and only one empty pupa case the year through, albeit continuous observation was kept up in the localities that were so prolific last year. What I did see, however, was abundant evidence that larvæ were feeding all through the period, which, in the preceding years, had been the time of emergence of the imago. I therefore live in hope. The gale of November 11th proved too much for the solitary ash tree in the front garden of the house opposite my own, off which, as recorded in *Ent. Rec.*, vol. i., p. 182, I, in 1890, obtained twenty-seven moths. The tree was snapped off about seven feet from the ground, and an examination of the carcase was an interesting study in economic entomology. The larvæ appear, in the first instance, to bore into the tree more or less horizontally, that is, directly across the channels up which the sap flows from the root to the leaves; the functions of such channels as may thus be interfered with is, of course, arrested, and sap can no longer flow up them. Having reached a greater or less distance from the bark, the larva changes its course and feeds upwards or downwards, returning again towards the bark and excavating a considerable cavity immediately under the bark before pupation. It follows from this, that the extent of injury to the tree depends partly on the size of the tree and partly on the number of larvæ feeding in it. Where the tree is a large one it would take a very considerable number of larvæ to destroy so many sap channels as would seriously interfere with the vitality of the tree as a whole, although some branches may have to pay the penalty; but in the case of saplings and small trees, a few larvæ may work very great havoc. Newman says (p. 18):—"We have even observed that fruit trees thus infected bear more abundantly than those which are perfectly healthy." If this be so, it is probably due to the limitation of the area of nutrition and is somewhat akin to pruning.—FRANCIS JOHN BUCKELL, 32, Canonbury Square.

STRANGE PABULUM FOR LARVÆ OF COSSUS LIGNIPERDA.—During the months of August and September, 1891, I had about two dozen larvæ of the above-mentioned species brought me from different quarters, many of which were nearly, if not quite full-fed. I placed the lot in a large tin, into which I put a lot of old corks, thinking that they would spin up more easily in that soft material than by my former process,

viz., elm chips and sawdust. I was surprised to find that they at once commenced to voraciously devour and to tunnel the large corks in all directions, apparently enjoying the new material as food. On removing several wine corks, nothing was left but an outer shell, and in several instances a full-fed larva was comfortably coiled up in the interior, where one would have thought it was almost impossible for such a large larva to find accommodation. Another remarkable thing was, I could find no excrement, unless it was passed in the same, or a similar state as when eaten; that it was eaten must be evident from the fact that most of the larvæ attained a much larger size. This circumstance has puzzled me on former occasions, when I have bred the insect from tolerably small larvæ. Has that oily exudation peculiar to the larvæ anything to do with the digestive organs, or is it only an offensive odour inherent in the creature as a protection against its enemies? Perhaps this experience may be an aid to those who breed *C. ligniperda*, that in the absence of a tree or its ordinary food, old corks form an excellent substitute, and also illustrates the wonderful power of the jaws of this larva, who can in a very short space of time drill a hole through a piece of cork 2 or 3 inches thick, quite as neat as any sharp-edged tool of the carpenter.—J. P. Mutch, Hornsey Rise.

Times of Flight of the Crambi.—My experience of the time of flight of the *Crambi* is much more in accordance with that of Mr. Harker than of Mr. Reid. I believe the real time of flight of nearly all the species to be from dusk till midnight. It is my experience of the following, *viz.*:—*Falsellus.*—From early dusk till 12.30 a.m. This insect I used to take freely in my own garden. I believe the larva feeds on the moss which grows on walls, thatch and buildings. *Prætellus.*—From dusk till dark. This is the only species I have met with, which does not fly late, but it is always more or less on the move by day. *Ericellus.*—Habits similar to *prætellus*. This is (or was) a very abundant Rannoch insect. *Margaritellus*—This is also a Rannoch insect. Both *ericellus* and *margaritellus* I have met with as late as 11 p.m., or even later. *Pascuellus* and *uliginosellus.*—In the afternoon, and from dusk far into the night. *Furcatellus.*—I know little of this insect. I have seen it on Snowdon, where I am told it is often very abundant, but know little of its time of flight. *Pinetellus.*—Only at dusk and afterwards. *Perlellus.*—This with us is exclusively a night flyer, swarming at the lamps as late as 2 a.m. *Warringtonellus.*—Habits like *perlellus*, of which it is only a variety. *Inquinatellus*, *geniculellus* and *contaminellus.*—From late dusk till about 1 a m., *contaminellus* the latest. *Tristellus.*—At dusk till 2 or 3 a.m. *Culmellus.*—Dusk till 11 p.m. *Chrysonuchellus.*—Dusk till 11 p.m. *Hortuellus.*—Dusk till 2 a.m. *Cerussellus.*—Although well on the move all day, I believe its real time of flight is just after dark. This I have observed repeatedly. These observations may be partly proved in this way: I have taken at light every one of the species mentioned above, with the exception of *furcatellus* and *cerussellus*, but as the latter does not, as a rule, occur where lamps are abundant, it proves nothing. There is one fact about the *Crambi* worth nothing, I believe, except *falsellus*, which is a solitary species, all the others are abundant where they occur, if we only know how to take them. With further knowledge, I believe all our rarer *Crambi* (except *falsellus*) will be found to be locally abundant, and as their habits are so very similar I am surprised this is not already the case.—C. Fenn.

The notes on the times of flight of the *Crambi* are very interesting, and such slight experience of them as I have I gladly give. *Ilithyia carnella.*—Can be easily disturbed during the day when the sun is shining, but not when it is at all cloudy; it flies rapidly a short distance, and can be easily marked down. Also flies just as it is getting dark, but so far as my observations go not for any length of time. Comes occasionally to sugar. *C. perlellus.*—Flies during the day in the sunshine. *Warringtonellus*, the same remark applies, but I have never noticed either species (?) after sunset. With regard to *warringtonellus* being a variety of *perlellus*, it is worthy perhaps of note that at Torquay only *perlellus* occurs; on the other hand, in Dorsetshire, where *warringtonellus* swarmed, I did not take any *perlellus*; but in North Staffordshire both the type and variety occur, I believe, in the same locality. *C. chrysonuchellus* swarms on the downs near Eastbourne during the day, and this year I took it plentifully on the Malvern Hills, between 5 and 6 p.m. I have had no experience with this insect after sunset. *Inquinatellus* flies freely in the sunshine, but I have never noticed it at dusk. *Culmellus* does not move during the day, but it swarmed at Torquay from dusk till between 10 and 11. *Pascuellus.*—At dusk. *Adipellus.*—Easily disturbed during the daytime. *Prætellus.*—Easily disturbed during the daytime. *Geniculellus.*—Easily disturbed during the daytime. *Myellus* flies freely during the day; abounds in a bog near Keswick. *Selasellus.*—During the day in long grass near ponds. *Hortuellus.*—This flies during the day, at dark can be easily disturbed. *Tristellus.*—Same remark applies.—E. C. Dobrée Fox.

I fear I can add only very scant notes as to the times of flight of the *Crambidæ*. *C. pinetellus* easily disturbed all day, natural flight begins at twilight. It is generally one of the earliest visitors to the moth trap on favourable evenings. *C. pascuellus.* Flies readily early in the afternoon and again at late dusk. *C. pinetellus.* I have only taken one specimen; that was flying after dark. *C. perlellus.* Comes to the moth trap after dark till about 2 or 3 a.m. *C. tristellus.* Easily disturbed all day, flies at dusk. *C. inquinatellus.* Frequently takes short flights in the afternoon. Comes rather early to the trap. *C. geniculellus.* Comes to the trap after dark. *C. culmellus.* Flies at dusk, and comes readily to light early. *C. hortuellus.* Disturbed easily in the afternoon, flies at early twilight; comes to light during the first part of the night.—M. Kimber.

Of the genus *Crambus* we have here, *falsellus*, *prætellus*, *pascuellus*, *pinetellus*, *perlellus*, *tristellus*, *inquinatellus*, *geniculellus*, *culmellus* and *hortuellus*. I find all these fly naturally from dusk on into the night and rest a bit in the day, but if they are ever asleep it is with one or both eyes open, for they are, most of them, only too readily put up in the day. *Perlellus* and *geniculellus* are not quite so easily moved in the day as the rest. If it is at all rough or cold they lie close. *Pinetellus* is the only one I have never started in the day, it does not seem to move till it is almost dark.—W. Holland.

I have corrected one mistake which I fell into last time; the times of flight given for the other species are the times when I have found the several species most abundant, Mr. Fenn's experience is very curious, according to him all are most abundant from dusk on to midnight. As nearly all the species I mentioned are found in June and

July, it is a physical impossibility for them to fly in the dark in this part of the world. Our night, at this season of the year, I call dusk, it is no uncommon thing for us to get *Crambidæ* in the dusk at midnight. The ♀'s of all the species I have captured are as strong on the wing as the ♂'s, but the ♀ is seldom got during the day. After going over the other lists I see our times of flight for the different species are in every instance nearly alike. Rev. Dobrée Fox finds *perlellus* and its variety flying in the sunshine, and has never seen either in the dark. I have also found both swarming by day in the sunshine, but never in the dark, while Mr. Fenn has found this to be a nocturnal species. *Culmellus* with us swarms by day as well as night. Two species are nocturnal, but the natural time of flight of nearly all the other species I know, is from sunset to dusk, after dark they may be found sitting on grasses, etc. Nearly all may be taken by day often in abundance, and early morning is a good time. I have continued the history of this genus by giving the best localities for the different species which I have found in Scotland. *Crambus prætellus*, riversides, meadows, near woods and grassy places, almost everywhere. *C. dumetellus*, coast sandhills, riversides, and along the edges of locks. *C. ericellus*, heathery knolls at a fair elevation. *C. furcatellus*, grassy slopes, and mountain tops at a great elevation. *C. margaritellus*, grassy places on wet moors, and pine woods. *C. myellus*, edges of woods, generally in wet places. *C. pinetellus*, pine woods. *C. perlellus*, coast sandhills; var. *warringtonellus*, coast sandhills. *C. tristellus*, among rank herbage almost everywhere. *C. culmellus*, railway banks, sandhills, meadows, and grassy places generally. *C. hortuellus*, once in a railway cutting by day, and on coast sandhills.—W. Reid.

Lobophora viretata.—This species did not occur here so plentifully last year as usual, and seemed to emerge in a desultory fashion, straggling on to the end of June. I obtained ova, and can corroborate Mr. Tunaley's statement that ivy is their food *par excellence* in captivity; they eat every particle except the stem, and moreover this food has the advantage of keeping fresh for a long time when "sleeved," and the stalks put in water.—P. W. Abbott, Birmingham.

Endromis versicolor.—I have to record the capture of 13 young larvæ of this species last May in Wyre Forest. They were just hatched, and I managed to get 8 into the pupal stage. Another local collector found a batch of about 15 eggs, I believe, a fortnight earlier.—Id.

SOCIETIES.

Entomological Society of London.—*Wednesday, June 1st*, 1892.—The Hon. Walter Rothschild sent for exhibition *Neptis mimetica*, n. s., from Timor, mimicking *Andasena orope*, one of the Eupleidæ, and *Cynthia equicolor*, n. s., a species remarkable for the similarity of the two sexes, from the same locality; also a hybrid between *Saturnia carpini* and *S. pyri*, and specimens of *Callimorpha dominula*, vars. *romanovii*, *italica*, and *donna*, bred by a collector at Zurich; he further exhibited a very large and interesting collection of Rhopalocera made by Mr. W. Doherty in Timor, Pura, Sumba, and other islands, during October and November, 1891. Col. Swinhoe remarked

that the various species of *Neptis* were usually protected and imitated by other insects, and did not themselves mimic anything, and that the pattern of the *Neptis* in question was very common among the butterflies in the Timor group. Mr. Jenner Weir, Prof. Meldola, Mr. Trimen and others continued the discussion. Mons. A. Wailly exhibited about fifty species of Australian Lepidoptera, mostly from Queensland, and fertile ova of *Trilocha varians*, which are arranged in small square cells, fastened together in large numbers, and present an appearance quite different from the usual type of Lepidopterous ova. Mr. F. Merrifield exhibited a series of *Drepana falcataria*, half of which had been exposed for a week or two, in March or April, to a temperature of about 77°, and the other half had been allowed to emerge at the natural out-door temperature. The latter insects were in all cases darker than the former, all being equally healthy. Mr. McLachlan, Mr. Barrett, Mr. Jenner Weir and others took part in the discussion which followed. Mr. C. G. Barrett exhibited a curious variety of the male of *Arctia mendica*, bred by the Rev. W. F. Johnson, of Armagh. Canon Fowler exhibited the egg-case of a species of Mantidæ from Lake Nyassa, and specimens of *Bledius dissimilis*, Er., from Bridlington Quay, Yorkshire. Mr. McLachlan called attention to the reappearance in large numbers of the Diamond-back moth, *Plutella cruciferarum*, which was very abundant in gardens near London, and expressed his opinion that the moths had been bred in the country and had not immigrated.[1] Mr. Jenner Weir, Mr. Bower, and Prof. Meldola stated that they had recently seen specimens of *Colias edusa* in different localities near London. Mr. Jenner Weir and others also commented on the large immigration of *Plusia gamma*, and also on the appearance of a large number of *Cynthia cardui* and other Vanessidæ. The Hon. Walter Rothschild communicated a paper on two new species of *Pseudacræa*.—W. W. Fowler, *Hon. Sec.*

City of London Entomological and Natural History Society. —*Thursday, May 19th*, 1892.—Exhibits: Lepidoptera.—Mr. Riches, living larva of *Agrotis nigricans* and pupæ of *Hepialus humuli*. Mr. Clark, a cabinet drawer, containing thirty-three species of *Depressariæ*. Dr. Sequeira, a large number of dwarfs of various species, with types for comparison, the most notable being *Vanessa polychloros*, *Lycæna corydon*, *Setina irrorella* and *Sesia chrysidiformis*. Mr. Bloomfield, a large number of *Tæniocampæ* and two *Selenia illustraria* from Epping Forest. Mr. Bacot, *Tæniocampa incerta* from Epping Forest, and a living example of *Lophopteryx camelina*, taken the same morning at Clapton. Mr. Bayne, a series of *Amphidasys strataria* from Epping Forest, and three examples of *Tæniocampa populeti* from the same district. Mr. Hill, a series of *Tæniocampa gothica* and var. *gothicina* from Rannoch; also examples of *Hylophila prasinana* with the green colour changed to yellow by the action of cyanide. Mr. Southey, a very fine series of *Notodonta dromedarius* from Highgate Woods. Dr. Buckell, a series of *Selenia bilunaria*, bred from ova from a female of last summer's brood. Two larvæ, from these ova, fed up and emerged last autumn and were of the æstival form, but the remainder went over until

[1] I quite agree with Mr. McLachlan with regard to this species. The larvæ were very abundant in my garden last autumn, the moths being equally so at the present time.—Ed.

this spring and produced the vernal form. Coleoptera.—Mr. Milton exhibited *Colymbetes notatus*, *Agabus conspersus*, *Hydrobius oblongus* and *Hydroporus parallelogrammus*. Mr. Heasler, *Anchomenus riduus* and *Limnebius pupposus* from Mitcham.

Dr. Buckell read a paper by Mr. J. Alston Moffatt from the *Report of the Entomological Society of Ontario, Canada, for* 1891, on "The microscopical appearance of the unexpanded wings of *Callosomia promethea*."

A most interesting discussion ensued, in which Drs. Sequeira and Buckell and Messrs. Clark, Simes, Bayne and others took part.

Thursday, June 2nd, 1892.—Exhibits: Lepidoptera.—Mr. Battley, a box of lepidoptera from Southend, Essex, including *Lycæna argiolus*, a dwarf form of *Anthocharis cardamines*, *Aleucis pictaria*, *Tæniocampa gracilis*, *Viminia rumicis*, *Hadena genistæ*, etc. Mr. Clark, a series of *Anticlea badiata* from Epping Forest. Mr. Tremayne, *Platypteryx unguicula*, *Coryeia temerata* and *Ephyra trilinearia* from Epping Forest. Dr. Buckell, living larvæ of *Amphipyra pyramidea* and *Cosmia trapezina*. Mr. Smith, *Halias prasinana*, *Demas coryli* and *Odontopera bidentata*. Mr. Bayne, a series of *Tæniocampa munda* from Epping Forest, and a specimen of *T. stabilis* with the wings on one side brown, and partly grey on the other. Mr. Bacot, a bred series of *Spilosoma mendica*. Mr. Southey *Tæniocampa gracilis* and *Pachnobia rubricosa* from Hampstead. He also exhibited two specimens of a NOCTUA bred from tomatoes imported from Italy, and a specimen of a BOMBYX found in a barrel of foreign apples. Coleoptera.—Mr. Heasler, *Philydrus melanocephalus* from Mitcham. Mr. Beck, *Cicindela sylvatica* and *Lina populi* from Aldershot, *Cassida oblonga* from Freshwater, *Onthophagus ovatus* from Bonchurch, and *Silpha littoralis* taken under a dead hedgehog. Mr. Bayne mentioned that *Lithosia aureola* was now fairly plentiful at Chingford, and that other species abounded. Mr. Tremayne stated that insects were very abundant at West Wickham, while Mr. Prout recorded *Stauropus fagi* and *Notodonta trepida* from the same locality.—A. U. BATTLEY and J. A. SIMES, *Hon. Secs.*

SOUTH LONDON ENTOMOLOGICAL SOCIETY.—*Thursday, May 12th*, 1892.—Mr. Adkin exhibited a box of Rannoch insects, including *Petasia nubeculosa*, *Erebia epiphron*, *Phibalapteryx lapidata*, and *Cidaria corylata* var. *albocrenata*; Mr. Frohawk larvæ of *Argynnis euphrosyne* 318 days old, larvæ of *A. paphia* 282 days old, larvæ of *Militæa aurinia*, pupæ of *M. cinxia* and *M. athalia*. Mr. Barrett a long and variable series of *M. aurinia* and *Melanippe fluctuata*; Mr. Tugwell reported on a trip to Tilgate where larvæ of *Sesia sphegiformis* were found, and Mr. J. A. Cooper recorded the capture of imagines and ova of *Tæniocampa opima* on Wanstead Flats.

Thursday, May 26th, 1892.—Mr. Hawes exhibited two parallel series of *Pieris napi* bred from the same batch of ova, part emerging as the summer brood with strong black markings in August last, part as the spring brood, dusky, with less strong markings in the present month (May). Mr. Weir remarked on the distinction of the two broods. Mr. Frohawk a pupa of *Argynnis paphia* with brilliant metallic markings, which only took 18 to 20 hours to change from the larval to the pupal stage. Mr. Tugwell a box of insects captured in Tilgate Forest; Mr. Adkin some fine *Asteroscopus nubeculosa*, which had been in pupa from

1890 to 1892, and stated that a previous lot had been in pupa from 1884 to 1887. Mr. Tugwell had bred the same species after three years, but Mr. Cooper's had all come out the first season. Mr. Hill exhibited some Scotch varieties of *Tæniocampa gothica*, and Mr. Carpenter a specimen of *Vanessa antiopa*, which had been captured some years ago on Tooting Common. Mr. Jenner Weir then read a most interesting non-entomological paper, at the end of which a most hearty vote of thanks was tendered to him.—Ed.

North Kent Entomological and Natural History Society.—The 15th bi-annual meeting of the above Society was held on Wednesday, May 11th, at the Royal Assembly Rooms, New Road, Woolwich. The minutes of the previous meeting were read and confirmed, and Mr. Dennis was elected a member. The exhibits were very limited, Mr. Allbuary showing Geometræ and Micro-lepidoptera; Mr. W. Broughton *Euchlöe cardamines*, etc.; Mr. Povey, Micro-lepidoptera; Mr. Woodward, larvæ and ova of *Geometra papilionaria*, and Mr. Poore, conchological specimens. The officers for the ensuing six months were elected as follows: President, Mr. J. Woodward; Vice-president, Mr. C. H. J. Baldock; Treasurer, Mr. A. S. Poore; Secretary and Librarian, Mr. H. J. Webb; Assistant Secretary and Librarian, Mr. T. Moore; Committee, Messrs. Allbuary, E. Knight, Sargent, W. Broughton, Povey and Wilson; Trustees, Messrs. Webb and Sargent; Auditors, Messrs. Allbuary and H. Broughton. The question of reducing the subscriptions was then opened, and after full discussion the proposition of the Secretary was adopted—*viz.*, that ordinary members pay 1*s.* 3*d.* per quarter, and that corresponding members (outside ten mile radius) pay in advance 2*s.* 6*d.* per annum. A vote of thanks to Mr. Baldock for a donation concluded the meeting.—H. J. Webb, *Hon. Sec.*

Lancashire and Cheshire Entomological Society.—*Monday, May 9th*, 1892.—The Rev. H. H. Higgins, M.A., read a paper entitled, "Butterfly life before leaving the egg," in which, after describing the formation of the egg, he traced the gradual growth of the nucleus through the various stages until the tiny caterpillar was complete in all its parts and ready to leave the egg. The paper was illustrated by various eggs of lepidoptera shown under microscopes. Mr. Higgins also showed some Brazilian lepidoptera, and pointed out a strong case of mimicry. The president exhibited the rare *Crambus myellus* from Perth; Mr. Stott, a case of educational entomology, on behalf of Mr. Rigby, Natural History Museum, Nottingham, containing the life history of *Eriogaster lanestris;* Mr. Jones, recently-bred lepidoptera, and a fine variety of *Asphalia flavicornis*.—F. N. Pierce, *Hon. Sec.*

Cambridge Entomological and Natural History Society.—*April 29th*, 1892.—Mr. White exhibited a very dark variety of *Smerinthus tiliæ* and specimens of *Plusia interrogationis*, *Hybernia progemmaria*, *Notodonta palpina;* Mr. Moss, some good varieties of *Tæniocampa stabilis* and *instabilis*. Mr. Farren read a paper on "Protective Resemblance" (which will appear in the next issue—Ed.). In connection with the paper Mr. Farren exhibited between 30 and 40 species of Fen lepidoptera representing nearly all the larger orders and many genera, also specimens of *Cleora lichenaria*, *Bryophila muralis*, *B. perla*, and *Leptogramma literana* and larvæ of *G. vernaria* and *C. lichenaria*. —W. Farren, *Hon. Sec.*

The Entomologist's Record AND JOURNAL OF VARIATION.

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THE GENUS ACRONYCTA AND ITS ALLIES.

By Dr. T. A. CHAPMAN.

(*Continued from page* 99.)

ACRONYCTA (*Bisulcia*) *ligustri*.—This species differs from the groups *Viminia* and *Cuspidia* more than they do from each other. If it is to be kept within the genus *Acronycta*, then most certainly such species as *Clidia geographica* and *Simyra nervosa* must be placed in the section *Viminia*, and not in separate genera.

Ligustri differs from the others in the form and sculpturing of the pupa, and also in the form, habit and general facies of the full-grown larva, even making full allowance for the immense variety that *Acronycta* allows amongst its adult larvæ. It agrees with *Acronycta*, however, in its two most essential characters—*viz.*, the flat dome-shaped egg (less than a hemisphere) very like that of *psi*, and in the young larva having a "weak" eleventh segment, and having, indeed, an undoubted *Acronycta* form and aspect, although it has no dark segments—except the black head, and this even is pale on emergence from the egg.

The egg (Pl. VIII., fig. 8) is of a pale pearly green, almost colourless, very translucent, 1.1 to 1.2 mm. in diameter, quite as flat as any of the others, about one-third its diameter in height. The ribs are 60 in number; the micropylar area is rather larger than usual, and the ribs do not increase in number outwards by intercalation or division so much as is usual in other species. The figure is faulty in not showing a large micropylar area, and in showing little or no branching of ribs. In one instance, two ribs joined together outwards, and so

diminished the number of ribs towards the margin. This is very unusual, and I have not met with it in any other *Acronycta* egg. The summits of the ribs are narrow and waved, but it would be hardly correct to say there are any transverse secondary ribs. The inner egg shrinks from the shell as in the other species, but no coloration takes place. The egg is laid singly, probably beneath the leaf.

The newly-hatched larva (Pl. V., figs. 8 and 9) is whitish or colourless except the head, which soon becomes black, and the brown jaws. The tubercles are slightly outlined in a darker shade, and the hairs are fuscous towards their bases. The length of the larva is about 2 mm., of the hairs 0.3 mm. There is one hair on each tubercle. The tubercles are arranged on the usual pattern, the trapezoidals and supra-spiracular are largest, and of oval form ; the post and sub-spiracular smaller, each abundantly distinct from its neighbours, with no trace of the angulation and apparent crowding so characteristic of many *Viminiæ* and *Cuspidiæ*. The slenderness of the larva makes the legs and pro-legs appear very long, and the pro-legs show well the double-winged form characteristic of typical *Macro-Heterocera*. The eleventh segment is lower than the others and rather broader, the tubercles and hairs are less pronounced, but not so markedly as in the other sections.

In the second skin the larva is $3\frac{1}{2}$ mm. long, very like the first skin, the head now tends to be pale, and is greenish with a large black shade dorsally on either side, the tubercles and hairs are black, the post-spiracular tubercle has dwindled and carries no hair, the dorsal and sub-trapezoidal yellow bands begin to show themselves.

In the third skin the yellow lines are more in evidence, the head is paler, usually with a distinct black lunule on either side, but sometimes with only a trace of fuscous. The tubercles are much the same, black with black hairs, and the post-spiracular still visible. When about to moult, the new hairs beneath the skin are easily seen, folded across the back in a regular pattern, the sub-spiracular reach the dorsum, the trapezoidal pass far down the opposite side. At this stage, in size, in colour, a pale transparent apple-green, in tapering to either extremity and in the sub-trapezoidal yellow band, the larva has a strange superficial resemblance to a *Botys* larva.

The further skins produce little or no change in the appearance of the larva, the tubercles become not only relatively but actually smaller, each only carries one hair ; the head tends to

be entirely green, but usually retains a black spot on either side, the plates on the sides of the legs are black, the spiracles orange; the head is small and the larva tapers to either end and continues remarkable for transparency, displaying trachea and other items of internal anatomy.

The larva always rests underneath the leaf, and as soon as large enough, along the mid-rib, and when full-grown along the central petiole of the ash leaf, which is its usual food. The tapering to either extremity assists it in eluding observation when so placed, indeed it is rather difficult to see, notwithstanding the bulk of the full-grown larva, and a half-grown one may be easily overlooked, even when changing the food in captivity, although its presence is of course well known.

I do not know, from personal observation, where the cocoon is made naturally, never having met with one; but my friend, the Rev. G. M. A. Hewett, finds that they make them under moss on the trunks of the ash trees, when such a situation is available. In captivity, some individuals ascend, and like to spin under some overhanging ledge, but the majority appear to prefer to go downwards and spin among dead leaves and surface rubbish, generally against the side of cage, however, and, probably, they usually spin against the stem of the tree. The cocoon consists of very dark, nearly black, silk, and is of considerable strength, in one dense layer, without any admixture of chips or extraneous matter, but adhering, if possible, to some leaf or other object all round. This habit makes it of varying and irregular form, and so gives rise to a little doubt whether the fact that the point of exit is usually a valvular slit is a true and constant result of instinct, or is due to this point being so often where two objects, between which the cocoon is made, meet at an angle. The fact, however, is undoubted, that, unlike *Viminia* with a weak place in the cocoon, or *Cuspidia* with a specially-arranged, but not specially weak point of exit, *Bisulcia ligustri* has frequently a valvular slit in the cocoon, often nearly as completely elaborated as in *Hylophila* or *Sarothripa*.

The pupa (Pl. I., fig. 3, and Pl. IV., fig. 4) is even more distinct from those of *Viminia* and *Cuspidia*, than they are from each other. Having only one species to deal with, it is difficult to take any of the points of difference as being generic rather than specific, but, as a provisional expedient, it is perhaps simplest to regard them all as being so. It is of the NOCTUA type as regards general appearance and texture, short and

thick, the general outline similar to a *Tæniocampa*, 15 mm. long, of which the free abdominal segments (9th–14th) are only 5 mm.; the width is 5 mm., the widest part being about the 4th abdominal segment. The colour is brown, tending dorsally to black, especially along the posterior margins of the 4th, 5th and 6th abdominal segments. The head, legs, and wing cases are very smooth and polished, but the remainder of the pupa, especially dorsally, is sculptured in a very definite manner, of which only the dimmest suggestion is to be found in any of the *Cuspidiæ*. A special pattern affects the dorsum of each segment, *viz.*, two furrows or channels crossing from side to side, leaving a median and two marginal ridges. On the prothorax these furrows meet laterally; the anterior is interrupted in the middle line by a very slight ridge, but the second is so interrupted as to present only two ends and two pits between the divided ends. On the mesothorax, the pattern is so modified by the expansion of the median ridge and central interruption, as hardly to come within the definition of the pattern which is fairly applicable to the other segments.

The furrows form a horse-shoe shaped depression, with the convexity forwards, and the posterior ends dilated, leaving in its centre a raised surface, shaped like a heraldic escutcheon or shield. On the metathorax, the furrows coalesce and the dividing ridge is represented by only a faint elevation in the dilated ends of the furrow.

On the first abdominal segment, the median ridge is divided on each side of the middle line. On the following segments, the pattern is more typical, the median ridge widens at its extremities, and flattens out to join the marginal ridges, and in the flat portion the spiracles are situated. The marginal ridges of adjoining segments are separated by a sharp but narrow incision, so that the pupa appears to have alternately double and single ridges transversely. All these ridges, from the posterior thoracic margin to the median ridge of the 7th abdominal segment, are very sharp and well-defined. There are no minute pits as is so usual with NOCTUÆ. The prothoracic spiracle is distinct, the six abdominal spiracles are oval and have a shallow depression behind them. The pupa tapers to a point behind, which has, however, a very definite though minute armature, consisting of eight short points hooked downwards (towards the venter), disposed almost in the pattern of the hooks of *tridens*, two being dorsal, and the other six in a line anterior to this, the central ones being the largest. There

are two, if not three, very minute bristles at the base of the antennæ.

I have never taken the larva on anything but ash, which is no doubt its proper food in this district (Hereford), and its form and colouring are so adapted to its residence on the leaves of the ash, that I should imagine its other foodplants are makeshifts, resorted to, if one may so express it, because their botanical affinities persuaded the parent moth when ovipositing, that if they were not ash they were something very like it, and the larvæ found it possible to accept the position.

I have never had a pupa of this species successfully pass a second winter in that stage.

(*To be continued.*)

SCIENTIFIC NOTES.

THE BRITISH COCCINELLIDÆ.—(*Continued from p.* 123.)

COCCINELLA, Linné.—This genus formerly contained two-fifths of the entire British species, but in the present arrangement six only are included. The first in order, *C.* 10-*punctata*, L. (*variabilis*, Ill.), has been referred to previously as being one of our most variable species. It is common and generally distributed, and may readily be recognised by the yellow legs when other characteristics are wanting. *C. hieroglyphica*, L., occurs in heathy places, and is generally common. At Esher, Farnham, Shirley, West Wickham, and other localities in Surrey it can be taken abundantly by sweeping heath, the black vars. being almost commoner than the type form. *C.* 11-*punctata* is occasionally abundant on the banks of the Thames and other places near London. A considerable variation is exhibited in the spot-markings on the elytra; sometimes the spots are entirely confluent, and in the Irish exhibits by Rev. W. F. Johnson and Mr. H. G. Cuthbert the whole of the specimens are of this character. The Rev. W. F. Johnson writes me that the type form of this species is rare in Ireland. The variety occurs also at Farnham (Surrey), Rainham (Essex) and Yarmouth. *C.* 5-*punctata*, L. is a northern insect, and I have no authentic information concerning it. *C.* 7-*punctata*, L., though generally common everywhere, can be best obtained by sweeping the rank grass at sides of meadows. It is also common on heath, and widely distributed. *C. distincta*, Fald. (*labilis*, Mulsant) closely resembles *C.* 7-*punctata*, but the anterior angles of the thorax are much broader, more rounded, and not so projecting; and the apex of the episterna of the metasternum is white. The species appears to be local rather than common, and occurs in various parts of Surrey, Kent, and Sussex.

HALYZIA, Mulsant.—As very little reliable information is to be obtained respecting *H.* 12-*guttata*,[1] it must be passed over for the

[1] It may be as well to note here that the term "*guttata*" is applied to the white-spotted species.

present. The next in order, *H.* 16-*guttata*, is said to frequent young birches and other trees, but none of my correspondents record any capture of this species. *H.* 14-*guttata*, L. can hardly be considered common, as it never turns up in any numbers. It occurs in the London district (that is to say, the district as recently defined very properly by the City of London Entomological and Natural History Society), Esher (on wild sage), Farnham, etc. Three specimens were captured by Mr. H. G. Cuthbert in the Dublin district during the autumn of 1891. *H.* 18-*guttata* abounds in fir plantations in south of England and elsewhere. Two of the series exhibited were sent me by Mr. Cuthbert, who captured them in Dublin district, in autumn of 1891. *H. conglobata*, L. (*C.* 14-*punctata*, L.) is found commonly by sweeping sides of lanes, banks of nettles, etc., everywhere. *H.* 22-*punctata* is generally common in Surrey and elsewhere on banks and sometimes on nettles.—G. A. Lewcock.

Coremia ferrugata and unidentaria.—The question as to the specific distinctness or otherwise of these two common Geometræ has long been an open one, but few attempts seem to have been made to arrive at any definite conclusion. Newman's remarks (*British Moths*, p. 170) are no doubt well known to most British lepidopterists, and need not be quoted in full. In effect, he states that we have *two* species, exceedingly alike except in colour, but not indistinguishable, *unidentaria* having occasionally a "purple-red median band very much resembling that of *C. ferrugata*"; but he adds that Guenée combines the two on account of Sepp having figured both varieties as bred from the same caterpillar; and that according to his (Newman's) own observation the two caterpillars "are extremely similar in all their characters." No doubt these remarks have given rise to many experiments, but very little seems to have been put on record. Mr. Sydney Webb has obligingly furnished me with a short outline of the history of the question. He says (*in litt.*):—"It is really curious how history repeats itself. When first collecting I learnt that *unidentaria* and *ferrugata* were forms of one moth; then Stainton's *Manual* came out and we had two species; doubts were thrown upon these and the two almost merged together again; at all events, soon afterwards we were told that *unidentaria* had red banded examples and *ferrugata* black ones. No doubt in collections the species were very much mixed, and when sales came on at Stevens' and Sotherby's rooms, these series were as eagerly sought after as lots of vars. now, not for their rarity, but intending purchasers, trusting to well known collections being rightly named, so purchased with avidity these lots to be certain their own insects were correct. Then came a time when a little more light was thrown upon the subject, and a little knowledge is a dangerous thing; all red *unidentaria* were thrown out from collectors' series as doubtful —Knaggs repudiated them; Newman, a good general entomologist, but no lepidopterist, could say nothing but follow the lead of others before him; and Stainton had devoted himself to micros. So things gradually drifted into the copying age of literature of entomology, combined with the crude observations of young observers. . . . It thus behoves us now to check (from these inaccuracies constantly repeated) all the older statements of entomologists."

Going on the lines suggested in the sentence last quoted, I have

obtained the following evidence of the existence of a red form of *unidentaria* :—I. Mr. Nelson M. Richardson has twice bred broods containing both red and black specimens from dark red or "purple-red" ♀'s. II. Mr. W. H. B. Fletcher has bred a similar mixed brood from a *black* ♀. III. The late Mr. C. S. Bouttell of Catford bred about two dozen specimens from a red ♀, half coming out black, half red or intermediate. IV. Mr. A. U. Battley, of Stamford Hill, has bred a small brood of black specimens from a *red* ♀. Thanks to the courtesy of these gentlemen, and of Mr. J. A. Clark (who is in possession of some of Mr. Bouttell's brood), which courtesy I take this opportunity of publicly acknowledging, I have been able to examine several of these specimens. V. I have myself twice bred *mixed* broods, black and dull red, once from a red ♀, once from one so worn that its colour was indistinguishable. VI. It should perhaps be added that Captain R. B. Robertson bred last season from a red and from a black ♀, the pupæ being unfortunately mixed; but he has kindly shown me some of the red specimens that resulted, and they are of the same form as Mr. Fletcher's red *unidentaria*. I may add that some are in possession of Mr. Sydney Webb, who agrees that "they must be *unidentaria*." Of the existence of a *black* form of *ferrugata* I can get no authentic information, though I have bred two which are darker and duller than some red *unidentaria*.

It need hardly be said, however, that the mere existence of a red var. of *unidentaria* no more justifies our sinking *ferrugata* as a species, than, for instance, would the existence of a *genistæ*-like form of *Apamea gemina* (Tutt, *Brit. Noctuæ*, vol. i., p. 87) justify us sinking the former species as a var. of the latter! Assuming the ordinary view to be correct as to what constitutes a *species*, the evidence wanted is—Do the two forms pair in a state of nature? If not, are they distinguishable in any stage? Several entomologists who have bred both forms have pronounced the larvæ indistinguishable; but Mr. Sydney Webb has been more discriminating, and has succeeded in differentiating them. He writes:—"The caterpillars are quite different in colour when first hatched, but after the first moult, almost indistinguishable one from the other until nearly full fed, when a dark dash appears upon the anal segment, at the side of the larvæ; and this mark bears much resemblance to that upon the imagines of *Notodonta dictæoides* and *N. dictæa*, being a dash in the one case, an elongated triangle in the other." If these differences are found *always* to hold, they will presumably be sufficient to mark the two as specifically distinct. As for the *imago*, several points of distinction between the red *unidentaria* and *ferrugata* have been suggested, though the variability of both species renders it difficult to say which can be relied on in all cases.

Mr. N. M. Richardson says of red *unidentaria* that "the red is generally rather darker than typical *ferrugata* and often of a purplish tint;" but his own personal opinion is that the two are forms of one species, connected by intermediates. He has shown me one typical *ferrugata* bred among some *unidentaria* from a dark red ♀; this specimen went round in one of the "*Record* Exchange Club" boxes, and Mr. Sydney Webb suggested that it must have been accidentally introduced among the brood; unless this was the case it seems to show that *ferrugata* is only a specialized form of *unidentaria*, and *can* be

obtained from it through the ordinary "red *unidentaria*." But all my other evidence points in the opposite direction, as I have seen no other "red *unidentaria*" which come at all near the typical *ferrugata*. Mr. Sydney Webb considers the two quite easily separable, and refers to the following characters as distinguishing them:—Apex of *unidentaria* less pointed, fascia broader, hind margin paler without the rivulet transverse lines, hind wings bicolored without waved lines. The width of the fascia seems to me far too variable to be relied on; Captain Robertson has a beautiful variety of *unidentaria* in which it is decidedly narrower than in typical *designata* (*propugnata*). In a few extreme cases the hind wing distinction does not hold, but on the whole this is very reliable, and generally the red *unidentaria* have paler hind wings than the black, and further removed in appearance from those of *ferrugata*. The late Mr. C. S. Bouttell wrote to me:—"I have certainly never hesitated about naming the two species; the *C. ferrugata* always appeared to me to have the red colour brighter and of a purplish hue, and the hind wings always smoke-coloured throughout with all the waved lines continuous, whilst in the red vars. of *C. unidentaria* the ground colour is more inclined to brickdust red, and the hind wings much lighter than *C. ferrugata*, and the waved lines not distinct." Mr. A. U. Battley suggests that the discoidal spot on the fore wings is narrow, linear, and transverse in *unidentaria*, broader in *ferrugata*, "and inclined in some specimens to become the shape of the moon at first quarter"; that the double pale bar on hind wings is more angulated in *unidentaria* than in *ferrugata;* and that *ferrugata* is slightly narrower in the wings, and more pointed, than *unidentaria*. The discoidal spot, however, is, I fear, too variable for the distinction to hold in a long series.

Other slight differences, not noticed by my correspondents, seem to be: (*a*) The "twin spots" of *ferrugata* are placed on an ochreous patch; in *unidentaria* on a pale space. (*b*) The under surface of *unidentaria* much less tinged with ochreous. (*c*) The fringe of *ferrugata* more distinctly spotted with dark colour, and others less important. The geographical range of both species in this country is extensive, though *unidentaria* is said to be absent in some places. The times of appearance of both species are the same—regularly double-brooded, with a tendency (at least in captivity) to produce a partial third brood late in autumn.

My object in writing these notes and collecting this evidence on the question is not to draw herefrom any dogmatic conclusions, but rather to bring information, as far as possible, up to date, and to stimulate entomologists to further investigations. There are three possible views which may be entertained—that we have one species, or two, or even three: a red, a black, and a variable species sometimes red and sometimes black; but the latter may, I think, be set aside as in the highest degree improbable, notwithstanding that black *unidentaria* generally throws, with remarkable constancy, black forms only; for the black specimens from red parents seem quite indistinguishable from other *unidentaria*. Of course, there can be no doubt about the common origin of the species, and it would be an interesting question for scientific investigators, Which is the older form? If the black, then *ferrugata* would be the most highly developed form, and the question

would be, Can it, by in-breeding, be obtained from *unidentaria?* If the *red* is the original form, it almost seems that the two must be now quite distinct, as typical *ferrugata* shows so very little tendency to throw *unidentaria*-like forms. As Mr. Richardson says:—"A few careful experiments ought to settle the question;" and the experiments I would suggest to those lepidopterists having leisure and inclination are 1. Pairing, if possible, the type forms; or red *unidentaria* with type *ferrugata*. 2. In-and-in breeding, with judicious pairings, and detailed notes of results. But even if every opportunity of breeding from red *unidentaria* be taken, much good work may be done, as these seem generally to throw "mixed broods," and the extremes could be compared with typical *ferrugata*.

In conclusion, I shall be only too pleased to hear from any entomologist who has any information on this subject; we have worked independently too long, and it is high time that all results were compared and put on record: it may then be hoped that ere long the question will be definitely settled.—LOUIS B. PROUT, 12, Greenwood Road, Dalston, N.E. *April 26th*, 1892.

HEPIALUS LUPULINUS LARVA.—I have read Mr. Fenn's comments on my *Hepialus* paper, but he is certainly wrong in saying that the larvæ of *lupulinus* feed "in a long *vertical* silken tube" (the italics are mine). In the first place I have never seen the burrow of any *Hepialus* larva lined with silk, and such a lining would be a disadvantage to the larva were it so lined. In the second place their burrows are not vertical. How could they get at their food, the roots of plants, were they confined in a silk-lined vertical tube? When ready to pupate, such a tube is formed, sometimes more or less vertical, but frequently at a very slight angle. In this, the pupa can move about with great ease, but it must be remembered the confinement therein is not the disadvantage to the pupa it would be to the larva, and when ready to emerge, it presses its way to the surface by use of the knots or spines in the segments. So far as my observations extend, I have never seen the burrow of a feeding larva lined with silk, nor yet vertical.—JOHN E. ROBSON, Hartlepool.

CANNIBALISM, ESPECIALLY OF SCOPELOSOMA SATELLITIA.—When any character has been held up to opprobrium through the ages, in the pages of history, there comes a time when one arises and shows that the whole matter was a mistake and that the arch villain of history was in reality a most estimable character. I think that something of this sort admits of being done on behalf of *S. satellitia*. In the *Manual*, Stainton says:—"Young collectors must be cautious not to admit the larva of the Satellite into their breeding cages, as it has a depraved taste, and, instead of confining itself to a vegetable diet, it eats with avidity other larvæ, not disdaining to eat those of its own kind." So high is Stainton's authority, that I find that not a few entomologists have acted most closely on this advice, and have no experience in the matter. For my own part I must admit that I always declined the acquaintance of the larva of *satellitia* till comparatively recently, and then I admitted it strictly as Stainton directs, cautiously, and noting its behaviour. This year I had a number of ova of *satellitia*, which resemble and are laid singly on twigs like those of *Xylina* and not at all like those of *Cerastis*, to which the moth is supposed to be allied, and

reared a number of larvæ. Now I had never detected *satellitia* in an act of cannibalism, and therefore I rather pressed the matter; I had a score of larvæ in a small tumbler, and finally kept seven together, also in a small tumbler, till they were full-grown, often starving them a good deal, yet they did to each other no injury whatever. *Calymnia trapezina* is no doubt the most determined cannibal, and I once reared the moth, having given the larva from a size of about a quarter grown only animal diet. There are other species that seem rather to like it, and some that only do it when crowded together. *Xylina*, especially *petrificata*, is given to cannibalism, and this tendency is much aggravated in captivity; at large, the larva is solitary, and when half-grown goes for more succulent food, generally leaving the trees and taking to low plants, and if not supplied with more juicy material in captivity will do badly and die, but will, if opportunity offers, try cannibalism as a means of adding to the moisture of its pabulum. Other species, such as *vaccinii*, also crave low plants and succulent food when half-grown, but no provocation will make them cannibals. The total list of occasional or frequent cannibals must be a long one. I have met with a considerable number but have kept no note of them. *Satellitia* belongs, no doubt, to the occasional class, under the pressure of too dry a diet; but I may repeat that I have, even so, never detected it.—T. A. Chapman, Firbank, Hereford. *June*, 1892.

Variation.

Strange aberration of Dasychira pudibunda.—I have lately bred a very curious specimen of *Dasychira pudibunda*, from a larva taken in Epping Forest on the 29th August last. The specimen has a large patch on the upper side of each forewing completely devoid of scales. The hindwings are similarly affected, the scaleless portion extending from the base of the wings to about the middle. On the underside, the forewings each have a smaller scaleless patch (corresponding with the upper half of the patch on the upper side), and the space on each side of the principal nervure of the hindwings, extending from the base to the crescent-like spot, is almost entirely devoid of scales. Altogether the specimen presents a very peculiar appearance, especially when held up to the light. A remarkable thing about the insect is that the scaleless portions of the wings are the same size and shape on each side. The only reason that I can think of for this curious malformation, is that it was caused by some accident to the pupa or larva, but this seems doubtful on account of the perfect symmetry of the scaleless patches on each side. The insect is a male, and in all other respects is perfectly well developed.—Henry A. Hill, 132, Haverstock Hill, Hampstead, N.W. *27th April*, 1892.

Variation of Odonestis potatoria.—The variation to which this species is subject seems to me full of interest, and worth following out. I have in my collection ten females all bred from larvæ taken in one year, and all under the same conditions. No two of the ten are exactly alike, either in colour or markings. Four of the females have the colouring of the males, though not quite so red in hue. I have never seen a male with the yellow colouring of the female, though I have

bred a very large number of the moth. I am trying them again this season in the hope of obaining fresh varieties. I have also among my specimens illustrating the life history of this species, two flies which emerged from a cocoon; they are not ichneumons, but diptera, closely resembling the common house-fly. The same species also emerged from a cocoon of *Bombyx rubi*.—Hy. Ullyett, Folkestone.

White variety of Rumia cratægata.—For the past ten days a number of *R. cratægata* imagines have been daily emerging in my breeding cage, which were bred from larvæ obtained from a whitethorn hedge in my own garden last September. One of these moths which emerged yesterday, is so totally different in colour from the ordinary type, that it may perhaps interest some of your readers if I give its description. All the wings are pure white, the costal margin of the forewings have the usual red brown spots, which *cratægata* possesses, but are not quite so large or distinct. The two little brown spots near the middle of each forewing, have a white centre, and are well defined. Unfortunately the two hind wings are crippled. The head, thorax, and body are a beautiful glossy white. The undersides are also white. I shall be glad to know if any of your readers have even bred a variety of this insect similar to the description I have given, and whether any one can account for the colour being so different from the ordinary form.—H. Shortridge Clarke, 2, Osborne Terrace, Douglas, Isle of Man. *May 21st*, 1892.

Food and Variation.—In order to see if the food of the larva had any effect upon the coloration of the imago, I fed up a brood of *Spilosoma lubricipeda* upon red pickling cabbage. They ate the coloured cuticle chiefly, their frass was the colour of their food, yet the imagines emerged if anything *rather paler* than the normal. A great proportion of the larvæ died, and a number of pupæ were consumed by the surviving larvæ. A brood of *Arctia caja* I tried to rear on red cabbage all died.—Harry Moore, 12, Lower Road, S.E.

CURRENT NOTES.

Mr. Bignell describes (*E.M.M.* p. 176) a new species of Cynipidæ under the name of *Spathegaster punctatus*.

Reports of *Deiopeia pulchella* continue to come to hand. Specimens of *Deilephila livornica* also have been taken by Captain Robertson at Swansea, by Mrs. Routledge at Carlisle, by Mr. Newton at Winchester and by Mr. Flood at Dorking. *Colias edusa* was still on the wing on Saturday last, July 9th; but Lieutenant Brown has eclipsed all previous records for the year up to date by taking *Cloantha perspicillaris* (*polyodon*) near Folkestone.

At Oxford, Mr. Stainton has been appointed as one of the Curators of the Hope Professorship, held by the veteran entomologist Professor J. O. Westwood.

One of the oldest entomologists has, we regret to say, passed away in the person of Professor H. C. Burmeister at the age of 85.

A first class plate illustrating the genital organs of the *Coleophoræ*, lately differentiated by Dr. Wood, is given with the current number of the *E.M.M.*

The late Mr. J. C. Dale's photograph appears in *The British Naturalist* for the current month.

Mr. Reid records the turning up of "several larvæ of *Hadena porphyrea* (*satura*) on Bennachie, from which only one imago has, as yet, been bred. Mr. Common (Connon?) of Braco captured a beautiful specimen at treacle several years ago."

"Sugar" appears to be maintaining its efficacy. Mr. Hodges reports to us the capture of six *Triphæna subsequa* at Freshwater. In Kent, on Saturday night last (July 9th) a dozen patches were covered with moths; but they had to be left, all our boxes having been filled up previously.

Students interested in the lepidoptera of Scotland, should not miss Dr. Beveridge's article on "Lochinver as a locality for lepidoptera," in the current number of the *Annals of Scottish Natural History*.

The third volume of *The British Noctuæ and their Varieties* has just been published. Subscribers who have not yet received their vols. should communicate at once with us.

NOTES ON COLLECTING, Etc.

A Red Letter Night on Wicken Fen. — Productive as is "light" on Wicken Fen, the really good nights are few and far between. A close, warm night, cloudy, with thunder rumbling in the distance, when you can stand still and perspire! and the moths come even too thick. All manner of flies and gnats buzz round your ears and eyes, with Crambites and Pyrales. *Nascia cilialis*, among others, dances up and down the lamp glass, attended by *Chilo phragmitellus*. Noctuæ keep dabbing on the "sheet," *caia* comes flopping around, generally in your face, assisting the swarms of gnats and common things to prevent your boxing a *Catoptria expallidana* which is running up and down the lamp glass. "Lappets" and "Drinkers" come flop on the sheet, and some of them dropping off keep up an incessant rustle in the grass below, while *Bombyx neustria* and *Arctia fuliginosa*, the noisiest of all, come tap, tap against the lamp, and then commence a series of furious charges, making it a matter of impossibility to box the rare micros that run up and down the front of the lamp. The only way is to go for these noisy, blustering fellows —catch, kill, knock them down, tread on them—anything for a lull in the wild storm, and you may go the next morning and survey the wreck—"Tigers," "Lappets," "Drinkers," "Lackeys," wings and bodies all over the place. August is *the* month for these night of nights; July stands next chance; June rarely produces one; this, however, is the month for quality of species. Such a night in May is as unlikely as "snow in harvest." But I was on the Fen on Tuesday, May 31st, and saw Houghton, who told me of a wonderful night he had on May 27th. Species, usually looked for three weeks later, out in profusion, such as *Arctia fuliginosa*, *Viminia venosa*, *Meliana flammea*, *Nascia cilialis*, etc., and his characteristic statement that there were "hundreds and thousands," was proved afterwards, when I called at his house, by the board after board he showed me filled with the above-mentioned species, some of the finest *flammea* I have ever seen, and a grand lot of pretty forms of *fuliginosa*; and the

numbers of *cilialis* he had, showed that it must be full out; the usual time for it is the third week of June, and I have taken it as late as August 11th. Things appear to be generally early in the Fen, as the day I was there (May 31st) *Papilio machaon* was flying in a worn condition.—WM. FARREN, Cambridge.

NOTES OF THE SEASON.—*Guernsey.*—During a business stay in the Channel Islands, extending from June 20th to July 4th, I was unable to devote much time to collecting, but paid several visits to my old locality for *Melitæa cinxia*, which occurred in profusion on its very limited ground, and some rather warm and exciting sport resulted in a long series in grand condition, amongst which were three varieties of undersides (one of which is very fine) and several well-marked upperssides. Our best day's sport was on Midsummer Day, when we filled all our boxes. Amongst other species, I was glad to be able to secure about 30 *Nemoria viridata*, which were knocked out among the furze, and were in the finest condition. I might add that although killed, as usual with all my captures, with ammonia, the delicate green colour is not in the least affected. *Nemeophila russula* was very common, the males on our earlier visits affording us some capital exercise, and it was pleasing to see the enthusiasm their wild flight evoked from my companion, whose motto after once starting in pursuit was "*Nil desperandum.*" On a later visit we were fortunate in finding the females of this species on the wing, and secured 7, which is unusual in my experience, as previously I had found that the females were as retiring in their habits as the males are the reverse. Amongst them was one good variety, in which the underwings were as light as in the males, with a complete absence of the usual black cloud. *Ino statices* were very much more widely distributed but hardly so common as on previous visits, and females of this species were also more in evidence than in previous years. *Arctia villica* was fairly plentiful and remarkably strong on the wing; the enthusiasm aroused by its very brilliant appearance in the sunshine hardly sufficing to carry the pursuit to a successful end. *Orgyia fascelina* appeared early; I took a fine pair *in cop.* on grass stems, where, although such large insects, they were remarkably inconspicuous. We also took full-fed larvæ of the same species and a single one of *Bombyx trifolii*. *Pararge semele* was dashing about on the cliffs, and *ægeria* in the shady lanes above; although woods are entirely absent here, possibly they are attracted by the old name of the parish, "The Forest," and accept the similitude for the reality. *Acidalia promutata* occurred sparingly at rest on the cliffs, and *Zygæna filipendulæ* rivalled *Ino statices* in the metallic brilliancy of its appearance on the wing. We were tempted by the prolific nature of the locality to stay the night and try our luck, but, unfortunately, the evening selected proved very clear and cold, with an almost frosty brilliancy of the stars; nothing appeared on the wing at dusk, saving one or two of the commonest micros and some 1,000 to 1,200 sugared flower heads produced next to nothing; a few *Miana strigilis*, *Viminia rumicis*, *Agrotis exclamationis*, etc., only appearing, to our intense disgust. I indulged in only one other evening, with the treacle tin during my stay with precisely similar results, excepting that the common species were rather more plentiful, and one very worn *Caradrina superstes* gave evidence that I was too late for that interesting species.—ALBERT J. HODGES, Isle of Wight. *July 5th*, 1892.

Wye Valley (*Monmouthshire*).—I note Mr. Fisher's query in your last number. *Vanessa cardui* was very abundant here this spring, and I had not seen it in this locality before; in fact, all hybernating Lepidoptera were remarkably numerous. From Newman's description of the habits of the larvæ of *Ellopia fasciaria*, I imagine they were full-fed at the end of October, but my larvæ passed the winter on the needles of the Scotch fir, commenced feeding again early in the spring, and were full-fed, some by the middle of May, others not until the middle of June. I have bred at one time or other most of the larvæ which have a reputation for being cannibals, but the most determined cannibal I know is *Calocampa exoleta*. I put four in a box together; the largest of the larvæ killed and partially devoured the other three in one day. Out of three dozen (one dozen I obtained from Lincolnshire) I now have three survivors in separate boxes, or I expect I should only have one; all the rest fell victims to the prowess of their brethren. *Colias edusa* has appeared about this part, whilst *Vanessa c-album* and *Argynnis paphia* have put in an appearance. Moths have been plentiful, amongst others, I have taken since my last note *Stauropus fagi*, *Epione advenaria*, *Pericallia syringaria*, *Thyatyra derasa*, *Aplecta prasina*, *Melanippe hastata*, *Melanthia albicillata*, *Macaria liturata*, *Phorodesma bajularia*, *Bomolocha fontis*, *Chœrocampa porcellus* and *elpenor*, and *Plusia iota* and *festucæ*.—A. NESBITT, Llandogo.

Tunbridge Wells.—The last month has been a wonderful one for sugar here. I never saw insects in such profusion, sometimes there were seventy or eighty on one patch of sugar. My best nights have been during bright moonlight, thus being quite contrary to the old notions. Among the species I have taken were *Xylophasia hepatica* and *X. rurea* and vars. (swarming) *D. pinastri*, *Mamestra anceps*, *Apamea basilinea*, *M. persicariæ*, *Aplecta herbida*, *A. nebulosa*, *A. tincta*, *Apamea gemina*, *Hadena pisi*, *H. thalassina*, *H. genistæ*, *H. adusta*, *Noctua plecta* (swarming), *N. c-nigrum*, *N. festiva*, *N. tenebrosa*, *Triphæna pronuba* and *Agrotis exclamationis* were a positive nuisance, *Chœrocampa elpenor*, *Notodonta camelina*, *Cuspidia psi*, *C. aceris*, *C. megacephala*, *C. tridens*, *Viminia rumicis*, *Leucania pallens*, *L. impura*, *L. lithargyria*, *L. comma*, *Thyatyra batis*, *Gonophora derasa*, *Miana strigilis* and *M. fasciuncula* swarmed.—R. A. DALLAS BEECHING, 24, St. James Road, Tunbridge Wells. *6th July*, 1892.

Penarth.—During April and the early part of May, the larvæ of *Melitæa artemis* swarmed in the Penarth district, more particularly in one field where several hundred were taken by the members of the Penarth Entomological and Natural History Society—the majority of the larvæ have found their way to various parts of the country.—At the end of May the imagines were very plentiful. During May, several specimens of *Saturnia carpini* were taken on Barry Island, and during May and June the larvæ have been very abundant, feeding on bramble. One larva has already pupated—is not this very early? This is the first year we have met with *carpini* here. On May 14th I took on Barry Island a female *Arctia fuliginosa*, which, although a cripple, produced a goodly number of ova. These hatched in due course, and the larvæ, after feeding well on dock leaves, are now spinning up. Another specimen was captured at Porthkerry near Barry, by Mr. W. E. R. Allen, a few days before I took mine, these

are the first specimens of *fuliginosa* noted for this district. On June 12th I took at Penarth *Macroglossa bombyliformis* as the insect was settled on the grass. Several specimens are believed to have been seen on the wing. *Vanessa cardui* has turned up very suddenly this spring in extraordinary numbers, none having been seen last season about here. This seems to show that the present visitors are immigrants. I have lately come across some of the larvæ. *Zygæna filipendulæ* has also been literally swarming this season. Several *Arctia villica* have been taken on Barry Island. During the last week or two a fairly good number of *Macroglossa stellatarum* have been seen, several being captured. Is not this date also rather early for *stellatarum*? This is certainly thus far the best season we have had for several years. May one of the reasons be found in the severity of the last two winters, killing many enemies of the insects, and thus preserving the larvæ and pupæ from destruction.—G. A. Birkenhead, Downs View, Penarth, near Cardiff. *July 6th*, 1892. [*M. stellatarum* has been recorded for every month in the year, I believe. June and July are its chief months in Kent.—Ed.]

Folkestone.—I took *Deiopeia pulchella* here on May 29th, and saw another whilst fishing at Smeeth (about nine miles from here, on the South Eastern Railway) on the 4th of June. I had no net with me, but tried to box the insect several times, when a gust of wind blew it into some willows across the stream. During the five years I have resided here, I have never seen *Colias edusa* in the spring till this year, when I have seen quite close I should think at least half a dozen (male and female) *all much worn.*—F. Le Grice, 4, Shorncliffe Road, Folkestone. *June 30th*, 1892.

Swansea.—I took a splendid *Dielephila livornica* flying over rhododendrons, a few days since.—R. B. Robertson, Fort Hubberstone, Milford Haven. *June 24th*, 1892.

Folkestone.—I have the pleasure of adding *Cloantha polyodon* (*perspicillaris*) to the record of rare insects captured this year. I took a specimen at sugar on the 4th of this month, near Folkestone. It is a male, and in good condition, except that the fringes are worn, showing that it must have been on the wing for some days. It is too striking a moth to make any mistake about, but to make assurance doubly sure, I took it up to South Kensington Museum, and compared it with the solitary specimen which I was shown there.—E. W. Brown, Shorncliffe. *June 29th*, 1892. [It is a pleasure to record the capture of such a rarity as *C. perspicillaris*. "This species is hardly known as British. There are two records only, given in Newman's *British Moths*, p. 425. Of Clerck's figure I made the following description:—'Anterior wings brownish-fuscous with the basal area white, a broad, white, longitudinal patch running out of the basal area, along the central nervure as far as the whitish-ochreous reniform with which the patch is joined by three fine white lines. The space between the elbowed and subterminal lines white, especially in the upper parts; the subterminal W-shaped and white; the costal area dark brownish-fuscous; a fine white edge to inner margin; area under white patch in stigmatal area ochreous-yellow. Hind wings grey; paler base.' (*Icones*, Pl. II., fig. 2). Of the early occurrence of this species in Britain, Mr. Stainton writes:—'A single specimen of *Cloantha perspicillaris* was

taken by the late Mr. Paget near Yarmouth, the capture of which is recorded in the *Entomologist*, June, 1841, p. 128, whilst the specimen is in the collection of Mr. Doubleday. The species is figured and described in Humphrey and Westwood's *British Moths*, vol. i., p. 230; Pl. LI., fig. 1. According to Guenée, the species is widely dispersed on the Continent, but 'never very abundant.' 'The larva feeds in July and August on Hypericum.' (*Ent. Ann.*, 1855, Pl. XVI.); whilst Mr. Stainton further writes:—'A specimen of *Cloantha perspicillaris* found in a spider's web at Ashford, Hants, was exhibited by the Rev. Mr. Hawker. at the May meeting of the Entomological Society' (*Ent. Ann.*, 1855, p. 47). Guenée writes:—'Engramelle has figured (846 ab), under the name of *La Pale*, a *Noctuelle* which does not at all resemble *Leucania pallens*, and which appears to me only an accidental variety of our *perspicillaris*' (*Noctuelles*, vol. vi., p. 113)." (*British Noctuæ and their Varieties*, vol. iii., pp. 98, 99).—ED.]

Lee, Kent.—The season here is the latest I ever recollect. Two or three nights ago *T. gothica* and *stabilis* in fine condition were flying merrily and commonly with *Rumia cratægata*, which has only just appeared. *Eupithecia dodoneata* is only just out (May 23rd), which is the latest time I have ever recorded for first emergence, they are in lovely condition, I have known them out the first week in April. *Anticlea badiata* and *Selenia illunaria* are hardly over yet, so comment is needless. Trees and plants are equally late; the ash is only just bursting, and the oak is not yet in flower.—C. FENN. *May 26th*, 1892.

Birmingham District.—I have just returned from a short collecting trip after *Lobophora viretata*, and am glad to be able to report it to be still unaffected by the rather continuous and close attacks to which it has been subjected the last season or two by the very active collectors of the district. To a southerner, the hollies certainly were a surprise, both for size, age and plenty, and held out an amply fulfilled promise of providing a head-quarters for this elsewhere very scarce GEOMETER. *Lycæna argiolus* was also very plentiful, although getting worn; but I was struck by the complete absence where we were working of many common butterflies, such as *Anthocharis cardamines*, *Argynnis euphrosyne*, etc. A few hours spent on my journey down, in Wychwood Forest, after *Nemeobius lucina*, were not altogether successful, owing to a very cold and high wind and lack of continuous sunshine. I am, however, afraid this species was not so plentiful this year there as usual, I only secured eight or ten in the short time my train allowed me to wait. When working for *viretata* we picked up a good many *Hadena glauca* at rest in fine condition, this was also new to me.—ALBERT J. HODGES.

Felixstowe.—On June 10th I took a specimen of *Deiopeia pulchella* at Felixstowe, and on June 20th a female *Colias edusa* at the same place, which had every appearance of having hybernated. Sugar was attractive, and I took a fair number of NOCTUÆ but none of them rare.—A. W. MERA, Forest Gate. *June 30th*, 1892.

Bognor.—I took *Colias edusa* at Bognor on the 26th inst., having seen the species previously on the 12th inst.—W. H. MCLACHLAN, Clapham. *June 30th*, 1892.

Weymouth.—In netting insects I have been fairly fortunate, and

have, amongst other captures, taken about 40 *Heliaca arbuti*, and to-day have had given to me a ♀ *Deiopeia pulchella*. It was taken in this neighbourhood in an allotment garden, and after its capture was shut into a match-box, and fed on grass, where it unfortunately rubbed one of its wings slightly, otherwise it is in good condition. During the past fortnight numbers of *Colias edusa* have been on flight, apparently hybernated specimens, as their wings generally are more or less torn and their colours have faded. *Cynthia cardui* and *Vanessa atalanta* are more plentiful than I have seen them for some years.—A. FORSYTH. *June 6th*, 1892.

New Forest, Epping, Abbot's Wood, Chingford, etc.—A week at Whitsuntide at the New Forest produced *Nemeobius lucina*, *Stauropus fagi* (2), *Notodonta dodonœa* (1 *at sugar*), *Boarmia consortaria*, *Diphthera orion* (10), and a full-fed larva of *Apatura iris*, which is now in pupa. The evening of June 10th was grand for sugar, hot, hazy and dull. Besides a large number of ordinary NOCTUÆ, I took 8 of the *D. orion* on that evening. They usually come to sugar at dusk (9—9.20 p.m.), and settle, with wings closed, at the top of the patch, looking remarkably like the green lichen which covers the trees. Fortunately they are not shy, and have to be scraped into the box, so fond are they of the sugar.

I was a little too late for *S. fagi* at Epping. I had one day there and took no imagines, but found 56 ova on a beech trunk. These were scattered, from about 6 inches from the ground, up to 8 ft., on all sides of the tree, singly or in small groups. They are now changing colour. If this is the usual way in which *S. fagi* oviposits, it would be a good way to collect the species, as the newly deposited ova are very conspicuous on the green trunks.

A visit to Abbot's Wood, Polegate on June 25th, was chiefly planned for *Melitœa athalia*. The dull day almost prevented them from flying, but I took 10, also *B. consortaria*, *Ennychia octomaculalis*, etc.

Sugar is splendid round here. Last week I boxed over 100 insects in $1\frac{1}{4}$ hour, and set out 96 of them. This was at "Lark's Wood" near Chingford.

Phorodesma smaragdaria is a great lover of the *sun*, and basks on al the sheltered plants. Mine are doing well. I have already bred about 20 all full size. This seems to disprove the theory that the southernwood fed specimens are dwarfed, for my larvæ had both southernwood and sea wormwood, and preferred the former. I believe it to be a question of plenty of food, sun, air and space.—A. U. BATTLEY. *June*, 1892.

Aberdeen.—The season here promises to be a very good one. The sallows in the spring were unusually productive; *Tœniocampa stabilis*, *T. instabilis*, *T. gothica*, and *Pachnobia rubricosa* swarmed on them almost every night. *Panolis piniperda* and *Hadena glauca* were rather scarce. I was surprised to find a male *T. stabilis* and female *T. gothica in cop.* drop into my sheet. I have bred a nice lot of *Spilosoma mendica* from larvæ obtained near Aberdeen last autumn, the males are not quite so dark as the English form, hitherto this insect was supposed to be very rare in this district. The best of my other captures is a fine series of ochreous forms of *Dianthœcia conspersa*. *Hadena adusta* is abundant at sugar, and *Mamestra albicolon* has been taken in fair

numbers. *Hyppa rectilinea* is exceedingly scarce, I have only taken one specimen. I was successful in taking a short series of *Retinia duplana* and *Leptogramma scotana* in Morayshire. *Viminia myricæ*, *V. menyanthidis*, *Hadena dissimilis* (1), *Viminia rumicis*, *Rusina tenebrosa*, *H. dentina*, *X. rurea* and its var. *combusta*, *T. batis* and *H. pisi* are turning up at sugar in more or less abundance. I have netted *Hypsipetes impluviata*, *H. ruberata*, *Chesias obliquaria*, *Macaria liturata*, *Eupithecia satyrata* and its var. *callunaria*, *E. indigata*, *E. nanata*, *E. vulgata*, *E. minutata*, *E. pumilata*, *Lobophora lobulata*, *Tephrosia biundularia*, *Phigalia pilosaria*, *Amphisa prodromana*, *S. palustrana*, *Phoxopteryx myrtillana*, *P. biarcuana*, *Peronea mixtana*, etc. —A. HORNE, Aberdeen. *June 20th*, 1892.

Winchester.—I began to sugar on the last day of May, and my first bag was three *Bisulcia ligustri* and three *Cymatophora or*. I went again the next night and took seven *C. or*, six *B. ligustri*, one *Cuspidia alni*, one *C. leporina*, *Euplexia lucipara*, *Hadena thalassina*, *H. pisi*, *Agrotis cinerea*, five *Grammesia trilinea*, two *Noctua festiva*, one *Demas coryli* (at my lamp), one *Thyatyra batis*, etc. Not to go too much into detail, I have taken altogether (*all* at sugar), in the same ride, three *C. alni*, four *C. leporina*, forty *Aplecta herbida*, twenty-three *A. tincta*, three *A. cinerea*, twenty-one *B. ligustri* (they soon get worn), twenty-five *C. or*, one *Dianthœcia cucubali*, one *Neuria saponariæ*, seven *Chariclea marginata*, five *Xylophasia hepatica*, eleven *Noctua brunnea*, nine *A. segetum*, three *Apamea gemina*, one *H. contigua*, two *H. genistæ*, five *N. c-nigrum*, one *Leucania pallens*, one *Xylophasia sublustris*, two *A. corticea*, eleven *T. extersaria*, one *Eurymene dolobraria*, four *Boarmia repandata*, three *B. consortaria*, *Cabera exanthemaria*, *Asthena candidata*, and *Iodis lactearia* and any quantity of *Euplexia lucipara*, *N. festiva*, *T. batis*, *A. exclamationis*, *Triphœna pronuba*, *Apamea basilinea*, *A. nebulosa*, *H. thalassina*, *Rusina tenebrosa*. I learnt a great deal, so much that I hardly know how to arrange it. The following appear to be the chief facts:—1. *Geometers*—especially the *Boarmidæ*—came freely to sugar. 2. *Nola cristulalis* does not come (there were lots about), whereas *N. strigula* does. I took a fine series one year, on sugar, at Lyndhurst. 3. The etiquette about a made ride ought to be most stringent. If a man has sugared three times in a ride, he ought to have an absolute claim on it. I say this for two reasons: (*a*) More insects came every successive evening. Objection—They may have been coming out fast. Answer—Many were very worn. (*b*) After three nights absence and a heavy rain, the wind changed, and I sugared the opposite side of the tree; there were three times as many insects on the old place as the new, right in the wind. 4. *Atmospheric conditions.* The best night, in point of numbers, was in a pouring rain. I still shudder at that night. I started in a drizzle, and when I got to the wood every tree was dripping, and it was roaring with pain—pouring with rain, I mean. I had on a mackintosh and a 'brolly, and filled two collecting boxes (I wanted to renew *E. lucipara*, *H. thalassina*, *T. batis*, *A. nebulosa*, *N. festiva*). But whenever one opened a box, in came the rain, so I knelt in the mud and held the box, etc., under the umbrella, and the strong wind kept blowing the 'brolly away. I reached home in a piteous plight, but with my insects in a perfect state. Moonlight made

a little difference, but not much, the insects were very wary and kept jumping off, not falling down, and fresh ones kept coming much later than usual. I did not get home till 2.30 one very bright night, but had as many insects as usual. Wind (warm) made no difference, except, perhaps, that the insects sat very tight and were easy to take. I thought they rather took a drink and walked into shelter, and then came back for another. I found several off the sugar, especially higher up the tree. Since the change of last week I have hardly taken anything. 5. I don't know what a man does without the cyanide bottle and oxalic acid. I tried, as an experiment, boxing *C. marginata*, *A. nebulosa*, and *T. batis*, and they were wrecks next morning. Of course, my method is tedious. Pin sideways when stupefied in the bottle, and oxalic about every six insects. It involves a small wait after every insect, even with a new bottle and some method in putting away the pen and oxalic carefully. It was a terrible trial on the wet night. But you can pack dead insects very close, and they come home in splendid order with the box very slightly damped. 6. *The behaviour of insects.* Lots drop and can be picked up. Notably—*A. nebulosa.* They often walk away from the sugar, one should look round about especially above and in a wind. Several stay only for a very small drink, notably, *T. batis* and *C. marginata.* Others drink for ever, notably, *N. festiva* and *Triphœna pronuba.* Some come early and disappear, *e.g.*, *C. or.* Some vary, *e.g.*, *T. batis*, the earliest on one night, the latest on another. Some come late, *e.g.*, *A. tincta* (rarely before 11 o'clock). Some came almost on the ground, on the trickles, *e.g.*, *C. marginatus* and, to some extent, *T. batis.* Some may possibly be passed over, *e.g.*, *B. ligustri* and *A. herbida.* Some are liable to be confused, as *R. tenebrosa* and *G. trilinea* var. *bilinea* (dark), *A. tincta* and *A. nebulosa*, *A. segetum* and *A. corticea*, etc. Some seem always fresh and then disappear, *e.g.*, *A. herbida.* Others get worse and worse as *Grammesia trilinea* and *H. thalassina* and *T. batis.* Some are pugnacious and drive the others off, especially *G. trilinea.* I slew two of the latter because, under my very eyes, they hustled off *A. tincta.* This seems specially to happen just as the light falls upon them. It is very advisable to come straight on to your sugar and not round a corner, they drop off immensely when the light falls on them sideways (or from underneath), it seems to tickle them under the wings. 7. *Materials.* I thought I found treacle and rum better than treacle and jargonelle, and thin treacle better than thick treacle, as making better trickles and keeping them longer. I sugared with very thick treacle one evening, and a very little seemed to go a long way. The bulk of the insects were six inches away from the sugar, and a lot on the ground singing "We won't go home till morning," and some didn't, not till two o'clock. So much for sugar.

I kept a female *Colias edusa*, and put her under a bell-glass with a sod of white clover. She was very fresh, wing edges perfect, and colour nearly so. She laid heaps of eggs, little white things like pears, with the stalk stuck into the upper side of the leaf. These have behaved with much eccentricity. Some have changed their second skin, some have changed their first, some are just hatched, and some are still ova.

Two females of *Demas coryli* laid freely, but all the ova seem infertile. One was taken by day and one by night. *B. consortaria* have laid well.

I put a chip box into the sleeve with them, and nearly all the eggs are invisible, hidden away under the films of wood which have started with the damp. I thought they had not laid until I noticed the green of the ova under a thin film. *C. or* also laid well. They differ much from the Rannoch ones. I hope the second brood of *Deiopeia pulchella* may turn up. Has anyone views as to how to try for the larvæ—sweep the *Myosotis* in the water meadows? I can't sweep the middle of a cricket pitch, where there was one taken, others are paid to do that.—G. M. A. Hewett, Winchester. *20th June*, 1892.

Bristol.—I consider that the season here is, on the whole, a good one. The weather so far has been fairly favourable, though many nights have been cold. On Whit Monday, which was a splendidly fine day, I was able to get a good day's collecting at Dursley (Gloucester) with a friend, and although we got no rarities, we saw that fine locality at its best, as far as number of specimens is concerned. *Lycæna alsus* was literally in swarms, sitting in rows of a dozen or so on the damp mud in the roads left by rain on the previous day. (By the way, I once saw this species resting on a sheep's dropping at Portsmouth.) *Ino geryon* also was flying among the long grass in hundreds. Nearly all we caught were males, the females hiding among the grass. We were rather too early for *Nemeophila plantaginis*, two specimens only putting in an appearance, and only one *Nemeobius lucina;* but we either saw or captured fifteen species of butterflies and a large number of moths.—C. G. Griffiths. *July 4th*, 1892.

Folkestone.—Colias edusa and var. *helice*, *C. hyale*, and *Deiopeia pulchella* have been taken at Folkestone this year.—Hy. Ullyett, Folkestone.

Retarded Emergences.—In June, 1890, I had some larvæ of *Sphinx ligustri* which fed up and pupated in the following August. One emerged in June, 1891, and the remaining sixteen have now made their appearance in the following order: 6 ♀'s, 4 ♂'s, 1 ♀, 5 ♂'s, the last one appearing this evening. I also had a similar experience with *Cucullia verbasci*. Out of about a dozen larvæ which pupated in August, 1890, all but one hatched in April and May last year; this remained in the pupa until April 21st, 1892. I have captured 6 specimens of *Agrotis suffusa* in splendid condition at different dates from June 8th to 27th this year. Is it not rather an unusual time for this species? They are in too fine a condition for hybernated ones. —H. Sandlin, 28, Hastings Road, Maidstone. *July 5th*, 1892. [*Agrotis saucia*, *A. suffusa*, and *A. puta* all have double broods in some seasons, one in May and June, and a later in August and September. Records of retarded emergences of *Sphinx ligustri* and *Cucullia verbasci* both occur in the first vol. of this magazine.—Ed.]

Asphalia ridens—Retarded Emergence.—In the New Forest the appearance of this insect in the larval stage is very uncertain; some years it is abundant, while sometimes hardly one is taken. In June, 1888, it was very abundant all over the Forest. Of the larvæ taken in that year by myself quite 80 per cent. died before reaching the pupal stage; most of them were stung, but several fell victims to cannibalism, I found "sleeving" the best method of rearing them. If moss is placed in the sleeve they will spin up in it without the slightest trouble. The pupæ are very hardy, those kept in a warm

room emerge just as well as those kept out of doors. It is fatal to remove them from the cocoons, as this produces cripples in many cases. Those kept indoors emerge in the middle of March; those outside, about a fortnight later. As a rule the males appear first. They appear to remain in this pupa from *one* to *five* winters. In 1889 I bred 25 insects; in 1890, 13; in 1891, 22; in 1892, 14 (these having been in this pupa 4 winters). There are now only 3 pupæ left which appear to be alive; while apparently not a single pupa has died or produced an ichneumon. The time of emergence varies from 3 p.m. to 7 p.m. I have not succeeded in getting them to pair in confinement. Since 1888 I have only taken a few larvæ, which have been kept carefully separate from those taken in 1888. Not a single cripple resulted from pupæ left in the cocoons.—REGINALD S. SELLON, The Hall, Sydenham, S.E. *May 5th*, 1892.

PLUSIA MONETA AT TUNBRIDGE WELLS.—I last night (July 12th) had the good fortune to capture another fine specimen of *Plusia moneta* at light in a garden within a very short distance of the place where I captured a specimen in 1890. Another was netted to-night (13th), and one missed.—R. A. DALLAS BEECHING, Tunbridge Wells.

TIME OF EMERGENCE OF SMERINTHUS TILIÆ.—During the last three seasons I have bred some numbers of *Smerinthus tiliæ*. Some of them have been forced; but whether forced or not, they have almost invariably emerged between the hours of 12 and 2 p.m. This seems to support Miss Kimber's theory as to special times of emergence (*Ent. Rec.*, vol. i., p. 341).—J. H. D. BEALES, W. Woodhay Rectory, Newbury.

BISTON HIRTARIA.—*Females seeking the males.*—Last season, when the insects were emerging, my breeding cage, which was glazed both sides and placed against a window in an outhouse, enabled me to see upon more than one occasion, between 8 and 9 p.m., the females seeking the males. The males were resting motionless, but the females were quivering round them with that fluttering motion of the wings so familiar to those who have kept silkworms.—HARRY MOORE, 12, Lower Road, Rotherhithe.

THE LEPIDOPTERA OF EPPING FOREST.—(*Concluded from page* 135).

In August there is not much day work, and beating has produced little except *Ennomos angularia*, and a few *Triphœna janthina*. *Thecla betulæ*, however, is on the wing, and on the 18th August, 1890, three males were taken, and several others seen. One *S. revayana* (*undulanus*) was found on a post on the 3rd of the month, last year, in the Monkswood section. *Boarmia gemmaria* and *Catocala nupta* may be boxed on trees on the borders. One *Odonestis potatoria* was attracted by a lantern on the 8th, last year, near High Beach. Night work is much better. Flying over heather, in the Monkswood section, *Hepialus sylvinus*, *Noctua baia*, and *xanthographa*, *E. nanata*, and *minutata* are common, while in the glades *Epione apiciaria* and *Eubolia mensuraria* may be taken, rather sparingly however. Sugar produces *N. rubi* and *xanthographa* in swarms, and *N. umbrosa* and *baia*, and *Triphœna orbona* less frequently, and in 1891 *Miana literosa* and *Cerigo matura* also turned up, while *Calymnia affinis* was plentiful at the beginning of the month.

During September there are many good larvæ to be found. *Stauropus fagi* was beaten for vigorously. We, however, did not get any, though we saw one fall into the sheet held by Messrs. Quail and Austin,

who were beating the next tree to the one we were under; still a good number of *D. coryli*, *D. pudibunda*, *H. prasinana*, *A. betularia* and commoner larvæ fell into the trays. Beating by night was rather more productive than by day. The principal fresh arrivals at sugar and light are *Tapinostola fulva* (which, however, has only been taken singly), *Gortyna ochracea*, *N. popularis*, and *A. lunosa*. Two specimens of *Ennomos erosaria* were found on trees in Monkswood, in 1891. The principal butterflies noticed during the month have been *Vanessa io*, *urticæ*, *cardui* and *atalanta*, and *Pararge megæra*.

During October ivy is the great attraction. The locality most worked is Chingford Old Church. The regular captures are *Anchocelis pistacina*, *Miselia oxyacanthæ*, *Scopelosoma satellitia*, and *H. rostralis*. In 1890, two specimens each of *Orthosia lota*, and *Mellinia ferruginea* were taken. *Oporabia dilutata* swarms at light. All I have seen have been of the dark form. Sugar attracts most of the above. In November, on mild evenings, *Diloba cæruleocephala*, *Himera pennaria*, *Hybernia defoliaria*, and *aurantiaria*, and *Cheimatobia brumata* are plentiful at light; and on the 1st November, last year, one *Pœcilocampa populi* was taken. From the captures mentioned, it will be noticed that the Forest is weak in butterflies and Sphinges: 24 butterflies have been seen, the best being *A. paphia* and *selene*, *T. betulæ* and *L. argiolus*. The only Sphinges taken have been *S. populi*, *I. statices*, and *Z. filipendulæ*. The other divisions are better represented. Of the Bombyces may be mentioned 2 *Nolidæ*, 3 *Lithosiidæ*, 4 *Hepialidæ*, 4 *Drepanulidæ*, 2 *Notodontidæ* (*S. fagi* and *L. camelina*), in all 33 species. *Noctuæ* show 95 species, and *Geometræ* 99, giving a total of 254 species.—A. F. Bayne. *Feb.*, 1892.

Errata.—p. 132, line 2 from bottom, for "4th of May" read "4th of April."

p. 133, line 1, for *Cidaria testata* read *Melanippe tristata*.

Societies.

City of London Entomological and Natural History Society. —*Thursday, June 16th*, 1892.—Exhibits.—Dr. Buckell, a peculiar dark coloured var. of *Lophopteryx camelina*, bred from a pupa taken in Epping Forest, also a female of *Hepialus lupulinus*, ovipositing, the ova being merely dropped, and possessing no adhesive property. Mr. Huckett, a specimen of *Stauropus fagi* from Monks Wood, Epping Forest, and examples of the summer brood of *Selenia illunaria*. Mr. Tremayne, specimens of *Stauropus fagi*, *Notodonta dodonœa* and *Lithosia aureola*, taken in the New Forest at Whitsuntide. Mr. Smith, some prettily marked forms of *Hadena pisi* from the Lake District, and a series of *Nemeobius lucina* from the New Forest. Mr. Fox, a long and variable series of *Spilosoma menthastri*. Mr. Bayne, a pupa of *Halias quercana*, and a variable series of *Strenia clathrata*. Mr. Battley, *Lithosia aureola*, *Brephos parthenias*, *Nyssia hispidaria* and *Eurymene dolobraria*, all taken in Epping Forest this season. He also exhibited a specimen of *Diphthera orion*, taken on sugar in the New Forest, and recorded the

capture of nine more examples of this species, two *Stauropus fagi*, and a full fed larva of *Apatura iris*. Mr. Nicholson, bred specimens of *Boarmia cinctaria*, and living larvæ of the same species. He remarked that these larvæ were of a bright green colour, and not brown as stated by Newman, also that they feed freely on sallow,—a fact which he believed to be unrecorded. Mr. Simes, living larvæ of *Bombyx castrensis* from Shoebury. Mr. Clark, a series of *Gelechia atriplicella* from the Hackney marshes. Mr. Milton, a series of *Melanippe hastata* from Stornaway, with southern forms for comparison; the northern examples tending towards a lighter coloration. He also exhibited in Coleoptera, specimens of *Philonthus splendens*, and in Hymenoptera, series of the males, females, and neuters of *Bombus hortorius* and *B. lapidarius*.

Thursday, July 7th, 1892.—Exhibits. Lepidoptera.—Mr. Hollis, a melanic example of *Cheimatobia brumata* from Highgate, and a very fine form of *Spilosoma lubricipeda*, approaching the var. *radiata*. Mr. Battley, varieties of *Smerinthus tiliæ;* also living larvæ of *Colias edusa*, *Viminia venosa*, *Gonoptera libatrix*, *Cidaria suffumata* and *Stauropus fagi*. He stated that he found the ova of *S. fagi* deposited in batches of about half a dozen, at varying heights on a large beech trunk in Epping Forest. The larvæ had hatched on July 2nd, and cast their first skin on July 4th. He also mentioned that he had bred about fifty *Phorodesma smaragdaria*, and that although the larvæ had been fed on southernwood, the imagines were rather above the average in size. Mr. Clark, a series of *Leucania turca* taken at sugar in the New Forest. He stated that sugar had been unusually attractive during his stay at Brockenhurst, and that on one occasion he counted 93 insects on a single patch. Mr. Bacot, *Cuspidia leporina*, *Rusina tenebrosa* and *Neuria saponariæ* taken at sugar at Hadleigh. Mr. Rosevear, *Smerinthus ocellatus*, *S. tiliæ* and a series of *Eubolia peribolata* from Guernsey. Mr. Prout, a series of *Melanippe unangulata* and a slightly asymmetrical form of *Melanthia rubiginata;* also examples of *Notodonta trepida* and *Stauropus fagi* from West Wickham, and a specimen of *Eupithecia togata* from Hale End (Epping Forest). Mr. Quail, a life history of *Zeuzera æsculi* and a specimen of an Australian species closely approaching *Z. æsculi* in shape and structure, but resembling *Cossus ligniperda* in coloration; also two examples of *Stauropus fagi* from Epping Forest. Dr. Buckell, a bred series of *Demas coryli*. With regard to this species he remarked that there was a slight tendency to variation in the depth of tint of the dark portion, and also in the amount of ochreous coloration of the upper half of the anterior wings; he also mentioned that although Newman states that the larva pupates under moss, all of his larvæ had spun a leaf together for pupation. With regard to the position of the species in Mr. South's list, he suggested that that gentleman might have placed it among the NOCTUÆ on account of the well defined orbicular and the distinct signs of a reniform; but that personally, judging from the larval state, he inclined to place it among the Bombyces. He also exhibited an example of *Cidaria corylata* in which the lower half of the central band was resolved into two dots. Mr. Milton, a number of species bred this season, including *Smerinthus ocellatus*, *S. tiliæ*, *Geometra papilionaria*, etc. Coleoptera:—Mr. Heasler, several species

from Eynsford, including *Lithocaris fuscula*, *Pseudopsis sulcata*, *Otiorhynchus tenebricosus* and *Platytarsus echinatus*. He remarked that the last was exceedingly local, all the nine examples exhibited being taken in one sweep, and that subsequent work had failed to produce more. Mr. Quail mentioned that he had been working for pupæ of *Cossus ligniperda* but found that the woodpeckers had forestalled him, leaving nothing but empty cocoons.—A. U. BATTLEY and J. A. SIMES, *Hon. Secs.*

BIRMINGHAM ENTOMOLOGICAL SOCIETY.—*June 4th to 7th.*—A three days' excursion was made to Sherwood Forest. A party of ten made Edwin's Dome their head-quarters, from which they worked Thoresby Park, and that part of the Forest more specially called Sherwood. They were mainly lepidopterists, who were not rewarded by anything new; many larvæ of *Euperia fulvago* were taken; a few *Notodonta trepida*, *Eurymene dolobraria* and many commoner species were found on tree trunks, etc., but nothing of special note. A few Dipterists who were of the party were rather more fortunate, taking some nice Syrphidæ on the Hawthorn bloom, including such species as *Criorhina floccosa*, *C. berberina*, etc.; they also took commonly on the furze flowers the fine "Daddy" *Pachyrrhina crocata*. Glorious weather was enjoyed, and considering that fact, the number of insects met with, was disappointingly small.—COLBRAN J. WAINWRIGHT, *Hon. Sec.*

THE CAMBRIDGE ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY. —*Friday, May 13th.*—Mr. Moss exhibited a very pale ochreous variety of *Amphidasys prodromaria*, also specimens of *Noctua dahlii*, *N. brunnea*, and *umbrosa*, *Hyppa rectilinea*, *Pachnobia rubricosa* and *leucographa*, *Tæniocampa gracilis*, etc. Mr. Farren his collection of the "Thorns" and other Geometræ. Mr. Powell a box of aquatic insects collected in the district; Mr. Bull a very pale and also a very dark variety of *Saturnia carpini*. Mr. Farren, having attended the South London Entomological Society's Annual Exhibition on the 5th and 6th inst. described and remarked on some of the exhibits, making especial mention of Mr. Merrifield's cases illustrating the effects of temperature (during the pupal stage) on the colouring of certain species of Lepidoptera, and Mr. J. Jenner Weir's *Papilio merope* and the various forms of its female, with the different species of *Danaidæ* they mimic for protection. The subject of mimicry was discussed at some length, Messrs. Langdon, Bryan, Jones and Moss taking part.

Friday, May 27th.—The Right Hon. Lord Walsingham, F.R.S. was elected an honorary member of the Society. Mr. Freeman exhibited a very fine *Amphidasys betularia* var. *doubledayaria* taken at Cambridge, a beech leaf found in Norfolk with a cocoon each of *Halias prasinana* and *Dasychira pudibunda* spun on it, and the two specimens bred from them, *Hypsipetes ruberata* from Norfolk, and a large box of Lepidoptera, Hymenoptera, etc. Mr. Bryan a box of Hymenoptera, Diptera, etc. to show instances of mimicry. Mr. Bull *Xylina semibrunnea*, *Eupithecia indigata* and *Hypsipetes ruberata*. Mr. Farren a series of *Argynnis paphia* var. *valezina* and other butterflies. Mr. Moss read some notes on different species of Lepidoptera which had come under his notice, chiefly at Liverpool and Windermere, the notes relating to the habits of *Cœrocampa porcellus* and *Cossus ligniperda*, etc. being especially interesting.—WM. FARREN, *Hon. Sec.*

The Entomologist's Record,
AND
JOURNAL OF VARIATION.

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SCIENTIFIC NOTES.

Protective Resemblance.[1]—I have been induced to put together these few rough notes on "Mimicry" or, as I prefer to call it, "Protective Resemblance," from seeing in a recent number of *The Field Club* an article by the Rev. F. O. Morris attacking the theory of "Mimicry." The article in question reads as follows:—"One of the fresh fancies put forth by our wise men of late years is what they call 'mimicry.' It is the likeness of various creatures, especially insects (as being, I suppose, the most numerous), to the objects they more or less repose or live upon. There is just a *substratum* of truth, or of apparent truth, in the notion they broach about it, and of this, advantage is at once taken to build any number of castles in the air upon it. To take, first, a few examples of such instances as might appear at first sight to give countenance to the supposition. There is the resemblance of *Leptogramma literana* to the green lichen on the bole or branch of an old apple tree, which is indeed most curious; but if the eye of an entomologist can detect the little insect even with this protective disguise, how much more readily must that of some small bird or other creature in search of its food, with the hundreds of lenses of the eyes that some of them have, given them by Nature to aid them thus to get their livelihood—told, though we are, that the would-be captors are deceived by the similarity? But the insects by no means escape in numberless cases, and thus the rule is disproved by exceptions. I do not know anything from this point of view more wonderful than the likeness of the buff-tip moth (*Pygæra bucephala*) to a bit of stem of a small branch of the silver-birch tree; and the ends of the wings, when closed, have a most exact resemblance to the end of the said piece, as if cut off with a knife; so much so, that, when I was a boy some four or five years old, or a little more, I gave it the name of the 'piece of stick moth.' But here is a fact for the philosophers to face as well as they can. This moth, in its caterpillar state, I have never known to feed on this birch,[2] nor on any other such (though it

[1] Abstract of a paper read before the Cambridge Ent. and Nat. Hist. Society, April 29th, 1892.

[2] Mr. Morris's stock of information and power of observation must be very limited. I had three birches in my garden stripped by the larvæ of this species in September, 1891.—Ed.

will on occasions), for that tree grows naturally in a sandy or peaty soil, while the elm,[1] which is the tree most affected by the larva, has no such predilection, but rather the contrary. It is plain and palpable then to any one who prefers facts to fancies, that so far from the wonderful resemblance of this moth to a stem of the silver-birch being a protection to it, it would have the exactly contrary effect when in view of all the birds in the neighbourhood on the green leaves[2] of the elm, or any other tree in Nature."

It will be readily seen that the reverend gentleman is quite sensible of the remarkable resemblance which the two species cited bear to their respective foodplants or probable surroundings, and my own conclusion is that he will not, rather than can not, see that this resemblance is protective, and so invents arguments of a frivolous nature to disprove the theory; and even when speaking of *Leptogramma literana* he commits himself so far as to say:—"But if the eye of an entomologist can detect the little insect, even with this protective disguise, how much more readily must that of some small bird or other creatures in search of its food, with the hundreds of lenses of the eyes that some of them have, given them by Nature to aid them thus to get their livelihood?" so that he admits it to be a protective disguise, and then contradicts himself without apology. Now when an entomologist is searching for *L. literana* or any other moth, generally speaking, his eye is sensible of no other object, being trained by experience to note the shape of a moth; whereas a bird on the look-out for a dinner is more likely to pass over the moth, which to all appearance is part of the lichen on which it rests, for the little black beetles and other more conspicuous insects with which the lichen teems. The lichen-feeding species afford several good instances of protective resemblance; most fresh in my mind now is *Cleora lichenaria*. No one who has hunted for the larvæ of this species could help being struck by the resemblance it bears to lichen, and the meagre result of searching for an hour or so bears ample testimony that the resemblance is protective. The same remark might apply to the imago; indeed, we hear of this variable insect adapting its colour by "natural selection" to the colour of the lichen on which it rests; for instance, in districts where yellow lichen prevails there is a preponderance of the yellow variety of the moth; in the only locality for the species in this district of which I know, the yellow form is a rarity, greenish-grey being the prevailing colour, as it also is of the lichen. *Bryophila muralis* and *perla*, two species feeding on lichen growing in old walls, are in the perfect state protected not only by their resemblance to the lichen, but also to the walls on which they generally rest, *glandifera* (*muralis*) being especially hard to see. Mr. Tutt states (*British Noctuæ and their Vars.*, vol. i., p. 8) that at Deal, where *B. perla* occurs commonly, he gets the yellow forms on a wall covered with yellow lichen, and he further informs me that he hardly ever gets a yellow one on any other wall in the town. I have taken several yellow *perla* here, but cannot say for certain on which walls. One thing, however, I did notice last year, that on a certain white wall I got a larger percentage of very light specimens. Although there are endless

[1] Surely willow and sallow are the trees most generally affected in Britain. I find a large number are again feeding in my garden this year both on birch and oak.—Ed.

[2] Is not this assumed habit imaginary?—Ed.

instances of "mimicry" in imagines, it is among larvæ that it is most pronounced. *Geometra vernaria*, for instance, presents one of the most remarkable cases I can call to mind. The moth, a green one, deposits its eggs on the stems of *Clematis vitalba*. These eggs are green like the stem and are somewhat flat, cylindrical, and laid one on top of another in little steeples of about 10 or 13, looking under a glass like a heap of small cheeses, but to the naked eye they might be a leaf-stalk with the leaf broken off or a short tendril. The larva hatches in July or August, and is green like the eggs. They rest on the stems of the foodplant, sticking straight up, holding on merely by the hind claspers; they have a bifurcate hump on the first segment sticking forward over the head, and the resemblance to a broken leaf-stalk or tendril is most remarkable. It is a hybernating larva, and in the late autumn when the leaves and stems of the *Clematis* turn brown, the larvæ of *vernaria* turn brown with them; and in the spring, when they commence to feed again, with the first moult the brown skin is discarded and they become green again like the growing plant, and the disguise all through is complete; for they spin up among the leaves, turn to a green pupa, and in a week or so the perfect *vernaria* emerges green also. Every one must have noticed the resemblance of the larvæ of the larger GEOMETRÆ, *A. betularia*, *B. hirtaria*, the "thorns," etc., to sticks, and at some time or other, known them as stick caterpillars, and I should think few will doubt that this resemblance is protective. Fewer, perhaps, will have seen the larvæ of *Anticlea sinuata* on the seeds of *Galium verum*, or *Cidaria sagittata* on *Thalictrum flavum*, both of which larvæ bear marked resemblances to their respective foodplants. *Lasiocampa quercifolia* is well protected; in the larval stage they feed by night and rest by day, low down on the stems of the foodplant. I have found them on hawthorn, sallow, blackthorn and buckthorn, and so difficult are they to see that a very general way of collecting them is to feel down the stems for them; for my own part, I always prefer to trust my eyes. They are very variable, and certainly seem to have a way of adapting their colour to the stems of the bush in which they feed; for instance, I have, on blackthorn and buckthorn, the stems of which are black and smooth, found most black larvæ; and on sallow and whitethorn, the stems of which are white or mottled grey, found larvæ to match—the rule of course not being without exception, but I found it, nevertheless, a rule. Returning to the imagines, I have always wondered at the peculiar prevailing wainscot or grey colouring of most "fen" moths, and a certain general style of the markings, consisting of striations running down the length of the wing from the base to the hind margin; and when I say "fen" moths, I do not mean any particular genus or order, but genuine "fen" species of many orders. It is particularly shown in the "wainscots," *Leucania*, *Tapinostola*, *Nonagria*, etc. *Macrogaster arundinis*, *Lælia cænosa*, represent the BOMBYCES; *Hypena cribralis*, the DELTOIDES; all the *Chilos* are excellent examples in the CRAMBIDÆ; *Scoparia pallida* and *Nascia cilialis*, in the PYRALIDÆ; *Dictyopteryx lorquiniana*, in the TORTRICES; *Gelechia divisella*, *oblitella* and *inornatella*, *Orthotelia sparganella*, and *Laverna phragmitella*, the TINEINA; whilst *Peronea hastiana*, a well known polymorphic species, is a good illustration in a way. There is a very pretty wainscot-coloured form of it, having the before-mentioned

striations very plainly marked, which appears to be peculiar[1] to the "Fens." The moth itself cannot be called an exclusive "fen" insect, but this form appears to be so, and follows out my idea of a typical "fen" moth. If we inquire into the reason of this prevalent colour and style of markings, I think we must come to the conclusion that it is due to a "protective resemblance" to the dead reeds and sedges on which they rest, and, indeed, it seems beyond doubt when we see how like *M. flammea* and the other "wainscots" are to the nodes of the reeds, resting as they do head downwards and with the wings wrapped round the reed.

As regards the Rev. F. O. Morris's remarks on *P. bucephala*, I certainly should have thought he had lived long enough as a naturalist to know that so far as trees are concerned, the larvæ of this common moth are omnivorous, and the natural conclusion is that such a species is generally to be found feeding on the prevailing tree of the district. Here there is very little birch; elm and lime are the prevailing trees, and are accordingly well patronized by the "buff-tipped" larvæ; but in a district where birch prevails, it is the tree most affected. Then, as regards the resemblance of the imago to a piece of birch stick, I don't think there is so much difference between birch and other sticks, especially sallow and willow, as to arouse the suspicions of a bird; it does not seem feasible that birds would be able to discriminate between one piece of stick and another, and even if they could, I should think if they saw several pieces of stick lying at the foot of an elm tree, and amongst them was what their botanical knowledge told was a piece of birch, that they would hardly go out of their way to see why it was there; and the frivolity of the reverend gentleman's arguments are complete when he talks of the moth's resemblance to a stick rendering it conspicuous when resting on the green leaves of the elm. As a well-known matter of fact, they rest on the trunk of the tree or on the ground, only frequenting the leaves at night when depositing ova, and then they are protected by the darkness and the fact that all respectable birds are asleep; and such birds that do hunt by night, as the night-jar, etc, usually catch insects on the wing rather than on trees.

I cannot think Mr. Morris does well in so frivolously attacking a theory put forward, as he says, "by our wise men." These wise men, as he chooses to term them, are the men we have to thank for advancing our hobby of making a collection of moths into an interesting and instructive science. They are specialists at their work, devoting all their time to studying and making known these interesting facts, so lightly criticised by the Rev. F. O. Morris, who is well known as a writer of popular books on Natural History, but who is no scientist. I wonder how he reconciles the wonderful resemblance of the Indian leaf butterflies (which, when resting with the wings closed, are so like a dead leaf as to make it very difficult to detect them, even when one is aware of their presence) with his statement, "there is just a substratum of truth or apparent truth in the notion they broach about it"? This paper is necessarily very incomplete, as it only occurred to me to write it in the present week and then only as an answer to the Rev. F. O. Morris's article. I have not been able to consult any of the literature

[1] Possibly I am mistaken in considering the form peculiar to the Fen; certainly it is common there.—W.F.

that has been written on the subject, and so have had to rely entirely on my own personal observations.—W. FARREN, Cambridge.

FECUNDITY OF SPILOSOMA LUBRICIPEDA.—It occurred to me lately that it might be interesting to ascertain whether, in the event of a male or female being induced to pair a second time, the number of fertile or fertilised ova could be thereby increased. Having no bred specimens ready, I selected several pairs of the prolific *S. lubricipeda*, which were just then emerging in great numbers. For distinction I shall call the males m 1, m 2, etc., and the females f 1, f 2, etc.

I took m 1 and f 1 *in cop.*, and boxed them in (what I shall call) box 1. Boxing them, unfortunately, made them separate, but in due course about 180 ova were deposited. After this, they again came together, and as a result f 1 laid about 100 more ova. I then removed them from box 1, and placed m 1 in box 2 with another female, f 2, and f 1 in box 3 with another male, m 2; m 1 and f 2 soon came together, and as a consequence f 2 in due time deposited about 440 ova. On the other hand, m 2 and f 1 at first took no notice of each other, the reason being that f 1 was still engaged in oviposition, which lasted until about 100 more ova were laid. But after this I found m 2 and f 1 *in cop.*, and as a result (apparently) about 140 more ova were deposited by f 1, making up the enormous total of 520 ova laid by one female, while m 1 was (apparently) responsible for the deposit of more than 800 ova.

Having been so far successful, I tried a different experiment. I placed another male, m 3, and another female, f 3, together in box 4, and in due course about 400 ova were deposited. I then removed them, together with another female, f 4, into box 5. About sixty more ova were laid in this box, which, from their position I attributed to f 3. I then removed m 3 and f 4 to another box, where thirty ova were deposited; but, unfortunately, nothing more came of it, as all the moths died soon after.

Now as regards fertility. Only about one-half of the 180 ova first laid by f 1 hatched out, whereas about two-thirds of the remainder proved to be fertile. In other words, about three-fifths of the whole, or scarcely more than 300 ova had been fertilised. On the other hand, virtually the whole brood deposited by f 2 proved fertile, less than ten having failed to produce larvæ. Assuming, then, that m 1 was responsible for about 220 of the fertile ova laid by f 1, and for 430 of those laid by f 2, m 2 must have fertilised no less than 650 ova. Nearly all the ova deposited by f 3 hatched out, making about 450 fertile ova; that is, of course, on the assumption that the sixty ova deposited in box 5 were laid by f 3. I think this may be taken as about the maximum of fertile ova deposited by one female of this species. So far as I am able to judge from the above experiments, I should incline to the opinion that a second pairing does not increase the number of *fertile* ova deposited by one female; but, that it does, or may, increase the number of ova fertilised by one male. I may just add that the above are only a few of the experiments which I tried, but which, for various reasons, led to no result of general interest. Many species decline to pair a second time.—GEORGE HOLLIS. *July*, 1892.

THE OVA STATE OF GEOMETRÆ.—The following few rough notes

made from actual observations of my own, may be of some slight interest, tending as they do to throw some little light on the time which elapses between the laying and hatching periods. It will be seen that the amount of variation is excessive, and this is not always explained by reference to temperature, although this influence must be very great. At present, the materials are not sufficient for theorising, at least to me, but still one or two salient facts are worthy of record. The most noteworthy is the duration or period in the egg state of those which pass the winter without hatching, and it is curious to remark that although some of these ova are deposited at least a month earlier than others of the same species, yet the date of hatching is practically the same. It is unnecessary to say that ova can be hastened by being kept in a warm temperature, the fact being so well known, but I am inclined to think that the very extraordinary difference in the time of hatching of different broods of the same species may be caused by the length of time which occurs in their deposition; that is to say, that the last portion of the batch laid by a captured female hatches more rapidly, in proportion, than those first deposited, but this is merely an idea. I have reared most of our GEOMETRÆ either from the ova or larva state, but fail to find references among my notes to duration of time in the ova except with regard to those enumerated below. The dates and the year being given in every instance, it would be easy to compare the average temperature of each period. Such a list may be in existence, I dare say it is, but I have no time at present to work it out. So many larvæ are easily procured that rearing from the ova is not always resorted to, but it is an interesting study which, however, is often of little service from absence of notes and observations.

GEOMETRÆ. DURATION OF OVA STATE.

	Year.	Ova Laid.	Year.	Hatched.	Duration.
O. sambucata	1874	July 11	1874	July 23	12 days.
E. apiciaria	1890	Aug. 18	1891	June 7	9¾ months.
advenaria	1875	June 27	1875	July 7	10 days.
R. cratægata	1874	June 24	1874	July 6	12 ,,
,, ...	1874	Sept. 1	1874	Sept. 8	7 ,,
E. fasciaria	1885	July 6	1885	July 19	13 ,,
E. dolobraria ...	1875	May 15	1875	May 25	10 ,,
P. syringaria ...	1884	July 9	1884	July 26	17 ,,
,, ...	1885	July 14	1885	July 27	13 ,,
S. illunaria	1860	May 9	1860	May 25	16 ,,
illustraria	1861	July 22	1861	Aug. 3	11 ,,
,, ...	1874	May 4	1874	May 22	18 ,,
,, ...	1876	April 29	1876	May 22	23 ,,
lunaria	1861	June 13	1861	June 25	12 ,,
,, ...	1865	June 3	1865	June 10	7 ,,
,, ...	1886	June 9	1886	June 24	15 ,,
O. bidentata	1886	June 2	1886	June 8	6 ,,
E. autumnaria ...	1884	Sept. 18	1885	May 5	7¾ months.
,, ...	1885	July 27	1886	May 22	10 ,,
,, ...	1886	July 20	1887	May 13	9¾ ,,
,, ...	1887	July 30	1888	May 6	9¼ ,,
tiliaria	1865	Sept. 14	1866	May 29	8½ ,,
,, ...	1866	Aug. 15	1867	May 10	8¾ ,,
,, ...	1886	Sept. 15	1887	May 26	8¼ ,,

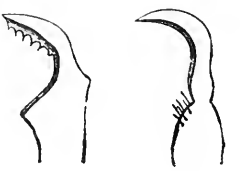
	Year.	Ova Laid.	Year.	Hatched.	Duration.
E. fuscantaria ...	1865	Sept. 16	1866	June 5	8¾ months.
erosaria	1887	Aug. 27	1888	May 20	8¾ ,,
angularia	1865	Sept. 14	1866	May 3	7½ ,,
,, ...	1887	Sept. 23	1888	May 13	8 ,,
,, ...	1888	July 15	1889	May 6	9¾ ,,
H. pennaria	1888	Oct. 27	1889	Mar. 23	5 ,,
B. hirtaria	1861	April 17	1861	May 22	35 days.
,, ...	1885	April 16	1885	May 9	24 ,,
,, ...	1886	April 20	1886	May 7	17 ,,
A. prodromaria ...	1887	April 12	1887	May 12	30 ,,
H. abruptaria ...	1860	May 26	1860	June 22	26 ,,
,, ...	1886	May 30	1886	June 15	15 ,,
,, ...	1889	May 16	1889	May 30	15 ,,
B. abietaria	1886	July 31	1886	Aug. 19	19 ,,
cinctaria	1875	May 17	1875	June 3	16 ,,
extersaria	1861	June 7	1861	June 21	14 ,,
D. obfuscaria ...	1874	Aug. 10	1874	Aug. 22	12 ,,
G. papilionaria ...	1886	July 13	1886	July 18	5 ,,
,, ...	1888	Aug. 4	1888	Aug. 20	16 ,,
,, ...	1891	Aug. 24	1891	Sept. 2	9 ,,
E. porata	1874	Sept. 2	1874	Sept. 16	14 ,,
,, ...	1885	Aug. 17	1885	Aug. 26	9 ,,
,, ...	1891	Aug. 20	1891	Aug. 26	6 ,,
punctaria	1875	May 16	1875	May 26	10 ,,
,, ...	1885	June 21	1885	June 29	8 ,,
omicronaria ...	1865	Aug. 20	1865	Aug. 26	6 ,,
,, ...	1887	June 17	1887	June 23	6 ,,
,, ...	1888	May 22	1888	June 1	10 ,,
,, ...	1888	Sept. 3	1888	Sept. 16	13 ,,
pendularia... ...	1886	Aug. 24	1886	Sept. 2	9 ,,
,, ...	1887	June 10	1887	June 16	6 ,,
,, ...	1888	May 26	1888	June 4	9 ,,
,, ...	1890	May 19	1890	May 27	8 ,,
,, ...	1891	Aug. 18	1891	Aug. 23	5 ,,
trilinearia ...	1885	July 25	1885	July 31	6 ,,
E. heparata	1866	June 9	1866	June 22	13 ,,
A. rubricata	1887	Aug. 10	1887	Aug. 15	5 ,,
scutulata	1874	July 13	1874	July 23	10 ,,
bisetata	1874	July 13	1874	July 23	10 ,,
humiliata (*interjectaria*)	1874	July 4	1874	July 14	10 ,,
rusticata	1875	July 25	1875	Aug. 3	9 ,,
virgularia	1875	Aug. 4	1875	Aug. 6	2 ,,
promutata	1883	Aug. 20	1883	Aug. 30	10 ,,
subsericeata ...	1885	July 10	1885	July 19	9 ,,
,, ...	1887	June 27	1887	July 5	8 ,,
strigilata	1871	July 27	1871	Aug. 7	11 ,,
imitaria	1874	July 23	1874	July 31	8 ,,
emutaria	1866	July 21	1866	July 27	6 ,,
,, ...	1874	July 16	1874	July 23	7 ,,
aversata	1874	July 23	1874	July 31	8 ,,
inornata	1891	Aug. 12	1891	Aug. 17	5 ,,
emarginata ...	1874	July 23	1874	July 31	8 ,,
,, ...	1875	Aug. 7	1875	Aug. 15	8 ,,
B. amataria	1874	July 1	1874	July 9	8 ,,
C. pusaria	1874	June 20	1874	July 6	16 ,,
C. taminata	1862	May 26	1862	June 4	11 ,,
M. notata	1862	May 27	1862	June 6	10 ,,
,, ...	1866	May 31	1866	June 10	10 ,,
,, ...	1865	Aug. 16	1865	Aug. 26	10 ,,
,, ...	1875	May 24	1875	June 5	12 ,,
,, ...	1888	June 18	1888	June 27	9 ,,
L. petraria	1861	May 10	1861	May 28	18 ,,
N. pulveraria ...	1865	May 20	1865	May 30	10 ,,

	Year.	Ova Laid.	Year.	Hatched.	Duration.
A. citraria	1874	Aug. 29	1874	Sept. 7	9 days.
gilvaria	1874	Aug. 29	1874	Sept. 12	14 ,,
H. leucophæaria ...	1888	Mar. 24	1888	May 3	38 ,,
aurantiaria ...	1889	Nov. 2	1890	Mar. 29	5 months.
C. boreata	1886	Oct. 28	1887	Mar. 31	5 ,,
,, ...	1887	Nov. 1	1888	April 12	5½ ,,
O. filigrammaria ...	1891	Sept. 15	1892	Feb. 6	4¾ ,,
L. cæsiata	1874	Aug. 13	1874	Sept. 6	24 days.
salicata	1875	June 10	1875	June 25	15 ,,
olivata	1874	Aug. 22	1874	Sept. 6	15 ,,
E. pumilata	1886	July 26	1886	Aug. 5	10 ,,
satyrata	1886	June 12	1886	June 25	13 ,,
abbreviata	1887	May 16	1887	May 30	15 ,,
L. lobulata	1875	May 11	1875	June 3	23 ,,
Y. ruberata	1875	June 20	1875	June 30	10 ,,
M. ocellata	1874	Sept. 6	1874	Sept. 19	13 ,,
,, ...	1884	June 18	1884	June 28	10 ,,
M. hastata	1886	June 15	1886	June 27	12 ,,
tristata	1875	June 28	1875	July 5	7 ,,
,, ...	1886	June 14	1886	June 23	9 ,,
rivata	1875	July 20	1875	July 25	5 ,,
,, ...	1888	July 13	1888	July 23	10 ,,
,, ...	1889	Aug. 15	1889	Aug. 26	11 ,,
subtristata	1874	July 18	1874	July 27	9 ,,
montanata	1875	June 11	1875	June 30	9 ,,
fluctuata	1874	July 4	1874	July 9	5 ,,
A. rubidata	1874	July 1	1874	July 11	10 ,,
,, ...	1885	June 22	1885	July 3	11 ,,
,, ...	1889	June 29	1889	July 7	8 ,,
badiata	1884	May 10	1884	May 21	11 ,,
C. ferrugaria ...	1875	May 12	1875	May 29	17 ,,
,, ...	1884	May 9	1884	May 20	11 ,,
,, ...	1891	Aug. 12	1891	Aug. 17	5 ,,
unidentaria ...	1875	May 12	1875	May 29	17 ,,
,, ...	1886	Aug. 22	1886	Aug. 29	7 ,,
,, ...	1891	Aug. 22	1891	Sept. 3	11 ,,
propugnata ...	1886	June 8	1886	June 15	7 ,,
quadrifasciaria ...	1875	July 25	1875	Aug. 8	14 ,,
C. fluviata	1862	Oct. 13	1862	Oct. 28	15 ,,
,, ...	1865	Aug. 30	1865	Sept. 4	5 ,,
,, ...	1865	Sept. 29	1865	Oct. 9	10 ,,
,, ...	1865	Oct. 28	1865	Nov. 18	21 ,,
P. tersata	1874	July 9	1874	July 16	7 ,,
,, ...	1875	July 10	1875	July 17	7 ,,
vitalbata	1865	May 26	1865	June 1	16 ,,
C. russata	1889	Aug. 29	1889	Sept. 9	11 ,,
,, ...	1890	June 6	1890	June 14	8 ,,
,, ...	1890	Oct. 13	1890	Nov. 8	26 ,,
,, ...	1891	June 29	1891	July 12	13 ,,
,, ...	1891	June 20	1891	June 30	10 ,,
silaceata	1887	Aug. 1	1887	Aug. 9	8 ,,
,, ...	1888	May 2	1888	May 14	12 ,,
,, ...	1888	June 27	1888	July 9	12 ,,
testata	1874	Aug. 16	1875	April 11	8 months.
E. cervinaria ...	1874	Oct. 7	1875	Mar. 23	5½ ,,
bipunctaria ..	1874	Sept. 5	1874	Sept. 24	19 days.
C. imbutata	1874	Aug. 23	1875	April 6	7½ months.
A. plagiata	1874	Sept. 6	1874	Sept. 19	13 days.
C. spartiata	1874	Oct. 29	1875	Mar. 14	4½ months.
obliquaria	1875	May 30	1875	June 6	7 days.
,, ...	1884	April 30	1884	May 23	23 ,,

—C. FENN. *July*, 1892.

COREMIA FERRUGATA AND UNIDENTARIA.—Mr. Prout asks for any information concerning the specific difference or otherwise of these so-called species, and suggests a few careful experiments which he considers ought to settle the question. No doubt many of your readers are familiar with the old tale of the Chinaman whose house was burnt down containing his pig; the pig was roasted, and for some time it was thought necessary to burn down a house in order to obtain roast pig, until it was discovered that a porkling might be roasted and still leave the house unburnt! Thus, Mr. Prout's experiments seem to suggest almost any method except the most simple and natural one, viz.,—that of comparing structure. His three pages and a half are carefully devoted to comparison of scale markings; but surely a moth is not composed entirely of scales. Why then should structure be so carefully avoided? Had the specimens belonged to the Coleoptera, Hymenoptera, or Neuroptera, the structure would have been the first thing examined, but, because they are Lepidoptera, the only part used for differentiation is scale markings, which every breeder knows to be most variable and eccentric.

One of the most important parts to the anatomical student, is the genital organ of the male. This, as a rule, differs greatly in species otherwise very closely resembling each other, and it is to the investigation of these organs, I devote myself when I wish to at once tell whether *unidentaria* and *ferrugata* are one or two species. A glance at the two woodcuts will at once show how different these two species are in the structure of this part alone. They represent what are termed the harpes, and consist of a pair of hooks, situated one at either side of the terminal segment. In the first figure, that of *ferrugata*, the hook is furnished with a series of cockscomb-like projections, which are absent in the second figure, that of *unidentaria*, in which the basal portion is rounded and narrower than in *ferrugata*, where it is angulated and stouter. The remaining parts of the organ are equally distinct. No matter how variable may be the scale markings, the structure of these organs will be found constant. In conclusion, should Mr. Prout, or any other of your readers, wish to test the accuracy of my statement, let him send me a body of a male carefully cut off from either of these two species, and I will undertake to name it from the genitalia alone.—F. N. PIERCE, 143, Smithdown Lane, Liverpool. *August 2nd*, 1892.



C. ferrugata. *C. unidentaria.*

CURRENT NOTES.

The *British Naturalist* gives this month a portrait of Mr. George T. Porritt, who, after thirty years of collecting is as keen a field naturalist as ever, and whose *List of the Lepidoptera of Yorkshire* is a perfect monument of patient labour.

Mr. Gardner records *Deilephila galii* from Hartlepool. Mr. Reid saw *Vanessa antiopa* at Forres. Further records of *Plusia moneta* are in our current number; whilst Mr. Peers records two others from

Harrow-Weald, Middlesex. Additional *Deiopeia pulchella* are recorded from East London, Christchurch and Grange (*Entom.* 161). *Zygæna filipendulæ* var. *chrysanthemi* from near Hastings. *Stauropus fagi* has been particularly abundant in the Reading district, Epping Forest and elsewhere. *Meliana flammea* was as abundant at Hickling and Ranworth as at Wicken in May, whilst *Macroglossa stellatarum* swarms in various parts of Middlesex, Devonshire, Kent, etc.

Our readers should not miss Mr. Holland's note (*E.M.M.*, p. 206) on the habits of *Stauropus fagi*. I saw a magnificent series of varieties of this species, captured by Mr. Holland, exhibited at a recent meeting of the South London Entomological Society.

The thanks of all naturalists are due to those gentlemen who took such active steps against the Government proposal to acquire sites in the New Forest for rifle ranges. Our readers will hear with pleasure that their efforts have been entirely successful, and that the Forest is now more than ever secured to the public as an open space. Entomologists are particularly indebted to Mr. Goss, the hardworking Honorary Secretary of the Entomological Society of London.

Mr. Dale adds *Ripersia tomlinii* to the British list, Mr. Newstead's original examples having come from the Channel Islands.

Records of *Colias hyale* especially from unusual districts should be carefully noted, as in *edusa* years *hyale* is frequently recorded in error for var. *helice*.

Tapinostola concolor in moderate condition is recorded as captured on July 13th by Mr. Woodforde in a marsh near Market Drayton in Staffordshire. Has any competent lepidopterist examined the specimen?

Special attention is drawn to the fact that the City of London Society has removed to The London Institution, Finsbury Circus, E.C

VARIATION.

APLECTA NEBULOSA VAR. ROBSONI.—I have bred three black vars. of *A. nebulosa* this year; Mr. Tunstall has also bred three, and Mr. Collins two.—T. ACTON, Warrington. *July*, 1892. [Mr. Acton has kindly sent me a series of very dark (var. *suffusa*) specimens of this species leading up to the extreme form.—ED.]

I have bred a black specimen (var. *robsoni*) of *A. nebulosa* from a larva which was taken in Delamere Forest.—R. TAIT, JNR., Manchester.

GOLDEN VARIETY OF TINEA MISELLA.—Among a considerable number of specimens of this species taken in an old barn here, are a few which have the forewings of an unicolorous golden tint and with scarcely any of the dark mottling usual to this species.—J. W. TUTT, Wicken. *August 5th*, 1892.

HEMAPHRODITE OF BUPALUS PINIARIA.—On 3rd July I took a specimen of the above species having the right side and a portion of the left hind wing that of a male and the left upper wing that of a female, one antenna is pectinated, and the other simple.—T. WILLSON, 7, Warrington Road, Richmond, Surrey. *July 18th*, 1892.

NOTES ON COLLECTING, Etc.

NOTES OF THE SEASON.—*Epping Forest.*—The following list of larvæ beaten here in June last may be of interest, although nothing of importance has been taken: on buckthorn *Scotosia vetulata*; on oak *Hemithea thymiaria, Eupithecia abbreviata, Eugonia angularia*; on whitethorn *Bombyx neustria, Abraxas grossulariata, Himera pennaria*; on sallow *Hypsipetes elutata*; on blackthorn *Thecla betulæ* (several); and the following very commonly on same: *Nola cucullatella, Diloba cæruleocephala, Cosmia trapezina, Phigalia pedaria*, with some light vars.; *Hybernia defoliaria, aurantiaria, rupicapraria, Rumia luteolata*, and I was also surprised to beat one larva of *Biston hirtaria*. Of imagines the following are worth noting, *Lithosia aurcola, Drepana falcataria* and *lacertinaria, Stauropus fagi* and dark var. of ♀, *Nemeophila russula* and *Epione advenaria*. A visit to my old *Cossus* ground was disappointing, for although I found about a dozen cocoons, every one had been cleared out by the woodpeckers, which have this last year or two done considerable damage to the *Cossus*. I was, however, pleased to find the larvæ of *Vanessa cardui* commonly on thistle heads, this larva has not occurred since 1888, when I took it plentifully on the same ground.—AMBROSE QUAIL, 15, Stamford Hill.

Northampton.—I recently spent three months at Northampton, and thought that some notes on lepidoptera of the district may be interesting. The Northampton Natural History Society publish a list of Macrolepidoptera occurring within a radius of fifteen miles of the town, and there are recorded of Rhopalocera 51 species; Sphinges, etc., 17 species; Bombyces, etc., 44 species, Noctuæ 144 species, and Geometræ 125 species; making in all 381 species for which the localities are mostly given. Of the Rhopalocera the most noticeable are *Leucophasia sinapis, Vanessa c-album, Apatura iris, Thecla pruni* and *Carterocephalus paniscus*. Of Sphinges *Acherontia atropos, Chærocampa porcellus* and *Macroglossa bombyliformis*. Of Bombyces *Psilura monacha, Lasiocampa quercifolia* and *Notodonta chaonia*. Of Noctuæ *Cuspidia alni, Cirrhædia xerampelina, Hadena advena* and *Cucullia absynthii*. Of Geometræ *Geometra papilionaria*. The card of membership to this society is a permit to collect on over a dozen estates in the neighbourhood; and I mention this as many provincial Natural History Societies would do well to adopt the same idea where possible. I had little time for collecting, but among others I took *Viminia rumicis, Pterostoma palpina* (1), *Cilix glaucata, Eupithecia absynthiata, assimilata, vulgata, exiguata, consignata* (?) and *dodoneata*; the two latter are not recorded in the Northampton list, which is therefore broughr up to 383 species. —ID.

Hereford.—I saw but did *not* capture a specimen of *Colias edusa* here to-day, the first for a number of years. The frequency of *Cynthia cardui* and abundance of *Plusia gamma* and *Plutella cruciferarum* are features of the season.—T. A. CHAPMAN, Burghill, Hereford. *June 9th*, 1892.

Doncaster.—The following notes relating to lepidoptera for this district begin in the middle of the season, without any attempt to recall the earlier months. July has been only middling in both weather and insects. Sugar has not been the great success here, that it seems to

have been in other places. I have seen no crowded nights, but neither have there been any perfect blanks. Nothing rare came to the sweets, but I took a nice series of *Neuria saponariæ* and some beautiful forms of *Xylophasia monoglypha*. At flowers (sweetwilliams and pinks) were many *Plusia chrysitis*, a few *P. iota* and one *Hecatera serena*. I have had very little opportunity for day collecting, but I have heard of *Colias edusa* being seen here. Micros are abundant, and at present some nice forms of *Cerostoma costella* and *Psedisca solandriana* are out. Larvæ of *Laverna raschkiella* are abundant, whilst *Sophronia parenthesella* is on the wing at dusk, but difficult to catch.—H. H. CORBETT, 19, Hallgate, Doncaster.—*August 2nd*, 1892.

Wye Valley.—Mania maura is exceedingly common here, and comes to sugar in numbers. I have always fed the larvæ on *Salix alba*, but this does not appear to be usually given as a food-plant. While on this subject, I believe if the Editor of *The Entomologist's Record* could devote a small space in his valuable journal for his readers to record instances in which they have successfully fed larvæ on out-of-the-way food-plants (by which I mean those not given by any of the recognised authorities), it might be useful to collectors, in cases in which larvæ are not by any means general feeders, and the usually accepted food-plants not (as is occasionally the case) easily attainable. I have some larvæ of *Phorodesma pustulata*, which emerged a few days ago. It is curious how sticky they appear to be, everything they touch adheres to them; when first observed they were covered with loose ova; these I removed, and placed them on their food-plant; they immediately commenced gnawing the upper cuticle of the oak leaf into minute fragments; and in these with the exception of the head they are completely enveloped: these fragments stick up all over them, giving them an extraordinary appearance as they move about, for their activity in their encumbered condition is remarkable. The weather has been lovely here for some time, and the commoner sorts of insects have been plentiful, but I have taken nothing worthy of note, with perhaps the exception of *Thecla w-album*, of which I have taken several fair specimens. *Grapta c-album* appears to be a remarkably confiding insect, several times lately when standing about in the garden, specimens of this butterfly (male and female) have settled on me, and have not stirred until I moved. I was certainly to be trusted, as I never interfere with it until the spring, when I take the hybernated females to obtain ova. My wife has also had a similar experience.—A. NESBITT. *30th July*, 1892. [I am always quite willing to insert the occurrence of unusual food-plants for larvæ. The habit referred to as occurring in *P. pustulata* is undoubtedly protective. This species and *P. smaragdaria*, gnaw off pieces of their food and gum them on to their bodies. The body is not I believe "sticky," as suggested by Mr. Nesbitt, nor is the attachment of the pieces a matter of chance.—ED.]

Isle of Wight.—Having heard, in common with other stay-at-home collectors, of the great success attending the use of the treacle tin in the early part of June, I left London about a week earlier than usual for my quarters at Freshwater, but found to my disappointment that I was even then, colloquially speaking, "a day behind the fair." I think June 14th was the first night I started "sugaring," and although insects were very plentiful, yet the rarer species had evidently been out some

time, and were in some cases almost over. *Aplecta herbida* was in fine condition, and had I been a fortnight earlier would have been plentiful; as it was, I secured each evening till the 18th (when I left for the Channel Islands) from 4 to 6 specimens. *Diphthera orion* in one instance only gladdened us by putting in an appearance on the sugar, and was promptly boxed. *Cymatophora duplaris* occurred, but not commonly. *Aplecta advena* was taken as usual, but sparingly, although it occurred singly even after my return here on July 4th; during which month every evening produced some welcome addition to the long columns of NOCTUÆ on the setting boards, of which the best were the *Triphæna subsequa* already noted (*ante*, p. 156). Of these I captured the first in a wood where I rarely work on account of its greater distance from my quarters (and from supper); on July 8th and the following evening I took two more in my regularly worked wood, missing a third, which was hustled off by a swarm of *T. pronuba* whilst I was eagerly boxing the second off the same tree. On the 11th I secured 2 more in the same wood, and a friend working for me took a fifth specimen in another wood. Three more specimens (making 8 in all), of which the last was worn, turned up singly, the latest being taken July 20th: its disappearance being marked by the emergence of our eagerly anticipated British-born *Colias edusa*, of which I saw the first specimen July 21st, flying over a clover field near the Bay. Amongst other species at sugar in more than usual numbers here may be mentioned *Neuria saponariæ*, *Bisulcia ligustri* (in ones and twos each evening, almost regularly), *Xylophasia hepatica* (early, but straggling on almost to end of July), *Euplexia lucipara*, *Noctua brunnea* (in grand condition), *Mamestra anceps*, and the usual retinue of humbler species, amongst which the palm for numbers and variety must certainly be given to *Triphæna pronuba*, of which I never saw such a number of fine forms. Of the species which, although regular occurrents, seldom visit sugar, can be noted *Toxocampa pastinum* (of which for the first time in my own experience I saw several specimens on the sugared trees), *Heliothis marginatus* (singly), and *Chærocampa elpenor*, which was so unusual a sight amongst the NOCTUÆ as, for the moment, to recall the enthusiasm of early days, then evoked even by *pronuba*. *Gonophora derasa* was very plentiful, but very easily alarmed, and proved rather troublesome by disturbing other species. *Triphæna fimbria* and *Thyatyra batis* have occurred very sparingly. During the early part of July the high winds entirely prevented any useful work on the Downs, but the 13th and 14th proved suitable, and a long round of sugaring produced a very fine series of *Agrotis lunigera*, with a few *A. lucernea*. The latter species turned up in greater numbers on the 29th, in company with *A. nigricans*. The scarcity of thistles or any suitable blossoms to sugar, necessitated the use of bundles of cut blossom, of which *Heracleum sphondylium* was the most attractive. A well-sugared bunch of this in a favoured spot, on the 14th, was a magnificent sight, being almost covered with *A. lunigera* in the grandest condition. Is not this idea capable of application to *A. ashworthii*, which must surely, if given the chance, fall a prey to the same temptation which is so fatal to the other species of the genus AGROTIS? NOCTUÆ seem early right through up to date of writing, all the following having turned up earlier than usual with me:—*T. janthina* (28th July), *Amphipyra tragopogonis*,

Agrotis puta, *A. suffusa*, etc. *T. pastinum* was fairly plentiful about the middle of the month, and was easily beaten out just at dusk. About a dozen was my largest capture in the evening, but I neglected netting in favour of the sugar. The "Emeralds" are not plentiful here, but my brother secured a fine *Geometra papilionaria* at dusk, and *P. bajularia* also occurred, followed by plenty of *Hemithea thymiaria*. *Acidalia emutaria* were early, and, as usual, very difficult to get in fine condition; but by netting among the reeds in the middle of June, I managed to secure a fair series. During the last few days *Colias edusa* has been fairly plentiful, although as yet they are only locally common; the males seemed to emerge first, as out of my first day's capture (July 26th) only one ♀ was found, the sexes seem now equally divided. Two fine *helice* have rewarded some very warm work, but I have not seen *C. hyale* at present, whilst *Cynthia cardui* appeared with the first *edusa*. Although personally I have not been the lucky captor of any of the recorded great rarities, yet I am quite delighted at the improved reports of the year as received at present, and can heartily congratulate the various captors of such prizes as *Deiopeia pulchella*, *Deilephila livornica*, *Cloantha perspicillaris*, and *Ophiodes lunaris* (recorded in the columns of the *Record*) upon their success, and trust we shall all have our turn before the close of the season.—ALBERT J. HODGES, Freshwater Bay, Isle of Wight. *August 1st*, 1892.

Isle of Purbeck.—While driving to-day (July 27th) along the road between Corfe and Swanage I saw two lovely specimens, evidently just fresh from the chrysalis, of *Colias edusa;* they were apparently both males, and are doubtless the earliest individuals of the brood, the appearance of which we are all so anxiously awaiting. Although *C. edusa* was common here in June, I did not see a single one fine enough to take, and it was evident that they were immigrants from the Continent. On June 8th I netted a worn var. *helice* which had not previously been recorded from Purbeck.—E. R. BANKES.

Isle of Wight.—A first visit to the Freshwater district on July 25th and 26th was productive of some notes worth recording. The season so far, has been a fair one, but not so good (I am informed by Mr. A. J. Hodges) as 1891. The usual NOCTUÆ have found their way to sugar, and the net captures were also fair, but facts had better be chronicled in the regular way. A hot afternoon's climb up the East Downs produced *Aciptilia spilodactyla* in plenty, for on a small patch a few inches across, of *Marrubium*, about a dozen pupæ, several imagines and one larva were quickly found, and more on adjoining clumps. On Compton Downs a lot of Mullein (*Verbascum*) was fairly eaten to bits by *Cucullia verbasci*. The gulls had, however, found out this conspicuous larva, and only half a dozen were taken on scattered stems. On the chalk *Gnophos obscurata*, *Lycæna corydon* and *Satyrus semele* occurred, but the sun was not bright enough to bring them out in numbers. This (Freshwater) is the regular home of *Colias edusa*, a stray hybernated female is seen there almost every season, and this year has proved no exception, while on July 21st the first newly emerged *edusa* was seen by Mr. A. J. Hodges near the Compton Downs; and at Yarmouth on the 26th we captured five specimens, one being a female, while two others were chased unsuccessfully—they were first seen on a sandbank, near the mouth of the river Yar, while searching

for *Agrotis ripæ* larvæ at the roots of the sea Orache; the other *edusa* were flying on clover fields and Downs; four males were taken first, all bright and freshly out of the pupa, the female rather small—*Agrotis ripæ* larvæ were very small, but over a dozen were turned up in the sand. The evening was unfavourable for sugar, as a stiff north-easter blew on the Downs, and the night was far too cold to expect much. Parties were divided, those sugaring in the wood for *Gonophora derasa*, *Thyatyra batis* and *Triphæna subsequa* (of the latter Mr. Hodges has captured eight fine specimens) were only favoured with a few common insects, *Triphæna orbona*, *Leucania pallens*, *Xylophasia polyodon*, *T. pronuba*, etc., but the high cliffs were far more productive, and under the guidance of Mr. A. J. Hodges, whose favourite collecting ground lies many hundred feet above the sea, I made a practical acquaintance with *Agrotis lunigera* and *A. lucernea*. The only other moths flying to the sugar on thistle heads and baited wild flowers were four *A. nigricans* and one *A. puta*. It is rather a dangerous experience, and I quite agree with a former writer that every *lunigera* taken is worth a pound. Those from the most exposed cliffs and overhanging precipices were always the finest, and the sugar most attractive was generally placed where one would hardly care to go by daylight. *A. lucernea* were in splendid trim, but scarce, compared with *lunigera*, which were getting a little worn. The best advice to nervous cliff collectors of *lunigera* who are not insured, is Punch's hint to those about to marry—"Don't." I should hardly care to renew the experiment (Which?—Ed.), and if the truth were known, felt quite glad to get safely back to Freshwater at 11.30 p.m. The next day's take was principally *Zygæna trifolii*, of which several nicely banded vars. have been met with this year. Altogether I have to thank Mr. Hodges and his brother for a very enjoyable trip after Isle of Wight species.—JOHN HENDERSON, 25, Madeira Road, Streatham.

Hampshire.—Between Petersfield and Rowland's Castle I found plants of both black mullein and woolly mullein, and a few larvæ on each, probably *C. lychnitis* and *verbasci*, all gone to earth now.—J. HENDERSON.

AGROTIS SUFFUSA AND A. PUTA IN JULY.—Mr. Tutt's editorial notes on p. 164 to the effect that *A. suffusa* and *A. puta* are in some seasons double-brooded—the first brood occurring in May and June, and the second in August and September—while satisfactorily explaining the appearance of the former in June, as recorded by Mr. H. Sandlin, will hardly account for the occurrence of both species in *the latter half of July*, to which I can bear witness, as I have taken them at sugar here within the last ten days. On July 15th I boxed a fine fresh *A. suffusa*, and believe that I left alone another that was slightly damaged; and last Saturday night, July 23rd, a rather worn *A. suffusa* and a beautifully fresh *A. puta* came to sugar! Although I have met with *A. puta* in the middle of June in Portland, August seems to be the regular month for it here, so probably the specimen taken on Saturday was an early moth of the ordinary single brood; but as the normal time for *A. suffusa* with us is September and October, it would require some boldness to say whether those seen lately belong to the ordinary autumn brood or an earlier one, or what has been their previous history. In Stainton's manual *A. suffusa* is given as appearing in

"June (?) to September," and in Merrin's calendar in "July to October, to March, May and June."—EUSTACE R. BANKES, The Rectory, Corfe Castle. *July 25th*, 1892. [It is quite possible that in a season like the present the *A. suffusa* might be either late specimens of the early brood or early specimens of the late brood. *P. puta* (second brood) occurs normally at Deal in August, but I have taken beautiful specimens during the last week in July in early seasons.—ED.]

TIME OF EMERGENCE OF LEPIDOPTERA.—I observe in the *Entomologist's Record* for July a note on the time of emergence of *Smerinthus tiliæ*. I am glad to notice that this interesting subject is now receiving some attention. In some notes upon "Lepidoptera in Roxburghshire," which I wrote for the *Proceedings of the Berwickshire Naturalist's Club in June*, 1885, I therein made the following observations:—"Before closing these notes, I may mention that with regard to the time of emergence from the chrysalis state of lepidopterous insects, it is curious to note the regularity in time, I mean certain periods of the day, in which different species emerge. I cannot say whether or not there is a general rule, but I have found this to be the case with several species that I have repeatedly bred: thus the time of emergence of *Bombyx quercus* var. *callunæ* is from 8 to 12 p.m.; of *Harpyia furcula*, about 2.30 p.m.; *Leiocampa dictæa*, 6 p.m. to 8.30 p.m.; *Notodonta dromedarius* and *N. ziczac*, from 5 p.m. to 6 p.m, and *Saturnia carpini* about 9.45 a.m. These instances might be extended, but they are sufficient to show the apparent rule of certain periods of emergence." I should say that the pupæ from which the species mentioned above were bred, I kept as near as possible under similar conditions, and their time of emergence was closely watched and particularly noted.—A. ELLIOT, Caverton, Roxburgh, N B. *August 2nd*, 1892.

PLUSIA MONETA.—I caught a third *Plusia moneta* on the 14th instant at light in the same garden where I caught the other two on the 11th and 12th instant. They were all hovering over the monkshood (*Aconitum*), which grows in profusion there. A fourth specimen was captured on the 23rd July in the same garden, and hovering in the same manner.—R. A. DALLAS BEECHING, Tunbridge Wells.

I am fortunate in being able to report another capture of *Plusia moneta* in my garden on the 21st July. I noticed something hovering in the dusk about the flowers of *Nicotiana affinis*, somewhat after the manner of the SPHINGIDÆ, but upon its settling on the flower I at once saw what it was, and it remained perfectly quiet sucking the honey from the flower, so that I was enabled to box it without aid of the net.

I have this June taken 2 *Cymatophora ocularis*, and 3 *Apamea ophiogramma* at sugar in my garden. Common things absolutely swarmed at sugar during June, but since hardly a specimen is to be seen.—M. A. PITMAN, Norwich. *July 28th*, 1892.

HINTS ON LABELLING.—When collecting, one is always meeting coincidences, such as certain plants are in flower when certain lepidoptera are on the wing. One year they may be found together early in the month, and the next, the bad weather or other causes may retard them, but in nearly every case the causes which retard or accelerate the flowering of the plants, also retard or accelerate the time of appearance of the insect. Of course there are exceptions, but

I think this method of recording is more useful than the date alone, without any remarks. I know gentlemen who are very particular about having the exact day on which their insects were captured recorded on the label. To my way of thinking I should consider the exact hour at which they were caught was of far more importance, a record of this kind would be one little piece of information regarding the insect's life-history; and if there were added to this a note saying whether the species was at rest or flying naturally, one would have a certain part of its life-history in a nut shell.—WM. REID. *July*, 1892.

MICROPTERYX SANGIELLA AND CALEDONIELLA.—I sent a box to my friend, Mr. C. G. Barrett, with some *Micropteryx* to look over, and he returned them, to my satisfaction, with two new species added to my collection, *viz.*, 7 *sangii* and 1 *caledoniella*: the former is a fine distinct species.—J. B. HODGKINSON.

NOTES ON MIDLOTHIAN LEPIDOPTERA.—*Bupalus piniaria*, L.—Very common in the wood in June, as many as 20 or 30 females having been found at one time clinging to grass stems within the area of a yard or two. Taken also by Mr. Evans, Mr. Wilson, and Dr. Northcote. *Eupithecia helveticaria*, Bdv.—I took some six specimens of this insect on the bog in June, 1888, where it has also been captured by Dr. Northcote. Mr. Wilson found the larvæ on juniper by Balerno Burn, September 5th, 1858. Mentioned by Low and Logan in *Proc. Roy. Phys. Soc.*, vol. i., p. 259. *Dianthœcia cucubali*, Fues.—Three dozen larvæ taken from flowers of the ragged robin (*Lychnis flos-cuculi*) on Balerno Bog, August 4th, 1884. Taken also by Mr. Wilson. *Eupithecia pygmœata*, Hb.—One imago captured on rushes at Balerno Burn, July 2nd, 1854, and another at hedge of Harelaw Farm, July 12th, 1858. Mr. Wilson speaks of this insect as *E. palustraria*. *Anarta cordigera*, Thnb.—I have only been fortunate enough to capture one specimen of this very pretty little insect, which rose from the heather on the north side of the road that bisects the bog. *Ellopia prosapiaria*, L., *fasciaria*, Schiff.—This insect may be commonly found early in July just emerged from the pupa, either on the ground at the roots of the pine trees in the wood, or on the bark of these about half a foot above the grass. Caught also by Mr. Evans, Mr. Wilson and Dr. Northcote. *Scodiona belgiaria*, Hb.—I have only taken a single specimen of this insect, a male, that had fallen into the small Burn which crosses the bog, July, 1887. Mr. Evans captured a female on Currie Moor in July, 1880, and a single specimen, var. *flavillacearia*, fell to the lot of Mr. Wilson, July 13th, 1865.—E. W. CARLIER (*Annals of Scot. Nat. Hist.*, pp. 42–48).

NOTES ON SATURNIA PAVONIA.—On looking over my diary for 1891, I noticed some interesting facts about *S. pavonia*. I had a dozen cocoons, from 1890 Wicken Fen larvæ, the foodplant of which, on the Fens is Meadow-sweet (*Spiræa ulmaria*). The peculiarity about these Fen cocoons is now well known,[1] some being quite a silvery white colour, but there is no appreciable difference between the Fen imagines and those from the New Forest. From these cocoons five ♂'s and one ♀ emerged between 7 and 8 a.m., and four ♀'s emerged about

[1] Recent experiments has gone a long way to prove that this is not peculiar to "Fen" larvæ, but is probably due to a starvation diet before pupation, *vide Ent. Rec.*, ii., pp. 299, 300; *Ent. Rec.*, iii., p. 9.—ED.

11 a.m., two not emerging. The ♀ that emerged at 7 a.m. is very peculiar; it approaches the scaleless specimens sometimes seen, and in markings and colour partakes much of either sex, which coupled with its emergence at the same time as the males is interesting. I had two ♂'s and one ♀ emerge the same day. A pair copulated between 3 and 4 p.m for about 45 minutes, and between 7 and 7.30 p.m. the ♀ deposited a batch of ova, 18 in number; about 8 p.m. another 16; and a third batch six in number. Part of the second and the last six laid proved infertile, the others hatched on May 10th. As is well known the males in a state of nature fly between 2.30 and 4.30 p.m., at which time the ♀ has just dried its wings; and, as I have shown, copulation takes place about that time, it suggests the probability that unless the ♀ has emerged the same day, it would have no attraction for the males, as otherwise you would expect them to fly at any time during the day. The fact of males emerging four hours before the female, strikes me as being interesting, and it might be worth while to observe whether it occurs in other insects, as by that means an idea of the natural time of flight might be obtained.—AMBROSE QUAIL, 15, Stamford Hill, N.

PLATYPTILIA PALLIDACTYLA.—I was pleased to read your note on this interesting group (*Pterophorina*), also the table annexed, which, to my mind, is invaluable. I should like to say a word or two on a few species. I am glad to see you have put *pallidactyla* = *bertrami* the "yarrow-feeding" plume. It is the larva of this, I believe, that Mr. Eales found feeding on the flowers of *Senecio aquatica*, and not that of *isodactyla*. I have specimens from him which appear to be all *pallidactyla*. They were common, and he breeds plenty of the "yarrow" specimens as well. I may here note I have some twenty or more from Witherslack, from Mr. Eales, of all colours, some nearly as yellow as *ochrodactyla*, others nearly white, but some nearly black. All the specimens in my series, however, have the same markings, legs also, as the species which is now called *ochrodactyla* (*dichrodactyla*), a very good name. I cannot find a single marking on this insect yet that is not on *pallidactyla*. *Ochrodactyla*, in a long series, is perhaps larger and has the fore wings more falcate. I bred most of my specimens from tansy, the others came from Sang. So far, I am inclined to think they are but one species.—J. B. HODGKINSON. [There is nothing in my note, I think, to suggest that I supposed Mr. Eales' specimens were *isodactyla*. As that gentleman very kindly gave me some of his specimens, and they are now in my collection, I can only reiterate that they are like *pallidactyla*, but whiter, even in bred specimens.—ED.]

TIMES OF FLIGHT.—On September 12th, at 2.30 p.m., I took last season *Celæna haworthii* flying over the mosses on the moors in this neighbourhood. The afternoon was overcast and warm. My experience of the species is that if the atmosphere be clear and the sun shining brightly there are few insects on the wing, but if the afternoon be calm, warm and moist the species flies pretty freely. I have also taken the species on the blossom of the heather (*Calluna vulgaris*) at night in August.—J. FINLAY.

BREEDING SOLENOBIÆ.—I find the larvæ of a *Solenobia* upon a stone fence in some abundance. Can any readers give me any hints regarding the best method of rearing those insects? Would it be a

good plan to sleeve them with a few large stones by way of pabulum? or would one have more success if they were to allow the larvæ to pupate before collecting them?—Wm. Reid.

A *Solenobia* is an unsatisfactory insect to breed as one may not improbably get nothing but females, which in this genus are, to say the least, uninteresting. I should think that if the pupæ could be collected with equal ease, one would be likely to breed a larger proportion of them than one would from the larvæ, as some of these would probably die before changing. I have had some small *Solenobia* larvæ on lichen-covered stones in a flower-pot this winter (1891–'92), but many have disappeared.—N. M. Richardson.

Liparis dispar at Southsea.—The specimen of *L. dispar* in my box was seen at rest in the window of a grocer's shop in Palmerston Road, Southsea, and my son obtained permission of the shopman to box it. I should think it must occur at Southsea or on Portsea Island generally.—Douglas A. Onslow. [It would be interesting to have any other recent records of the capture of this species at large.—Ed.]

Deiopeia pulchella.—Since reporting to you the occurrence of this insect here and at Dungeness, I have been informed on good authority of two specimens having been seen at the beginning of the month (June) at Maldon, in Essex. One was taken, so there can be no question as to the identity of the species. The one I took here was so fresh and perfect as to make the idea of its being an immigrant rather startling at first sight; but as the species seems to have occurred all along the coast from Gosport on the south to Maldon on the east, I can hardly doubt that you, Mr. Editor, are right in your belief that these insects were not bred here. The Dungeness specimen was taken on the sea shore. As to *Colias edusa* and *Cynthia cardui* they are abundant here at this time, the latter especially, and I have no doubt whatever that *they* are immigrants, as neither species was to be found here last autumn. That they will be abundant at the end of August and early in September all along the south coast there can be no kind of doubt.—R. D. Postans, Eastbourne.

Melanippe montanata.—Apropos of Mr. Gates' exhibit at the City of London Entomological and Natural History Society (*Ent. Rec.*, p. 94), a few notes may be of interest. Though so common, it appears its life history is not over well known. My reading may not be up to date, but as far as I can judge neither Stainton, Newman nor Kirby bred it, although their descriptions of the adult larvæ are correct. Neither, however, say anything about its being double-brooded. Newman says the egg is laid in the *autumn* and the larva is full-fed at the end of March, which Kirby and Stainton extend to May. The fact is, the eggs which are deposited in early summer produce larvæ which will be full-fed, and their metamorphosis complete within three months, while others will feed slowly right through the season, hybernate through the winter, and not produce imagines under ten months. As regards food, Stainton and Newman say the larvæ feed on primrose, Kirby says low plants. They are probably not very particular in their choice: mine ate anything but sallow, and prospered. Kirby says the imagines appear from May to August—far too short a period, being too late and too early, at least according to my experience. On June 8th, 1890, I took a female in the Crown Woods, Shooter's Hill, which

deposited a batch of ova. These hatched in a few days, and took kindly to sallow. Imagines appeared August 26th, September 5th, 7th and 25th, November 2nd and May 20th, 1891. Some of the larvæ I gave a friend emerged the same season, but as far as I know only one successfully hybernated through that terribly hard winter.—HARRY MOORE, 12, Lower Road, Rotherhithe. [This must be quite unusual in this species. I have never seen during 20 years' experience in our Kent woods, where the species swarms, a specimen of a second brood in nature.—ED.]

ENTOMOLOGICAL PINS.—The "Pin" correspondence is very interesting to all entomologists; let us hope that some changes will result from it. Without doubt Tayler's pins are the best, barring the heads. It is a good suggestion to cut these off, but why not sell some at a cheaper rate without them? Another drawback to their pins is the confusing way in which they are numbered. A fault I find with both makers is that the fine pins are too fine, and the coarse too coarse. With the former it is hardly possible to move an insect either with pliers or fingers in safety. Who uses such pins as 2 and 3 (Tayler), or 11, 12, and 13 (K.B.), and what for? For micros, pins must be fine; but could they not then be made of steel, either blued, bronzed, silvered or varnished in some way to prevent rust? Then at any rate they would not double up at a touch. For macros, any one who values their specimens must use coarse pins, but they need not be *so* coarse. Take Kirby Beard's, 10 is a very nice pin for *Lycænidæ*, *Hesperidæ*, and small GEOMETRÆ, but it barely leaves enough room above the thorax to catch hold of with pliers, and fingers are out of the question; whilst if it were made also in Nos. 8 and 9 length, it would do for all the medium sized NOCTUÆ and larger GEOMETRÆ. No. 9 is of quite sufficient thickness for 4, 5 and 6 length, and No. 5 quite thick enough for 2 and 3 length. The same with Tayler's: No. 8 the thickness of No. 10, and Nos. 12, 13, 14 and 17 the thickness of 8, would give us very serviceable pins. As to the black varnish, whether it prevents verdigris or not, it certainly makes the pins softer and look coarser than they really are, yet looking down on a drawer they certainly catch the eye less on account of their dark colour (this is particularly the case with the flat-headed ones, Tayler's). But this would be better met by a *brown* bronzing, the present pins are too black; no insect is jet black, whilst the majority have the thorax more or less brown. In effect, I suggest that entomological pins should be firstly, *brown* bronzed: secondly, headless (this apparently would improve the points of Kirby Beard's); thirdly, the coarse ones less coarse; fourthly, the fine ones made of steel or some harder metal.—K. M. HINCHLIFF, Instow, N. Devon. *June*, 1892.

I am glad to see the discussion anent pins. So far as I am concerned, the mere colour of the pin is not, to my mind, of any great importance, though I prefer gilt or black to white as less liable to verdigris. I like Kirby Beard & Co.'s best, and use the following sizes in macros (black). No. 1 for insects the size of *A. atropos;* No. 4 for *P. machaon*, *S. tiliæ*, etc.; No. 6 for *Arctia villica*, *T. pronuba*, etc.; Nos. 8 and 9 for the NOCTUÆ (excluding the very large and very small) and for most butterflies; No. 10 for small NOCTUÆ, and 9 and 10 for GEOMETRÆ. according to size. The great thing to my mind is

to use a pin of moderate length in proportion to the insect to be set, and strong. If I were limited to 4 sizes for macros my verdict would be without hesitation for Nos. 4, 8, 9 and 10.—T. MADDISON, South Bailey, Durham.

I have come to the conclusion that although Tayler's undoubtedly have the best points, Kirby Beard's are most satisfactory as regards *sizes* and as having smaller heads. The sizes I use are No. 2 for the larger, and No. 4 for the smaller species of "Hawks" and Bombyces; No. 8 for the largest butterflies, small Bombyces, and largest NOCTUÆ; No. 9 for most NOCTUÆ and several small Bombyces and medium size butterflies, and the few largest GEOMETRÆ; No. 10 for the few smallest NOCTUÆ, a good many butterflies, and most GEOMETRÆ; No. 17 for nearly all TORTRICES and TINEINA; No. 19 for smallest TINEINA. I use more No. 9, 10 and 17 than any; No. 18 I consider too thin for TORTRICES and TINEINA. No. 17 serving for nearly all these, and I never use anything finer than No. 17 in BLACK; the very thin pins seem to be rendered useless by the enamelling. For the smaller *Lithocolletes* and all *Nepticulæ* I have lately adopted the *Minutin Nadeln* Vienna pins, and it yet remains to be proved as to whether the *steel* or *silver* ones are the best. I fear the steel will *rust*, otherwise they seem perfection itself, and supply the hitherto much-wanted "perfect pin for Neps."—WM. FARREN, Union Road, Cambridge.

Although other entomologists claim to have been the first to use the black pins, I think Meek would say that both Mr. Howard Vaughan and myself had persuaded him for some years to get some made; for Mr. Edleston first started enamelled pins in 1846 for his own and Mr. Sidebotham's private use. They were reported to be a success, and we did not know then that they had been afterwards repudiated as useless and dropped altogether. I have never used the black ones and refused a testimonial in their favour. They were, and are, as is in fact known, not suited for anything but just to be put in position and never moved again. In 1879, acting upon my advice, the late John Sang had some silver ones made, having seen my *Dicroramphs* ungreened after three years, he liked them very much; but it is difficult to get them made very thin. Rapid desiccation is, after all, the best means to keep off for a time evil consequences. I used, after setting my TORTRICES, to place them in the sun, throwing a newspaper over them, tent-like, for a few hours; if this be done, series will be in good order, unsprung and ungreen, when others not so "cooked" will be spoilt; and as black enamelled pins certainly stand longer than plain white, perhaps this method might be tried with them with even more success.—SYDNEY WEBB, Dover.

DIPTERA IN SOMERSETSHIRE.—Whilst collecting in the west of England last summer, I made an effort to obtain a few *Gastrophilus* (Diptera) larvæ, and in the horse-droppings of two fields near Wellington, Somerset, I found 14, from which I bred 11 flies; 7 were *G. equi*, the others were *G. nasalis*. Six of the *equi* were females, but the sexes of *nasalis* were equal. In one of the males of the latter the pubescence is of a bright golden colour, except that on the basal segment of the abdomen, which is of an ashy colour. The eggs of these flies are deposited in the autumn on the horse, chiefly the front legs, from which they are licked by the horse and swallowed; and on

reaching the stomach they hatch, the larvæ fastening themselves to the stomach by hooks with which they are provided, feed on the partially digested food. When full-fed, which is about the end of June, they pass through the horse, and may then be found in the droppings. They pupate within the larval skin, and the flies emerge about the beginning or middle of August. Those I bred were exceedingly restless on emerging, and seemed unable to hold on to the box or gauze, and one of them was spoilt through falling about so much. At last I stuck a stick in the centre of the box and that seemed to be just the thing for them. On reaching the top of the stick they were quite comfortable, and I had no further trouble with them. I often used to see and kill them when I followed the plough, but never remember seeing them settle even when the horses were at rest, and I never saw them follow the horse to the stables and very rarely to the roads. Although so common as to be very troublesome to horses in the fields they are rarely taken elsewhere. A nephew of mine squeezed out two larvæ of *Hypoderma bovis* from the cows. One of them (the larvæ) died at once, and the other pupated, but did not emerge. They are exceedingly large for the size of the insect, and the orifice of the tumour leading to the larvæ beneath the skin is about the size of a pencil when the larvæ are full-fed. I also took the following in the neighbourhood: *Stratiotoma pulchra* on *Heracleum sphondylium* over a brook; this is the second species I have of this rare genus, the other being *riparia*; *Echinomyia ferox*, *fera*, both on and near the hills; *Micropalpus vulpinus* on the hills; *Therioplectus micans* on the trunk of a tree: *Xylota sylvarium* flying along a hedge near a river; *Atylotus fulvus* flying over heather on the hills; *Tabanus bromius*, a few on umbelliferous flowers over a brook; *Volucella bombylans* and var. *plumata*, common on the hills. I took a male of the latter and female of the former *in copulâ*; *Nichrochrysa polita* on horse-droppings; *Pedicea rivosa* in a marshy meadow; *Tipula scripta* in a wood, one specimen only; *T. lutescens* fairly common in most woods. The males of this seem very difficult to capture, as they were up and away before I could get within ten or twelve feet of them, and the brambles and ferns made pursuit very difficult. I only took one, and that was owing to its being hampered and doubtless much weakened by parasites. Its thorax was quite red with them. The females were much easier to capture. *Mesembrina meridiana* was not common except in one sheltered spot, where I took four by one stroke of the net as they were settled on the trunk of a tree. My captures also included *Conops quadrifasciatus*, *Sericomyia borealis*, *Chilosia vestracia*, *Chrysotoxum arcuatum*.—F. Milton, 184, Stamford Hill, N. *April*, 1892.

Erratum.—p. 160, line 7, "Pl. xvi." read p. 16.

Societies.

South London Entomological and Natural History Society.—*Thursday, July 14th*, 1892.—Mr. Oldham exhibited a number of species recently captured at Epping, including *Cymatophora ocularis*. Mr. Fenn, a magnificent series of dark varieties of *Liparis monacha*, originally from New Forest specimens, the darkening having been intensified by selection

in interbreeding. Mr. Adkin, an empty pupa of *Sesia scoliæformis* in its cocoon under the bark of the birch. Mr. Tugwell stated that he had seen the pupa of *S. sphegiformis* push itself from the burrow in which it changed, and after breaking through the skin of the alder, as if just about to emerge, retreat into the burrow again, if the meteorological conditions were not favourable. Mr. C. G. Barrett remarked that he did not know of the power of pupæ to retire again, although he knew well enough of the forward movement. A discussion ensued in which several members took part. Mr. Hawes exhibited larvæ of *Lycæna ægon* feeding on *Ulex*. Mr. Fenn stated that Buckler had bred it from Bird's-foot Trefoil.—Ed.

City of London Entomological and Natural History Society. —*Thursday 21st July*, 1892.—Exhibits:—Mr. Clark, a variety of *Fidonia atomaria* from Ringwood, a specimen of *Noctua festiva* with distinct transverse dark lines, and two *Eulepia cribrum*. Mr. Smith, *Macroglossa fuciformis* and *Melanthia albicillata* from Blandford, Dorset, and recorded the capture of *Hesperia actæon* and *Sesia ichneumoniformis* near Swanage. He also exhibited, on behalf of Mr. Quail, *Epione advenaria* and *Cidaria picata*. Dr. Sequeira, *Eulepia cribrum*, *Euthemonia russula*, *Aplecta herbida* and *Boarmia repandata* var. *conversaria* all from the New Forest. Mr. Battley, *Melitæa athalia* and *Ennychia octomaculalis* from Abbots Wood. Mr. Nicholson, bred specimens of *Cynthia cardui*, and a var. of *Abraxas grossulariata*. Mr. Bacot, a variable series of *Hepialus lupulinus* from Tottenham, several specimens being almost entirely silvery white in colour: also a specimen of *Dasychira pudibunda* from Clapton.

Mr. Allbuary, *Sesia bembeciformis*, *Melanippe hastata*, *Ennychia octomaculalis*, and a fine specimen of *Diopeia pulchella* from Dover. Mr. Simes, a living female of *Bombyx quercus*, and young larvæ of *Sphinx ligustri*. Mr. Southey, series of *Caradrina alsines* and *Tæniocampa instabilis*. Mr. Milton, *Chelonia villica*, *Endromis versicolor* and many others; also in Coleoptera, *Dytiscus circumflexus*, *Aromia moschata*, *Ilybius fenestratus* and *Aphodius rufescens*, also several fossils from the chalk at Gravesend. Mr. Heasler, *Quedius maurorupus* and *Orchesia micans*, both bred from fungus from Bexley. Mr. Burrows, *Strangalia revestita* taken near Coventry. Mr. Rosevear, specimens of *Helix albensis*, a snail that is only found at Gibraltar, and which has hitherto been unrepresented in the British Museum. Dr. Buckell remarked that the habit of resting head downwards appeared to be usual in two species, *Nola cristulalis* and *N. cucullatella*, showing a similarity in habits of two allied species. He also recorded the occurrence of several chalk insects at Southend, Essex, a locality on the London clay, notably *Melanippe procellata*, *M. rivata* and *Eubolia bipunctaria*. Mr. Battley recorded *Eremobia ochroleuca* and *Aspilates citraria* as further examples of chalk insects from that locality. Mr. Nicholson mentioned that he had seen two flights of *Cynthia cardui* depositing their eggs on some thistles at Chattenden Woods. Dr. Sequeira remarked that the male glow-worm had the power of emitting a faint light, although it was not as bright as that of the female. Messrs. Tremayne and Smith gave accounts of entomological work as Lyndhurst and Dorsetshire, the chief feature being the large number of insects attracted to sugar.

Thursday, 4th August, 1892.—Exhibits:—Mr. Tremayne, a bred series of *Callimorpha dominula* from Deal, and *Melitæa athalia* from Abbots Wood. Mr. Machin, *Mamestra anceps*, a variety of *Cuspidia psi*, dark forms of *Boarmia abietaria*, and a series of *Phlœodes demarniana*. Mr. Smith, *Gonophora derasa*, *Triphœna fimbria*, *Pericallia syringaria*, *Cleora lichenaria* and *Hyria auroraria* from Lyndhurst, and *Sesia ichneumoniformis* from Swanage. Mr. Bellamy, *G. derasa*, *Thyatyra batis* and *Leucania turca* from Highgate Woods, and *Dicranura furcula* from Southend. Mr. Hollis, a yellowish variety of *Abraxas grossulariata*, and ichneumons bred from *Selenia illustraria*. Dr. Buckell, a series of *Amphidasys betularia* bred from one batch of eggs. One specimen of these had the ground colour almost ochreous, while the dark markings seemed to have lost their intensity. He also exhibited a variable series of *Noctua festiva*, all taken in an evening at Highgate Woods, one of them having the dark dot beneath the discoidal spots expanded into a distinct claviform mark. Mr. Clark, a specimen of *Grammesia trilinea* var. *bilinea*, and a fine variety of *Polyommatus phlæas* both from Abbots Wood. The latter had a broad black hind marginal band on the fore-wings, reaching to, and including the transverse row of spots. Mr. Battley, a bred series of *Phorodesma smaragdaria*, and various preserved larvæ showing a system of retaining the colour by stuffing with green silk. Mr. Milton, *Colias edusa*, *Sesia tipuliformis*, *Notodonta dictæoides* and *Scotosia certata*; also a living example of a rare species of Diptera, *Stratiomys riparia*, of which he had recently taken specimens at Gravesend and Stamford Hill. Coleoptera:—Mr. Heasler, *Scaphidium 4-maculatum*, *Mycetoporus lucidus*, *Megapenthes sanguinicollis* and *Malthinus frontalis*. Mr. Machin stated that he had recently bred *Notodonta dictæoides* from ova deposited last May, proving that this species is occasionally double-brooded.—A. U. Battley and J. A. Simes, *Hon. Secs.*

Birmingham Entomological Society.—*July 11th.*—The following exhibits were made:—Mr. Wainwright for Mr. G. W. Wynn, a specimen of *Stauropus fagi* bred from a larva found at Wyre Forest last year; also a box containing some of Mr. Wynn's captures made during the recent visit of the Society to Sherwood Forest, including *Hadena contigua*, *Cuspidia leporina*, *Agrotis suffusa*, etc. Mr. Kenrick showed Sherwood captures; also *Aplecta herbida* from Trench Woods, and a few Scotch insects including a fine red variety of *Smerinthus populi*. Mr. P. W. Abbott showed a fine variety of *Arctia caia* from a larva reared on colts-foot, specimens of *Stauropus fagi* from Wyre Forest, and a nice series of *Melanippe hastata* from the same place. Mr. W. D. Spencer showed a bred specimen of *Cuspidia alni* from near Rugeley. Mr. C. J. Wainwright showed Diptera taken at Sherwood this year; also a few taken in 1889, including *Xiphura atrata*, etc. Mr. A. Johnson showed larvæ of *Anthocharis cardamines* found on pods of the white rocket, which they resemble very closely. Mr. R. C. Bradley showed his Sherwood Diptera, and read a few notes upon them; they included two species of *Criorhina*, *floccosa*, and *ruficauda*, *berberina* also being taken by Mr. Wainwright; also other nice *Syrphidæ*, and a few good "Daddies," including one specimen perhaps new to the British list.—Colbran J. Wainwright, *Hon. Sec.*

The Entomologist's Record AND JOURNAL OF VARIATION.

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THE GENUS ACRONYCTA AND ITS ALLIES.

By Dr. T. A. CHAPMAN.

(*Continued from page* 149.)

MOMA ORION.—This is the only British species outside the genus *Acronycta* that appears to me to belong to the same family. I presume it was originally classed with *Acronycta* on the ground of characters of the imago, I sustain its claim to that position because the newly hatched larva presents an eleventh segment that has essentially the same characters as that segment has in true Acronyctas. The young larva has, nevertheless, a considerably different facies, and the egg is nearly spherical, instead of being of the flat form characteristic of those of *Acronycta*. Nevertheless, the egg has the same remarkably fragile delicacy that many Acronycta eggs have.

The egg (Pl. VIII., fig. 10–10a) is flat on the lower surface on which it rests and so is not quite a sphere, but is nearly three-quarters as high as it is wide. Its diameter is 0·7 mm., the ribs number thirty at the margin, and the transverse or secondary ribs are very marked, from the netting at top, the ribs increase outwards by division and intercalation in the usual way, but, instead of doing so in irregular positions, nearly all the increase takes place at about one-third of the way from the summit, though rarely quite as regularly as shown at fig. 10a. The whole egg is extremely delicate and transparent, acquiring a pale straw tint, but no deeper coloration or markings, nor does any change occur as the contained larva becomes ready to hatch, except a slight increase of opacity and the tips of the larval jaws can be seen, but the young larva is itself so transparent that very close observation is necessary to see anything more of it.

The eggs are laid beneath the leaf in batches of fifty or more, regularly disposed in close order like many species of *Arctia* and NOCTUÆ.

The newly hatched larva is a very delicate whitish scrap, whose first duty is to eat up as much as his neighbours permit of his egg-shell, and who is already prepared to drop by a thread if alarmed. In Pl. VI., figs. 6–6a, the facies in which he differs from a young *Acronycta* is, perhaps, a little exaggerated, and he certainly has not so much colour as there shown, though a greenish tint soon arises when some food has been eaten. They linger rather leisurely over their eggshells, apparently waiting for the last member of the batch to hatch. I have not found them (as *Spilosoma* does) eating any infertile eggs. At length they commence to feed, which they do by ranging themselves exactly side by side, and marching forward exactly in line, in the manner of *Pygæra bucephala*—only even more exactly and accurately. They only eat the parenchyma of the leaf, leaving the upper surface and even the smallest ribs. The larva is practically colourless, and only 1½ mm. in length. It looks rough and irregular from the large size of the tubercles and has a large head, but the want of colour makes details very difficult to observe, and it is generally cylindrical. Segments 4 to 10 have a small circular anterior trapezoidal tubercle and a large curved posterior trapezoidal, which arches round the anterior trapezoidal apparently in order, as it does, to occupy all the dorsum except that taken by the small anterior trapezoidal. Then there is a large supra-spiracular, and an equally large sub-spiracular tubercle, and between these two minute (pre- and post-spiracular) tubercles. There is also, in these segments, a remarkable feature suggestive of alliance with *Liparidæ, viz.*,—a minute dot in the central line, between the posterior horns of the posterior trapezoidals. The other segments do not possess this.

The hairs are long, delicate, and colourless, the longest on the posterior trapezoidal, a very short one on the pre-spiracular, each tubercle has only one hair, except the supra-spiracular which has three. It may be noted that the prolegs are complete circles of about 14 hooks, the true legs have the battledore palpus well-developed, and there is a chin-gland which, when everted, is of very much the size and outline of a thoracic leg but with a fine pellucid apex somewhat prolonged. Except the brown tipped four-serrate jaws and black eye spots the head is nearly colourless, and carries about five hairs on

either side. The tubercles on 2, 3 and 4 are somewhat different (as usual) from those on the other segments. On 11, the tubercles are very small, and the hairs about half the length of those on the 10th and other segments.

Below the sub-spiracular I only detect one ventral tubercle, but suspect there must be another.

(*To be continued.*)

CURRENT NOTES.

Mr. J. E. Robson is working at the distribution of Melanic and Melanochroic forms, and would be obliged if entomologists would send him lists of species occurring in their localities which produce dark varieties. He would also be glad to know when these dark varieties were first noticed, and if any changes in the surroundings have been made during the last half-century. Communications should be addressed to Mr. John E. Robson, Hartlepool.

We have heard of competitions in various branches of natural history. Messrs. Gregson and Robson exhibited at the meeting of the Lancashire and Cheshire Society of September 12th, "Challenge Series of *Abraxas grossulariata*, showing variation produced by food." We think the exhibitors should add "and other incidental circumstances." Cannot these series be exhibited at one of the City of London Society's meetings for Londoners to see the sight?

Ditula woodiana has been run to earth at last. It has figured as a rarity ever since its discovery, and suggestions have even been made that it was only a small form of *D. hartmanniana*. It is a very distinct little species, and it was only natural that its habits should be discovered by Dr. Wood, after whom the species was named. It feeds on mistletoe, mining as a rule into the thickness of the leaf and eating the cellular tissue. It is able, however, if its first mine does not last until the larva is full-fed, to spin two leaves together, and it then clears out the cellular tissue of the second leaf where they are in contact, but this is not a natural habit. We have to thank Dr. Wood for bred specimens.

To those interested in London entomology, "The Entomology of a Bayswater House," in the *E.M.M.*, p. 230, should be interesting reading.

The larva of the rare Lamellicorn, *Gnorimus variabilis* is described by the Rev. Canon Fowler, M.A., from Windsor Forest examples (*vide E.M.M.*, p. 242).

Mr. C. G. Barrett records the occurrence of *Syricthus alveus*, Hüb., in England about 20 years ago. The specimens were detected several years ago in the cabinet of the Rev. T. H. Marsh, of Cawston, Norfolk, by Mr. Barrett, and two were given to him. Since that time Mr. Barrett's specimens have remained unnamed, owing to their similarity to both *S. alveus* and *S. serratulæ*. The specimens were probably taken in May or June, 18 or 20 years ago. Mr. Barrett states that Mr. Marsh tells him that he never saw *S. alveolus* except when he captured the specimens in question and considered them as such. He

suggests "migration" as an explanation of their appearance, as they have never been observed since. Of course a much better chance of finding out something about their appearance would have occurred if the specimens had been recognised shortly after their capture. But after twenty years there is little chance of making a satisfactory guess.

Mr. King, of 14, Sauchiehall Street, Glasgow, has created quite a record in taking a large number of *Erotesis baltica* at Chippenham Fen, and offers to send specimens to "Neuropterists who desire the species." Previously it was known as British by four specimens, taken by Dr. Wheeler in Wicken Fen, in 1877, and one by Mr. Porritt, in 1891, at the same place.

Mr. Ward-Jackson records the capture of *Deilephila livornica* at Lyndhurst, on June 4th. Mr. Phipps, *Plusia moneta* from Tunbridge Wells, on July 13th; whilst another is recorded by Mr. Reid as captured at Alton on July 12th. *Deiopeia pulchella* at St. Leonards on May 28th last, by Mr. Esam, and another at Brighton by a boy last month (July). *Lycæna arion* was captured at Selcombe (Salcombe?), South Devon, during the first half of July by Mr. Prideaux; whilst *Callimorpha hera* has again been taken by Mr. Jäger in its old haunts.

Mr. Beadle records eighty specimens of *Erebia cassiope* on the afternoon of June 21st in the Cumbrian mountains, near Borrowdale.

NOTES ON COLLECTING, Etc.

NOTES OF THE SEASON.—*Wicken Fen.*[1]—My success at Wicken last year tempted me to make another trip to the same locality with my son Bertie, and we spent three weeks there, commencing from July 27th. The local collectors reported an excellent season up to date, several species having occurred abundantly on some evenings, as *Meliana flammea*, *Nascia cilialis*, etc.; whilst such local species as *Cuspidia strigosa* and *Cymatophora ocularis* had been rather more common than usual. *Bisulcia ligustri* had turned up; *Apiecta advena* had been abundant, but Mr. Houghton informed me that he doubted whether I should get *ravida* this year, as it was out fully a month earlier than last year, and it was, he believed, over. This, I found, was only too true, one specimen only being allured by the light a day or so after my arrival. My troubles meteorologically were legion. During the first week, there was a north-east wind blowing, the sky was generally clear, radiation was excessive, and in about an hour after sunset there was a thick dew, sometimes changed into a ground fog all over the Fen. Of course, on such nights, nothing came to light and nothing to sugar. On two nights in this week it rained and was pitch dark, and then we got a heap of moths at light, although sugar still failed. The second week the wind got more westerly, but the sky remained clear as ever. There was less radiation, but a full moon prevented the light working, and only on one night during this week did we have any real success. Sugar was still an absolute failure. Dusking, however, paid well, and I took a very large number of specimens, chiefly GEOMETRÆ and TORTRICES, in this way with the net. The last week the wind was

[1] Read at a meeting of the City of London Entomological Society, Thursday, September 1st, 1892.

chiefly southerly, we did not have one good night at light, and only one or two fair ones. The wind was on three or four evenings very high, and on one occasion Bertie nearly got buried under the sheet which collapsed. Sugar, however, paid the last three nights, the last night, of course, proving the best. However, taken all round, we got a fair return for the labour put in, and brought home a large number of insects. There were some strange appearances. The beautiful May weather had tempted many of the early species to try a second brood, apparently in many cases successfully. The earlier NOCTUÆ were much earlier than last year, but the changed conditions of July had made the later species rather later. In the following captures it may be understood that I took charge of the sugaring and netting department whilst my son made almost all the captures at the light.

During the day time, a second brood of *Papilio machaon* was in abundance, as many as forty being taken by an entomologist during one day. This is in striking contrast to last year, when scarcely a specimen of a second brood occurred. Larvæ of all sizes, and pupæ, were also to be found at the same time. *Pieris napi* was abundant in the Fen; the two other species, *rapæ* and *brassicæ*, in the gardens of the village. *Colias edusa* was seen once or twice, but was common at Cambridge. *Gonopteryx rhamni* was apparently fairly plentiful, whilst *Cynthia cardui*, *Vanessa atalanta*, *V. urticæ* and *V. io* were everywhere. The hedges were alive with *Epinephele tithonus* and *E. janira*, whilst *Chortobius pamphilus*, *Polyommatus phlæas* and *Lycæna icarus* occurred on the green in front of the house where I stayed. I saw *Satyrus megæra* in the orchard, and this, I think, completes my observation on the Diurnal fauna.

In the NOCTURNI, most of the captures were made at light. *Smerinthus populi* (evidently a specimen of an autumn brood) was bottled, and larvæ of *Chærocampa elpenor* of various sizes noticed on the ditch sides. *Macrogaster arundinis* came to every sheet but ours (it was the same last year), only odd specimens, of course, owing to the lateness of the season. *Hepialus humuli* males swung merrily right in the heart of the Fen, whilst *Nudaria senex* was captured at early dusk, its appearance at that time in abundance almost always presaging a dewy evening and an entomological collapse at dark. It also came late to light. *N. mundana* occasionally at light in the Fen, but this species can be best captured with the hand-lamp in the "droves" outside the actual "Fen." *Lithosia griseola* occurred sparingly at light, but more freely the last few nights at sugar, whilst its var. *stramineola* was rare. We took three only between us. *L. lurideola* was not common. Larvæ of *Euchelia jacobææ* were reducing the *Senecio* to ribbons, whilst *Chelonia caia* now and again showed up at light. *Arctia fuliginosa* occurred as a second brood: we got some four or five specimens at light. One larva only of *Spilosoma urticæ* occurred, and though I nursed it because I did not know the habits of the animal, it acted contrariwise and died. *Liparis auriflua* was everywhere, and an occasional *L. salicis* at light. *Bombyx neustria* on one night came in crowds. We boxed and bottled two or three dozen, and I consider them one of the best results of the trip, owing to their variation. But Bertie did better in this line with *Odonestis potatoria*. He took some five dozen specimens, comprising no less than four yellow males, one or two males almost of the colour

of *Lasiocampa quercifolia*, the rest being intermediate, some closely approaching the purely yellow males, others rich brown with the inner marginal areas yellow, others entirely reddish-brown, and sometimes with a purplish tinge. Only some ten specimens of *L. quercifolia* came to light, and of these four specimens, one a large female, were in the net at the same time. Larvæ of *Saturnia carpini* appeared to be fairly common. The second brood of *Cilix spinula* was abundant, and by simply setting those that I could not help netting I got a nice series. *Pygæra bucephala* came to light, as also did one male *Ptilodontis palpina* and several *Notodonta ziczac*; the larvæ of the latter also occurred on the sallows, and were of various sizes. *Gonophora derasa* was on the sugar, but worn, and *Cuspidia tridens* occurred until the last day of my visit. Larvæ of this latter species from those just hatched to full-fed were noted at the same time. Only one *C. psi* occurred, very different from the pale forms captured last year, this one resembling our London var. *suffusa*. *C. aceris*, *C. megacephala* and *Viminia rumicis* also visited the sugar. The second brood of *V. albovenosa* was more than usually abundant. Bertie took about twelve or fifteen at the light. These were all of the pale var. *albida*, Auriv. (var. *argentea*, Tutt), which seems to be the usual autumn form, the type and var. *ochracea* constituting the bulk of the spring emergence. *Leucania lithargyria* var. *pallida* turned up at sugar, whilst *L. impudens* (with very little variation this year) came to light during the time that sugar would not pay. *L. pallens* and *L. impura* were abundant, and *L. phragmitidis* with its vars. *pallida* and *rufescens*, appeared repeatedly during the last week both at light and sugar. *Cœnobia rufa* flew at dusk, but *Tapinostola hellmanni*, although worked specially, would not turn up in numbers. Bertie got about a dozen at light, and I got another couple of dozen perhaps, from the sugar, and this was all. A few of the specimens were beautiful examples of the red ab. *saturata* of Staudinger, and some were much dusted with black scales. Pupæ of *Nonagria arundinis* were found in *Typha*, the affected plants being at once detected by the yellow central leaf. *Hydræcia micacea* put in an appearance on the last night, whilst an odd specimen of *Axylia putris* occurred on the first night of our visit. *Xylophasia lithoxylea* and *X. polyodon* swarmed when sugar was attractive, but I saw no black varieties of the latter like those I got at Wicken last year. Of *X. hepatica* I saw one late specimen and several *Cerigo matura*. *Mamestra brassicæ* and *persicariæ* were the only representatives of their genus, whilst varieties of *Apamea didyma* were occasionally to be seen in profusion. *Helotropha leucostigma* occurred freely on two evenings, I boxed some seventy specimens, but although many looked very fine on the sugar, their evening and morning tales did not agree. and only about a half were really perfect. Some fine dark specimens of var. *albipuncta* and var. *lunina* occurred among them. *Miana strigilis* and *furuncula* both occurred very rarely, *literosa* rather more frequently, whilst *Chortodes arcuosa* came to light whenever it was attractive. *Caradrina taraxaci* was the only representative of the genus. I believe I have two specimens against three or four dozen captured last year. *Agrotis segetum*, *A. nigricans* and *A. tritici* var. *aquilina* were all rare, and I only saw one *A. ravida*, which I captured at light. *Triphæna janthina*, *T. interjecta* and *T. orbona* began to appear as I left. *T. pronuba* was in

more than its usual abundance. *T. interjecta* is peculiar in its habit and appearance on this Fen. I used to get it freely at Cuxton in July flying rapidly in the late afternoon sunshine over bramble blossom, and occasionally at sugar. Here it sometimes indulges in the former habit, but it comes very freely to sugar in late August, and last year I shook about five dozen grand specimens out of the sugared "knots" on one evening. This year, it was later in putting in an appearance, and I only got a very few. *Noctua augur* was worn, as also *N. triangulum*; but *N. xanthographa* and the second broods of *N. plecta* and *N. rubi* were in fine condition, and the last named plentiful. A few *N. festiva* and *N. baia* were observed, but *N. umbrosa* occurred more freely than any other member of the genus. Larvæ of *Taeniocampa stabilis* appeared to be common on the sallows. *Tethea subtusa* occurred twice at sugar, but of the genus *Cosmia* I only took five *C. affinis* against almost a hundred specimens of *affinis* and a few *pyralina* last year. *Hecatera dysodea* larvæ were rare this year. If our collectors would only carefully overhaul the lettuce flowers and seeds in country gardens, I feel sure this species would be less local. We used to get the imago years ago in Kent, but I did not know how to find the larvæ then. *Polia flavicincta* larvæ occurred commonly in Houghton's garden. *Cleoceris viminalis* came to light sparingly. I can never understand why this species is not commoner in the "Fens;" the same remark applies to *Dyschorista ypsilon*. *Euplexia lucipara* occurred, but *Aplecta advena*, which had been abundant, was over. *Hadena oleracea* and one *H. pisi* were the only representatives of the genus; the hedges and the undergrowth in the "drove," where I was so successful last year, had been cleared out, and perhaps seriously interfered with some of the species. Bertie took one *Plusia festucæ* at light, and *P. gamma*, of course, swarmed. Houghton bred a large number; two I selected are almost as purple as *P. pulchrina*, and one has no red gloss on it whatever. Even a common species like this is worth breeding. Two *Gonoptera libatrix* came to sugar, with a few *Nœnia typica* and *Amphipyra tragopoginis*. This, I think, completes the NOCTUÆ observed. Only *Hypena proboscidalis* occurred of the DELTOÏDES; and the PYRALIDES gave but few species. *Pyralis fimbrialis*, one only; *P. farinalis*, in abundance in the old barns in the village, with *Aglossa pinguinalis* and *A. cuprealis*. Of this latter species Mr. King of Glasgow got a very considerable number just previous to my visit. Two specimens of *Nascia cilialis* were taken at light, so fine as to suggest a partial second brood from the May moths. A few *Cataclysta lemnalis*, *Paraponyx stratiotalis* and *Hydrocampa stagnalis* were observed, but no *H. nymphæalis*. *Botys verticalis* swarmed round the outside of the Fen, *B. urticalis* and *Ebulea sambucalis* being almost as abundant. *B. fuscalis* had to be worked for to get a series, whilst an odd specimen of *E. crocealis* came to light. *P. forficalis*, *Scopula lutealis*, *S. olivalis* and *S. prunalis* were all common on the outskirts of the Fen, whilst an odd specimen or so each of *Scoparia cembræ* and *S. mercurella* were the sole representatives of this genus, except *S. pallida*, of which I got a very long and fine series of well-marked specimens. CRAMBIDÆ were scarce. *Crambus pratellus* *C. pascuellus*, *C. perlellus*, *C. tristellus* and *C. hortuellus* all occurred very sparingly on the Fen. *C. culmellus* was commoner, and by dint of hard work, walking through the sedge in Burwell Sedge Fen, I got a

series of *C. selasellus*. The species also came to light in Wicken. This is supposed to be a common species. I have never found it so, and lose no opportunity to take it whenever I meet with it, and find my correspondents want it. *Chilo phragmitellus* was the commonest species: the males coming freely sometimes to light, but the females were rarely to be met with. A fine black form of the ♂ was captured. *Schœnobius mucronellus* and *S. gigantellus* were both obtained very sparingly by Messrs. Houghton and Bailey. I was not working in that part of the Fen to which they appear to be almost restricted, and was therefore less fortunate. Of *Rhodophœa advenella*, two specimens unexpectedly turned up at light.

Of GEOMETRÆ, I took a fair number. *Epione apiciaria* was to be taken in plenty on some nights (very late) flying along the sallow bushes; some specimens have the outer band reduced to a minimum, but the females do not appear to be so variable as at Deal. *Rumia cratægata*, of course, occurred, so did the second brood of *Selenia illunaria*, though not at all commonly. One specimen of *Crocallis elinguaria* was netted at dusk, whilst *Boarmia rhomboidaria* (males and females) came freely to sugar on one evening. Of the genus *Acidalia—scutulata* and *bisetata* were common, but the form of the latter thickly suffused with dusky scales, was not met with this year. *A. immutata* came to light, and *A. imitaria* and *aversata* occasionally to sugar, whilst *emarginata* flew sparingly at dusk. *Cabera pusaria* and *exanthemaria* both flew among the sallows, and *Strenia clathrata* came rather freely to light. *Halia wavaria* occurred occasionally on the outskirts of the Fen, whilst *Abraxas grossulariata*, as usual, was in swarms. *Lomaspilis marginata* was only seen once or twice, evidently the precursors of an autumn brood. *Larentia didymata* occurred outside the Fen, and *S. pectinitaria* was taken at dusk, and also came somewhat freely to sugar. *Emmelesia alchemillata* flew very sparingly in the afternoon, and amongst the *Eupithecia—centaureata, vulgata, tenuiata, coronata* and larvæ of *valerianata* were observed. *Collix sparsata* occurred in abundance, in good condition, on our arrival, but gradually got worse, although remaining almost as abundant until the end of our stay. *Lobophora sexalisata* was evidently over, only two or three specimens being captured. I took a long series of *Hypsipetes elutata*. The "Fen" form agrees pretty generally with our South of England wood form, although pale central banded forms are rather more common, and the central band is often strongly tinted with reddish. Second broods of *Melanippe subtristata* and *M. fluctuata* began to put in an appearance, and I netted a considerable number of black-banded, with a small number of purple-banded, *unidentaria*. Only one or two of my captures appear to be referable to *ferrugata*. *Camptogramma bilineata* was of course abundant, but we could not find the larvæ of *Cidaria sagittata*. Some six years ago they were taken in great abundance on the *Thalictrum flavum*, growing all over the Fen; since then they have got very rare, and now appear to have become almost extinct for the time being, although they will most probably turn up as commonly as ever in the immediate future. Worn *Cidaria russata* were met with, and a fine series of *C. testata* taken. The latter are rather pale in coloration, rarely with the rich purple reflections characteristic of the North English and Scotch specimens of the species, and they are of rather large size. *C. fulvata* also

occurred, as did *Pelurga comitata;* whilst an odd specimen of *Eubolia mensuraria* brings the captures in this group to an end.

Among the TORTRICES I got more species. I saw two larvæ only of *Halias chlorana*, but *Tortrix dumetana* was much more abundant than last year, and I set a good number. *T. pyrastrana*, *xylosteana*, *rosana*, *heparana*, *ribeana*, *unifasciana* and *costana* were noted in more or less abundance, whilst a few *T. palleana* were captured. *Peronea comparana*, *perplexana* and *schalleriana* all turned up, and, as usual, together. I have seen a very considerable number of *perplexana* now, including several that have gone through Mr. Barrett's hands, and I am as unable as ever to distinguish them from *comparana*. That *comparana* and *schalleriana* are but colour varieties of one species has long been my opinion, and I expect to see all three telescoped into one species shortly by breeding from the egg. *P. variegana* occurred, and *P. shepherdana* was just commencing to put in an appearance. *P. hastiana* occurred in all stages—larvæ, pupæ and imago. I used to think this was double-brooded, but it appears in the Fen to occur all the year round without break. Houghton gets the imago in the winter and spring, and larvæ in May on to November, the imago occurring from June until the following May. Some of the larvæ I got were full-fed, some just hatched, whilst the moths were obtained at the same time. A few specimens of *Dictyopteryx uliginosana*: all of that form with the central black dot which, I believe, characterises the second brood, were taken, and *D. holmiana* noticed on the sugar. *Ditula semifasciana* came sparingly to sugar. I could not find a method to get this freely, although I believe it must occur rather commonly. Some fine fresh specimens of *Spilonota roseæcolana* were taken in the middle or August, whilst the extremely local *Sericoris fuligana*, on one evening only, came for a short time rather freely to light. The black form of *S. lacunana* was only once noticed, and *Orthotænia antiquana* and *O. ericetana* occurred very rarely at light. *Sciaphila chrysanthemana*, a very large and dark form, came to light; whilst a late specimen of *Clepsis rusticana* and a ♀ *Bactra lanceolana* were netted. The dwarf sallow form of *Hypermecia cruciana* was common. The second brood of *Phoxopteryx paludana* was just beginning to put in an appearance, as also was *P. inornatana*; but I got a fine and long series of *P. siculana* from the buckthorn. This was the first time I ever saw the species other than very rarely. *Pædisca solandriana* was represented by an odd specimen, as was *Ephippiphora cirsiana*. *Opadia funebrana* larvæ were in evidence as usual. How well Houghton appears to breed this species! My captures of *Stigmonota orobana* were this year restricted to two or three specimens. This was due to the fact that I did not often spend the afternoon in the Fen. *Catoptria* was represented by two or three specimens each of *scopoliana* and *expallidana*, whilst the second brood of the so-called Fen *Eupœcilia vectisana* was accompanied by a few specimens of *E. notulana* and *E. udana*. *Xanthosetia hamana* was abundant. An odd specimen or two of *Conchylis stramineana* brings our captures in this group to a close.

Among the TINEINA our captures were few enough. Rarely was the weather still enough to give them a chance of flight. *Plutella cruciferarum* was everywhere. *Phibalocera quercella* came to sugar, as did some dozen species of *Depressariæ*, all, I believe, common. Of the

Gelechiæ—inornatella, *oblitella*, *morosa* and *quæstionella* were the best, whilst *subocellea* was the most abundant. Several species of the genera *Coleophora* and *Elachista* occurred, I hardly know which yet. Of the PTEROPHORI, the second brood of *Leioptilus microdactyla* occurred somewhat freely on *Eupatorium cannabinum*. *Mimæscoptilus bipunctidactyla* were kicked up or came to light, whilst a small dark form of what may be *Pterophorus pteroda tyla* (*monodactyla*), which I reported last year, occurred sparingly. *L. pentadactyla* was the only other species observed.

As will be at once noted, my captures were almost all common species, nothing rare turning up. However, the setting of these kept me employed, and gave me a quantity of additional material to study local variation.—J. W. TUTT. *August*, 1892.

Lee.—There has been a great change in the entomological scene during the last month, and if all goes on as it promises at present this should be a really good season. After last year, the worst on record from my experience, and 1889 and 1890 not much better, this is really refreshing. At present, insects are swarming. *Eupithecia dodoneata*, though late, has been commoner than usual, but in lovely condition. *Phibilapteryx vitalbata*, *Lygdia adustata*, *Lobophora hexapterata*, *Chesias obliquaria*, *Cidaria silaceata* and many others have been far more frequent than usual, some of them abundant. TORTRICES are coming out; *Grapholitha lactana* is already flying thickly over the aspens, *Capua ochraceana* in profusion among the hornbeams, and I took a few *Lobesia servillana* among the sallows a few afternoons ago. There is, of course, a rush of species in my breeding cages, and setting is quite a business. Larvæ also seem plentiful.—C. FENN, Eversden House, Burnt Ash Hill, Lee. *June 5th*, 1892.

Honiton.—The earliest sallows were in full bloom the last week in March. On one evening only were moths abundant, and they were the commoner *Tæniocampidæ* and hybernated *Cerastes*, with one rarity to make up—a female *rubiginea*. The latter is of the pale ochreous-brown ground colour form, and has since obligingly laid eggs. Some hatched early in May, and are feeding on apple and dandelion, though they refused the latter when young. I visited the sallows frequently, but found few visitors, as the bright moon and east winds in the earlier part of April, whilst they were at their prime, seemed to keep insects away, the only successful night (that on which I took *rubiginea*) being cloudy, and a warm west wind blowing gently. *Cidaria silaceata* emerged in my cages (indoors) towards the end of April, from larvæ bred last autumn. All the imagines, except one, have the dark transverse band divided by a fine pale line; whilst some imagines taken at light at the end of last August, and so fresh that they had evidently just come out, all have the band without this division.[1] I think there can be no doubt that there are two broods in the south of England, one at the end of April and the beginning of May, and the other towards the middle and end of August. I have taken four female *Numeria pulveraria*, flying during the day time in bright sunny weather along the hedgerows. If missed at the first stroke of the net, they dive down into the herbage, but are easily disturbed by the stick or captured by searching. They appear to be looking out for sallow on

[1] *Vide*, *Ent. Rec.*, vol. ii., p. 297.—ED.

which to deposit their eggs, for one I took early in May between twelve and one o'clock, in very perfect condition, laid a large batch of eggs within an hour or two, on being placed in a large chip box covered with muslin. I do not remember seeing this habit of the female noticed, as the insects are usually supposed to fly at dusk. I have bred two *Ephyra omicronaria* from an ordinary marked female, in which the usual wing marking, a central spot, is obsolete. Is this a common variety elsewhere? I netted one here last spring in a wood, in which it is very indistinct—only just visible, but I have never before come across specimens in which it was absent.

Leucophasia sinapis is supposed to be a wood insect, but both last year and this I have taken it flying along the hedges of the lanes far away from any woods or copses. Its smaller size and fluttering slow flight easily distinguish it at a distance. I killed two with ammonia, but find they are permanently damaged by it, as the yellow colour induced does not pass off. Can anyone tell me, from their experience, whether the vapour of vinegar or some mild acid would restore the original pure white colour? My son took a specimen in very fair condition, as late as the beginning of the present month.—W. J. RIDING, Buckerell Lodge, Honiton. *June 21st*, 1892.

Essex Marshes.—I found *Dichrorhampha plumbagana*, *D. plumbana* and *Psyche radiella*, on the 6th of May, at Benfleet; *Stenopteryx nocturella* (common), *Heliodes arbuti*, *Eupœcilia affinitana*, *Argyrolepia æneana* (one only), *Spilosoma mendica*, and larvæ of *Eriogaster lanestris* on the 29th of May, near Benfleet; *Sericoris littorana*, *Agdistis bennetii*, *Fumea reticella*, at Shoeburyness, on the 6th June, but not a single larva of *Bombyx castrensis* was seen on this occasion, although many well advanced larvæ were found a fortnight later. *Coleophora salinella* and *C. artemisicolella* were taken on the 10th June at Benfleet, and a pair of *Eupithecia subumbrata* netted, in the middle of June, at Shoeburyness. *Tortrix costana* occurred, on the 24th of June, in the same locality, whilst *Leucania phragmitidis*, *Dichrorhampha politana*, *Ephippiphora trigeminana*, *Catoptria hypericana*, *Homœosoma binœvella* and *Crambus selasellus* were taken on the 15th of July at Benfleet. On the 18th of July, *Catoptria scopoliana* and *Euchelia jacobææ* were on the wing, the latter in fair condition, whilst larvæ of the same species—adult and young—were on the foodplant. *S. noctuella*, *Cynthia cardui* and *Plusia gamma* were common on the Essex marshes in May. I was particularly pleased to take *Fumea reticella*. It occurred so freely that, in a short visit, I was able to take thirty-one specimens.—F. G. WHITTLE. *July 25th*, 1892.

Isle of Wight.—Since my note of August 1st (*ante*, p. 181) we have here had some very fine sunny weather, and bearing in mind the old adage of "making your hay while the sun shines," I have "made hay" to a considerable, although not literal, extent amongst our welcome immigrant, *C. edusa*, recollecting that it is fifteen years since we all had a similar opportunity. My friend, Mr. Abbott, joined us on the 18th, and our united captures since *edusa* appeared (July 21st) have resulted in filling up a very long series of picked forms, including no less than twenty-one var. *helice*, among which are two very fine forms, intermediate between the var. and the type, in which the usual white or very pale shade of *helice* is replaced by shades of very pale yellow

inclining to a deeper bistre towards the middle of the upper wing. In another case, the usual bright orange spot on each underwing, which stands out so conspicuously in normal *helice*, is of nearly the same pale shade as the ground colour, and is only rendered conspicuous by a slightly different tone, and by the circumscription. "Sugaring" has been very unsuccessful, but is now improving again nightly, excepting when south-westerly gales sweep the Downs almost bare of everything except the enthusiastic "bug-hunter," who, in his vain struggles to obtain *Agrotis obelisca* for his friends, will face the elements in their most blustering moods. *A. saucia* has turned up singly again after being absent here for several seasons, but *Aporophyla australis* at present, is very scarce, the first specimen taken, although much earlier than usual (August 19th) being much worn, whilst those taken since have been in fine condition. Amongst species now occurring at (to me) unusually late dates are *Thyatyra batis*, at sugar, August 22nd and 25th; *Calligenia miniata*, also at sugar, about August 25th; *Viminia rumicis*, still at sugar, August 29th; *Arctia menthastri*, at rest, August 29th. In addition to these, several double-brooded species are now out in fine condition. *Acidalia emutaria*, very fine, but scarce; also *A. promutata*; while *Noctua rubi* and *Agrotis puta* appear nightly fresh as paint, and *Cosmia affinis*, with one *C. diffinis*, again graced the sugar last week. *Miana furuncula* is still deferring its "positively last appearance for the season." Amongst RHOPALOCERA, *Pararge megæra* and *ægeria* are still on the wing, plentifully and in good condition, whilst *Vanessa atalanta* and *cardui* are more plentiful than usual. Among the more frequent visitors at sugar lately are *Amphipyra pyramidea*, still in fine condition, *Noctua c-nigrum* and, of course, *xanthographa*, with an occasional *Hadena suasa*. It would be interesting now that *Colias edusa* is plentiful, if all intermediate varieties between the type and var. *helice* could be recorded and described, or, better still, figured or exhibited and discussed, with any other interesting forms, among which are, in my case, males with the underwings displaying a most perfect and beautiful pale violet metallic reflection resembling that on mother-of-pearl. This is not at all general in freshly emerged specimens, although, I fancy, not to be seen in any but such. The females also vary widely in the size of the yellow spots in the black border on the upper wings. I have them from almost black borders to a most beautiful form in which the yellow and black is almost equal. After recording "appearances," it is quite refreshing, from the setting-board point of view, to note the absence of any usual visitor, which, in this case, is *Sphinx convolvuli*, and which, up to date, we have sought long, but in vain.—ALBERT J. HODGES. *August 29th*, 1892.

Box Hill.—I went on Saturday last (August 20th) to Box Hill for a few hours, and it being a glorious day I found common butterflies abundant; of less common species, *Hesperia comma* was plentiful and in good condition. In a field chiefly full of thistles, below the Hill, I was lucky enough to take 1 *Colias hyale* and a splendid specimen of *C. edusa* var. *helice*. *C. edusa* was fairly numerous. I have seen a few stray specimens of *C. edusa* in this neighbourhood since the 4th inst., and one at Rainham, Essex, on August 12th. I have tried sugar, off and on, for the last fortnight, but found it almost a blank until Satur-

day last, when moths, though common, were numerous. It seems as if the moister air after the thunderstorm of the 18th had brought them out again, as the night was clear and not very warm, and by no means as typical a mothing night as many of the previous ones, which proved useless. I found sugar very attractive here on June 6th to 10th, and also on July 2nd, on which last night I took 4 *Leucania turca*.—WALDEGRAVE, Bookham Lodge, Cobham, Surrey. *August 22nd*, 1892.

Swanage and South Wales.—This has been, as was generally expected, a great *edusa* year at Swanage. I found it generally along the coast, but in one field of white clover it literally swarmed, and here I was fortunate enough to take 4 specimens of the var. *helice*, and had I been able to stay longer I have little doubt that I should have had more, as the females were just emerging. In South Wales *edusa* was fairly common on the sand hills and along the banks by the side of the railway; but failing to find its head-quarters I did not do so well with it as at Swanage; however, I heard of 2 or 3 *helice* being taken by some young beginners. I am told that *edusa* has also been taken in this locality. *Cynthia cardui* I have not come across in any abundance. At Swanage I took 2 fresh specimens, and saw another that had every appearance of being a hybernated specimen. *Nudaria mundana* is very abundant here at present, but sugaring a great failure.—E. C. DOBRÉE FOX, Castle Moreton, Tewkesbury. *August 16th*, 1892.

Chinnor, Oxon.—*Colias edusa* is now out here (August 16th), but is not plentiful. It was a wonderful season early for a short time, but I did not consider July at all equal to the anticipations I had formed. I have, however, taken nearly 50 *Agrotis ravida* and 2 *Mamestra abjecta*. Only two of the former were taken at sugar; the others were taken by searching out-houses, etc. Yesterday I had a larva of *Cuspidia alni* brought in: it has spun up in elder pith, excavating the hole in about four hours.—A. J. SPILLER, Chinnor. *August 16th*, 1892.

Southsea.—This is a poor locality after the Isle of Wight, but I have found a few larvæ of *Agrotis ripæ* (only 4), and on August 14th *Colias edusa* was flying at East Southsea in a stiff wind and with very little sunshine. It was at the extreme point of land belonging to the War Office, facing the inlet locally known as Langston Harbour, and close to Hayling Island. Four females were captured and a few others seen, besides one very pale specimen, which was probably the var. *helice*. *Pararge semele* was abundant, and the females in very good condition, but no other insects occurred beyond occasional *Plusia gamma* and *Cynthia cardui*.—JOHN HENDERSON, Streatham.

London District.—I have observed *Colias edusa* at George Lane, Woodford, and High Beech, Epping; also a few between Mitcham and Streatham, Surrey.—ID.

Lowestoft.—Yesterday afternoon, August 22nd, while collecting in a small field of lucerne near here, I took 11 *Colias hyale* and 16 *C. edusa*, including 1 var. *helice*. The latter species was swarming, and I could easily have taken 100.—RUSSELL E. JAMES, Hornsey Lane, N.

Lincolnshire.—On August 25th, as I was driving from East Barkwith to Panton, I noticed a *Colias* at rest on a grass-stem under a hedge. I descended, and, on boxing it, found it to be a large ♀ *edusa* in fine condition. I hear of another specimen being taken at Toft, near Market Rasen.—(Rev.) G. H. RAYNOR, Panton Rectory, Wragby.

Middlesex.—The Rev. C. A. Lloyd, Rector of Rand, near Wragby, informs me that he saw (at close quarters) a specimen of *C. edusa* at Hampstead Railway Station on August 18th.—ID.

Sevenoaks.—I had the good fortune to take 1 var. *helice*, though I only netted a dozen typical *Colias edusa* at Sevenoaks.—A. J. CROKER, *August 22nd*, 1892.

Canterbury.—What numbers of *edusa* there are this year. I have taken one with a silvery border instead of a black one, also several females with almost spotless borders.—J. PARRY.

Clapton.—It may be interesting to note with regard to the appearance of *Colias edusa* in London, that single specimens have been seen by my brother in our garden at Clapton on July 31st, and on Clapton Common on August 13th, and also by myself on the railway bank near Hackney Downs Station on August 17th, on which date I also saw *Vanessa atalanta* flying among the traffic on London Bridge.—R. W. ROBBINS, 79, Chardmore Road, Upper Clapton, N.E. *August 18th*, 1892.

Castle Cary.—*Colias edusa*, *Cynthia cardui* and other Lepidoptera are frequent in this locality. I saw both the above species on the wing today, though it was windy.—W. MACMILLAN, Castle Cary. *August 6th*, 1892.

Reading.—It is a butterfly year this time. Most species have been plentiful. *Colias edusa* was not uncommon here in the early part of June, all worn though, so I let them pass on. Why will people hunt these down, and call them fresh? I am afraid a good many have been slaughtered, and the chances of a good lot in the autumn so much lessened. *Cynthia cardui* and *Vanessa atalanta* were swarming at the same time. Nobody raises a doubt whether these were hybernated. *Limenitis sibylla* has not been so abundant for years. The same with *Leucophasia sinapis*, *Nemeobius lucina* and all the Fritillaries. *Apatura iris* is in great force, often five or six to be seen about one tree. *Vanessa antiopa* was seen twice in the beginning of June, not taken, but unmistakably identified. The buckthorn is in rags, the work of larvæ of *Gonepteryx rhamni*. Larvæ of *Cynthia cardui* and *Vanessa atalanta* are on the nettles and thistles everywhere. For the moths the season is a good one all round. Crowds of NOCTUÆ and GEOMETRÆ showed up at sugar till July, when the quantity became less but the quality better. *Cosmia pyralina* is on now, both here and at Swansea. The latter place seems to be better for this species than Reading, judging from the last night's sugaring I had there, when Captain Robertson and I took fifteen specimens among the elms, on which they probably feed. Some few species which were plentiful last year have not yet appeared. *Noctua stigmatica* I have not seen yet; but for the last day or so the wind is set dead east, and I don't expect to see it much till we get a change. Is hornbeam the chief foodplant of *Capua favillaceana*? I have reason to think it may be Spanish chestnut, in some districts at least. This species is uncommon at Reading. Out in the Hastings woods I found it very plentiful in May. A large proportion of the undergrowth in the woods about Hastings is chestnut, and *favillaceana* always turned up amongst this and not among the hornbeams; in one wood in particular the whole cover was chestnut, and "the" only moth there was *favillaceana*, but this

absolutely swarmed at rest on the stems and branches. I find on referring to my note-book, that in the only place I take the moth near Reading, there is some chestnut growing but no hornbeam. *Argyrolepia hartmanniana* too, what is it supposed to feed on? At Swansea last year I got this moth commonly by brushing *Scabiosa succisa*, wherever the plant grew. I mentioned this to a friend the other day, and he brought in *hartmanniana* a day or so after from his place, Basingstoke, where he had never seen it before. He brushed it out of the Scabious in the same way. The larvæ of *Cidaria silaceata*, which I have just brought home, how like they are to the capsules of the *Epilobium* on which they are feeding!—W. Holland, Reading. *July 27th*, 1892.

Norfolk Broads.—I have just returned from the Norfolk Broads, where I cannot say I have found the season a good one. The weather was, however, much against collecting, and almost the whole time I was there the weather was cold and dull with a N.E. wind. Only a couple of *Leucania brevilinea* rewarded my efforts, exactly the same number as I obtained last year. *Nonagria cannæ* were scarcer than last year. *Lithosia muscerda* and *Nonagria neurica* I never saw.—A. Robinson. *August*, 1892.

Swanage, Ringwood and Neighbourhood.—Night work during a stay in the above named locality from July 18th to August 2nd was very disappointing, owing no doubt to the general prevalence of N.E. winds and cold nights. Day work, however, was more satisfactory. *Argynnis paphia*, *A. adippe* and *Limenitis sibylla* were very plentiful, and in good condition at the beginning of my stay there, but they very soon became chipped and worn. *A. paphia* var. *valesina* was fairly common. It has a habit of resting with closed wings on the tree trunks, to which it bears a striking resemblance. The type *paphia* does not appear to rest like this, but goes among the leaves. *Gonepteryx rhamni*, *Vanessa io*, *V. atalanta*, *V. cardui* and the autumn brood of *Pararge ægeria* were just appearing by the end of July. I took *Thecla quercus* in the forest, and a nice freshly emerged lot of *Lycæna ægon* on the heath on July 21st. Among the moths I took *Calligenia miniata*, *Lithosia complana*, *Callimorpha dominula* (worn), *Cilix spinula*, *Cuspidia psi*, *Calymnia trapezina*, *Polia flavicincta*, *Metrocampa margaritaria*, *Tephrosia crepuscularia*, *Thera variata* and *Melanippe hastata*, at rest; *Anarta myrtilli*, flying over heather; *Bupalus piniaria*, flying round pine; *Heliothis dipsaceus*, disturbed among grass in a meadow, and *Ellopia fasciaria*, *Eupisteria obliterata*, *Macaria liturata*, *Eubolia mensuraria* and *E. plumbaria* by beating. Then as to night work, flower blossoms were the most productive; *Lithosia mesomella*, *Leucania lithargyria*, *Xylophasia polyodon*, *Caradrina alsines*, *Agrotis porphyrea* (common), *Noctua triangulum*, *Triphæna subsequa* (1), *T. orbona*, *T. pronuba*, *Pachynemia hippocastanaria*, *Eubolia plumbaria*, *Endotricha flammealis* and *Ebulea crocealis*, on heather; *Caradrina blanda* and *Apamea didyma*, on bramble; *Eupithecia absynthiata*, on ragwort; *Lithosia complanula*, *Hepialus hectus*, *Xylophasia lithoxylea*, *Apamea didyma*, *Miana furuncula*, *Acidalia emarginata* and *Anticlea rubidata*, flying at dusk in lanes. Treacle only produced *Cymatophora duplaris* (1), *Leucania lithargyria* (1), *Noctua brunnea* (1), *Nœnia typica* (2), *Orthosia ypsilon* (2) and one or two *Triphæna pronuba* and *Boarmia*

repandata, while light attracted *Bombyx neustria*, *Odonestis potatoria*, *Habrostola triplasia* and *Selenia illunaria*. Two days at Swanage, July 29th and August 1st, was productive of some splendid fresh *Colias edusa*, *Arge galatea*, *Lycæna alexis*, *L. corydon*, *L. alsus*, *Thaumas tages* and a fine lot of *Hesperia actæon*. *Macroglossa stellatarum* were flying about commonly, but I only succeeded in catching one. *Zygæna filipendulæ* were flying as thick as flies. I also took *Bryophila glandifera*, *B. perla*, *Phytometra æenea* and *Miana furuncula*.—W. Bloomfield, 14, Canterbury Road, London, N. *September 5th*, 1892.

Manchester.—On August 26th I saw a fine female *Colias edusa*, taken that day in a field near my house. I do not think *edusa* has been seen in this neighbourhood since 1877. A friend of mine then took two of the type and one *helice*, about a mile away from here.—B. H. Crabtree, The Oaklands, Grange Avenue, Levenshulme, Manchester. *Sept. 5th*, 1892.

Marlow, Bucks.—Some *Colias edusa* have been brought in to me here, but I have not seen a single var. *helice* at present, nor have I taken *C. hyale* yet.—(Rev.) Bernard Smith. *August 28th*, 1892.

Forest Gate.—I have only seen one *Colias hyale* here yet; this I unfortunately missed.—B. L. Nussey. *August 29th*, 1892.

Colchester and Essex Coast.—My son Bernard took a good ♂ *Colias hyale* last Saturday, 13th inst., and his younger brother Philip took one on Monday, 8th. We have also taken several nice varieties of *C. edusa* and *Cynthia cardui*, but have looked in vain, thus far, for *Pieris daplidice*, *Argynnis lathonia*, which ought to turn up this year, *Deiopeia pulchella*, which may be expected again now, *Vanessa antiopa*, etc. On Wednesday, the 17th, I took two nice *C. hyale*, and one of my sons took one, and saw two others. The species is not in the least likely to to be confined to this district, so that there will be plenty of records in another month probably. We took the first at St. Osyth, on the Essex coast, and the others at Myland and Sexden, two of the outlying parishes of the borough of Colchester.—W. H. Harwood, Colchester.

Cambridge.—I have not much to report this season. The "lions" of the year have not neglected us. *Cynthia cardui* in profusion in May and June, and again now; one (to my knowledge) *edusa* was seen in June. They are quite common now in suitable localities. What an insect the "clouded yellow" is to carry the entomologist back; quite a golden landmark in one's life! Two or three weeks ago, on the old Roman road, three miles out of the town—happy hunting-ground for *Lycæna alsus*, *Chærocampa porcellus*, *Anticlea sinuata*, and in days gone by of *L. acis*—three otherwise sedate enough entomologists might have been observed rushing madly about after yellow butterflies; not, indeed, catching so many as if they had stood still and struck at them as they flew by, but it was fifteen years ago since either of them had seen *edusa*, except one or two worn ones in 1889, and the old association and memories called up by the sight of these yellow strangers flitting about in all directions took them back those fifteen years, and so they must needs run for the time. *Plusia gamma* has fairly out-*gamma*-d itself for commonness, and *Plutella cruciferarum* thoroughly maintains its reputation as a pest. *Apamea ophiogramma* has been with me the best thing of the season. Working in a small locality close by, where it used to be taken years ago, I succeeded in getting a good series; and two

other collectors, at least, were equally successful. They were on the wing a long time; the first I know of was taken about the 5th or 6th of July. I took them in first-rate condition myself from the 15th to the 26th, after which I was obliged, owing to other matters, to abandon them, but I know of captures up to the 5th of August. They are genuine dusk flyers, about half-an-hour being the time allotted one to get them. I took three or four by walking about with a light after dark, but dusk is undoubtedly *the* time. They fly quietly, look very light on the wing, settle about on different flowers, *Scrophularia* and nettles for preference, and are very quiet in the net and easy to box.—WM. FARREN, Cambridge. *August 17th*, 1892.

Liverpool.—Colias edusa has been fairly abundant on the sandhills on the north side of the river, and I took one at Wallasey. *Agrotis præcox* was somewhat more plentiful than usual; *A. cursoria* and *A. valligera* scarcer; whilst *A. tritici* showed up with some nice forms. *Vanessa atalanta* and *Cynthia cardui* have appeared in some numbers. We do not usually see much of either in this neighbourhood. A week ago we found about thirty larvæ of *Macroglossa stellatarum*, since then incessant rain has stopped collecting.—G. A. HARKER, 100, Huskisson Street, Liverpool. *September 5th*, 1892.

Hackney.—The enclosed specimen of *Colias edusa* is the third taken in our garden at Hackney this season. I have not noticed it in London before. I took a male of this insect on June 15th last at Walmer, Kent, which had, from the freshness of its colour, only just emerged from the chrysalis. Is not this very early?—WALTER BUTTERS, South Hackney, N.E. *August 29th*, 1892. [Although fresh in colour, I should say that the specimen taken on June 15th had not recently emerged and was most probably an immigrant. It was just at that time that specimens (presumably immigrants) were common all over the southern half of England.—ED.]

Bournemouth, Swanage and New Forest.—I saw a specimen of *C. edusa* flying over the heath at Bournemouth in the beginning of July, but in spite of a long chase did not succeed in taking it, not having a net with me. Soon after that several were seen at Swanage, where the species was very plentiful on August 5th, but no var. *helice* were to be seen. During August I hear that *edusa* was to be seen even in the gardens at Bournemouth. I have noticed that *Macroglossa stellatarum* and *Uropteryx sambucata* were both unusually plentiful this year; whilst I found *Argynnis adippe* far more common than usual during July in the New Forest. With careful searching I managed to take several *Nemoria viridata* at the end of June at Bournemouth, where I also took *Nola confusalis*, *Amphydasis betularia*, *Pseudoterpna cytisaria*, *Anarta myrtilli*, *Sesia bembeciformis*, *Liparis salicis*, *Phytometra ænea*, *Heliothis aipsaceus* (1), *Nola cucullatella*, besides many other common species. Out of three expeditions which I made in July to the New Forest, two turned out hopelessly wet. But during the three days I took *Argynnis paphia* and *Limenitis sibylla* plentifully, though they did not seem quite so common as last year. I was rather early for var. *valezina*, but we secured two or three, and missed as many more. *Phytometra ænea* was fairly common, as was *Argynnis adippe*. I took a few fine specimens of *Argynnis aglaia*, and one or two *A. euphrosyne* in good condition, late though it was. Amongst other things I took *Hepialus hectus*, *Metro-*

campa margaritaria, *Lithosia mesomella*, *Aplecta nebulosa* and one *Thecla quercus*. I also took five small larvæ of *Dicranura furcula*; whilst those of *D. vinula* and *Gonoptera libatrix* were common. At Swanage on July 15th I found *Hesperia actæon* fairly common and in good condition, and hear that on August 5th they were more plentiful than ever; as, alas! were its captors. *Phytometra ænea* and *Macroglossa stellatarum* were on the wing, as were also *Zygæna filipendulæ* and *Z. loniceræ*, of the latter of which I took a nice variety[1] with confluent spots.—(Rev.) J. A. MACKONOCHIE, Douglas, N.B. *September 5th*, 1892.

Lanark, N.B.—In Scotland insects seem rather more plentiful than last year here (Douglas), which is, however, saying but little. *Charæas graminis* has been very common in August, and I have taken some nice dark forms of *Cidaria russata* and *populata*. Besides these I have taken *Carsia imbutata* fairly plentifully in one particular spot, *Eubolia mensuraria*, *Cidaria dotata*, a few *Coleneæ haworthii*, *Miana fasciuncula*, *Plusia iota*, *Oporabia filigrammaria* (1), *Coremia propugnata* (1). I have also seen one or two *Vanessa urticæ*, *Pieris rapæ* and *Cœnonympha pamphilus*—quite a marked occurrence, as butterflies of any description are a great rarity here!—ID.

Swansea.—On August 20th I took a very fine ♀ *Sphinx convolvuli* hovering over a bed of *Nicotiana affinis*, which I had planted on purpose; and on the 22nd another female was brought into the house by a cat; whilst on the 31st I took two males, but have seen none since, the weather being too stormy.—R. B. ROBERTSON, Sketty Park. *September 5th*, 1892.

Sussex and Hampshire.—I have much pleasure in recording the occurrence of *Colias hyale* this year in Sussex. I have taken six specimens as follows:—August 20th, one, about three miles east of Brighton; 22nd, one, near Lewes; 23rd, two, between Lewes and Brighton; 25th, one, about three miles west of Brighton; 30th, one more in the same place. It thus appears to have been thinly distributed over a somewhat large area in that part of Sussex. In addition to the above I have seen six specimens on the setting boards of two Brighton collectors. Var. *helice* appears to have been somewhat more plentiful than *C. hyale*, thirteen specimens having fallen to my net, seven in Sussex and six in this part of Hampshire. One specimen has the spots in the border almost entirely absent, and two or three *edusa* vary in the same way. Another *helice* is of a pale saffron colour, and I have one *edusa* intermediate in colour to this and the type. It seems somewhat difficult where the colour is so variable, to say exactly where *edusa* ends and var. *helice* begins.—H. PACKHAM, Crofton, Fareham, Hants.

Perth.—I had a look at the ragwort bloom for the first time this season last night; and as it was moist and warm, there were a great many insects at it, especially *Noctua xanthographa*, four or five of this species being on every bloom. Amongst my captures I took three newly-emerged *Agrotis obelisca* in perfect condition, besides a number of finely marked vars. of *A. nigricans*. If this warm weather continues, I believe we shall have a successful autumn collection.—J. WYLIE, Perth. *August 24th*, 1892.

[1] Is the captor sure that the species was not *trifolii*? It is so rare an occurrence for *loniceræ* to have confluent spots.

Boxhill and North Kent.—In company with a member of the North Kent Society (Mr. E. Knight), I paid a short visit to Boxhill, and found *C. edusa* just coming out. We managed to take seven after great labour, on the slopes of the hills between there and Reigate on July 24th.

From July 24th to August 21st, Mr. Knight and I spent all the time we could get in the North Kent Marshes, between Higham and Woolwich, where we found *C. edusa* very abundant, especially in the clover and lucerne fields; of the first fifty taken by us, only thirteen were females. We also captured *Colias hyale*, and saw one other. The second week of August seemed very like the first; *C. edusa* was abundant, var. *helice* and *hyale* occurred but very sparingly, our record being two of each (of the latter). On August 21st we had our best day. Messrs. J. Wilson, E. Knight, and myself went down to Gravesend, counting fifty-seven *edusa* on the railway banks going down. Near Gravesend we got into one clover field where *edusa* nearly equalled in numbers the whites; and what was better than all, var. *helice* and *hyale* occurred in greater numbers than we had seen it before. I should think one out of every five or six were *hyale*, and one out of every ten or eleven were var. *helice*; we managed to secure twenty *hyale* and nine *helice*. We saw *C. edusa* flying in the main streets of both Gravesend and Northfleet, and severally have actually been taken in the Royal Arsenal. We found the males near Gravesend quite twice as numerous as the females.—H. ALLBUARY, 42, Elm Street, Plumstead.

Wimbledon.—Having found Wimbledon a rather productive locality last year, I determined to visit it again this year, partly to increase my own collection, and partly to work up some beetle localities for the London fauna list, which has been taken in hand by the City of London Entomological Society. Three visits have been made, one in April, another in June, and a third in August. The weather having been rather cold, I restricted my operations on the first visit to tuft-cutting in the ravine, and only took one good insect, namely, a nice specimen of *Colon serripes*; but as this was the first *Colon* I had ever taken, I was tolerably well satisfied. In June I spent a whole day on the common with my brother, and insects were plentiful in quantity and good in quality. By sweeping down the ravine I took *Zeugophora subspinosa*, *Malthodes atomus*, *Telephorus lateralis*, and, rather strangely, *Hydropones memnonius*. By searching among the reed refuse I secured *Lustus rufescens* and *L. fulvibarbis*, *Acupalpus gyllenhali*, *Oxypoda umbrata* and *nigrina*, *Agabus didymus* and *paludosus*; and while searching I saw an *Anchomenus*, running up one of the reed stems, which proved to be *A. livens*. By the banks of the stream running by the side of the common, *Callicerus obscurus* and *Cercyon aquaticus* turned up, and by beating I took *Rhynchites megacephalus* and *Erirhinus tremulæ*, while my brother took *Rhynchites æneovirens* and *Cœliodes subrufus*. Coming back, as it was getting dusk, I recommenced sweeping in the hope of getting some club-horns, and I succeeded in getting one *Colon rufescens*, also *Oedica castanea* and *Galeruca tenella*. In August I confined my operations almost entirely to sweeping, but the wind was strong and cold, and insects were not plentiful. The sheltered spots on the common, however, produced *Phytobius waltoni*

and *P. comari*, and single specimens of *Oxypoda umbrata*, *Dorcatoma flavicornis*, *Balaninus cerasorum*, and *Plectroscelis subcærulea*. The banks of the stream again produced *Cercyon aquaticus*, and the little beating that was done resulted in three *Ceutorhynchus rugulosus*.—H. Heasler, 17, Danby Street, Peckham, S.E. *September 5th*, 1892.

Isle of Wight.—In addition to the late occurrence of previously-named species, I was very surprised to capture at sugar (September 3rd) a very fine *Triphæna subsequa* in the same wood that my previous specimens were captured in. Earlier in the week (about 1st inst.) my friend Mr. Abbott, and my brother, captured a single belated *Bisulcia ligustri*, also in the finest condition.—Albert J. Hodges.

Lithosia deplana (helvola).—While in the New Forest last month I found the larvæ of *L. deplana* very abundant, beating it commonly from both oak and beech. All the authorities give lichen as the foodplant; but I found that most of the larvæ were on trees with no lichen at all. I tried feeding them on oak leaves and beech leaves (both fresh and dried), also on lichen from both trees, but they refused everything. Perhaps some collector, more successful than myself, can inform me what they feed on, and whether they will thrive in confinement.—Reginald S. Sellon, The Hall, Sydenham.

Capture of Deiopeia pulchella in August.—On August 14th, after getting the *C. edusa*, recorded elsewhere, I chased and captured a moth on the shore, not ten yards from the sea, facing Hayling Island; it showed white wings and frequently settled, but was off again. At first I took it to be a large Pyrale or Crambus, but found to my delight that it was *D. pulchella*. I see a notice of another taken at Gosport, and personally consider them foreigners; for the wind was blowing so strongly that it would not have taken many hours to cross the Channel that morning.—J. Henderson, Streatham.

Acherontia atropos in Northumberland.—I had sent to me by a friend a living specimen of *Acherontia atropos* on July 27th, taken near Morpeth.—John Finlay, Meldon Park, Morpeth. *August 5th*, 1892.

Sphinx convolvuli in Lincolnshire.—On the evening of August 20th, whilst I was watching some plants of *Nicotiana affinis*, a specimen of *Sphinx convolvuli* appeared on the scene. It came to the tobacco flowers, but, being alarmed, flew off to some sweet peas. Then it visited a phlox, but soon returned to the tobaccos, hovering over which it was quickly captured. It proved to be a female, and was so denuded of scales that I put it down to be an immigrant. Panton is not more than twenty miles distant from the coast.—(Rev.) G. H. Raynor, Panton Rectory, Wragby.

Deiopeia pulchella at Folkestone.—I have a very fine female specimen of *D. pulchella*, taken here on August 17th. It is the largest specimen I ever saw; it measures nearly two inches across the wings. —W. J. Austen, 2, Radnor Street, Folkestone.

Plusia orichalcea.—I tender my most grateful thanks to Mr. Farren for his "wrinkles" on the method of finding *P. orichalcea* larvæ (*ante*, vol. ii., p. 294). I went out in search of them the first week in June, as suggested by him, and took twenty larvæ on June 2nd; also two on the 3rd. I only came across one or two afterwards. The time mentioned seems the best time to get them, as they are full-fed

or nearly so. I dug up some roots of *Eupatorium*, and planted them in the garden. Having the larvæ on the plants I went away with a clear conscience. On looking in my pupa box to-day, I found eleven beauties had emerged, and two cripples.—R. B. ROBERTSON, Swansea. *July 11th*, 1892.

TIMES OF FLIGHT.—I see (*ante*, p. 186) it stated by Mr. Quail that *Saturnia carpini* males fly between 2.30 and 4.30 p.m., there is no doubt but that they do; but my experience of the species is that the males are on the wing before 11 a.m.; and I have always found them more difficult to net between 11 a.m. and 2 p.m., *i.e.*, at the hottest part of the day, when the sun is shining.—J. FINLAY, Morpeth. *August 29th*, 1892.

LATE APPEARANCE OF NOCTUÆ ON SUGAR.—During the years that I have collected at "treacle," I have often looked for the "second flight" of moths that the old collectors talk of, but hitherto without success, although after a good night I have frequently turned out after supper for a late round, and my usual reward has been at most one or two of the fewer good species wanted. Last night, however (September 6th), lighting up at 7.30 p.m., with cold wind (S.W.) and very clear sky, we met with fair but continued success until about the usual hour and a half had expired, when we retired, moths being scarce the last round. On looking out about 10.30, I found the full moon very much overclouded, and that, with the warmth and absence of dew, tempted me out again. I found common species on very plentifully, in fact, more so than the first round, including *Noctua xanthographa*, *c-nigrum*, *A. segetum* and *suffusa*, with a few *P. meticulosa*, etc. Amongst these were scattered about the usual sprinkling of the species I was working for, *viz.*, *A. obelisca* and *A. australis*; and in several rounds I took five of the latter against three the early part of the evening, and just half the number (which was already a "*record*") of the former species that I had previously secured, thus bringing up the evening's total to a larger take than I have ever had of *obelisca*. On the last round (about 1 a.m.) common things still came on freely, and I had just previously secured my second *A. saucia*.—ALBERT J. HODGES, Freshwater. *September 6th*, 1892.

ERRATA.—p. 148, line 20. For "8 to 12 p.m.," read "from 8 a.m. to 12 noon."

p. 187, line 4 from bottom. For "anything but sallow," read "nothing but sallow."

p. 176, line 17 from bottom. For "*vitalbata*, etc., 16 days," read "*vitalbata*, etc., 6 days."

SOCIETIES.

CITY OF LONDON ENTOMOLOGICAL SOCIETY.—*August 18th*, 1892.—Exhibits:—Mr. Smith, *Hesperia lineola*, *Acidalia immutata*, *A. emarginata* from Leigh, Essex; and a series of *Pamphila actæon* from Swanage. Mr. Tremayne, *Bombyx quercus*, bred from larvæ from Deal: also *Hemithea thymiaria* and *Phorodesma bajularia* from the New Forest. Mr. Nicholson, a series of *Vanessa cardui*, bred from ova

from Chattenden, one example having a curiously malformed posterior wing. Mr. Bacot, a ♂ *Colias edusa* and, a series of *Noctua festiva* from Epping Forest. Mr. Broomfield, a fine ♀ of *Argynnis paphia* from Ringwood, having a distinct suffusion of dark green on the upper side, and a fine blue tint on the underside; also *Lasiocampa quercifolia*, *Triphæna subsequa* and *Heliothis dipsacea* from the same locality. Mr. Allbuary, *Colias hyale*, a fine series of *C. edusa*, including one example of the var. *helice*, and a series of *Odonestis potatoria* from Abbey Wood. Mr. Huckett, *Halias quercana*, *Noctua rhomboidea*, and examples of a third brood of *Selenia illunaria* from Epping Forest. Mr. Heasler, a number of "weevils" from Wimbledon, including *Phytobius waltoni*, *P. comari* and *Balaninus cerasorum*.

September 1*st*, 1892.—Exhibits:—Mr. Jackson, a fine var. of *Papilio machaon*, in which the two black blotches on the costa of the fore-wings had coalesced; also a fine example of *Polyommatus phlæas*, without the copper band on the posterior wings, and a gynandromorphous specimen of *Trichiura cratægi*. Mr. Gates, a number of species taken this season near Hammersmith, including *P. salicana*, *P. neglectana*, *P. bilunana*, *D. oliviella*, *C. laburnella*, *Platyptilia gonodactyla*, *Elachista cygnipennella*, *S. internana*, *G. hermanella*, *G. velocella*, *P. cruciferarum*, and one example of what he believed to be *Solenobia triquetrella*. Mr. Bacot, a variable series of *Bombyx neustria* bred from larvæ from South Devon, and from Hadleigh, Essex; the series included a var. of the male, in which the central band was resolved into two triangular marks, one on the costa and the other on the inner margin. Mr. Smith, two living larvæ of *Cuspidia tridens*, and examples of *Zygæna trifolii* and *Gnophos obscurata* from Swanage. Dr. Sequeira, *Colias edusa*, *Eupithecia subfulvata*, and a pair of *Leucania lithargyria*, the male being set underside to show a tuft of black hairs situate behind the third pair of legs. Mr. Tutt considered this tuft as a "secondary sexual character," and referred to somewhat similar tufts in *Apamea*, *Plusia*, etc. He also stated that in many species "tufts of hairs" and "scale patches" were intimately connected with the "scent glands," with which many species were provided. Mr. Sykes, *Colias hyale*, *C. edusa* and var. ♀ *helice*, and a specimen of *Polyommatus phlæas*, with a xanthic posterior wing almost devoid of pigment. Mr. Clark, a very dark female *Odonestis potatoria*, and a fine specimen of *P. phlæas* without any of the characteristic copper colour, but of a brassy or yellowish tint. Mr. Tutt stated that he thought this and the many similar varieties recorded from time to time to be instances of the ill-development of the pigment, yellow being ordinarily the next colour in genetic sequence, below red. Mr. Goldthwaite, two vars. of *Spilosoma menthastri* from Walthamstow, one specimen closely approaching in its markings those of *S. urticæ*; also a series of *Colias edusa* from Folkestone. Mr. Riches, a long series of *Abraxas grossulariata*, and living larvæ of *Dianthœcia capsincola*, feeding on the seeds of sweet-william. Mr. Soul, a large number of species from the neighbourhood of Tunbridge Wells, including *Coremia propugnata*, *Macaria liturata*, etc. Dr. Buckell, living larvæ of *Eupithecia oblongata*, ten days old; also a series of *Acidalia immutata* from Leigh, Essex, and read the following notes on the latter species:—"This is an insect, about which Newman appears to have known but little. Merrin states that it is

found in fens and similar localities in June and July, and sometimes again in September; he also adds that the larva hybernates, feeds on some marsh plant, and will also eat knot-grass (*Polygonum*). Mr. Seymour St. John gives purple loosestrife, plantain, yarrow, valerian, and meadowsweet as regular foods, and chickweed, groundsel, dandelion, whitethorn and clematis as plants upon which the larva will feed in confinement. The natural foodplants appear to be quite as much hedgerow plants as fen plants. The best time for the imago would appear to be about the second week in July. Those shown were taken on July 15th, and on the 26th they were *passé*. They rise out of the long grass as one walks along. Ova were deposited last year on July 26th, hatched on August 12th. On the 30th, I noticed that the larvæ were growing very slowly; they rested on the stems and leaves of the chickweed, curled up in the shape of a note of interrogation (?), a similar attitude to that assumed by the larvæ of many *Eupithecia*, etc. The colour was of a dingy green without any characteristic markings. The larvæ were exhibited before this Society on October 1st, and on the 4th I noticed that some appeared nearly full-grown, whilst others remained quite small; some of the larger ones began to make earthen cocoons on October 10th, and the first pupated on the 17th of the same month. None of the moths, however, emerged. The insect seems to be widely distributed, but local. It does not figure in any of our London lists, but is recorded from the neighbourhood of Swansea, Leigh, Romsey, Hertford and Warrington. Mr. Tutt also records it from Wicken Fen, Mr. Simes from Matley Bog near Lyndhurst, and Mr. Fenn from Deal." Mr. Tutt also read a paper on his work at Wicken Fen.[1] In Coleoptera Mr. Heasler exhibited two very local species from Mitcham, *Trechus discus* and *Hydroporus ferrugineus*; he states that his example of the latter species was taken in his hand, and that he felt sure he could have procured more if he had had a water net.—A. U. Battley and J. A. Simes, *Hon. Secs.*

Birmingham Entomological Society.—*August 8th*, 1892.—Mr. C. J. Wainwright exhibited some nice specimens of *Xylota sylvarum* from Wyre Forest, forms of *Amphydasis betularia*, intermediate between the type and var. *doubledayaria*, etc. Mr. G. W. Wynn, a box of moths taken on sugar during two nights at Wyre Forest, including a nice row of *Aplecta tincta*, *Cossus ligniperda*, *Cymatophora or*, etc. Mr. A. Johnson showed series of *Chærocampa elpenor*, *Sphinx ligustri*, etc., and some varieties of *Arctia caia* from larvæ fed on lettuce.—Colbran J. Wainwright, *Hon. Sec.*

South London Entomological Society.—*Thursday, August 25th*, 1892.—Although there was only a small attendance, a few good exhibits were made. Mr. Nussey exhibited a specimen of *Polyommatus phlæas* with only the central spot on the fore-wing, and another with entirely dark hind-wings, *Lycæna icarus* with the dots on the undersides developed into dark dashes, and a dark banded *Argynnis euphrosyne*. Mr. Allbuary, a fine series of *Colias edusa* and its var. *helice*, taken near Gravesend; also two living *Vanessa urticæ*, in one of which the whole of the normal bright red colour was of an ochreous tint; a large specimen of *Melanippe hastata* from Shepherdswell; *Deiopeia pulchella* taken on Whit Monday at St. Margaret's; *Lobophora hexapterata* from

[1] Printed *ante*, p. 196.

Bexley Woods, and *Acidalia rusticata* taken as late as August 21st. Mr. Hawes, a second brood of *Thanaos tages*. It was remarked that it had been seen in the New Forest on August 20th. Mr. Adkin exhibited *Apatura iris*, and Mr. Carpenter a series of *Argynnis paphia* var. *valesina*, also a specimen with pale patches in the centre of the wings. Mr. Hawes had taken *Colias hyale* and *edusa* at Felixstowe, whilst Mr. Carrington, referring to the variation of *edusa*, remarked that he had heard of no very unusual varieties except a *helice* with green hind-wings, and a typical specimen almost as small as *phlæas*.

Thursday, September 8th, 1892.—Another small attendance, many members still being away from town. Mr. Frohawk exhibited *Satyrus semele* bred from ova laid by a female captured in the New Forest, Mr. Fenn a brood of *russata*, the ♀ having been captured at Chattenden. There were practically three forms, (1) with a whitish central band, (2) with a black central band, (3) with a yellow band = var. *centumnotata*. Of the latter variety one specimen showed the yellow of a particularly pale coloration, looking almost as if worn. Mr. Fenn further exhibited *Colias edusa*, a female quite black banded, another with only one or two yellow dots on the band, also var. *helice;* also specimens of *Cosmia pyralina* from Reading. Mr. Winkley, a peculiar variety of *Catocala nupta*. Mr. Frohawk said that he had examined the specimen by daylight, and found the normal red colour of the hind wing was in this specimen pale brown, shot on the surface with purple. By gaslight the specimen looked of a purple-brown tint. The fore-wings were also much darker than is usual in this species. Mr. Tugwell, three dark-banded specimens of *Spilosoma lubricipeda* with their Yorkshire parents. These three were only in pupa three weeks, emerging in August last. Mr. Carpenter, *Sirex juvencus* from Belsize Park. Mr. Manger, a specimen of *Cynthia cardui* taken at sea 30 miles from Algiers. Mr. S. Stevens, a rather large specimen of a *Botys* allied to or identical with *fuscalis* taken at Totland Bay in June last, with typical *fuscalis* and *terrealis*. Mr. Fenn thought there was some difference in the transverse lines from *fuscalis*, but after careful examination Messrs. Frohawk and Tutt could find no point of difference between this specimen and *fuscalis*, except its size, a slightly sharper angle at the upper part of the elbowed line and some pale patches between the nervures of the hind-wings, but the two latter points were both exhibited in one or other of the typical *fuscalis* exhibited. Mr. Tugwell considered it was a large *fuscalis*. Mr. Harry Moore exhibited the following Orthoptera from Cadiz:—*Decticus intermedius*, *D. albifrons*, *Œdipoda fasciata*, and *Pachytylus cinerascens*. Mr. Jenner Weir exhibited four specimens of *Pyrameis cardui*, which he had reared from larvæ collected at Westgate in July last on thistles, the chrysalids had been subjected immediately after metamorphosis to a temperature of 57° Fahr., the result was that the whole of the eight specimens which had become imagines showed a decided darkening of colour, chiefly brought about by the black of the wings occupying a much larger area, and the fine innermost row of spots on the lower wings being not only of increased size but often confluent. Also a specimen of *Epinephele ianira* ♂, with a clearly-defined ocellus on the upper side of the lower wings. Messrs. Frohawk and Tutt remarked that they had never noticed an ocellus on the lower wings in this species.—Ed.

The Entomologist's Record AND JOURNAL OF VARIATION.

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THE GENUS ACRONYCTA AND ITS ALLIES.

By Dr. T. A. CHAPMAN.

(*Continued from page* 195.)

MOMA *ORION* (*continued*).—In the second skin, the larva is at first colourless as it was on hatching, but as it grows, it takes on some colouring, faintly outlining the richness of the adult larva. The tubercles are still large, giving a rugged outline to the larva if closely looked at. The 5th and 6th segments are widest. It narrows towards the head and again to the 11th segment, the 12th and 13th are again very large, forming two dorsal humps, the head is pale, with two transverse rufous bands. The general colour is creamy yellow, with a red brown dorsal line and another below the trapezoidals. On segments 3 and 4, this lower line runs through the outer trapezoidal and another red line runs between them, the result of the five lines and the tubercles between is to strongly suggest a slashed and puffed sleeve. On 5 and 7 the dorsal line is absent, and is faint on 10. On 6, the two lines meet in a broad band, round the anterior trapezoidal, and in front of the posterior the incisions are also red brown. On 8 and 9 the dorsal line sends a curved branch forward between the trapezoidals, forming a trident-shaped mark. On the 11th segment, the colour is increased by the dorsal line widening behind the anterior trapezoidals and the outer one behind the posterior. 12 has the dorsal trident, but no lateral line, 13 and 14 have no lines.

On the 4th to 10th segments (and the others are similar), the anterior trapezoidals have four secondary hairs, the much larger posterior have five secondary hairs and an indication of an outer row of 10 or 12, the supra-spiracular have also five

or six secondary hairs; there is no trace of the central dot seen in the first skin, but there is, between and behind the anterior trapezoidals, a depressed area fading out forwards, with straight sides and angulated behind. The post-spiracular dwindles, but the sub-spiracular has acquired some secondary hairs. On 11, the tubercles are smaller and have fewer secondary hairs than the others. On 3 and 4, the outer trapezoidals and supra-spiracular are nearly fused. The arrangement of hairs on the 2nd segment is so complicated, and they are so abundant as to make description practically out of the question. The head is nearly colourless and has at least five hairs on either side. The prolegs have now assumed the unilateral form with 9–11 hooks—the anal have nine hooks.

The larva still eats the lower side of the leaf, leaving the upper cuticle and veins, it never leaves any cell untouched, so that a leaf often presents a very perfect skeleton, but with the upper cuticle. They still march forward shoulder to shoulder, their heads exactly in line and their sides touching, and sometimes 40 or 50 in a row. When disturbed they drop by a thread, and throwing the head back, have the form of a letter S. I do not know how they manage, in the wild state, to reform their procession after such a disturbance.

In the third skin (after 2nd moult) it has much of the colouring of the adult larva, the head is rather deeply cleft, giving an angular outline much like that of *Acronycta (Cuspidia) alni*, and is black, with green radial marblings, but the proportion of each is very variable; it is very rounded, smooth and polished, and has a dozen or more hairs on either side, of which four or five are decidedly larger than the others.

On 5, 6 and 12 the tubercles are large, forming humps. The general colour is pale yellowish green, marbled dorsally with blackish red, 6 is the darkest segment, and has only a small creamy patch behind the posterior trapezoidals; 5, 7 and 10, have a clear, creamy dorsal lozenge, including the trapezoidals on the other segments; 8, 9 and 12 have the trapezoidals yellow, and the anterior are so also on 3 and 4. On 8, 9, 11, 12, the ground colour tends to form a broad subdorsal pale line through the posterior trapezoidals. There are no dark markings on 13 and 14. Except some long lateral hairs on 2, 3 and 4, which are dark, all the hairs are pale or whitish.

The supra-spiracular are dark on 2, 3, 4; from 5 backwards, pale. There is some reddish marbling below these; the

sub-spiracular tubercles are smaller and paler. Except the post-spiracular, which appears to be obsolete, all the tubercles are highly developed and have 5–10 hairs. The inner dorsal tubercles, however, of 3 and 4, are worthy of special note, they stand up, leaning somewhat forward, as great mammillæ, narrowing towards the apex. Other tubercles somewhat approach this form. When full-fed in this skin the larva has a riband-like aspect due to the sides being parallel and the back flattened, and the flattening appears more complete than it really is, from the arrangement of the colouring, *viz.*, broadly noted, a yellow larva with the flat dorsum coloured dark claret or deep red, in which are three yellow lozenges stretching across segments 5, 7 and 10, and in the others, two yellow spots, marking the outer ends of such lozenges, these being smallest on 6.

After the third moult (in fourth skin) it is a red larva with black and yellow markings, a black lump on 6th segment (with two yellow dots behind) a yellow raised patch (hump ?) on 5, 7 and 10, and a small black hump on 12. The red colour is due to the trapezoidals which are so coloured and of large size. On the yellow patches (5, 7 and 10) they are yellow, and on 6 black; on 12 their inner halves are black. The back is otherwise black from the upper margin of the supra-spiracular tubercles, with two very narrow yellow dorsal lines indicated, one between and one below the trapezoidals; a conspicuous yellow (nearly white) patch is present on each side in front of hump on 12. The sides are marked by several alternate lines of yellow and fuscous, the lower parts are very delicate and transparent still, and may be called colourless or pale fuscous. The hairs are whitish and longer than the diameter of the larva, more than twice this on 2, 3, 4, 12 and 13. The head is black with yellow marblings and a yellow patch at upper end of clypeus, and one on each side of this.

From this to the last skin there is little change except in the abundance and conspicuousness of the hairs. In the last skin these are either rufous or whitish, but always so abundant as to make it rather a hairy larva, they especially hang abundantly over the head Skye-terrier fashion.

A specially pale larva possesses yellow lozenges on segments 4 to 10 or 11, encircling and including the trapezoidals, much like those on *A. alni*. On 5, 7 and 10 the tubercles are of same colour, on 9 only, the posterior trapezoidals are red and linked together by a red band, in the others (4, 6, 8, 11),

the tubercles are all red. In the typical larva these red tubercles are so surrounded by red areas as to obscure what is essentially the case, *viz.*, the existence of these lozenges on all segments, only those on 5, 7 and 10 being conspicuous. The tubercles are still large, but the anterior are relatively small and almost in line with the posterior, across the larva. This results in a red band encircling each segment.

The most remarkable feature of the larva is the disappearance of the 2nd segment. This is reduced dorsally to an exceedingly narrow black collar, with two white transverse lines, but is hard to see from the thick fringe of hair passing forwards over the head from segment 3. Laterally, it possesses two tubercles of ordinary type, of a pale cinereous colour. Immediately behind these is the 1st spiracle, black and very large. The other spiracles are black, surrounded by paler areas.

At all stages the head is large, and this gives a somewhat unusual appearance at the moults. The dislocation of the head, which takes place when laid up, has a specially unhealthy and repulsive aspect, the large head giving an appearance as if the larva had just moulted, rather than of being about to do so. The progressive atrophy of the 2nd segment adds to the unhealthy look by placing the new head under a very bald membrane, out of place in a hairy larva.

In the fourth skin, certain larvæ become rather larger than others, and moult directly into the last skin, others take an intermediate moult. What I have to say on this point is, perhaps, more interesting than if I had succeeded in making more definite observations. I secured larvæ in 1887 from the New Forest, and had several broods from these in 1888. Not being prepared for this variation in moulting, the result was that I concluded I had made some error in counting the moults, and had got muddled. In 1889, however, I found that this variation occurred, about half the larvæ adopting each method. I fancied, therefore, that following *Orgvia antiqua* possibly they were ♂ and ♀. This proved, however, not to be the case; those that moulted an extra time grew much larger than the others, and when they emerged were larger and finer moths, the wing expanse averaging 39 to 42 mm., against 36–37 in the 4-moulters; but both sexes occurred equally in both sets. In 1890, I intended to make further observations, but most remarkably all the larvæ in the brood I especially watched moulted the full number of times (5). In 1891, I

failed to do anything, as but few eggs were laid, and many of these were infertile. I concluded that from in-breeding or domestication they were dying out. This year (1892), however, the broods were large and healthy, but, unfortunately, I had not leisure to observe them properly at the right time. A certain portion of pupæ usually remain over a second year, and I had this spring, pupæ of two years; however this may have affected the matter, it is somewhat curious that with no fresh blood introduced, the race should regain vitality and fertility.

To pupate, the larva likes to get under a dead leaf or other similar object, and makes a cocoon of loose matters on the surface of the ground; I succeed in making them spin up in sawdust, but they always do so close to the surface, and often aggregate their cocoons together. The cocoon is moderately firm, made with a pale reddish brown silk, and always has a very flimsy portion opposite the head; it is smooth, but not polished inside; the flimsy portion, seen from within, has hardly any silk, and the cocoon materials are held together by the larval hairs, which are interwoven with the cocoon throughout, and here hold the materials together, some of them being held by the silk round its margin. When the moth emerges, these hairs project more or less from the opening.

The pupa (Pl. I., figs. 4, 4a; Pl. IV., figs. 3a, 3b, 3c) is of the brown, corneous, brittle-looking texture, common among NOCTUÆ, but is firm and robust, length 15 mm. (wing portion 10 mm., abdomen 5 mm.), and breadth 5 mm. The wing portion fairly cylindrical, but slightly swelling towards the 8th segment, the 3rd also full, and the anterior tibiæ rather prominent; the abdominal segments taper regularly, but not so much as usual, the termination being broadly truncate instead of sharp. The brown colour becomes nearly black dorsally; the surface is highly polished, the wing and leg covers rather less so, being transversely striate, as is also somewhat the thoracic dorsum. The 2nd segment has a central ridge dividing two polished almost specular surfaces. The feature of the pupa is the sculpturing of the anterior borders of the segment most marked on the free borders of 9, 10, 11, contrasting with the glassy polish of the rest of the surface. It consists of a sharp raised margin, with a groove behind it, the groove being formed by a series of pits, to the number of 16 or 18, across the dorsum from spiracle to spiracle, the sharp ridge being depressed opposite each pit. Ventrally, these pits merge into a row of the ordinary small

pits common on pupæ, this row being the posterior margin of a set that extend up to the bottom of the incision. The anterior margin of the incision (where movable) is the ordinary membrane, but shagreened with much finer points than usual, the margin of the segment (in front) attached to this has a fine groove, the extreme margin against the membrane being raised into a high rounded ridge. The anal armature consists of six short, thick, recurved hooks, set round the dorsal semicircular margin of the wide truncate extremity, the anterior margin being rounded off and falling into the ventral surface of the pupa. The two marginal hooks are rather close together, the two dorsal hooks are about 1 mm. from these and from each other. This gives a measure of the comparatively large scale of the terminal arrangements, the hooks themselves, though very thick, being, however, very short. There are two very minute antenno-basal hairs, hardly to be detected except by knowing where to look for them; the want of this knowledge may be the reason that no others are seen.

The pupa often stays over a second winter, sometimes more than half the brood doing so, but it never goes over a third one.

The specimen that emerged from the wild larvæ, and those reared the first year from these, contained a proportion of Esper's type form with extra rows of black spots, but though I raised a brood with both parents of this form, I have not seen one since.

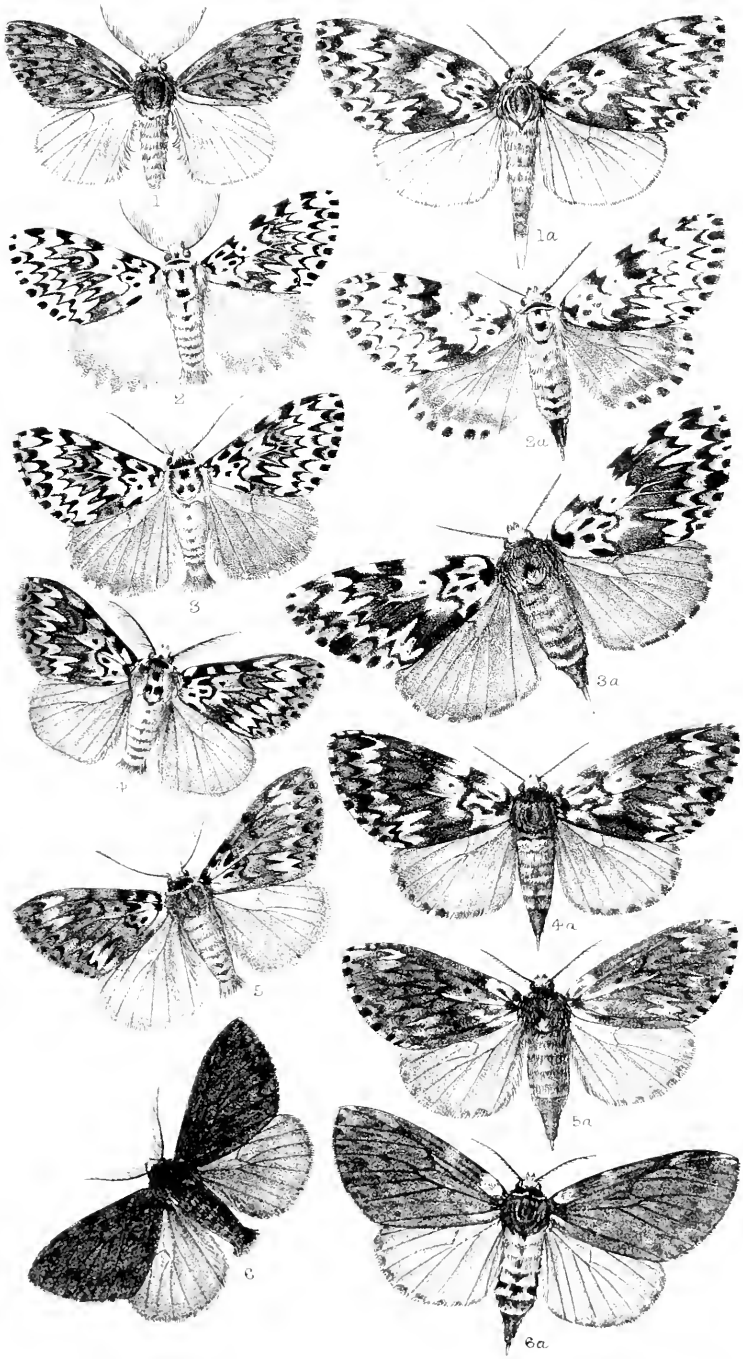
I have never met with the species myself, but I gather that it is quite a Southern species and rarely abundant anywhere, certainly most common in the New Forest.

(*To be continued.*)

VARIATION.

A MELANIC RACE OF LIPARIS MONACHA.[1]—In July, 1891, I received from a correspondent at Scarborough, a male and female of *L. monacha*, which had been captured in that neighbourhood. The male was very much suffused, and had lost the whole of the white ground colour, although the normal black markings were distinct enough in a very intense hue. The female was also suffused, but much less so than the male. The basal area was white, with the normal transverse markings, whilst the central area showed a not very intense transverse black band. The area following this was paler, almost white, and the outer area was again darker. The parent moths I exhibit, and they are figured, the male being fig. 1, and the female fig. 1a.

[1] Paper read before the City of London Entomological Society, September 15th, 1892.



Varieties of Liparis monacha

The female laid a batch of eggs numbering 110, from which I lost three larvæ, and bred all the rest. These I fed on oak in my own garden, and they throve admirably, all save the three already mentioned going into pupæ.

On June 21st the first specimen emerged, a ♀, and almost normal in colour and markings. This I gave to Mr. Bloomfield, a member of the City of London Entomological Society. The specimens that emerged after this, however, showed me that I had a most interesting race in my possession, for the emergence of a dark suffused specimen was rapidly followed by the emergence of others, some approaching the normal form, others more or less (generally more) suffused, with several specimens entirely black, and two males so intensely black, that the markings could only be detected with some difficulty (fig. 6). I gave one specimen away, beside that previously mentioned, and four pairs were wasted in getting a supply of ova. The remainder, consisting of fifty-five males and forty-two females, I exhibit to-night.

The first thing which strikes one is the general fact that there is a very strong tendency for the sexes to follow their respective parent forms. Thus the male parent was the darker, and only five out of the fifty-five males bred, show any white in their coloration. On the other hand, out of the forty-two females, thirty-six have more or less white in them, some being quite normal in their appearance, without even a semblance of a central band, others being more or less suffused, the darkest, however, having white patches in the basal and subterminal areas (*vide* figs. 5a and 6a). Fig. 6a represents the darkest ♀ bred.

In the males again, there are seven which show a mottling in these areas (basal and subterminal), having them paler than the rest of the wing (*vide* figs. 4 and 5), but they are in no way white. Corresponding with these there are five females, although in these five there are absolute traces of white, such traces, however, being slight enough (*vide* fig. 4a). The remainder of both sexes are black, that is, forty-three males and one female (*vide* figs. 6 and 6a). Of these forty-three males, two intensely black specimens have been before referred to. One of these is figured (fig. 6), but the figure is not so dark as the moth.

I think these facts point to the influence of the sexes on the progeny in a given direction. I know the material is too slight to generalise upon, but as a fact it must be taken for what it is worth.

There is a considerable amount of variation in the intensity of the coloration of the hind wings, following, as might be expected, to a great extent, the coloration of the upper wings, although not entirely so, and also in the fringes. In the paler males and females, the fringes are alternately light and dark. As the specimens get darker, the fringes also get darker, until, in the darkest specimens the fringes are concolorous with the rest of the wings.

There seems to be some sort of general rule as to the way the suffusion and darkening is carried out. The first step seems to be always the development of a dark transverse central band, due to the coalescence of, and the filling in with dark scales between the two wavy transverse lines, situated in the central area (*vide* figs. 3a, 4a). The outer margin is the next portion of the wing to become darker, the subterminal area remaining pale longer, whilst the basal area

remains pale the longest of all. These last two areas are often suffused (*vide* fig. 5a), but yet distinctly paler than the first two. Even in positively black specimens these areas can be traced.

The abdomina vary much. Of the males, four dark and three paler ones show the normal red and black rings. Two pale and three dark males show a whitish abdomen with blackish abdominal tufts. What should be the red rings in the other specimens, are suffused with dark, the normal dark rings being still darker. Two or three of the blackest show scarcely any trace of rings (*vide* figs. 5a and 6).

In the females, the same range may be traced but the red is much stronger and more persistent. In some of the palest specimens the red is quite brilliant. There is also a tendency in one or two specimens for the red to take a yellow or orange tint.

I might mention that the last of the specimens, a black one, came out on August 2nd, showing that the period during which they emerge extends over about six weeks.

In the Plate, figs. 1 and 1a are the parent moths (♂ = fig. 1, ♀ = fig. 1a). Figs. 2 and 2a represent the palest male and female of the brood; figs. 3 and 3a show the banded form; figs. 4 and 4a, a banded form with the outer margin suffused; figs. 5 and 5a have the basal and subterminal areas also suffused, whilst fig. 6 (♂) is entirely black, 6a (♀) also black with the exception of the two basal marks shown paler in the figure.—J. A. Clark. *September 15th*, 1892.

Varieties of Vanessa atalanta and Colias edusa.—I bred a splendid variety of *Vanessa atalanta* last week, of which the bands on the upper wings are a very pale yellow, and the margin of the hind wings are of the same colour. I also caught on August 14th, a variety of *Colias edusa* (*helice*), the first I have seen or heard of in this district for fifteen years. The type is very numerous here this season.—H. T. Exeter, Dartford. *August 17th*, 1892.

Scientific Notes.

Coremia ferrugata and unidentaria.—The figures of the genital organs of these insects, given by Mr. Pierce in the August number of this magazine (p. 177) are very distinct, and caused me some surprise, as I have seen specimens of the one form said to have been produced from ova laid by the other. I accordingly examined these organs in some males of both forms, with the result that I found all to resemble the figure attributed to *C. ferrugata;* the serrations of the hook, and the angular projection preceding it, were equally developed in both forms, and I did not in fact perceive any difference between them.

I suppose it is open to anyone to maintain that my supposed *unidentaria* are only varieties of *ferrugata*, and that there is a true *unidentaria* which I do not possess; my specimens are, however, certainly such as commonly pass for *unidentaria*, and until I see examples of anything different, I shall continue to regard the two forms as mere colour varieties of the same species.

Perhaps I may be permitted to add that, whilst the form of genital organs is doubtless usually constant in normal individuals of the same species, yet abnormalities are liable to occur in these as in every other

structure.—E. Meyrick, The College, Marlborough. *Sept. 17th*, 1892. [This want of corfirmation of Mr. Pierce's work by so experienced an entomologist as Mr. Meyrick, will necessitate further experiment. There is no reason to suppose (even though Mr. Meyrick himself suggests it) that the specimens examined by him were not *unidentaria*. Of course, the specimen examined by Mr. Pierce may have been abnormal. I do not like to suggest a not unlikely alternative, but had the body of another species been attached, to perfect the *unidentaria* before it came into Mr. Pierce's hands?—Ed.]

Variation in Size brought about by food.—The size of *Selenia illustraria* is much affected by foodplant; those fed on ash or lime are larger than those on oak or hawthorn, and the larvæ also are very distinct in colouring on each tree, assimilating to the twigs. But the various foods have no marked effect on the colour of the imago.—E. A. Bowles. *July*, 1892.

Phigalia pilosaria ♀ seeking Male.—In connection with Mr. Moore's note (*ante*, p. 165), a most interesting note on the probability of male *hirtaria* attracting the female, by Mr. Silcock is to be found in the *E.M.M.*, vol. xiv., p. 43.—J. W. Tutt.

Assembling.—I do not know whether it has ever been put on record that *Satyrus semele* "assembles" after the manner of the Bombyces, etc., by "following the scent," and not (or not solely) by its sense of sight, as is usual, I believe, with the butterflies. Happening to pill-box a ♀ specimen the other day, and transfer the box to my pocket, I soon noticed a ♂ flying round me, and even settling about my person; as *semele* is not generally a sociable insect, I guessed the cause, and, taking the box from my pocket, held it in my hand, when the male almost immediately settled upon it. In a very few minutes some half dozen were flying about me, evidently in search of the captive ♀. One thing I noticed which may be worth mention—that a sort of blind instinct seemed to lead them to seek her near the ground, more than one settling on my foot as I stood, though occasionally they found their way up to the elevation of the box.—Louis B. Prout, Marine Villa, Sandown, I.W. *18th August*, 1892.

Current Notes.

Mr. E. Saunders has found *Elenchus tenuicornis*, Kirby, to be parasitic on a Homopterous insect of the genus *Liburnia* (probably allied to *brevipennis*). The Rev. A. E. Eaton writes a description, and gives figures, of the same species (*E.M.M.*, p. 250).

The Rev. C. T. Crutwell records the capture of *Ellopia fasciaria* var. *prasinaria* (the green form), *Crambus salinellus* and *Leioptilus lienigianus* at Aldeburgh in Suffolk.

Mr. Elisha publishes a description of the larva of *Swammerdamia apicella* (*comptella*), and states that they feed on the underside of the leaves of sloe-bushes, being solitary when young, and becoming gregarious as they get older.

Dr. Mason states that, when on a visit to the Rev. A. Matthews of Gumley, he noticed a Pyralid which eventually proved to be *Hercyna phrygialis*, Hb. The specimen is said to have been captured in

Scotland, bears a slight superficial resemblance to *Psodos coracina*, and occurs commonly in the Alps and in the Scandinavian mountains, so that collectors in Scotland ought soon to render an account of it.

Mr. Saunders adds *Psallus albicinctus*, Kirschbaum, to the list of British Hemiptera. A single ♀ example was beaten off a sallow on the 13th of July, at Chobham.

Colonel Partridge records having seen a *Pieris daplidice* at Folkestone, whilst his groom saw a *Deiopeia pulchella*. He also saw a specimen of *Plusia moneta* on the boards of a beginner, who had taken it at light.

Specimens of *Deiopeia pulchella* are recorded (1) from Battle, captured by Miss Roper on June 4th; (2) from Fonmon Castle, taken by Mr. Jones on June 8th; (3) from Southampton, by Mr. Rybot on June 10th.

The record of the occurrence of *Tapinostola concolor* in Staffordshire, in July last, to which we at once drew attention (*ante* p. 178) has proved to be incorrect as was expected.

Lord Rendlesham and his sons captured eleven specimens of *Sphinx pinastri* at Woodbridge, Suffolk, during the daytime in the first part of August, and left several damaged specimens on the trees. Ova were obtained, and larvæ were recorded as feeding up on September 4th.

The *Botys* referred to *ante*, p. 216 is recorded in the official report of the South London Ent. Society as "a new species of *Botys* allied to *fuscalis*." The specimen is certainly a large *fuscalis*, and that was the general opinion of the members present who knew the genus. It is a pity to introduce a supposed new species in this manner. If some authoritative entomologist describes a species and gives it a name the matter can be thrashed out, but this method is altogether objectionable and unscientific.

Mr. Bateson, at the Meeting of the Ent. Soc. of London on October 5th, exhibited specimens of *Saturnia carpini* which he had fed up in a white muslin sleeve, and which had spun their cocoons in white paper; also others which had spun up in a dark muslin sleeve in dark paper. There was no difference in the colour of the cocoons, thus showing that the larvæ had not been influenced by their surroundings.

Mr. Poulton then read a paper and stated that the larvæ of *Amphydasis betularia* when exposed to light were very sensitive to environment. He reared some in the dark, these showed no variation, another lot was kept in darkness during the day, and exposed to the light of a paraffin lamp by night. These produced but slight variation. He found the colours very little altered in the last stage, the previous stages being those in which the larvæ were most susceptible. The action of artificial and distinct colours in the larvæ did not produce the same colour in the larvæ, thus orange produced green, blue produced dark brown, etc. *Melanippe montanata* larvæ were sensitive to the action of light, *Rumia cratægata* very sensitive, whilst those of *Catocala electa*, *C. elocata*, *Hemerophila abruptaria* and *Boarmia roboraria* proved also sensitive. On the other hand, *Gnophos obscurata* larvæ did not respond in any way to the action of light.

Messrs. A. Robinson and Jäger have been successful in capturing *Callimorpha hera* again this season in South Devon.

Plusia moneta pupæ are recorded as taken by Mr. Gervase Mathew in Kent (*vide*, Report of Ent. Soc. of London in this number).

NOTES ON COLLECTING, Etc.

COLIAS EDUSA AND C. HYALE IN 1892.—The event of the year, entomologically, has been another influx of *Colias*. It is but rarely we are favoured with an appearance in numbers of both our British species *edusa* and *hyale* in the same year; but this has been one of the few years in which such an event has occurred, and will go down to posterity, if not with 1835, 1857, 1858, 1868, 1875 and 1876, when both species were almost equally abundant, at any rate, with such years as 1826, 1843, 1844, when *edusa* was very abundant, and *hyale* by no means rare. In the year 1842 *hyale* was exceedingly abundant, but there were no *edusa*; in 1868, the *hyale* greatly outnumbered the *edusa*; whilst in 1859, when *edusa* swarmed, there was only one record for *hyale*, and in 1877 (probably the "record" year of the century for *edusa*) there were practically no *hyale*.

That neither *edusa* nor *hyale* have a permanent home among us, has been most positively demonstrated, although in most years the sheltered nooks in the Isle of Wight produce a few specimens, and the information which we have now at hand, and the carefully recorded occurrences of the appearance of the species, both in 1877 and the present year, demonstrate beyond doubt the fact that a large number of specimens come into the country as immigrants in the early months of the year. These are most prolific, and their progeny, finding ready and suitable feeding grounds in our clover and lucerne fields (both of which plants are largely cultivated all over the country), abound in the latter part of July and thoughout August, the offspring of these again appearing before winter finally sets in. There are, I know, lepidopterists, who, in the limited light of their own individual experience, still believe in triennial, septennial and other "ennial" appearances of this species, just as there are others to whom the terms "migration" and "immigration" are like the proverbial "red rag to the bull," but the former is nonsense, and the latter have a vast array of facts to support them, at any rate, in our larger and strong-winged species.

As in 1877, *edusa* this year appeared first in May. At the meeting of the Entomological Society of London, Messrs. Weir, Bower and others noted their appearance near London. Records from Bognor, Weymouth, Doncaster and Wallasey, showed that their distribution south, west and north was pretty extensive; but there appeared to be no record for Scotland or Ireland. These were denominated by the captors as being "fresh," "fine," "worn," or "tattered," according to the individual standard set up by the observer as to the condition of specimens in general. I can only re-echo Mr. Holland's query, "Why will people hunt these down and call them fine?" In this immigration, *edusa* was very much commoner than *hyale*, a few var. *helice* appearing with the typical forms of the former species. These worn specimens were noted until the second week in July (my last observation was on July 9th), and by that time all except a few of the more powerful specimens had died off.

The relative numbers in these early specimens were, as might have been expected, maintained thoroughout. *Edusa* has been much commoner than *hyale*. In fact, the var. *helice* of the former species has

been commoner than the latter species. The first specimens of *edusa* which were British fed appeared in the Isle of Wight on July 26th, the appearances being pretty general all over its area of distribution by the end of the month. As was to be supposed, the south coast has been its great home, but it is doubtful whether any English counties have not been visited by the welcome stranger. Even in the heart of London it has occurred; and a little lad brought me a fine female from his back garden (a little paved court some 12 by 9 ft.), where it was resting on a wall, the house being at Star Corner, the central point of the Bermondsey slums and the great home of costermongers in general. Perhaps var. *helice* has been most common on the south coast. Some two to three dozen specimens were exhibited at the last meeting of the Entomological Society of London, captured near Bournemouth by one collector, two of the specimens being strongly tinged with yellow, and intermediate between the type and extreme form. Mr. Hodges records above two dozen from the neighbourhood of Freshwater in the Isle of Wight, including also some intermediate forms, and other collectors have been equally successful in obtaining considerable numbers, so that those whose collections have come into existence since 1877, and who leave gaps in their cabinets for rarities, which they sometimes never fill, should at any rate be able to fill up at least one of these empty spaces. *Hyale* has been in no way so generally distributed nor so abundant, although individual collectors have sometimes caught fair numbers. These, however, have been chiefly captured in the eastern and south-eastern counties, and the records from more westerly localities are decidedly rare. The exhibition of var. *helice* mentioned above, comprised also some hundreds of type specimens which had been sacrificed, whilst there were only six *hyale*. Mr. Hodges, at Freshwater, did not see one. In Kent, Messrs. Allbuary, Knight, Wilson and others got fair numbers; but still the fact remains that *hyale* was very much more restricted in its range, and rarer than its congener. Of other varieties, Mr. Griffiths records a female with typical wings one side, and *helice* wings the other. Mr. Parry one with a *silvery* border, I cannot imagine quite what this can be like; and Mr. Carrington had heard of a *helice* with green hind wings. As *helice* is often described as greenish white, and the records in the *Field* are not generally made by specialists, probably this latter was nothing much out of the common way. The normal females vary very much in the shape and size of the yellow spots in the black band, and there has hardly been a large exhibit in which I have not noticed a female so devoid of these spots, that it has been placed among the males owing to the absence of this character. On the other hand, some have the spots very large and well developed. In both sexes the band itself is subject to great variation, sometimes being of an intense black, at others quite ruddy, both being frequently much powdered with light scales. The central spot in the fore wing varies considerably, both in size and shape, whilst the pale central spot in the hind wing is very variable in tint. The width of the border also varies considerably, and some specimens have a tendency to throw off dark prolongations towards the centre of the wing, from the middle of the band of the anterior wings. But it is probable that most of the best varieties will have been caught by comparative youngsters, and will not be recorded in the magazines.

The life-history of *edusa* was well worked out in 1877 by Mr. Fitch (*Entom.*, xi., p. 58):—Female captured June 6th, eggs were laid June 8th, these hatched June 14th, larvæ pupated July 7th–9th, imagines emerged July 21st–August 15th. A large brood being reared, consisting of 49 males and 57 females. These bred specimens paired, eggs were laid July 29th, larvæ hatched August 7th, pupa September 24th. No butterfly was bred, and only one pupa was obtained, owing, as Mr. Fitch said, to "heavy rains injuring them in the breeding cages" and his own neglect. But living imagines freshly emerged were again at large throughout October, and other entomologists reared the brood through. This year the Rev. Mr. Hewett, Mr. Hawes and others, have succeeded in getting through the first brood, and numbers of larvæ and pupæ belonging to the second brood have been exhibited by various collectors at the entomological meetings during the last fortnight, so that this second brood must be now very near emergence. On the Continent, the species, I believe, without exception, hybernates as an imago, but in England the query propounded by Mr. Fitch still remains to be answered by observers this winter. He writes:—"Does it pass the winter as an egg? as a larva (*Ent. Mo. Mag.*, vi., p. 232)? as a pupa (*Id.* v. 77)? or as an imago (*Ent. Intelligencer*, ii., 11, and *Id.* ix. 179)?

I quite believe that those specimens that emerge here and fly about in the late autumn and early winter (in 1877 imagines were captured in December) lay their eggs, contrary to the generally accepted idea on the Continent, and that both the eggs, young larvæ (if hatched) and imagines are killed off. If a specimen of a hybernating butterfly goes into hybernation, I believe it does so at once, and the females are then usually unfertilised. The fact that so few *edusa* go into hybernation here, but attempt to fly actively about during the winter, points to a conclusion that their failure to continue here is essentially due to climatic causes, but of how these act we appear to be at present in hopeless ignorance. At any rate I believe the species can only be perpetuated by imagines which, on emergence go directly into hybernation, and safely pass the winter in that stage.—J. W. Tutt. *October 7th*, 1892.

Notes of the Season.—*Galway.*—My captures have not been specially interesting so far, except a specimen of *Eupithecia togata*, taken in a fir wood some miles from here.—J. E. R. Allen, Galway.

Chippenham Fen.—During my stay at Wicken, I took a run over to Chippenham on the first Friday in August. It was a fine hot day, and although I knew day work was almost useless as a rule in the Fens, I thought I might get something entomologically besides the pleasure of looking over new ground. I met Mr. Cross of Ely as soon as I got there, and he enabled me to find my way about much more quickly than I could have managed alone. There is no doubt for most Fen insects, Chippenham Fen is far beyond Wicken, and the numerous trees scattered as belts all over the Fen give quite a distinctive character to it. Much of the Fen is known as "Poor's Land" and is public property, the rest is private and preserved, and it appears that the keepers do their best to keep off visitors from the whole. But there is certainly enough public land to serve entomologists for their work. Great beds of *Eupatorium cannabinum* abound almost everywhere in the "Fen," and on these the larvæ of *Plusia orichalcea* are taken in some abundance in June. *Macrogaster arundinis*, too, is

much more common here than at Wicken, and the number of yellow reeds I saw scattered all over the Fen gave evidence of the work of the larvæ in the roots below. The first species I met in the "Fen" were *Crambus tristellus* with a few *C. selasellus*, *Rivula sericealis*, and *Leioptilus microdactyla*. A plant of *Verbascum* was eaten completely, and large quantities of "frass" were on and about it; but I could find no larvæ. *Pieris napi* occurred abundantly everywhere in the "Fen," and passing through a belt of trees *Rivula sericealis* began to occur in considerable numbers. In the course of the day I took some 60 or 70 specimens of it, most of which were in fine condition. This species I have taken in many marshy localities, but I have never seen it really abundant before. The long grass and sedge were mixed with *Vicia cracca*, and from this several *Toxocampa pastinum* were disturbed. Some of these were in fair condition, much better than others I had observed a fortnight earlier in North Kent. The paths crossing the Fen appear to have been made up, at no very remote period, of Cretaceous rocks (gault, etc.), and on these, many species of the "chalk" flora were established, and appeared strange in the "Fen"; and here such species as *Pyrausta purpuralis*, *Phytometra ænea*, *Lycæna icarus* and *Polyommatus phlæas* were flying merrily in the sunshine. Strangest to me, though, was the sight of numbers of *Epinephele hyperanthus* flying freely all over the Fen. I turned up one *Bankia argentula*, the first I had seen alive. It was in good condition, probably the offspring of an early ♀ of the same summer. A made road, overgrown with flowers, produced, besides lots of *Rivula sericealis*,—*T. pastinum*, *Strenia clathrata*, *Melanippe subtristata* (second brood), *Stigmonota orobana*, *Catoptria scopoliana*, *Nematois schiffermillerellus*, *Mimæseoptilus bipunctidactyla*, *Sciaphila chrysanthemana*, and in a field hard by, *Crambus selasellus* (without *C. tristellus*) and *Catoptria scopoliana* were fairly abundant; and here also I took an odd specimen of *Semasia rufillana*. Besides these, I noticed several *Acidalia scutulata*, also *Eubolia mensuraria*, and other species equally common. I left at 6 o'clock and was well satisfied (considering that I did not stay to take a single evening-flying insect) with some 160 specimens I had captured, and many observations made; and I am sure the Fen, which can be easily worked from Fordham, where there is plenty of accommodation, would give an excellent result, especially to any one who could get there during the latter part of June and the early part of July. I may add that Mr. Houghton took a fine lot of *Macroglossa bombyliformis* larvæ on *Scabiosa* there this season. He found them when small on the undersides of the leaves during June, the plants attacked showing conspicuous evidences of the work of the larvæ.—J. W. Tutt. *August*, 1892.

Tewkesbury.—This has been, in this locality, one of the best seasons we have had for Geometers for a long time. Sugar has varied much. With the dry moonlight nights there has been very little; then when we have had a warm dull night, things have been fairly plentiful. One thing has struck me, how on some nights certain trees attracted freely, and then on another night the same trees produced nothing, whilst the trees barren before produced the moths. On the light nights, a tree over a pond proved attractive, but Saturday night last was the best night we have had; the barometer was falling, night rather dull,

atmosphere very warm, with an entire absence of that chilly night feeling that so often troubles us. On the same night, light was most attractive, also flowers; indeed, light has been more or less attractive for the last three or four weeks.—E. C. Dobrée Fox, Cas le Moreton, Tewkesbury. *August*, 1892.

Doncaster.—What little time I have been able to give to collecting has been fairly profitable, but sugar has been a complete failure. Numerous earwigs and spiders, and a few very worn *Noctua xanthographa* being the only things attracted to the sweets. Searching tree trunks has produced a nice series of *Pœcilia nivea* and several other *Gelechidæ*, of which I do not know the names. Seeing *Pœcilia nivea* is one thing, and catching it is quite another. They sit in the crevices of the bark of oak trees, and when a pill box is brought near them they either fly away or run over the hands of the would-be captor in a most annoying manner. *Pædisca corticana* was a perfect pest on the tree trunks. I never saw this abundant species so abundant. One single specimen of *Calymnia diffinis* I found on an elm trunk, but sugaring failed to produce any more. A wall on the way to my favourite wood has well repaid searching; on the morning of the 21st ult. I counted 18 species of moths upon it. These included *Polia chi* in varied forms, *Bryophila perla*, *Cidaria russata* very variable, and some *Scoparias* which I think are *angustea* and *mercurella*. Last week I took *Pyralis glaucinalis* on the same wall. This species is not recorded for Doncaster in "The Yorkshire list." Autumn larvæ are beginning to show up. *Abraxas sylvata* is abundant, and *Asychna terminella* is busy mining the leaves of *Circea*. I shall hope to get many larvæ, both macros and micros, before the next month's notes are due.—H. H. Corbett, 19, Hallgate, Doncaster.

Hampshire.—It may be of interest to note that *Colias edusa* made its appearance at Christchurch as early as the middle of July, and soon became extremely abundant; but during the first fortnight or three weeks the specimens consisted chiefly of males. Those friends who have been successful are, firstly, Mr. Brameld, who obtained a large number, including four of the well-known variety *helice* on the cliff, not far from High Cliff; Mr. Druitt found it very plentiful in meadows by the river, and captured several of the variety *helice*; whilst Mr. McRae and myself succeeded in taking an unusual number at the same place in one morning (August 6th), finding the species in extraordinary profusion, unparalleled since the year 1877. We managed to secure a fine specimen of *Colias hyale*, and missed two others. On the following morning I visited the same field, and caught another specimen of this latter in fine condition. Since that date I have taken 6 fine *helice*, and Mr. McRae has just shown me a long and beautiful series of this variety with intermediate forms, also 4 more *C. hyale*. Most of these were taken nearer Bournemouth.—J. M. Adye. *Sept. 4th*, 1892.

The Excursions of the North London Natural History Society during 1892: On May 21st, Epping Forest; June 4th–6th, New Forest; June 25th, Polegate; and July 23rd, to Leigh, Essex, were attended by the following gentlemen:—Messrs. S. Austin, A. U Battley, Hawes, Hicklenton, Horton, E. Joy, L. B. Prout, C. Nicholson, R. W. Robbins, J. A. Simes, C. B. Smith, L. J. Tremayne and H. A. Tremayne. The insects taken were as follows:—

Epping Forest.—Weather very fine and bright. *Argynnis euphrosyne, Hesperia malvæ, H. tages, Bombyx rubi, Drepana cultraria, D. binaria, Odontopera bidentata, Tephrosia consonaria, Bapta temerata, Anticlea badiata, Coremia unidentaria, Numeria pulveraria.*

New Forest.—Lyndhurst, Rhinefield, Beecham Lane, and Brockenhurst. *Argynnis euphrosyne, A. selene* and *paphia* (larvæ), *Euchloë cardamines, Thecla rubi, Lycæna icarus, Nemeobius lucina, Macroglossa fuciformis* (*ad lib.*), *M. bombyliformis, Gnophria rubricollis, Lithosia sororcula, Halias prasinana, Nola cristulalis, Spilosoma fuliginosa, Bombyx rubi, Dasychira pudibunda, Stauropus fagi* (3), *Notodonta trimacula, N. camelina, Moma orion, Thyatyra batis, Grammesia trilinea, Aplecta prasina, Epione advenaria, Eurymene dolobraria, Aspilates strigillaria, Macaria liturata, Tanagra atrata.*

Polegate.—Weather warm, but cloudy in afternoon. *Melitæa athalia* (many in good condition), *Chærocampa elpenor* (1), larvæ of *Bombyx neustria* and *Eriogaster lanestris. Miana arcuosa, Erastria fasciana, Tephrosia luridata* and several other GEOMETRÆ. *Ennychia octomaculalis.*

Leigh.—Weather fine, warm, and rather hazy. *Hesperia lineola* (*ad lib.*), *Melanargia galatea* (several), *Macroglossa stellatarum, Zygæna filipendulæ, Strenia clathrata, Acidalia immutata* (common), *A. emarginata*; also larvæ of *Vanessa urticæ, io, atalanta, cardui, Saturnia carpini, Bombyx neustria, B. rubi,* all common.

Although the above are not complete lists of species taken on these excursions, they may be of sufficient interest to publish.—R. W. ROBBINS (*Hon. Sec.*).

Folkestone and Reading.—I captured a freshly emerged male *Colias edusa* in the Warren at Folkestone on July 22nd, and another on July 25th. One of my sons captured a female in my back garden at Reading on the 29th; and on the 31st I saw five (one pair *in cop.*) on the railway bank near my house, since which I have taken thirty *edusa* and two *C. hyale.*—W. E. BUTLER, Reading.

Ireland.—The whole of last month I was in Ireland: the first fortnight in Co. Galway with Mr. Jones, in search of *Zygæna nubigena.* For this we were too late. We found it, but scarce, and in poor condition. We had very bad weather—rain and wind every day, still we managed to get together a few insects. Amongst the butterflies we found *Leucophasia sinapis, Epinephele hyperanthus, Satyrus egeria, S. semele, Cœnonympha pamphilus, S. janira,* including one variety with no white pupil to the black spot on the forewings, *Argynnis paphia, A. adippe, Lycæna alsus, L. icarus*; these latter were very fine, with much larger red spots than any I have ever before seen. We also took *Thanaos tages.* Among the BOMBYCES, *Spilosoma fuliginosa, Hepialus velleda, H. hectus, Zygæna filipendulæ, Drepana lacertula* and *Setina irrorella.* Of the NOCTUÆ, *Phothedes captiuncula* was everywhere, flying about in the day-time in hundreds, but mostly worn; these are much more strongly marked and marbled than any English specimens I have seen. Sugar produced *Noctua plecta, N. brunnea, N. baja, Leucania lithargyria, L. conigera, Hadena pisi, Viminia rumicis, Triphœna subsequa, T. fimbria, T. pronuba* and *Xylophasia polyodon,* many fine almost black forms, *X. sublustris, X. lithoxylea, Thyatyra batis, Apamea gemina, H. oleracea, Miana strigilis, M. fasciuncula,* and we netted a specimen of *Euclidia glyphica.* GEOMETRÆ were represented by *Metrocampa margaritaria,*

Larentia pectinitaria, *Melanippe tristata*, *Strenia clathrata*, and of course, *Camptogramma bilineata*. Many of these *bilineata* had very dark bands across the forewings, but we spoiled a number of them with ammonia.[1] It seems to have no effect on the yellow, but it apparently takes the black band out entirely, or at least only leaves a dingy yellow. We found a form not uncommonly of exactly this dingy colour that the blackish ones were reduced to. *S. hybridalis* was, of course, common, also *Herbula cespitalis* and *Rivula sericealis*, *R. sanguinalis* was fairly common, and exactly the same colour as our sandhill (Wallasey) form. I have seen a form called the "Irish form," in which the ground colour is of a greenish-yellow. I do not say this form does not exist in a state of nature, but I never saw it alive, and I can make as many as I want by simply killing with ammonia, as I found to my cost last year. Among the micros we could do nothing, the weather was too much for them.

The last fortnight I spent at Howth, but could only collect in the evenings. *Lycophotia strigula* (*porphyrea*) was very common on the heather, *Agrotis lunigera* and *A. lucernea* somewhat scarce, the latter very dark. Besides these, I took *Eupithecia pumilata*, *Noctua festiva*, *Bryophila perla* (yellow forms), *Anaitis plagiata*, *Gnophos obscurata* and *Acidalia promutata*, all rather scarce; and *Larentia pectinitaria* extremely abundant.—G. A. HARKER, Liverpool. *August 2nd*, 1892.

Moray and Aberdeen.—The season in the North of Scotland still continues to be a good one. Sugar is working splendidly, both on the coast and inland. On the 22nd June at Loch Nabo, Morayshire, I found *Hyppa rectilinea* abundant at sugar, *Cymatophora duplaris* also was rather common; the only other thing worthy of note was one pale *Cuspidia leporina*. I netted on the same evening a nice series of *Macaria liturata*, *Eupithecia togata*, *Ellopia fasciaria*, etc. On 1st July I had a night's sugaring at Inveran, Sutherlandshire, but the only insect that occurred in quantity was a very dark form of *duplaris*. I beat from birch a beautiful lot of *Cidaria corylata* var. *albocrenata*. Traces of the larvæ of *Sesia scoliæformis* were not rare on the birch trunks. At Aberdeen, on the coast, I found swarms of *Crambus dumetellus*. *Emmelesia ericetata* has also been abundant, I managed to net 140 in about two hours. *Agrotis lucernea* is plentiful at heather bloom along the Kincardineshire coast. *Agrotis tritici*, *cursoria*, *valligera* and *Mamestra furva* are turning up in fair numbers on the sandhills; while in the woods *Noctua dahlii*, *N. sobrina*, *N. castanea*, *Dyschorista suspecta*, *Lithomia solidaginis*, *N. glareosa* and *Aplecta occulta* are coming more freely to sugar than I have seen them for some considerable time. On the 25th July at Burghead, Morayshire, I took two fine *Triphæna subsequa* at sugar, and lost a third specimen; they were almost the only insects at sugar that night, which was cold and frosty. At the same place I netted *Scodiona belgiaria* and *Dasydia obfuscata*, *Crambus dumetellus*, *P. rubiginosana*, *Stigmonota coniferana*, and a pretty variable lot of *Sericoris cespitana*. At Monymusk, Aberdeenshire, on the 5th August, I took at heather bloom a NOCTUA which I take to be *Hadena satura*; it is in perfect condition, and is now on the setting board; it certainly is not *H. adusta* or *Apamea gemina*. At

[1] We cannot imagine how some of our friends use ammonia. We have very long series of dark (black) banded specimens all killed with ammonia.—ED.

the same place I was fortunate enough to take six *Crambus myellus* and a long series of *C. margaritellus*, which are both new to me.—A. Horne. *August 21st*, 1892.

York.—I have nothing of interest to report, as this season at York has been a great failure owing to the excessive rainfall. Askham Bog has been and still is unworkable; there is a great deal of water yet upon it. I ventured two evenings in the hope of getting *Dyschorista suspecta*, but only a few odd specimens appeared, whereas last year at the same time it occurred in hundreds. *Geometra papilionaria*, I believe, had been fairly common, for I saw numerous wings scattered about, which showed that the bats had had a fairly good time of it, and we found five at rest on the grasses, but none were seen on the wing. These were freshly emerged specimens, and considering the date, August 5th, we should in ordinary seasons consider this late. I tried sugar one night last week and it was a complete failure. *Plusia gamma* was almost the only species to be seen, and this was commoner than ever I had seen it. It appeared to congregate most at the flowers of the bramble.—R. Dutton. *August 29th*, 1892.

Saltburn and Durham Coast.—I have been at Saltburn, Yorks., off and on during a considerable part of August, and have sugared on nearly every favourable night. Common Noctuæ came freely as a rule, but the only insect of any value was *Agrotis ravida* of which I got three specimens, one on each of three successive nights, and I missed a fourth on another occasion. Through the kindness of Mr. Robson of Hartlepool, I made my first acquaintance this year with *Phothedes captiuncula* in its living state. This is a most peculiar insect to take, flying low in short flights over grassy places near the sea. For five minutes or so many specimens will be flying, then, possibly owing to some slight change in the temperature, none will be seen for a considerable time, perhaps half an hour or more, then the flight will be repeated. My specimens were taken on the 3rd of August, which is a trifle late for it, the best time being from the middle to nearly the end of July.—T. Maddison. *September 3rd*, 1892.

Norfolk and Devon.—The weather has been unkind to my collecting this year. In July I was three weeks in the Norfolk Broads, but, with a cold N.E. wind and occasionally rain, I got little. Pupæ of *Nonagria cannæ* were scarce this year, I have only bred eight, and there is one to come out. Of *Leucania brevilinea* I only got a couple. In August I paid a visit to South Devon after *Callimorpha hera*, and was lucky enough to obtain a short series, and also some eggs from which the young larvæ are just hatching. Though I had little time to give to anything else, I got some nice *Colias edusa*, which was common, and a couple of var. *helice*. I am now in North Devon, about ten miles from Barnstaple. *C. edusa* is not uncommon here, but we hardly ever get a fine day, and the weather keeps up a monotonous drizzle.—A. Robinson. *September 16th*, 1892.

New Forest.—Sugaring in quite a new direction in the New Forest recently, I have done very well with some species. Besides a large number of *Catocala sponsa*, I have seen *Thyatyra batis* (quite fresh; is this species double-brooded?), *Agrotis saucia*, *A. suffusa*, *Noctua neglecta* and *c-nigrum*, whilst *Asphalia diluta* has been present in large numbers. On one evening (September 5th) my son and I took

60 of this last species in good condition. I have also found an unusual number of *Cuspidia leporina* and *Ypsipetes impluviata* larvæ this year, but I observe that a great number of larvæ, especially those of the NOTODONTIDÆ, are ichneumoned. I have had the misfortune to lose three out of four *N. dictæoides* which I have taken, in this way. Is this the experience of other collectors?—J. C. MOBERLY, Southampton. *September 8th*, 1892.

Wyre Forest.—*Colias edusa* appears to be still emerging. A fine male was captured on September 15th by Mrs. Abbott.—P. W. ABBOTT, Birmingham.

Isle of Wight.—Since my last notes the season has continued to be very satisfactory. Sugar on the Downs always remunerative; the results vary little with the temperature and general state of the atmosphere, but it is worthy of note that in the woods, here at least, it continues to be absolutely useless. *Colias edusa* keeps emerging; some lovely specimens were noticed, and on Saturday last (September 17th) I saw my last *helice*, a perfectly fresh specimen, but which was so strong on the wing that I never got a shot at it, although I followed it doggedly for a quarter of a mile. Previous to this I had captured one, equally fine, among plenty of the type, freshly emerged, earlier in the same week and two (of which one is a very fine intermediate form) on September 5th. These bring our Freshwater total of *helice* to over two dozen, which I regard as very satisfactory. The 19th was the finest night at sugar that I have ever had at this time of year; amongst other good things I took two *Triphæna subsequa* (worn), with a few *Aporophyla australis* and a good take of *A. obelisca*, which although so late, as they have been out more than a month, were nearly all fine. Strangely enough *A. saucia*, which has been as conspicuously plentiful this year with me as it usually is the reverse, was on this evening very scarce, only about half a dozen being seen; although on some previous evenings I had brought home enough even to satisfy my rather sanguine anticipations. In the past five years I have only taken this species singly here, but this year I have been able to select out of a large number some very fine forms. It may not be generally known that this insect, when fresh, has a beautiful peacock-blue metallic glow upon the crest and head, and occasionally more slightly upon the body, resembling the sheen of rich plush. Besides the two *T. subsequa* referred to above, I took one (worn) upon each of the two only visits to the woods here, *viz.*, September 3rd and 14th; these, with another on the Downs, taken 12th September, brings up the season's total of this species to about thirteen or fourteen, which is also a "record" in my own collecting experience. *Agrotis puta*, *segetum* and *suffusa* have also been much more abundant than usual, and the larvæ of *A. ripæ* seem about as usual, but their mutual liking for flesh diet seems to beat all contrivance upon the part of those friends to whom I send them, and for my own part I gave up the attempt to bring them through years ago as a game not worth the candle. Mr. Abbott writes me that he has put 22 singly into separate receptacles; this should circumvent them, and his perseverance is worthy of all praise. Amongst late occurrences beyond those mentioned in the previous month, the most conspicuous has been a worn female *A. lunigera* on September 17th, nearly a month behind. *Bryophila glandifera* is also occurring singly

up till yesterday, September 20th, in good condition, which is later than usual here.—Albert J. Hodges, Freshwater Bay. *September 21st*, 1892.

Oxfordshire.—*Colias edusa* species appeared sparingly in the clover fields at the end of May and beginning of June, and, anticipating a *Colias* season (from their worn appearance, which showed that they were immigrants), I did not trouble to capture any, but left them to breed. The new brood appeared here early in August, and were soon very abundant. I have captured several hundred specimens near Chinnor, but the var. *helice* has so far been scarce, as I have only taken two specimens to date. As the insects are still in fine order I anticipate that they will occur (as in 1877) to quite the end of the month.—A. J. Spiller. *September 7th*, 1892.

Bucks.—Whilst collecting *Hesperia comma* on the chalk downs in the Wendover district I noticed *C. edusa* very commonly on the hills. I likewise captured it plentifully in a clover field at Monks Risborough. —Id.

Somerset.—I noticed at the end of August that *C. edusa* was apparently common at Taunton and Minehead.—Id.

Devon.—I noticed *C. edusa* on the cliffs at Seaton.—Id.

Oxon.—It is not often, I believe, that *Colias hyale* occurs here, hence I have the greater pleasure in recording the capture of eight specimens at Chinnor. Three of these were taken on August 23rd, by my younger son, Reginald Spiller, a lad of 10 years. On September 5th I captured two flying over a lucerne field, and on September 6th a milk-white female, just fresh from the chrysalis. Two other specimens have been taken by another collector.—Id.

Eastbourne.—I have little to record except the abundance of *Colias edusa* at Eastbourne, where I spent the first fortnight of August. One specimen I saw there was well worthy of note, and I greatly regret that I was unable to secure it. On the first morning after my arrival I went out, unfortunately without a net, and on a precipitous bank just out of reach, saw a specimen which had the two left wings normal ♀ and the right wings var. *helice*. It was sitting on the flowers just below me, and I watched it for several minutes, but it was quite impossible to reach it without a net and though I haunted the spot for several days after I never saw it again. *Lycæna corydon* was in the greatest abundance on Beachy Head and elsewhere, but although I examined numbers of specimens I only found one or two slight variations.—G. C. Griffiths. *September 7th*, 1892.

Surrey and Petersfield.—After writing to you from Surrey I took at sugar, on August 22nd, a fine *Catocala sponsa*, the first time I ever saw it there. I have seen several specimens of *Colias edusa* here this week while out shooting, and on September 6th managed to capture a good *C. hyale*.—Waldegrave, Blackmoor, Petersfield. *September 8th*, 1892.

Ireland.—My experience of the season has been not very satisfactory. I went to Tyrone and Monaghan to try for certain insects in their well-known haunts, but they were evidently very late in emergence, and, in spite of some very hot days, I only took a few precursors of the host which should have been thick on my sugar. It was thus with *Cymatophora duplaris*, *Hadena adusta*, *Aplecta herbida*, *Lycæna argiolus*,

etc. I had one day's success with *Macroglossa bombyliformis*, and caught seven, mostly in good condition, one hot day in a new locality; thus filling up my cabinet series, exhausted by the urgency of correspondents. I took nearly all on the wing, not settled as heretofore; the great heat made them swift and restless, delaying on flowers more from curiosity than hunger, and their flight under such circumstances is almost as rapid as that of *M. stellatarum*. *Dianthœcia barrettii* is still flying at Howth I learn, and is less scarce than in former years.—W. F. DE V. KANE. *July*, 1892.

Grange-over-Sands.—*Colias edusa* are out here. Previously to last week only two or three specimens had been seen, but they are now out in fairly considerable numbers. My best day's capture last week was 9 specimens—7 males and 2 females, all newly emerged. *Cynthia cardui* is also very abundant this year.—GEO. A. BOOTH, Grange-over-Sands. *August 29th*, 1892.

Isle of Wight.—On Saturday, August 20th, whilst staying at Freshwater, I made an excursion to Compton Bay with Mr. A. J. Hodges and some friends, and, as the weather was everything that could be desired, all the party burned with a desire to measure their agility against that of the wary and wily *edusa*. The locality selected was that where last year *Zygæna filipendulæ* swarmed, and where 5 specimens of the yellow variety were taken. The slopes leading down to the Bay are covered, amongst other short herbage, with birdsfoot trefoil (*Lotus corniculatus*), and as the Bay is only open to the south, one is not surprised at this spot being the usual annual head-quarters of *Colias edusa*, although in most seasons it is most sparingly represented. On our way we worked the steep slopes of Afton Down, and found plenty of excitement, *edusa* being everywhere except in the nets, as one of our "amateur" friends feelingly observed. The excitement increased when Mr. Hodges took a fine *helice*, which upon our arrival at our destination was quickly followed by two more, which fell to the "amateur" side of the party. Entomology for a time gave way to natation, as the temptation to take a refresher in the way of a dip proved stronger than the hopes of a phenomenal "bag." About one o'clock we turned homewards, and met with equal success on the return journey, taking two more *helice* within a few minutes after starting, and a third later on, together with some finely marked ♀ *edusa*, bringing up our morning's total to 6 *helice* and about 60 *edusa*. *Aspilates citraria* were plentiful, and proved a welcome catch to the older members of the party, who were content to reserve their energies for *helice*, leaving the younger and more enthusiastic juniors the honours of quantity as opposed to quality. —P. W. ABBOTT, Birmingham. *August 27th*, 1892.

Bakewell.—The insects of this neighbourhood, so far as I can gather, have been very little worked, and I hope to meet in course of time with some instructing material for observations. So far, my chief captures have been *Procris geryon*, which seems to be abundant in some of the dales; *Melanippe tristata*, which seems to be very generally distributed throughout the neighbourhood; *Habrostola urticæ*, which is fairly common, coming at dark to the flowers of sweetwilliam; *Scotosia certata*, which is generally supposed to feed only on the leaves of the common barberry, is here found in abundance on the holly-leaved *Berberis* of our gardens. The abundance of larvæ, to which attention

has already been directed, had attracted my attention; the rose trees being especially affected.—C. F. THORNEWILL, Bakewell. *July 14th*, 1892.

Morpeth.—This has not been a favourable season, either for collecting larvæ or imagines, in this neighbourhood. The weather in May was dull, cold and wet; June was the same, with the exception of two or three days; July no better. For the last ten days we have had much better weather. In June, sugar was more attractive than it is at present, the only insects which come to sugar at present being *Xylophasia polyodon* and *Triphæna pronuba*. The blossom of the heather is just now very attractive to *Noctua glareosa*. I was out on the moors the other day and was very much struck with the manner in which *Larentia cæsiata*, when at rest on stones, etc., assimilated with the colour of the stones. Sometimes as many as five insects were at rest on one large stone.—J. FINLAY, Meldon Park, Morpeth. *August 29th*, 1892.

Berks.—It may be of interest to record the capture of *Cuspidia alni* both in the larval and imago state. On August 17th, 1891, I found a half fed larva on elm, but it proved to be ichneumoned and died. On May 26th, 1892, I captured a freshly emerged imago at rest on a tarred paling, close by where I found the above-mentioned larva. *Colias edusa* has been plentiful round this neighbourhood.—W. P. BLACKBURNE-MAZE, Shaw House, Newbury. *September 29th*, 1892.

Keston.—*Colias edusa* has appeared sparingly in this neighbourhood, but in the clover fields round Keston three or four could generally be taken any bright morning since August 15th. On the 1st September my son took a nice fresh *Colias hyale* ♀ opposite the Salt Box on the Westerham Road; this is the only specimen I have seen.—F. W. BIDDLE, Beckenham. *September 10th*, 1892.

Sandown.—No doubt you will have plenty of communications as to the abundance of Lepidoptera in the Isle of Wight this season. I have only been staying here for a short time, but have succeeded in taking a good series of *Colias edusa*, and a fair number of *helice*, one with pale instead of orange spots on the hind wings. Several *hyale* have been taken, though I have not been lucky enough to meet with them. I obtained a nice series of *Lycæna adonis* at Ventnor, the females being especially rich in colour. *Aspilates citraria* has been common, and I took a female, which has deposited some eggs. Most of the common species have been also abundant. The weather last week was bad, and put a stop to collecting. It is a curious circumstance that the last occasion on which I remember *C. edusa* and var. *helice* to have been anything like common (though they were not nearly so numerous as now) was in 1885, in which year I was staying for a short time at Deal. This would give to the seven years' theory some weight, as I believe the previous abundance of the species was in 1878, or thereabouts.—GEORGE HOLLIS, Sandown, Isle of Wight. *September 10th*, 1892. [The last *C. edusa* year was in 1877 not 1878. The seven years' theory has, I believe, nothing whatever in it. The appearances of *edusa* in abundance are most erratic.—ED.]

Dover.—Being at Dover last month for a few days, I had the pleasure of spending two half-days (23rd and 26th) on the East Cliff. I found *Colias edusa* very common, taking about two dozen, eight males

and sixteen females, including two of the var. *helice*. I kept two females alive, and got a few eggs, which are now hatching; is not this an exceptional time for the eggs to be laid? I was also fortunate enough to capture two *Colias hyale* in splendid condition.—FREDERICK T. GRANT, 7, Hastings Road, Maidstone. *September 7th*, 1892. [In *C. edusa* years, the eggs of the newly emerged specimens are normally laid in July and August, a third brood appearing in October in favourable weather.—ED.]

Leicestershire.—*C. edusa* has turned up here again this August and September, after having been recorded only four times since 1877. I have notes from Stretton Magna, Kibworth, Knighton, Rearsby, Syston, Brooksby and Melton. I noticed one var. *helice* at Stretton, but have no other note of it.—F. BOUSKELL, Lansdowne Road, Stoneygate, Leicester.

LAPHYGMA EXIGUA AND HELIOTHIS ARMIGERA IN THE ISLE OF WIGHT.—After repeated disappointment I was at last rewarded with the capture of a single specimen of *L. exigua* at sugar on September 21st, at Freshwater, and upon the same evening was successful in capturing one *Heliothis armigera* also at sugar. I was leaving for London on the 23rd, but although I tried again the last evening I was unsuccessful in seeing any more. Other species at sugar during that week were *Agrotis saucia*, in profusion, on one evening I captured over sixty fine specimens, *A. obelisca*, and more rarely *Aporophyla australis*. I also took a single *Luperina cespitis* on sugar during the week. I believe this is a rare visitor to artificial sweets.—ALBERT J. HODGES, 2, Highbury Place, N.

BUTTERFLIES AT SUGAR.—During a stay at Brockenhurst (New Forest) this August, I took the following butterflies at sugar, *Argynnis paphia* (4), var. *valezina* (1), *Vanessa polychloros* (4), *V. io* (3), *V. atalanta* (1), *Limenitis sibylla* (6), *Apatura iris* (1), *Pararge ægeria* (4), *Epinephele janira* (1), *E. tithonus* (1), *E. hyperanthus* (1). The *iris* was a male, and I took it about 1.30 in the brightest sunshine. I shall be glad to hear if anyone has had a similar experience. I also saw one *Catocala sponsa* at 3.30 p.m., and took several others about 6 p.m.—F. BOUSKELL, Lansdowne Road, Stoneygate, Leicester. *September 10th*, 1892.

EGG LAYING OF TIMANDRA AMATARIA.—I took a *Timandra amataria* a fortnight ago, and had a good look at her whilst placing her eggs on the grasses on the side of a bank. She laid them in groups of four or five, and suffered herself to be quietly boxed. She afterwards gave me a nice lot of ova. They are of deep bright coral red, and change to an inky black the day before hatching out. The larvæ are now feeding on knot-grass. Will they hybernate?—S. WALKER, 23, Portland Street, York.—*August 8th*, 1892.

EUTHEMONIA RUSSULA.—I obtained a batch of eggs from two female *Euthemonia russula* captured at midsummer; the young larvæ were all fed together on dandelion, but—whilst the rest are still small before hybernation—one fed up quickly, pupated on August 26th, and emerged a fine male on September 15th.—H. W. BASDEN-SMITH, 6, Hillsborough, Plymouth. *September 18th*, 1892. [Similar instances have been recorded before. Usually one or two individuals in a batch will feed up rapidly, and emerge the same autumn.—ED.]

FOODPLANT OF LITHOSIA DEPLANA.—Referring to Mr. Sellon's note

on *Lithosia deplana* (*helveola*) (*Ent. Rec.* vol. iii., p. 212), although I have not had any personal experience in breeding this species from the larva, I have been informed on good authority that it feeds, at all events in the New Forest, on a very minute lichen which grows quite close to the branches and trunks of the trees, and has not the appearance of an ordinary lichen, merely giving the tree-trunks and branches a whitish appearance. Unless one could sleeve the larvæ on the actual trees on which they are found, I should think it next to an impossibility to rear them successfully (unless, of course, they are full-fed when taken). I always return the larvæ to the trees when I beat them out.—HENRY A. HILL, 132, Haverstock Hill, Hampstead, N.W. *October 5th*, 1892.

ENTOMOLOGICAL PINS.—As it is probable that I may have used more "black-enamelled" pins than any one in Britain, with perhaps the single exception of Mr. W. H. B. Fletcher, I should like to make a few remarks on the subject. As regards verdigris, my experience leads me to believe that black pins, although unsatisfactory in some respects, do, undoubtedly, as Mr. Tutt says, "stave off the evil day" longer than gilt or silvered ones. Of course, the only thoroughly satisfactory way of dealing with grease in both macros and micros is to extract it, if possible, from the body, as, even if verdigris is prevented, the grease is always liable to spread to the wings, and is an eyesore, even if it only affects the body and thorax. Of black pins, those manufactured by D. F. Tayler & Co., of Birmingham, are far and away the best, though it always makes one sigh to look at those gigantic and unsightly heads, and long for a little spare time in which to decapitate them before using! Owing to these ugly heads, I never use Tayler's pins where those of Kirby, Beard & Co. can be used safely, as is the case with the larger sizes; and after trying an enormous number of pins by different makers, I have selected the following as being decidedly the best and most convenient, and always have a large stock of them beside me:—Nos. 2, 5, 8, 9, 10, and 17 of Kirby, Beard & Co.; Nos. 15, 19, and 20 of D. F. Tayler & Co.; No. 18 of E. G. Meek. For the sake of uniformity *all* my insects are set on black pins, and when in the cabinet they certainly do not catch the eye like gilt or silvered ones. Any one ought easily to be able to decide for himself what size of pin is best for any particular species, though it is well to try to hit the "golden mean" between the two extremes, for there are those who set stout NOCTUÆ on No. 14 of Kirby, Beard & Co., whilst on the other hand, the late John Sang used to advocate the use of "as stout a pin as the thorax would take," and I have received from him such small and slender insects as *Gelechia tetragonella* set on No. 10 black pins! In reply to Mr. Farren, I think he will find No. 20 of D. F. Tayler & Co.—particularly if he has time to nip off the heads beforehand—a first-rate pin for all ordinary *Nepticulæ*. The Minuten Nadeln are useful for *N. acetosæ*, and the one or two other species that are equally small; but on the slightest provocation they rust in the most horrible way, and I have lately lost some dozens of *Nepticulæ*, received from a friend, owing to the lower parts of the pins being entirely destroyed by rust. There is one important point to which I should like to call special attention, as it is often so sadly neglected, I mean the careful selection of each pin

on which a specimen is going to be set. In every batch of pins there will always be a large proportion utterly unfit for use, owing to one of the following defects: (1) crooked shafts, (2) hooked points, (3) points too blunt, (4) points too fine, and certain to bend before long; and black pins should always be rejected unless *entirely* coated with enamel. When asked the question, "Where *do* you get your excellent pins from?" my answer is always the same in substance: "Probably the same place as you do, only on no account do I ever set a specimen on anything but as perfect a pin as it is possible to get." My plan for sorting them out is extremely simple: on a perfectly smooth sheet of cork, covered with white paper, I roll each pin with a finger of the left hand, whilst in the right I hold a powerful lens directed on the point of the pin; unless the shaft is quite straight throughout, the point "wobbles" when rolled on the board, and any other defect is easily seen. Different batches of even the same sized pin from the same makers vary very greatly in quality, and oftentimes an enormously large percentage has to be thrown away as imperfect, but some of the rejected pins can be utilised in the process of setting, for holding down braces, cross-pinning, antennæ, etc. The only objection that can be urged is that the selection of pins takes up time, but one gets quick at it after a little practice, and I maintain that it is time well spent, and that an insect might as well be destroyed at once as set on a bad pin; and, after all, it will be seen that the process cannot be a very lengthy one when I mention that I frequently sort the pins and set out from 150 to 200 moths—mostly, of course, and often all, micros—in from five to seven or eight hours (averaging about thirty in the hour), that I have before now killed, sorted out pins, and set in the same morning 100 micros by 8.30 a.m., and that at one time this season there were over 1,700 moths on my setting-boards at once, all bred, or taken, and set by myself within the previous ten or twelve days; it is only fair to add that all my specimens are set to the very best of my ability. Any one with a few spare hours in the winter or early spring might utilise them in sorting out some pins so as to save time in the season, and the result would well repay the trouble. One must remember that the only fair test of a good pin (or, for the matter of that, of a good moth!) is whether one would be glad to have it in one's own cabinet, and all that are not quite up to that standard should be rejected at once.—EUSTACE R. BANKES, The Rectory, Corfe Castle. *August 30th*, 1892.

I have just arrived at a crisis in my opinion about pins, having hitherto always used the silvered pins, as I prefer the look of them, but having a fine crop of verdigris growing on the thoraces of some of my best "infernal feeders" (to quote Dr. Knaggs' humorous friend), I have decided to go in for "the best black enamelled." My favourite sizes have always been Kirby, Beard's No. 10 for most GEOMETRÆ (under the size of *Selenia illustraria*, for instance); No. 9 for most NOCTUÆ, such sizes as *Scopelosoma satellitia*, etc. No. 4 for *Arctia caja*, etc. No. 2 for SPHINGIDÆ.—E. AUGUSTUS BOWLES, Myddelton House, Waltham.

PARASITES ON GEOTRUPES STERCORARIUS.—Last August at Cromer I found a specimen of *G. stercorarius* which seemed to have an unusual number of parasites (*Gamascus coleoptratorum*) upon it. These I have

now carded and counted, and find they reach the astonishing figure —nine hundred and twenty-four (924).—ID.

LIPARIS DISPAR AT SOUTHSEA.—Your correspondent in last month's *Record* (*ante*, p. 187), has evidently met with some of my *L. dispar*; for, just at the back of Southsea Castle, in a side road adjoining, and not fifty yards from Palmerston Road, I turned out a lot of larvæ of *L. dispar*, *Selenia illustraria* and *Ennomos alniaria* (*autumnaria*), as they were getting too crowded, and I only wanted to breed a few of each.—JOHN HENDERSON, Streatham.

EFFECT OF DARKNESS DURING DAY ON NIGHT-FLYING MOTHS.—It may be worth recording, I think, as instancing the effects of light in controlling the flight of lepidoptera; that during a heavy thunderstorm which occurred here about the 10th of August at 2 p.m., the sky reached a darkness about equal to that of twilight, and while this lasted, I observed a number of moths flying around the windows, amongst which I detected the following species: *Xylophasia polyodon*, *Leucania pallens*, *Mamestra brassicæ* and *Melanippe fluctuata*.—DOUGLAS STUART STEUART, North Leigh, Prestwich, Lancashire. *August 22nd.*

COREMIA FERRUGATA AND UNIDENTARIA.—In reference to the above question now being discussed in the *Record*, I think Mr. Pierce deals unwarrantably hard with Mr. Prout. He seems altogether to scout the idea of superficial markings and structure as being of any importance whatever. According to his unfailing method of distinguishing the species, we are as badly off as ever as regards the females, Mr. Pierce's method being applicable only to the males. We are also to destroy our series of both species by breaking off the bodies of all the males in order to find out the difference in the structure of the genital organs. If this is to be the only way to distinguish the species, I think we may as well do away with the differentiation of the species altogether, or else acknowledge and support the efforts of those who are trying to distinguish the species, not only by superficial markings, as Mr. Pierce infers, but by the structure and habits of all stages of the insect.—W. BLOOMFIELD, 14, Canterbury Road, Ball's Pond Road, N. *September 5th.*

KEEPING MICRO PUPÆ DURING THE WINTER.—I quite agree with Mr. Farren about keeping micro pupæ out of doors. It is absolutely necessary with some species, and good for many others, if not all. In the genus *Nepticula* the results are very striking, but I have found less difference in regard to *Lithocolletis* (except *L. lantanella*, and perhaps some others). *Coleophora* does best out of doors; in breeding *C. therinella*, for instance, I plant a thistle in a large flower-pot, low down in the pot, and leave the larvæ in this all the winter, out of doors, with a piece of muslin over the top of the pot. They spin their cases on to the sides of the pot, and come out well, requiring no food in the spring. Some of the macros do not seem to like so much exposure. I think that exposure is more important where the larvæ spin their cocoons in autumn, but do not become pupæ until the spring.—N. M. RICHARDSON, near Weymouth. *August 13th*, 1892.

TIMES OF EMERGENCE.—I have this year bred both *Notodonta dictæa* and *N. dictæoides*, from larvæ collected last year on Cannock Chase; and while the former invariably emerged between 9 and 11 at night, the latter made their appearance in the afternoon. This strikes me, in the case of two species so very nearly allied, as very remarkable.

Does it coincide with the observation of any other among our readers?—C. F. THORNEWILL, Bakewell. *July*, 1892.

SPHINX CONVOLVULI IN THE ISLE OF WIGHT.—When I last wrote and noted the absence of the above beautiful species, I was only too hasty in announcing the fact, as since then I have been successful in taking seven specimens, 4 ♂ and 3 ♀ ; the former appear smaller than usual, and, in fact, only one female is of what I consider ordinary expanse of wing. The males are very fine and richly mottled with dark splashes; the females appear less clearly marked, or possibly more worn. I saw two or three at once on September 7th, but was unable to get a stroke as they never hovered, but on the 9th I captured two, after which I saw no more till the 19th (one), 20th (one), and on my last evening (22nd) I had the good fortune to net three, all in the same garden, but more at geraniums than at petunias. I was rather sorry I could not stay another evening as I hoped to bring up my total to the same as Capt. Robertson for the season, viz., ten specimens, but was unable to do so. This last evening also proved a very successful one at sugar, as NOCTUÆ of all the species that usually turn up at the time, were present in good numbers.—ALBERT J. HODGES, 2, Highbury Place, N. *October 6th*, 1892.

DOES SPHINX CONVOLVULI HYBERNATE?—Can anyone account for the capture of this species here in June? (*ante*, p. 132). I see that the Rev. G. H. Raynor considers that the one taken by him at Panton on August 20th was an immigrant (p. 212). I believe that some entomologists consider that *convolvuli* hybernates in the perfect state. It has certainly been known to breed in England, as there are records in back numbers of the *Entomologist* of the finding of both larva and pupa. The one I mentioned as being captured here in June was very worn, and had the appearance of having hybernated; but perhaps I was too hasty in putting it down as such. On September 14th I missed a specimen at tobacco flowers. May not this have been a descendant of the above?—J. H. D. BEALES, West Woodhay Rectory, Newbury.

LARVA PRESERVING.—When reading a paper upon the above subject before the City of London Natural History Society, I mentioned that I always kill my larvæ with cyanide. Mr. Southey, on the other hand, recommended the use of benzine for the purpose. I find that the contortions indulged in by larvæ killed in benzine will sometimes cause them to assume a bad shape when preserved; therefore I still recommend the cyanide to kill, but before rolling, dip the dead larva in benzine. By this plan, the benefit claimed for benzine, *viz.*, of preventing the loss of hairs, etc, is obtained, and the result is generally a much better shape when preserved. I have also noticed that *Halias prasinana* imago when killed with cyanide becomes straw-coloured, but when removed from the bottle it reassumes its natural green colour, and I am curious to know whether the use of any other poison would have the same result.—AMBROSE QUAIL, 15, Stamford Hill, N.

SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON.—*October 5th*, 1892.—Mr. C. O. Waterhouse exhibited a specimen of *Latridius nodifer* feeding

on a fungus, *Trichosporium roseum*. The Rev. A. E. Eaton sent for exhibition the male specimen of *Elenchus tenuicornis*, Kirby, taken by him on the 22nd August last, at Stoney Stoke, near Shepton Montague, Somerset, and described by him in the *Entomologist's Monthly Magazine*, October 1892, pp. 250–253. Mr. McLachlan stated that another specimen of this species had been caught about the same date in Claygate Lane, near Surbiton, by Mr. Edward Saunders, who discovered that it was parasitic on a homopterous insect of the genus *Liburnia*, and had also described it in the *Ent. Mo. Mag.*, pp. 249–250. Mr. J. M. Adye exhibited, for Mr. McRae, a large collection of *Colias edusa*, *C. edusa* var. *helice* and *C. hyale*, all taken in the course of five days' collecting in the neighbourhood of Bournemouth and Christchurch, Hants. There were twenty-six specimens of *helice*, some of which were remarkable both for size and colour. He stated that Mr. McRae estimated the proportion of the variety *helice* to the type of the female as one in fifty. Mr. Adye also exhibited two specimens of *Deiopeia pulchella*, recently taken near Christchurch. The Chairman, Mr. Hanbury, Mr. Jenner Weir, and Mr. Merrifield commented on the interesting nature of the exhibition, and on the recent extraordinary abundance of *C. edusa* and the var. *helice*, which was probably not exceeded in 1877. Mr. Dallas Beeching exhibited four specimens of *Plusia moneta*, lately taken in the neighbourhood of Tunbridge Wells. Mr. Gervase F. Mathew sent for exhibition two specimens of *Plusia moneta* and their cocoons, which were found at Frinsted, Kent, on the 3rd September last. It was stated that Mr. Mathew had found seven cocoons on the under side of the leaves of monkshood, but that the imagos had already emerged from five of them. Mr. Rye exhibited a specimen of *Zygæna filipendulæ* var. *chrysanthemi*, and two varieties of *Arctia villica*, taken at Lancing, Sussex; also dwarf specimens of *Euchlöe cardamines* from Wimbledon; a variety of *Thecla rubi* from Bournemouth, and varieties of *Coccinella ocellata* and *C. oblongoguttata* from Oxshott. Mr. A. H. Jones exhibited specimens of *Argynnis pales* var. *isis* and var. *arsilache* (the females of which showed a tendency to melanism), recently taken at Campfer, in the Upper Engadine; also melanic forms of *Erebia melampus*, and a specimen of *Erebia nerine*, taken at Bormio, at the foot of the Stelvio Pass. Mr. Elwes exhibited specimens of typical *Erebia melas*, taken by himself at Campiglio, in the Western Tyrol, on the 25th July last, at an elevation of 7,000 feet; also specimens of the same species from Hungary, Greece, and the Eastern and Central Pyrenees. He stated that the supposed absence of this species from the Alps, which had seemed to be such a curious fact in geographical distribution, had been first disproved by Mrs. Nicholl, who discovered it at Campiglio two years ago. He also exhibited fresh specimens of *Erebia nerine*, taken on very hot rocks at Riva, on the lake of Garda, at an elevation of about 500 feet; also specimens of the same species, taken at the same time, at an elevation of about 5,000 feet, in cool forest glades; and remarked that the great difference of elevation and climate did not appear to have produced any appreciable variation in this species. Mr. Elwes also showed a pair of *Dasydia tenebraria* var. *wockearia*, Stgr., from Campiglio, which appeared to him to be sufficiently constant and distinct from the typical form to be treated as a species.

Mr. G. T. Porritt exhibited two fine varieties of *Abraxas grossulariata*, bred by Mr. George Jackson during the past summer from York larvæ. Also, on behalf of Mr. T. Baxter, a curious Noctua taken on the sandhills at St. Anne's-on-Sea on August 20th last, and concerning which a difference of opinion existed as to whether it was a melanic form of *Agrotis cursoria* or of *Caradrina cubicularis*. Also a small dark form of *Orgyia antiqua*, which had occurred in some numbers at Longridge near Preston. Mr. A. Eland Shaw exhibited a specimen of *Mecostethus grossus*, Linn., taken lately at Irstead, in the Norfolk Broads district. He stated that this was the first recorded capture of this species in Britain since 1884. Mr. C. G. Barrett exhibited a specimen of *Syrichthus alveus*, caught in Norfolk, about the year 1860, by the Rev. J. H. Marsh; a beautiful variety of *Argynnis euphrosyne*, caught this year near Godalming; and a series of varieties of *Ennomos angularia*, bred from a female taken at Nunhead. Mr. P. Crowley exhibited a specimen of *Zygæna filipendulæ* var. *chrysanthemi*, taken last August at Riddlesdown near Croydon, by Mr. Murton Holmes. Lord Walsingham sent for exhibition several specimens of larvæ of *Sphinx pinastri* and *Aphomia sociella*, preserved by himself, which were intended for presentation to the British Museum. The larvæ of *pinastri* had been sent to him by Lord Rendlesham, who obtained them from ova laid by a female which he had captured in Suffolk last August. Mr. de Nicéville communicated a paper entitled "On the Variation of some Indian Euplœas of the subgenus *Stictophlœa*;" and Captain E. Y. Watson exhibited, on behalf of Mr. de Nicéville, the specimens referred to in this paper. Colonel Swinhoe, Mr. Hampson, Mr. Poulton, and the Chairman took part in the discussion which ensued. Mr. W. Bateson read a paper entitled "On the Variation in the Colours of Cocoons and Pupæ of Lepidoptera; further Experiments." Mr. E. B. Poulton read a paper entitled "Further Experiments upon the Colour-relation between certain Lepidoptera and their surroundings." Miss Lilian J. Gould read a paper entitled "Experiments on the Colour-relation between certain Lepidopterous larvæ and their surroundings, together with Observations on Lepidopterous larvæ." A long discussion ensued, in which Mr. Jenner Weir, Dr. Sharp, Mr. Merrifield, Mr. Poulton, Mr. Tutt and the Chairman took part.—H. Goss, *Hon. Sec.*

City of London Entomological and Natural History Society. —*Thursday, September 15th*, 1892.—Exhibits:—Dr. Buckell, living larvæ of *Ephyra punctaria*, 19 days old, examples of *Liparis auriflua* without the black markings, *Nonagria rufa* from Wimbledon, and a very dark form of *Amphipyra pyramidea* bred from a larva found in Kensington Gardens. Mr. Southey, series of *Hadena pisi* and *Cidaria dotata* from Hampstead; also a long series of *Abraxas grossulariata*, containing an example with a pale straw ground colour, also a fine specimen, speckled with black dots on both fore and hind wings. Mr. Bacot, examples of *Melitæa cinxia* from the Isle of Wight, and a series of *Thecla betulæ* from South Devon larvæ. Mr. Rosevear, two specimens of *Torrubia robertsii*, a parasitic fungus having for its host the larva of *Hepialus virescens* from New Zealand; he also read notes descriptive of the growth of the fungus. Mr. Tutt drew attention to the description of this fungus in the *Entom. Record*, etc., vol. ii., pp. 99–101. Dr. Sequeira exhibited *Bisulcia ligustri*, *Cuspidia alni*, and

series of *Leucania turca* and *Aplecta herbida* from the New Forest. Mr. Allbuary, two very pale specimens of *Vanessa urticæ* from Northfleet, the pale colour being evidently produced by a failure of the pigment. Mr. Clark read a paper "On a melanic race of *Liparis monacha*," illustrating the same with a fine series of that species, the progeny of a pair received from Scarborough. The male parent was almost black, the female only suffused, and ♂ and ♀ offspring followed them respectively to a very large extent in the depth of their coloration. Coleoptera.—Mr. Heasler exhibited *Elater balteatus*, *Melandrys caraboides*, *Amaspis thoracica* and *Ceuthorynchus asperifolium*.

Thursday, October 6th, 1892.—Exhibits:—Mr. Goldthwaite, a series of *Aplecta advena* from Carshalton, and a lemon-coloured male of *Colias edusa*. Mr. Bacot, bred specimens of *Liparis dispar*. He remarked that a few larvæ received from Winchester produced males with paler markings and borders to the hind wings, while the females were darker than the others he had bred. Mr. Boden, *Vanessa urticæ* with white markings instead of yellow, and *Colias edusa* var. *helice*. Mr. Bellamy, a very variable series of *Anchocelis lunosa* and *A. pistacina*, taken on lamps at Wood Green. Mr. Smith, a male of *Ennomos autumnaria*[1] taken at Southsea this season, this being the third specimen he had obtained from that locality; also *Lobophora sexalisata* and a banded form of *Camptogramma bilineata*. Mr. Hill, a long series of *Ennomos angularia* bred from a female taken in Epping Forest. He remarked that the males all showed a tendency to become suffused in the vicinity of the transverse lines, but the females were normal, possibly indicating that the male parent was a suffused specimen. The larvæ were fed on copper beech. Mr. Riches, *Notodonta ziczac*, *Heliothis marginata*, *Dianthæcia capsincola*, etc. Mr. Mera, *Deiopeia pulchella*, a variety of *Lycæna alexis*, and bred series of *Lithosia complana* and *L. complanula*, all from Suffolk. He stated that he had beaten the larvæ of *complanula* from trees, but those of *complana* were found on a brick wall. Mr. Prout, a variable series of *Agrotis saucia* from Sandown. Dr. Buckell, pupæ of *Ephyra punctaria*. He remarked upon the curious butterfly-like mode of pupation of this genus, the pupæ being attached to a leaf by the tail and a silken belt. He also stated that although the majority of the spring brood turned green before pupation, the autumn brood usually retained their brown colour. Mr. Battley, *Apatura iris* (bred), *Cherocampa porcellus*, *Stauropus fagi*, *Diphthera orion*, and a specimen of *Thera variata* with the band reduced to a small blotch on the costal margin, all from the New Forest. Mr. Bayne, *Argynnis paphia*, ♂ with a bleached spot on each wing, *A. selene*, with the black markings much reduced, *Triphæna subsequa* and *Heliothis dipsacea*, all from the New Forest. Mr. Clark, a series of *Hoporina croceago*, bred from ova. Mr. Southey, *Xylophasia rurea* and var. *combusta* from North London. Mr. Milton, *Colias edusa* and *Leucophasia sinapis* from Cullompton; also in Coleoptera, sixteen specimens of *Necrophorus ruspator*, sixteen *N. vespilo*, and four *N. humator*, all taken under one dead rabbit, and specimens of *Dorcus parallelopipedus*, *Prionus coriarius* and *Philonthus splendens*. Mr. Heasler, *Apion cruentatum* and *A. spencei* from Totteridge.—A. U. Battley and J. A. Simes, *Hon. Secs.*

[1] *Vide* note by Mr. Henderson, *ante* p. 242.—Ed.

South London Entomological Society.—*September 22nd*, 1892.—Mr. Fenn exhibited a series of *Orgyia antiqua*, rather above the ordinary size; Mr. McArthur, a series of *Hepialus humuli* from the Shetlands, and stated that whilst the now well-known dark males from those islands affected the marshy districts, those taken on the cliffs were white. He also exhibited *Sesia scoliæformis*, with the pupa case, the puparium *in sitû*, and ichneumons bred from the species. Also *Agrotis hyperborea*, with empty pupa case and preserved larvæ mounted on the foodplant. Mr. Frohawk exhibited a bred series of *Vanessa atalanta*, and referred to the statement that was frequently made that the small white spot in the red band was indicative of the female. He exhibited six females with, and six females without, this white spot, but said that only one male had the spot present, and this was peculiar in having other superficial female characters. Mr. Tutt stated that he had found the males invariably without the spot, but the females both with and without, and that therefore those specimens with the spot were almost certain to be females, but those without were both males and females. Mr. Carpenter exhibited a bred series of the same species, showing the same main points, but he also had one male with the white spot. Mr. Barren exhibited several each of *Colias edusa* and *C. hyale*, taken on the same day at Blean. Mr. Fenn said he had seen *Vanessa urticæ*, *in copulâ*, and asked whether it was probable the female would lay her eggs this autumn, and so produce a late brood. Mr. Carrington did not believe the *Vanessæ* were double-brooded. Mr. Tutt stated that it was his opinion that most of the *Vanessæ* occasionally copulated in the autumn, and in such cases he considered the female would lay her eggs at once, and that an attempt at a partial second brood would thus be made, which would be a success or failure, dependent on the condition of the weather during late autumn. He further stated that it was generally accepted that when butterflies emerged in the summer those that meant to hybernate would go into hybernation at once, however early, and would copulate the following spring, but that a butterfly having copulated would not go into hybernation. He stated that autumnal copulations of *V. urticæ* were very frequent, those of *V. polychloros* less so. Mr. Cooper supported this view, and stated that he had, a day or two previously, taken newly hatched larvæ of *V. urticæ*. Mr. Adkin considered that the ova hatched a few at the time, and the existence of a brood might thus be spread over a long period. Mr. Frohawk pointed out that this would be practically impossible in the gregarious species of *Vanessæ* which clear the food as they go, and that the late hatched ones would starve. Mr. Hawes exhibited larvæ of *Colias edusa*—the ova laid 15th to 17th August, hatched the 22nd to 28th. As the larvæ were almost full-fed, these were certainly about to produce a second brood, as was the case in 1877. Mr. Tugwell exhibited *Grammesia trigrammica*, including specimens of vars. *evidens*, *semifuscans*, *obscura* and *pallidalinea*, but apparently no specimens of the var. *bilinea* of Hübner; also a pale variety of *Cymatophora or*, and nice specimens of *Bisulcia ligustri* and *Hadena genistæ*. Mr. Frohawk saw *Euchlöe cardamines* in Surrey on August 18th and August 20th; whilst Mr. Warne took two very fresh *Argynnis selene* late in August. Mr Adkin exhibited a series each of *Oxyptilus pilosellæ* and *distans*, captured at Folkestone; and, for

Mrs. Hutchinson, Cornish specimens of *Herbula cespitalis*, *Diasemia literalis*, *Scoparia dubitalis*, *Tortrix viburniana*, and a species marked doubtfully as *Homœosoma saxicola*. Mr. South exhibited a series of *Grapholitha nisana* and a comparative series of *G. cinerana*. Mr. Fenn called attention to the fact that *nisella* was common both on poplars and willows, and that there were two distinct races of the species, a larger and smaller, affecting these foodplants. Mr. Barrett remarked that poplar as a foodplant of *nisella* was unknown to him. Mr. Fenn referred to the fact that some entomologists wish to merge *cinerana* into *nisella*, and pointed out differences in shape, etc., besides difference in habit.—ED.

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY.—*September 12th*, 1892.—The President (Mr. S. J. Capper, F.L.S., F.E.S.) in the chair. Mr. F. N. Pierce, F.E S., read a paper entitled, "Some further researches upon the genital structure of Lepidoptera." The author described the different species in the genera *Acronycta*, *Agrotis*, *Noctua*, etc., and showed that in cases where the identity or otherwise of species was disputed the genitalia might often be used as a sure means of differentiation. The paper was illustrated by the author's preparations of these parts thrown upon a screen by the aid of an oxy-hydrogen micro lantern, and by photographs and specimens of each species described. The President exhibited varieties of *Angerona prunaria* Messrs. Gregson and Robson challenge series of *Abraxas grossulariata*, showing variation produced by food. Mr. Scowcroft, varieties of *Xanthia cerago*. Mr. William Johnson, a fine variety of *Vanessa urticæ*, which had the ground colour very pale; *Bombyx rubi*, with the bands absent; and *Orgyia fascelina*, with a mass of dark scales near the centre of the costa of the forewings. Mr. Prince, varieties of *Abraxas grossulariata* and a specimen of *Colias edusa*, nearly the var. *helice*, captured at Wallasey. Mr. Harker, *C. edusa* from Crosby. Mr. Crabtree, who remarked that he had only taken one var. *helice* among 56 types, a long series of *C. edusa* captured at Si lmouth, South Devon. —F. N. PIERCE, *Hon. Sec.*, 143, Smithdown Lane, Liverpool.

BIRMINGHAM ENTOMOLOGICAL SOCIETY.—*September 12th*, 1892.—G. H. Kenrick, Esq., V.P., in the chair. Mr. Neville Chamberlain showed a box of Lepidoptera which he had recently collected in Inverness-shire. Mr. P. W. Abbott showed a long series of *Colias edusa* from Freshwater, Isle of Wight, including half a dozen *helice*, and one specimen intermediate in colour between the type and var. *helice*. Mr. W. Harrison, two *Colias edusa* from Trench Woods. Mr. R. C. Bradley, *Zygæna trifolii* var. *confluens*, and one *Emmelesia tæniata*, both from Barmouth. Mr. G. H. Kenrick showed *Plusia bractea* from Scotland, and *Euperia fulvago* from Sherwood Forest and Cannock. Mr. W. Harrison, larvæ of *Sphinx ligustri* from Trench Woods. Mr. C. J. Wainwright read a paper upon "Isolation as a factor in the evolution of species," in which he endeavoured to show that not only were the indirect effects of isolation very considerable, but that it directly performed an important part in the divergence of species, without the assistance of "natural selection." Considerable discussion followed, in which Messrs. G. H. Kenrick, Neville Chamberlain and R. C. Bradley joined. — COLBRAN J. WAINWRIGHT, *Hon. Sec.*

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THE GENUS ACRONYCTA AND ITS ALLIES.

By Dr. T. A. CHAPMAN.

(*Continued from page* 222.)

DEMAS CORYLI and *Diloba cœruleocephala*.—We now come to two species, *Demas coryli* and *Diloba cœruleocephala*, that are certainly not very much related to each other, and though they have some indications of affinity with *Acronycta*, are not near enough to be placed in the same family. *Coryli* I should certainly restore to its old place in the *Liparidæ*, to which it is far closer than to the *Acronyctas*, whilst *cœruleocephala* seems to require a family to itself, and is possibly as near to *Acronycta* as to any other family, but is nevertheless rather a Bombyx than a Noctua. But neither of these seem to me to be nearer to *Acronycta* than is *Arctia*, or *Liparis*, or *Orthosia*, or *Xylina*, which appear to be perhaps the families nearest to *Acronycta* in different directions.

Before discussing this matter further it may be well to give some description of each of these.

Demas coryli.—The eggs are laid singly (Pl. VIII., figs. 9, 9a). In the figure they have a close resemblance to those of *Moma orion*, and in size and sculpturing the likeness is rather close, but the detailed character of the sculpturing is very different, and the colour and texture are also very different. The form is much the same, nearly three-quarters of a sphere, rather flattened on the top and below. The diameter is ·76 mm., the ribs are about twenty-five in number, diminishing in number towards the top, and the secondary ribs are very distinct, alternating in adjacent furrows. Each rib consists of or perhaps is surmounted by a very definite small raised ridge, unlike anything seen in *Acronyctas*. The colour is pale greenish when laid, and then becomes yellowish with a circle of small red dots just

above the widest part; the egg looks solid and strong when compared with the glassy delicacy of nearly all *Acronyctas*, *orion* especially.

The newly hatched larva (Pl. IX.) is cylindrical, the 12th segment perhaps a little pronounced, otherwise no sign of any segment being "weaker" either in form and colour than any other; the head is black, and there is a black plate on segment 2. The colour is rufous, with paler lines and black points and hairs, producing a general fuscous effect. The anterior trapezoidal possesses three or four hairs, the posterior one, the lateral many. The hairs are long, about twice the diameter of the larva dorsally, those of the large lateral tubercles three or four times, and those on 13 and 14 are as long as the larva, *viz.*, 2 mm. As the larva feeds up, various reddish marblings appear along the subdorsal region. The hairs are ringed darker and paler, like porcupine quills. The abundance of hairs and their length, the character of the tubercles, the anterior trapezoidal being more important than the posterior, the colouring, all point to *Liparis* rather than *Acronycta* as the nearest affinity.

In the second skin, the larva is rufous with a whitish dorsal line, a faint one between the trapezoidals, and one more distinct below posterior trapezoidal. The inner trapezoidal on 3 and 4 is either lost or fused with the outer, which is broad. The other trapezoidals are of about equal size, and the super- and sub-spiracular rather larger. The lateral tubercles of the 2nd segment are very large, as are those of 12 and 13. A peculiar central dot occurs on segments 3 and 4, and on 5 to 11 or 12 is a depression, with a corneous point immediately behind the anterior trapezoidal in the position of a peculiar organ in various *Liparids* (*e.g.*, *monacha*).

In the next (third) skin the length is 10 mm. The larva now shows variation in colour, as when full grown; some being white, some black, some rufous, etc., with intermediate and piebald forms. The 5th and 6th and 12th and 13th segments are more pronounced than the others, are darker and have larger tubercles. The dot on 3 and 4 still exists.

In the further skins it acquires a more *Liparid* general appearance from the anterior and posterior bunches, rather perhaps than brushes, of hair, but it does not acquire any dorsal brushes or glands, nor do the organs noted in the second skin acquire further development; but even so far they are very characteristic.

Its fashion of living between spun leaves is by no means that of an *Acronycta*, even if it be not characteristic of *Liparis*. This habit is, however, very characteristic of the young larva of *Leucoma salicis*.

The pupa (Pl. IX.) is nearly black, with paler membrane at the incisions of 9 and 10. It is broad and full at 6.7 and 8, narrow at 4 and 5, and tapers rapidly; 12, 13 and 14 finely tapered. The anal armature is a fairly tapering process, longitudinally ribbed, ending in an irregularly ribbed or pitted bulb, slightly flattened above, and terminated by a bunch of hooks, all arising together and lying in the same horizontal plane, and consisting of four larger ones, two spreading to either side, and three or four very small ones on each side crowded at the base of the others.

Diloba cæruleocephala.—The egg (Pl. VIII., figs. 11, 11a, 11b) is a dome of rather less than a hemisphere, 1·00 mm. in diameter, with 14 or 15 ribs, the top is rather flattened over an area of about 0·30 mm. in diameter, making a very large micropylar area. The ribs are rather high, but not sharp, and the secondary ribs are numerous and pass continuously over the primary ones. The primary ribs pass smoothly into the micropylar area without any irregularity or any meeting or division, whilst the secondary ribs form a network of small cells.

In the NOCTUA (and *Acronycta*) egg the cells around the micropylar area seem as they pass outwards so to arrange themselves that their radiating dissepiments form the primary ribs, and the others the secondary ones. Here the cells seem to arrange themselves into the secondary ribs, but the 14 or 15 primary ribs seem to be flutings underlying altogether these cells, and consequently the ribs into which they arrange themselves. They are laid in groups of fifty or more, nearly touching each other, but not overlapping, or always in very orderly arrangement, and are coated with abundant scales of the moth. The winter is passed in this state.

The newly-hatched larva (Pl. IX.), 2·50 mm. in length, is of a grey sooty colour, nearly cylindrical, head large and black, the 11th segment presents no difference from the others. The tubercles each carry one long hair, dark at the base, pale at the tip and of a length nearly twice that of the larva. The skin between the tubercles is covered with fine rough points, almost hairs. The 2nd segment has a black dorsal plate carrying six strong hairs and two tubercles in front of spiracle; on 3 and 4 the conjoined trapezoidal tubercles have each two

hairs, placed one in front of the other (not side by side). There are three circumspiracular tubercles, of which the post-spiracular is small on 3rd and following segments, a marginal tubercle to the 7th, but not after. The central tubercles of 13 are conjoined, and the anal plate has eight hairs. When full-grown in this skin, the larva is greenish-grey, with yellow dorsal and lateral lines, and is in fact already a miniature of the full-grown larva.

The second skin differs from the first, in the yellow bands being free from the minute black points or bristles, which give a smoky look to the white (green ?) portions. The head has sundry pale markings. The plate of the 2nd segment is divided into two portions, each with four hairs. The 3rd segment is decidedly the largest, then the 4th. The yellow band broadens on 3, so as to include the dorsal tubercles, and is nearly evanescent on 4.

In the third skin the larva is at first deep blue-black and yellow, but as it grows, the blue becomes a pale violet blue, and the yellow, clearer and purer. The marginal tubercles now present a complete series, and there is a pre-spiracular tubercle just to be detected. Each lateral plate on 2nd segment has now broken up into four tubercles, of which the two posterior are still conjoined. The yellow forms a broad transverse dorsal stripe on the 3rd, including the dorsal tubercles, and forming a hump. The 12th is also raised; in these and other respects the larva is almost identical with the full-grown larva.

The cocoon is 22 mm. by 8 mm., fairly cylindrical, and tapering at each end, but varying a good deal in size and outline, according to its position. In captivity, it is formed in an angle of the top or bottom of the cage, or more frequently on a stem of the foodplant, especially at a fork. In such a situation it pulls a leaf or two together in which to spin, but instead of curling them round the cocoon, it chops them up into fragments which it incorporates with the silk of the cocoon. It will also accept a surface of sawdust and cover the cocoon densely with this. The material is a white silk, afterwards becoming rather darker, apt in a cocoon formed without much extraneous material to be rather brittle. On several occasions I have found the cocoon on the trunk of an apple tree, and except that it was more rounded and prominent and, of course, softer, it much resembled a *Cerura* cocoon, the lichen of the surface of the back being most cleverly worked into the cocoon

Cerura-fashion, so as to make the cocoon quite like its surroundings. In some specimens there is almost a valvular arrangement by which a strong edge of silk easily separates from the surface in which the cocoon is made, but I fancy this is accidental, as in most cases the cocoon is ruptured for emergence.

The moth emerges from 5 to 7 p.m. (*Acronyctas* 11 to 3), and by 8 p.m. is usually paired; the date is about the first week in October. They pair readily in confinement, and the female sits very quietly till this occurs, remaining on the same spot even for several days, only moving in the evening enough to find a spot where she can conveniently raise her wings a little, but practically on the same spot where she expanded her wings. This is not at all usual in any other species I know, the female usually taking a short preliminary flight, obviously with the view of finding a more protected spot, and is especially unlike *Acronycta*, where the females certainly often sit still and "call," but very often also is so active that the male must have some difficulty in finding her.

(*To be continued.*)

VARIATION.

ZONOSOMA PUNCTARIA PUPÆ DIMORPHIC.—Mr. Hollis and myself have been rearing the above species from ova this autumn with the following results: Mr. Hollis's ova hatched early in August, and the larvæ commenced pupating towards the end of the first week in September. All his pupæ are bright green, some being marked with black spots. My ova were laid on August 17th, by a female captured at Wimbledon, and hatched on August 25th. The first larva turned to pupa on October 3rd. This pupa was green, though of a darker tint than those of Mr. Hollis. All the remaining larvæ have turned to pupæ of a light wainscoat-brown colour. These results show that the pupæ of the autumn brood are dimorphic. It is interesting to note that Mr. Hollis's pupæ, which were formed a month earlier than mine, were all green, and that the earliest of mine was green, the later ones being brown.

In 1887 I reared a brood from ova laid by a Wimbledon female in June —all the larvæ of this brood turned green in their last skin, and formed green pupæ.—FRANCIS JOHN BUCKELL, 32, Canonbury Square. *Oct. 22nd*, 1892.

VARIATION IN CEROSTOMA RADIATELLA.—I have been hunting and beating for larvæ for the last few days, and in the beating no end of *Cerostoma* of all sorts tumble out. I have gathered a hundred or two and set. What endless variety there is in the common *radiatella* to be

sure! I should like to get someone in the north to send me some. They get dark forms there which are missing here.—W. HOLLAND, 111, Southampton Street, Reading. *September 15th*, 1892.

NEMEOPHILA PLANTAGINIS ab. HOSPITA.—On June 7th, I was fortunate enough to get a male *Nemeophila plantaginis* ab. *hospita*, the markings on the fore as well as the hind wings, are intensely white. I saw two more on the same day.—F. B. NEWNHAM, Church Stretten, Salop. *October 6th*, 1892.

CHELONIA CAIA VAR.—During the last days of July, I had, brought to me by a workman, a female *Chelonia caia*, in which the collar, abdomen and hind wings are yellow, almost of the same shade as in *C. villica*. Has this aberration any name? There is, of course, the alpine *C. flavia*, Fuesla, a very distinct species.—ID. [This form is known as var. *lutescens*. See *British Noctuæ and their Vars.*, vol. ii., Introduction, pp. ix, x, for account of this and similar varieties.—ED.]

SCIENTIFIC NOTES.

ASSEMBLING.—On May 12th I took a newly emerged female *Saturnia pavonia* on the Longwynds, our highest range of hills here, and for the first time in my experience I "assembled," literally, hundreds of males between 3 p.m. and 5 p.m.—F. B. NEWNHAM, Church Stretton, Salop. *October 6th*, 1892.

COREMIA FERRUGATA AND UNIDENTARIA (A CORRECTION).—By an unfortunate error the names of these two species have been transposed on page 177. Will your readers kindly alter their copies to prevent perpetuating the error? For *unidentaria* read *ferrugata* and *vice versâ*. —F. N. PIERCE, 143, Smithdown Lane, Liverpool. *Nov. 1st*, 1892.

COREMIA FERRUGATA AND UNIDENTARIA.—Thanks to the kindness of Mr. Pierce, who forwarded to me the microscopic specimens on which his note on p. 177 was founded, and of Mr. Prout, who acquainted me with the fact that true *unidentaria* are occasionally red-banded, I am now able to clear up the apparent discrepancy in our observations. By a curious slip, Mr. Pierce, in his published note, has misplaced the names *ferrugata* and *unidentaria*, both in his text and beneath the figures. The species with the serrations (not very well represented in the figure, as they are less uniform) is *unidentaria*, not *ferrugata*. Mr. Pierce sent five slides of the former and three of the latter, correctly labelled, and I immediately noticed his mistake. The specimens which I had first examined as *ferrugata*, I now learn to be red-banded varieties of *unidentaria*, with which I took them; finding that they agreed in structure with what Mr. Pierce represented as *ferrugata*, I was satisfied, whereas if I had known that this was where the discrepancy really was, I should have gone on to examine *ferrugata* from other localities, and discovered the error. Proceeding then to examine *unidentaria*, I found that all the specimens also agreed with what Mr. Pierce represented as *ferrugata*, and not with his *unidentaria*; hence the resulting confusion. I presume that the two supposed *ferrugata*, bred from eggs laid by *unidentaria*, which I saw in Zeller's collection, now in the Natural History Museum at South Kensington, were also red-banded varieties

of *unidentaria*. It is proved then, I think, that Mr. Pierce, though unfortunately reversing the facts as above explained, is right in his main conclusion that the two species are to be regarded as quite distinct. Mr. Tutt's caution as to the possibility of a specimen being mended with a body from another species is not uncalled for. I once received from a most illustrious Continental entomologist a *Pyrale* with a head belonging to an insect of a different genus, which at first caused me great astonishment, and it is well-known that Mr. Stainton once described a new species from an equally artificial monster.—E. MEYRICK, The College, Marlborough. *October 22nd*, 1892.

MALE COPULATING MORE THAN ONCE.—This season a male *Leucoma salicis* was found in company with four distinct females of this species, this taking place on four consecutive days; the strange part of the whole thing being that all the females laid perfectly fertile ova. Prior to this experience I thought that the first intercourse usually proved fatal to the male.—F. B. NEWNHAM, Church Stretton, Salop.

THE OVA STATE OF GEOMETRÆ.—The following notes on the duration of the egg state of certain GEOMETRÆ may be looked upon as a supplement to those already published by Mr. Fenn (*ante*, pp. 173–176).

GEOMETRÆ. DURATION OF OVA STATE.

	Year.	Ova Laid.	Year.	Hatched.	Duration.
O. sambucata ...	1883	July 13	1883	Aug. 4	22 days.
,, ...	1884	July 4	1884	July 17	13 ,,
S. bilunaria	1883	April 18	1883	May 16	28 ,,
,, ...	1883	July 8	1883	July 24	16 ,,
,, ...	1890	Aug. 14	1890	Aug. 29	15 ,,
,, ...	1891	July 23	1891	Aug. 7	15 ,,
E. quercinaria ...	1886	Aug. 17	1887	May 10	8¾ months.
B. hirtaria	1882	Mar. 31	1882	May 7	37 days.
A. betularia	1891	June 24	1891	July 7	13 ,,
H. abruptaria ...	1884	May 20	1884	June 13	24 ,,
,, ...	1889	May 23	1889	June 6	14 ,,
B. gemmaria ...	1883	July 11	1883	July 31	20 ,,
H. strigata	1889	July 8	1889	July 17	9 ,,
Z. punctaria	1887	June 5	1887	June 13	8 ,,
,, ...	1887	Aug. 10	1887	Aug. 19	9 ,,
A. bisetata	1886	Aug. 11	1886	Aug. 21	10 ,,
remutaria	1886	June 8	1886	June 22	14 ,,
immutata	1891	July 26	1891	Aug. 12	17 ,,
T. amataria	1885	July 20	1885	July 24	4 ,,
C. exanthemaria ...	1887	June 5	1887	June 15	10 ,,
M. notata	1891	July 10	1891	July 23	13 ,,
,, ...	1892	June 5	1892	June 10	5 ,,
N. pulveraria ...	1890	May 25	1890	June 9	15 ,,
,, ...	1892	May 31	1892	June 10	10 ,,
H. defoliaria... ...	1881	Nov. 10	1882	Mar. 25	4½ months.
,, ...	1882	Dec. 2	1883	April 19	4½ ,,
M. unangulata ...	1886	Aug. 11	1886	Aug. 21	10 days.
C. designata	1890	June 5	1890	June 16	11 ,,
unidentaria ...	1892	Aug. 5	1892	Aug. 15	10 ,,
picata	1884	July 15	1884	July 26	11 ,,

—F. J. BUCKELL. *August*, 1892.

CURRENT NOTES.

Every now and again the common *Cordyceps* (*Torrubia*) *robertsii* awakens the interest of lepidopterists in general. The younger lepidopterists look on it in wonder, and the older as a curiosity. Comparatively few look at it from a scientific point of view, and we presume that those few would be astonished to find that it were possible to write a book of 364 pp. on the "Entomogenous fungi, or fungi parasitic upon insects." This work has been excellently done by Dr. M. C. Cooke, M.A., who calls his book *Vegetable Wasps and Plant Worms*. He describes the fungi known to be parasitic on Hymenoptera, Coleoptera, Lepidoptera, Diptera, Neuroptera, Orthoptera, Heteroptera, Homoptera and Arachnidæ, and figures most of them. It is to be hoped that entomologists, who observe larvæ, pupæ or imagines, attacked by fungi, will, instead of rushing into print with no actual knowledge of what the fungus is, turn to the pages of this work and write a scientific note under its proper name, and thus add valuable scientific matter. This is a book to be bought by every entomologist who is in the slightest degree interested in the advance of the science. It is published by the Society for Promoting Christian Knowledge.

Whilst, on the one hand, some of our friends explain that the "mudthrowing" recently indulged in, was not meant to spatter anyone, on the other hand two or three public cases of "whitewashing" occur in the current numbers of more than one of our contemporaries.

Mr. Jenner records the occurrence of *Melissoblaptes gularis*, Zell., bred from larvæ of pupæ detected in September, 1891, in some rice from Japan, which arrived about that time in this country.

Chærocampa celerio is recorded as captured in Sherborne, Dorset, on October 1st, by Mr. Benthall, and from Ashford, in Kent, on October 21st, by Mr. Viggers. *Lycæna arion* is reported from the Forest of Dean by Mr. E. G. C. Brooke. Unfortunately, Mr. Brooke was on a bicycle, had no net, and was unable to capture any specimens. This is unfortunate, as such a record as this really needs verification. Mr. Sich records the capture of a larva of *Deilephila galii*, found feeding on the common red fuchsia in a garden at Chiswick.

Specimens of a *Thecla*, which Mr. Bromilow supposes were hybrids between *T. spini* and *T. ilicis*, prove to be *T. spini* var. *lynceus*. Records of hybrids taken in a state of nature, always want inquiring into most carefully.

Probably no mass of reference work equal to that recently brought out by Mr. W. F. Kirby under the title of *A Synonymic Catalogue of Lepidoptera Heterocera*, vol. i., has ever before been presented to the entomological public. It is well known that Mr. Kirby has a greater knowledge of entomological literature, than any entomologist living; and it would certainly be hypercritical to attempt to deal with the work in the way of ordinary criticism. Such a monument of labour as this can never repay the author, except the knowledge that its use to future workers is unquestionable and almost beyond calculation. Every entomologist ought to support the publication of such a work as this.

It is with the greatest regret that we record the death, on October 18th, of Mr. Howard W. J. Vaughan, at the age of 46. He was well-known as an active collector, and his collection, sold in May, 1890, realized £832.

Dr. Wood describes another rush-feeding species of *Coleophora*, which he names *agrammella*, and states that its favourite food is *Juncus conglomeratus*, but that it also occurs on *J. effusus* and *lamprocarpus*.

Mr. McLachlan states that the large collection of Neuroptera formed by Mr. H. Albarda, has been given to the Leyden Museum, on condition that it be kept separate and not incorporated in the general collection. It would have been an excellent thing if such collections as the Zeller and Grote collections, in our own museum, had been placed under similar restrictions. Nothing is more unsatisfactory than the breaking up of these historical collections, and the obliteration of the individual value which such collections ought to possess.

We have also to record, with regret, the death of Mr. J. T. Harris, of Burton-on-Trent, on October 3rd, at the age of 62. He was a keen Coleopterist, but was always ready to support the production of works in other branches of Natural History.

Is it not nearly time that the South London Entomological Society began to waken up? At the last few meetings, members have not been so numerous as was their wont. No scientific papers have, as yet, been read this autumn, and the meetings are likely to degenerate into gossiping half-hours over the exhibits which come to hand.

It has come to Mr. Clark's knowledge that he was deceived in the origin of the *Liparis monacha* figured last month. He wishes us to state that he received them from Mr. Salvage, who supposed they were taken at Scarborough. Mr. Salvage received them from Mr. Head, supposing they were British. Mr. Head now states that they were "obtained originally from a cross between New Forest and Continental parents." He also states that he has "told correspondents how they were obtained if they asked if they were British." Surely this is insufficient! When buying from a British dealer, we generally assume the British authenticity of our purchases unless we are told the contrary. This, it would appear, is directly contrary to Mr. Head's practice. No one regrets more than Mr. Clark this unfortunate incident, and the British entomological public will perfectly understand the *bonâ fides* of that gentleman by his having had some of the specimens figured, and he wishes to take the earliest opportunity of explaining the matter.

Attention is drawn to the fact that the City of London Entomological Society has altered its meeting nights to the first and third Tuesdays in the month.

NOTES ON COLLECTING, Etc.

NOTES OF THE SEASON.—*Aberdeenshire.*—Punctually at 8 p.m. on August 3rd, the *Flying Scotchman* steamed forth from King's Cross station, bearing, with many others, my wife, self and family, to the happy "land o' cakes;" and well does this train deserve its title, for at 7.45 a.m. ($11\frac{3}{4}$ hours), we reached Aberdeen, a distance of 540 miles. Doubtless, the objects of paramount interest, *en route*,

to most of the travellers, were the Forth and Tay Bridges, but hardly compatible with the record of an entomological tour. At Aberdeen station we were met by our friend Mr. Arthur Horne, and conducted by him to a very substantial breakfast, he, at the same time, giving such glowing descriptions of our probable captures and eventual rendezvous, that we were all eager for the fray, and so we again wended our way to the station, and accomplished another twenty miles, probably the most tedious part of our journey, for the Scotch local trains are not famed for express speed. Through the kindness of Sir Arthur Grant, Bart., we were allowed carte blanche, to his extensive estate of Monymusk, there to revel on mountain and in valley in our favourite pursuit. Mr. Horne joined us on Friday, August 5th; and as I was allowed to relinquish the responsibility of both husband and father during his stay, I can assure you we did not allow the grass to grow under our feet. Mr. Horne was most desirous to complete his promise, that, had it not been for his affable companionship, I should have been tempted to cry "dead beat;" however, he had his desire nearly fulfilled, with only one exception.

August 5th, after dinner, we went in search of good "sugaring" ground, and on the way netted the following imagines:—*Larentia cæsiata*, some nice banded forms; *L. didymata*, swarms (not taken); *Thera variata*; *Cidaria populata*, common; *C. immanata*, very variable; *L. viridaria*, common; *Miana fasciuncula*, at rest on thistles; *Epinephele hyperanthus*, worn, but some without any markings on underside and much smaller than the southern form; *E. janira*, worn; *Cœnonympha pamphilus*, common; *Scoparia ambigualis*, very common; *Eupœcilia angustana*, common; *Pœdisca solandriana* and *Scopula lutealis*, both very common. Amongst larvæ were the following:—*Notodonta dromedarius*, *N. ziczac*, *Dicranura furcula*, *D. vinula*, *Asphalia flavicornis*, *Demas coryli*, *Tæniocampa gothica*. Home for tea at 6 o'clock; started at 6.30 for "sugaring" ground, and although a distance of three miles from our lodgings, we contented ourselves with just sufficient "mountain dew" to ward off the evil effects of the "Scotch mist," and then resorted to our pipes. Our "sweets" being laid on, we mounted our "flags" in readiness for GEOMETERS and MICROS. The following were caught:—*Cidaria dotata*, *C. populata*, *C. immanata*, *Larentia cæsiata*, *L. olivata*, *Metrocampa margaritaria*; and at honeysuckle, *Cucullia umbratica* and *Plusia pulchrina*. At the same blossom my friend secured a fine specimen of *Crambus myellus*. At sugar were the following:—*Noctua sobrina* (14); *N. neglecta* (2); *N. umbrosa* (2); *Aplecta prasina* (1); *Triphœna orbona* var. *curtisii* (1) (also the red form and the type); *Noctua baja* and *N. brunnea*, very common; *Xylophasia polyodon*, from type to jet black; *Triphœna pronuba*, *Leucania impura*, *Apamea oculea*, *Noctua xanthographa*, *N. festiva*, all very common and variable; *Graphiphora augur*, worn; *Apamea gemina*, worn; *Boarmia repandata* var. *sodorensium*.[1] We then went home very satisfied with our first day's work. I may mention that some of the above species preferred various flower blooms to sugar. On August 6th, the captures by day new to the former list were:—*Tanagra atrata*, *Coremia munitata*, *Hepialus hectus*, *Ellopia prosapiaria*; at sugar *N. sobrina* (10), *Xylophasia rurea*, *Leucania conigera* and *Miana arcuosa*.

[1] Is our correspondent quite sure that this variety was the one captured?—ED.

August 7th was devoted to mountain work. We obtained *Cœnonympha davus* and *Argynnis aglaia*, both worn; *A. selene*, in fair condition; *Lycæna alexis*, worn; *Emmelesia ericetata*, *Cidaria populata*, *Botys fuscalis*, *Crambus margaritellus*. At sugar we obtained *Noctua sobrina* (27), and the following fresh species:—*Charæas graminis*, *Miana literosa*, *Agrotis nigricans*, *Caradrina cubicularis*. Mr. Horne secured another *Crambus myellus*.

August 8th we were setting all the morning, the weather being cold and wet. At sugar we found *N. sobrina* (8) and the other usual species, but not so numerous as before.

On August 9th we again devoted ourselves to mountain work, and obtained larvæ of *Viminia menyanthidis*, *V. myricæ*, *Bombyx rubi*. The only thing new to our list was *Sericoris palustrana*. At sugar we obtained *N. sobrina* (6), with other species as before. The air was cold and frosty. On August 10th we again worked the mountains, and obtained the species of GEOMETERS already recorded, very numerous. *Plusia interrogationis* were very wild, we only captured three; whilst at sugar *N. sobrina* (8), and fresh to our list:—*Aplecta occulta* (1), *Xanthia cerago*, *Noctua dahlii*. This evening we secured three *C. myellus*, two falling to my net, but these I gave to my friend Mr. Horne.

On August 11th the morning was wet and spent at setting. At sugar, in the evening, we obtained *N. sobrina* (30), *C. myellus* (1), and, fresh to our list, *Noctua glareosa*, *Dyschorista suspecta*. Other insects swarming both on sugar and bloom. I don't think I should be exaggerating if I said we saw several thousands. Weather warm, drizzling rain.

On August 12th we again went to the mountains. We netted *A. aglaia*, *Plusia interrogationis*, *L. cæsiata* larvæ, as before, with the addition of some GEOMETERS, probably *Cidaria miata*; whilst at sugar we took *N. sobrina* (20), all other species being again very plentiful.

On August 13th Mr. Horne left for Aberdeen; we were both well satisfied with our week's captures, of which all rare Macros we agreed to divide equally. I accompanied Mr. Horne to Aberdeen to have a look at his splendid collection, also to well overhaul his duplicates. I had apprised him of this weeks before, so he had looked me up a very nice lot, valuable in renewing and completing series. This ended the most important part of my entomological holiday; the latter part of the time was spent in the immediate neighbourhood collecting botanical specimens, of which there were many varieties, these were consigned to the care of my eldest daughter. Sugar, on August 13th, produced with others already enumerated the red variety of *Leucania pallens*.

August 14th was very windy with rain in evening, so that we spent most of the day indoors.

On August 15th we captured *A. aglaia*, *C. immanata*, *L. cæsiata*, *H. elutata*, nice forms, and larvæ as before.

On August 16th, morning work, as before, nothing new to list; but at sugar in the evening *N. dahlii*, *N. glareosa* (black var.), *X. polyodon*.

August 17th, day work as before. Sugar in evening produced, new to list, only *Lithomia solidaginis*. No entomological work was done on the 18th and 19th.

On the 20th we arrived at Pitfour, Aberdeenshire, found there, new to list, *Cidaria fulvata*, *C. russata*, and larvæ of *Bombyx callunæ*.

On the 22nd we left Pitfour for Aberdeenshire, thence to Edinburgh.

On the 23rd we left Edinburgh for Morpeth, Northumberland, found there on the 24th at light, the red form of *C. graminis*, at rest *Polia chi* and var. *olivacea*, also a nice series of *Neuria popularis*.

August 25th, left for London. Thus ended a most enjoyable trip, and in my opinion a most satisfactory entomological record.—J. P. Mutch, Hornsey, N.

Hampshire.—On the 6th July last, by the very kind invitation of Rev. G. M. A. Hewett, whose enthusiasm as an entomologist is so well-known to all of us, and whose hospitality I enjoyed during my stay at Winchester, I had my first experience of collecting in the south. Going out in the afternoon but a very short distance from Winchester, we were well at work with net and beating-stick, in a narrow lane with hedges covered with *Clematis*. The wind was rather strong, but the stick brought out a lot of species which I had never seen on the wing—*Melanippe procellata*, *M. rivata*, *Phibalapteryx tersata* and *Eupithecia isogrammata* were in plenty, and in fine condition,—*Hemithea thymiaria*, *Lygdia adustata*, *Anticlea rubidata*, *Scotosia rhamnata*, *S. vetulata*, *M. ocellata* and a few others were not so plentiful. Having had sufficient of this we had a turn at some thistles for larvæ of *Cynthia cardui*, and shortly afterwards retraced our steps to the city, noting a number of *Cucullia verbasci* larvæ feeding on a high bank. I was much tempted to take some, but not having the food for them at home I had to reluctantly decide against it. After dinner we sallied out, accompanied by a gentleman from Portsmouth, to the wood made famous by Mr. Hewett's sugar experiences, so graphically recorded in these pages. The wind by this time was blowing almost a gale, and every moment we expected rain; however, it managed to hold off, and after a walk of two or three miles up a steep road we found ourselves in the woods. Mr. Hewett parcelled out the ground, and we were soon at work. The wind was so boisterous that nothing ventured on the wing at dusk, and our success at sugar was nothing to what it might have been with more favourable wind conditions. I managed to take one fine *Triphæna subsequa*, and, amongst others, I got *Bisulcia ligustri*, *Aplecta tincta*, *A. nebulosa*, six *Cymatophora duplaris*, *Noctua brunnea*, *N. festiva*, etc. Next morning we were at Lyndhurst Road station, soon after nine o'clock, and commenced operations immediately. I here saw several butterflies on the wing which are specially pleasing to a northern collector. The beautiful flight of *Limenitis sibylla* was worth going the journey to see. The males were mostly chipped however, but still I got a fine lot to bring home when I was out on the following day. *Argynnis paphia* was very fine, and very abundant. *Satyrus egeria* (worn), *A. adippe*, *Epinephele hyperanthus*, *Lycæna ægon* on the heaths, *Vanessa atalanta* (one), late for a hybernated specimen, were the chief captures. On the buckthorn, larvæ of *Gonopteryx rhamni* were not uncommon. In the afternoon I netted a fine example of *Boarmia repandata* var. *conversaria*, several *Fidonia piniaria*, with pale yellow markings in the ♂, *Ellopia fasciaria*, etc. I took also a few larvæ of *Asphalia ridens* on my way to Lyndhurst. My doings at sugar were of a successful nature, but do not warrant special mention. On the wing and at sugar were *Boarmia roboraria* (two), *Tephrosia extersaria*, *Bisulcia ligustri*, *Leucania turca*, *A. herbida*, *Thyatyra batis*, *Gonophora derasa*, the three latter very common. I also took during my stay

Phorodesma bajularia, *Calligenia miniata*, *Lithosia rubricollis* and *L. mesomella*.—S. WALKER, York. *August 8th*, 1892.

New Forest.—On August 30th, my son and I began sugaring a ride in the New Forest, quite apart from the usual haunts of entomologists in that locality. Between that day and October 1st we sugared fourteen times from twelve to twenty trees on each occasion, and we took 474 insects and saw forty-six different species. Amongt those we took were the following:—*Triphœna subsequa* (1), *Epunda nigra* (3), *Xylina petrificata* (7), *Noctua neglecta* (14), *Thyatyra batis* (4), *Agrotis suffusa* (20), *A. saucia* (34), *Asphalia diluta* (75), *Hadena protea* (31), *Xylina rhizolitha* (57), *Anchocelis rufina* (23), *A. lunosa* (2), *Calocampa vetusta* (2). It was interesting to note the days on which the species appeared at sugar for the first time; for instance, *A. litura*, *X. silago*, *N. protea*, *X. rhizolitha*, *X. petrificata* appeared for the first time on September 12th; *A. lunosa* on September 15th; *E. nigra* on September 16th; *X. cerago*, *A. rufina* and *pistacina* on September 19th; *Gonoptera libatrix*, *Agriopis aprilina* and *Scopelosoma satellitia* on September 20th; *C. vetusta* and *Cerastis vaccinii* on September 22nd; *Orthosia macilenta* on September 26th; *O. lota* and *Miselia oxyacanthæ* on September 28th. *Catocala sponsa* was present at first in large numbers, and occasionally *C. promissa*, but they were much worn. Both *C. sponsa* and *Amphipyra pyramidea* finally left us after the first chilly rains on September 28th. One *T. subsequa* was taken on September 20th in very fair condition. *A. lunosa* puzzled us by appearing on September 15th for the first time, and never again; on that night we took 2 *A. lunosa*, one specimen being the red variety. The chief point of interest was, however, in the very great variation which the specimens captured, showed. Besides taking the red varieties of *A. lunosa* and *N. neglecta* and an ochreous form of *O. lota*, we had a greatly varied series of *A. suffusa*, *A. saucia*, *S. satellitia*, *C. vaccinii*, *X. petrificata*, and *A. rufina* in two varieties. We took a series of *A. segetum*, which presented an extraordinary amount of variation. I may add that we found the best time was from early dusk for about an hour and a quarter. After that the insects almost entirely disappeared. So eager were they to get on to the sugar at dusk that when we were a little bit late (owing to the lateness of trains) my son went on before I sugared, and we frequently found that he got more insects off the old sugar than we did after I had put on fresh sugar in any single round.—J. C. MOBERLY, Southampton. *October 2nd*, 1892.

Lyndhurst.—I was too late for *Colias edusa* this year, being in the Orkney and Shetland Islands when they were out at their best. I am, however, able to add one or two more specimens to this year's records. I took three females at the beginning of August at Lyndhurst, one being the variety *helice*, and I also took three others (two males and one female) on the 27th August at Broadstairs, where I understand they have been very numerous this year, and where I also took two specimens of *Colias hyale*. I have also one female *Colias edusa* taken by a friend at Tenby, Wales, in the spring, and two females taken this autumn on Hampstead Heath, where several others have been seen. I have also been informed that one has been seen in Bishopsgate Street, City.—HENRY A. HILL, 132, Haverstock Hill, Hampstead, N.W. *October 5th*, 1892.

Ashdown Forest.—I have been staying on this beautiful forest during the month of August, and send you a few notes. Among the Rhopalocera *Cynthia cardui*, *Vanessa atalanta* and *V. io* were plentiful. I saw *Apatura iris* flying round an oak tree, but was unable to capture it. *Colias edusa* swarmed in a clover field, and, in fact, were met with all over the forest. I only saw one var. *helice*. Out of some two dozen captured only four were ♀. Sugar was very unproductive of good things, although the nights were on the whole favourable, but light was better. My sugaring tin and lantern somewhat surprised the natives at first. I captured at sugar and light the following:—*Hylophila bicolorana*, *Noctua plecta*, *N. rubi*, *N. xanthographa*, *N. c-nigrum*, *N. brunnea*, *Caradrina alsines*, *Cleoceris viminalis*, *Amphipyra pyramidea*, *Ptilodontis palpina*, *Neuria popularis*, *Nœnia typica*, *Axylia putris*, *Charœas graminis*, *Gonoptera libatrix*, *Phlogophora meticulosa*, *Plusia gamma*, *P. chrysitis*, *Agrotis segetum*, *A. suffusa*, *Hydrœcia nictitans*, *Apamea oculea* (very common), *Triphœna janthina*, *T. pronuba* (a pest), *Geometra papilionaria*, *Pseudoterpna cytisaria*, *Anarta myrtilli*, *Platypteryx falcula*, *Abraxas grossulariata*, *Ennomos angularia*, *Epione apiciaria*, *Boarmia consortaria*, *Anaitis plagiata*, *Eucosmia undulata*, *Melanthia ocellata*. The larvæ of *Bombyx rubi*, *Saturnia carpini*, and *Hadena pisi* were very plentiful. I also found larvæ of *Dicranura furcula*, *Cuspidia megacephala*, *Notodonta camelina*, *Ptilodontis palpina*, *Euchelia jacobææ*, and many others unknown to me. My first and few attempts at pupæ digging resulted in my obtaining over thirty.—R. A. Dallas Beeching, Tunbridge Wells. *September 30th*, 1892.

Isle of Man.—It may perhaps interest some of your readers to know that *Colias edusa* has occurred somewhat plentifully in this island during the past month. My friend, Mr. Ernest Dickson of Croft House, Castletown, informed me that his brother saw over one dozen flying about in a field in the vicinity of Castletown on the 28th of August, two of which he succeeded in capturing, and one of which is now in my cabinet. I myself took several very fine specimens in Sulby Glen on the 5th of this month. The "Clouded Yellow" has hitherto been considered a rare insect with us, but this year numerous specimens have been seen and taken.—H. Shortridge Clarke, 2, Osborne Terrace, Douglas, Isle of Man. *September 21st*, 1892.

Ireland.—Mr. Harker and I spent the first two weeks of July in the county Galway, and although we had very bad weather we did fairly well. *Zygæna minos* was very worn and scarce, but *Phothedes captiuncula* was in fair numbers and good condition. The best things we got were 2 *Triphœna subsequa*, *Xylophasia sublustris*, *Leucophasia sinapis* (6), some fine vars. of *Camptogramma bilineata*, a var. of *Lasiommata egeria*, in which the eyespots of the hind wings are without the outer yellowish band, *Rhodaria sanguinalis*, etc. The *Lycœna alexis* females were particularly fine, brilliant and variable, and much larger than the specimens we get here or at Colwyn Bay. We should have done much more had the weather been suitable, but we have only had three nights' treacling during the fortnight.—H. Bickerton Jones, 180, Lodge Lane, Liverpool. *October 4th*, 1892.

Penarth.—*Deiopeia pulchella*, one specimen was taken at Porthkerry, near Barry, on June 8th, by Mr. O. H. Jones, and is now in the collection of Mr. W. E. R. Allen. *Colias edusa* has been very plentiful

about here during the autumn, nearly 200 having been taken by the members of "The Penarth Entomological and Natural History Society," several of the var. *helice* having been met with. Of fifty *C. edusa* that I have taken, twenty-one are females, many in magnificent condition, with a rich glossy appearance on the dark portions of the wings. The *Vanessæ—io*, *atalanta*, *urticæ* and *cardui*, have simply been swarming, and many of them have been of large size. *Atalanta* is still on the wing, as also is *urticæ*. *Grapta c-album* has turned up again in this neighbourhood, Mr. Howe having caught one, and seen several about September 18th. I have had the pleasure of witnessing the emergence of the second generation of *Arctia fuliginosa* from the female I took on Barry Island, on May 14th. The first imagines I had from the ova laid by this female, began to emerge on July 16th; on the 22nd a couple paired, and the female began laying ova on the 24th. These hatched on the 31st. The larvæ fed up well on dock leaves, and commenced spinning about August 28th, the first imago emerging September 18th, another on the 23rd, another on the 24th, and so on. Of this batch I have had about twelve imagines so far, and one female has laid a few ova. I must say I have kept them indoors, and probably that may be the reason of the second batch of imagines, which have thus made three broods in the year.—G. A. BIRKENHEAD, Downs View, Penarth, near Cardiff. *October 8th*, 1892.

Newbury.—This season is undoubtedly a good one. Here, and at Marlborough, luck was good just at the end of July. It is curious, though, how sugar continues to fail with us. Even this year, many nights have been almost blanks, and just now nothing comes at all, except slugs and belated wasps. *Luperina cespitis* is fairly common in the trap, and *Melanippe unangulata* has turned up everywhere. I have a great number of the larvæ feeding now on chickweed, they grow very quickly. I have a brood of *Cidaria silaceata*, but find they will not touch *Epilobium hirsutum*. They eat *E. montanum* greedily. A batch of *Noctua depuncta* larvæ, which hatched from eggs laid by a captured female, behave most curiously. They seem to refuse food of all kinds, and yet they live. They have been hatched more than a fortnight now, and though they have not grown in the least, they appear to be very healthy. They like to creep into the florets of clover heads and hide there, sometimes four larvæ squeeze into one floret! I have put them out of doors now, among various low-growing plants, but as they behave so curiously, I rather doubt if any will survive the winter.—MARY KIMBER. *September 9th*, 1892.

Epping, Southend, etc.—On May 29th, *Tephrosia biundularia* was swarming in, to me, a quite unprecedented manner in Epping Forest, on the trunks of oak and hornbeam, there was scarcely a tree without one specimen on it, and sometimes there were several on the same tree. I saw no variation from the form I am accustomed to take in this locality. *Amphidasys betularia*, of which a series has been bred from ova obtained last year, emerged almost uniformly in the late evening, differing, in this respect, from its congener, *Amphidasys strataria* and *Biston hirtaria*, which emerge generally in the forenoon. *Colias edusa* was observed on June 6th in the neighbourhood of St. Albans, and has been plentiful recently in and about the Lea Valley. Sugar, from the third week in June to the third week in July,

proved very attractive, but after the latter date ceased to be so. *Zeuzera pyrina* was again captured on June 24th, but only four specimens have been obtained. I think in one of the localities the gardeners have found out how to destroy the larvæ. I was at Southend from July 12th to 20th, and obtained several species peculiar to the chalk. It is evident that about half a mile from, and parallel to the sea, there is a ridge of chalk which comes near enough to the surface to afford a foothold, to clematis and other chalk-loving plants, and among these I obtained *Acidalia dilutaria*, *Melanippe procellata*, and *M. rivata*, as well as *Eubolia bipunctaria*. At Wimbledon Common on August 17th, *Cœnobia rufa* was flying freely in a swampy bit of ground. Unfortunately, I did not recognise it till I got back, and only brought home a few, and these rather worn. On September 5th *Lycæna bellargus* was fairly abundant near Redhill.—F. J. Buckell. *September 14th*, 1892.

Folkestone.—Colias edusa has been very plentiful here since the beginning of August, and is still to be obtained in good condition. I have noticed that a large number, quite a third of those netted, are "chipped" at the anal angle of the hind wings, sometimes one wing only, sometimes both, and these I have, of course, released. Five of the var. *helice* have fallen to my share, but I have only got two *C. hyale*. —E. W. Brown, Shorncliffe. *September 7th*, 1892.

New Forest.—Of *Apatura iris*, one was captured, two more seen. My brother and I had a long chase after one—including a climb up two trees; but to no purpose. The one caught we disturbed as it was drinking at a stream, it flew up and pitched in a tall ash close by, so we sat down and enjoyed a smoke, and in about ten minutes were gratified to see "his majesty" come down, and, after several circles, alight on a stone, just in the shallow water. We allowed him to get comfortable, and my brother managed to get the net over. *Limenitis sibylla* was still about, and many in good condition. Some nice *Argynnis paphia* var. *valezina*, *A. aglaia* and *A. adippe*. *Anarta myrtilli*, *Lycophotia strigula* (*porphyrea*), *Lithosia helveola*, *Aventia flexula*. A night about the same time, at sugar, produced a few *Catocala sponsa* and *C. promissa*, *Thyatyra batis*, *Gonophora derasa*, *Liparis monacha*, *Rhodophæa consociella*, etc.—Edward Buckell. *September 18th*, 1892.

Eynsford and Boxhill.—Having heard good accounts of these two places as collecting grounds for Coleoptera, I paid them each a visit last June with very successful results. On June 17th I took the train to Eynsford, and commenced sweeping as soon as I got out of the station, but being somewhat early I only succeeded in getting my net wet through with the dew. I persevered, however, and took a series of *Platytarsus echinatus*, and later in the day, when it got rather warmer, insects began to be pretty plentiful. *Ceuthorhynchus constrictus*, *Otiorhynchus tenebricosus*, *Cistela luperus* and *Melegethes solidus* appeared in the net, and also a single specimen each of *Drilus flavescens* ♂, *Limobius dissimitis* and *Bruchus cisti*. Some fungus on an old stump produced *Bolitobius atricapillus*, *Homalota depressa* and *Choleva chrysomeloides*, but only one of each. A small chalk pit contained several *Dascillus cervinus* and one *Lithocharis fuscula*, and to wind up the day I was fortunate in securing a fine specimen of the

rare *Pseudopsis sulcata* from haystack refuse. On June 24th I went to Boxhill, but had wretched weather the whole day, as it rained soon after I arrived and rained on and off the whole afternoon consequently all I could do was to keep my eyes open for any chance captures that might turn up. My brother took a specimen of *Homaloplia ruricola* just after we had arrived, and we then made our way down to the banks of the Mole, where single specimens of *Homalota hygrotopora* and *Tachyusa umbratica* were secured, and under the bark of a fallen pine tree I took *Bolitochara bella* and *Omalium punctipenne*, and close by the pine tree I endeavoured to do a little sweeping between showers, and although I soon gave it up I succeeded in taking a specimen of *Homalota exarata* that I was extremely glad to get. We then went back to the station and arrived just in time to see the train go out, and on consulting the time table we found we had rather over two hours to wait, so I left my brother on the station while I went for a walk up Boxhill, where I was again fortunate as I took *Leptinus testaceus* so that although the weather was unfavourable, I was, on the whole, very successful.—H. Heasler, 17, Danby Street, Peckham.

Reading.—We have had a capital *Xanthia* time this autumn,—some beautiful forms, perfectly lovely. I often wish some of our northern friends could be here to see such a number of gems in the woods. How delighted they would be! *Colias edusa* was fairly common here. Yes, I know we have heard the same words so many times lately, but I thought you might think Reading was left out. A few var. *helice* were with them, and two or three *hyale* could be taken on any bright day, some days more. Second broods of *Leucophasia sinapis* and *Lycæna argiolus* appeared, a few of each. That uncertain species *Agrotis saucia* has been a thing of the year, it was everywhere, and so was *Scopula ferrugalis*. *Agrotis ravida*, it seems, was not satisfied with one brood; I took it at sugar in the middle of September. Larvæ of *Toxocampa pastinum* were in astonishing numbers at Newbury, not Reading, and I have been trying to force them to feed up, but they seemed determined to hybernate, for all the warm berth they have. Mice are a great nuisance to me. I had a couple of fine broods of *Asphalia flavicornis* which had turned in all well, and I brought in the sleeves and hung them up to attend to them when I had spare time; the mice attended to them first though, they ate up every one. Last winter I had about 400 larvæ of *Noctua stigmatica*, feeding in an outhouse in large flower pots with muslin over the top. The larvæ had a way of resting on the muslin, and very pretty they looked so, besides, it was very convenient for changing the food. But the mice saw how nice they looked too, and one morning I found the muslin full of little roundish holes, about the size of a pea, and most of the larvæ gone. I should not have believed mice able to draw the larvæ through so neatly, but I put down some poison and next morning there lay the mice dead on the muslin. *Biston hirtaria* occurs here regularly, but not plentifully, on the tree trunks in the beech woods, and sometimes at lamps in the streets. *Cidaria silaceata* I find also on the beech trees in the woods, and the larvæ on both *Epilobium montanum* and *Circea lutetiana* in the same woods. *Circea* is perhaps the more favourite food and the larvæ seem to rest lower down on it, where, as Dr.

Riding remarks, they look wonderfully like a leafstalk, so like it that one day in changing the food I cut one with the scissors as I thought I was cutting off a leaf. If Dr. Riding could assure us that blackthorn is the foodplant of *Cosmia pyralina* in the wilds I should feel relieved, but I cannot hear of anyone ever getting the larvæ from it. When I first took *pyralina* I naturally went to the blackthorn to look for larvæ, but I have never got it to this day. The species came to sugar at Swansea at two separate places in the wood on the edge of Sketty Park, places where elm grew. At Reading it occurs at two places, miles apart, again among elms, with very little blackthorn near, and that little as I say, I have ransacked for larvæ, but without success. If the larvæ do feed on elm my want of success would be accounted for, as these trees are usually beyond the reach of a search. I do hope Dr. Riding will pay attention to those apple trees in spring and see if he can get larvæ. With regard to the sugar I use, it is simply Egyptian raw, mixed with beer, and a drop or two of "essence of pears" added just before starting out. No rum, there is rum enough in sugar, perhaps the essence is the secret, I don't know. I put on sugar as often as I can, which is not often in the early part of the summer when there is so much to be done in the daytime, but as soon as day work drops off a bit, I apply it three or four times a week. As for what I sugar, everything almost, but I prefer something living.—W. HOLLAND, *Oct. 26th.*

Devon.—While shooting on the cliffs in the south of this county on 20th October, I noticed many fine specimens both ♂ and ♀ of *Colias edusa* flying in the most sheltered parts. *Vanessa urticæ*, *V. io*, *V. atalanta* and *Cynthia cardui* were at the same time numerous and in grand condition. The beaters disturbed many dilapidated NOCTUÆ and quantities of GEOMETRÆ, most of the latter probably being *Cheimatobia brunata* and *C. boreata.*—JOHN N. STILL.

Berkshire.—At sallows I took nothing worthy of note, although the commoner species were abundant. Towards the end of May setting had become quite a serious business. Some insects were out unusually early. I observed *Euchelia jacobææ* in some numbers on May 21st. My moth trap, which had been in use every favourable night since April 21st, attracted numerous common things with a few *Numeria pulveraria*. In June a nice series of *Chærocampa elpenor*, together with two *Sphinx ligustri* and a *S. convolvuli* were taken at the blossoms of honeysuckle and rhododendron. "Honeydew" and sugar also proved attractive to many common insects, several fine *Gammesia trigrammica* var. *bilinea* coming to the latter. *Nemeophila plantaginis* was found flying in scores upon the Downs, while three or four *Aplecta advena* came to light. At the beginning of July, "honeydewed" nettles and light became more attractive, the latter producing *Timandra amataria*, *Pericallia syringaria*, *Pseudoptera pruniata* (*cytisaria*), *Plusia iota* and *P. chrysitis*, among others too numerous to mention. Towards the end of the month sugar suddenly failed, and although I tried it constantly, it brought nothing until the middle of September. I saw the first specimen of *Colias edusa* on August 4th. It soon became plentiful, but I was not fortunate enough to come across var. *helice*, although I heard of several being taken nearer Newbury. *Luperina cespitis* again turned up at light, but in no great numbers. Among other insects taken at light were two of the black vars. of *Strenia clathrata*. In

September sugar produced a good series of *Agrotis saucia*, an insect not previously met with here. The following also came in fair numbers:—*Agrotis suffusa*, *A. segetum*, *Noctua c-nigrum*, *N. xanthographa*, *Tryphæna pronuba*, *Orthosia lota*, *O. macilenta*, *Anchocelis rufina*, *A. pistacina*, *A. litura*, *Xanthia citrago*, *X. fulvago* (*cerago*), *X. flavago* (*silago*), *X. circellaris* (*ferruginea*), *Agriopis aprilina*, *Phlogophora meticulosa*, *Scopelosoma satellitia* and *Hadena protea*. On September 23rd a fresh specimen of *Leucania pallens* came to light! At the flowers of *Tritoma uvaria* I took nineteen species, most of them being present in good numbers. Beating sallows produced a fair number of larvæ of *Smerinthus ocellatus*, *S. populi*, *Dicranura furcula*, *Lophopteryx camelina*, *Notodonta ziczac* and *Phalera bucephala*. *Vanessa io* and *V. atalanta* were particularly abundant, frequenting dahlias; only the lighter coloured varieties of these flowers appearing to attract them. I often watched them, but never did I see them settle on the darker (red) blossoms. Ivy has been fairly prolific, but no rarities have turned up. Although my trap has not done quite so well this year, considerably over 100 different species of macros besides a large number of micros have been taken in it. Altogether 1892 has given me plenty of hard work, and has been a great improvement upon 1891.—J. H. D. Beales, West Woodhay Rectory, Newbury.

Liverpool.—Yesterday I went to Simmonswood Moss. *Cœlena haworthii* was flying freely, but in very bad condition. Larvæ were backward and scarce, but we found *Notodonta dromedarius*, *N. camelina*, *N. dictæoides*, *Drepana falcula*, *Asphalia flavicornis*, *Cuspidia leporina*, together with a few odd imagines of *Tapinostola fulva* and *Ennomos tiliaria* which were flying around; but on the whole things were worse there than they have been for two or three years.—Geo. A. Harker. *September 19th*, 1892.

Warrington.—I have given a little attention to collecting the *Eupithecicæ* this season, and have taken *E. minutata*, *nanata*, *absynthiata* and *virgaureata* at Delamere. In July I succeeded in taking a nice lot of *Eupithecia valerianata*, which are now in pupæ. I have also got *Eupithecia pulchellata*.—Joseph Collins. *October 14th*, 1892.

Abundance of Amblyptilia acanthodactyla.—This season is the turn of *A. acanthodactyla*, which of late has been becoming annually more scarce, if not absolutely rare; more noticeable last autumn but throughout the present year, whether as hybernated examples or freshly emerged broods, abundant throughout the district, and often buzzing (the only word I know which aptly describes its flight) all around one.—S. Webb, Dover. *September 19th*, 1892.

Sphinx convolvuli.—I have the pleasure of recording the capture of a fine (female) specimen of *Sphinx convolvuli*, at Upper Clapton, about the end of September.—E. C. Brooke.

A fine female specimen of *S. convolvuli* was taken at Brockenhurst, on September 6th.—J. M. Adye, Brockenhurst. *October*, 1892.

Sphinx convolvuli turned up at Lirsadel (Sligo), Howth and Waterford, and one *Colias edusa* (type form) at Howth.—W. F. de VKane.

Deilephila celerio at Halifax.—On Saturday, October the 1st, I had brought to me, alive, a fine specimen of *D. celerio*. It was taken at rest, by a joiner, on some scaffolding erected in front of a shop in one of the principal streets in Halifax, and although brought in a

"match box," it is in excellent condition.—EDWARD HALLIDAY, Ackroydon, Halifax.

AGROTIS RIPÆ LARVÆ.—To find the larvæ of *Agrotis ripæ* dig round the prickly salt wort, found so plentifully at many places on the coast. At Hunstanton I found them very common, not less than 260 in four hours! I have, at other places, dug five hours for fifty.—WILLIAM FARREN, Cambridge. *September 17th*, 1892.

FOODLANT OF ODONESTIS POTATORIA.—On July 18th, a friend and I found ova of *O. potatoria*, laid on the upper side of the leaves of alder. My experience of this insect associates the larva with various species of grasses only.—F. B. NEWNHAM, Church Stretton, Salop. [I believe the species is restricted to grass as food.—ED.]

SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON.—*November 2*, 1892.—Mr. S. Stevens exhibited, for Mr. J. Harrison, of Barnsley, and read notes on a beautiful series of *Arctia lubricipeda* var. *radiata*, which had been bred by Mr. Harrison this year. Mr. G. T. Bethune-Baker exhibited specimens of *Polyommatus dispar* var. *rutilus*, taken in England by his father about sixty years ago. He stated that it was generally believed that this form of the species was confined to the Continent, but his specimens proved that it formerly occurred in England. Mr. C. G. Barrett exhibited dark varieties of *Acronycta leporina*, bred by Mr. J. Collins, of Warrington; also a white variety of *Triphæna pronuba*, taken at Swansea by Mr. W. Holland. Mr. M. Jacoby exhibited a specimen of *Sagra femorata*, from India, with differently sculptured elytra, one being rough and the other smooth. Mr. J. A. Clark exhibited a long series of remarkable varieties of *Liparis monacha*. Several of the specimens were as light in colour as the typical form of the species; others were quite black; and others intermediate between these two extremes. The Rev. Seymour St. John exhibited a monstrosity of *Abraxas grossulariata*, and a specimen of *Tæniocampa stabilis*, with a distinct light band bordering the hind margin of the upper wings. He stated that he had bred both specimens. Mr. E. B. Poulton exhibited two series of imagos of *Gnophos obscurata*, which had been subjected to dark and light surroundings respectively. The results were seen to be completely negative, the two series being equally light. Mr. F. Merrifield showed a number of pupæ of *Pieris napi*. About eight of them, which had attached themselves to the leaves of the cabbage plant on which they were fed, were of a uniform bright green colour, with light yellowish edgings; of the others, those which had attached themselves to the black net covering the pot, or the brownish twigs which supported it, nearly seventy in number, were dark coloured, with dark spots and lines. The remainder were of a green colour, much less vivid than in those which had spun up on the leaves, with numerous dark spots and lines on them. Mr. R. Adkin exhibited three bred female specimens of *Vanessa c-album*, two of which belonged to the first brood, and the third to the second brood. One of the specimens of the first brood was remarkable in having the

under side of a very dark colour, identical with typical specimens of the second brood. He thought the peculiarity of colouring in this specimen had been caused by a retarded emergence from the pupa, due to low temperature and absence of sunshine. Mr. F. W. Frohawk exhibited a series of striking varieties of *Satyrus hyperanthus*, bred from ova laid by a female taken in the New Forest in July last. Mr. F. D. Godman exhibited a specimen of *Amphonyx medon*, Cr., received from Jalapa, Mexico, having a pouch-like excrescence at the apex of its body. Mr. McLachlan, Mr. H. J. Elwes and Mr. Poulton commented on it. Mr. C. J. Gahan communicated a paper entitled "Additions to the Longicornia of Mexico and Central America, with notes on some previously recorded species." Mr. W. L. Distant communicated a paper entitled "Contributions to a knowledge of the Homopterous family Fulgoridæ." Mr. Oswald Latter read a paper (which was illustrated by the Society's new oxy-hydrogen lantern) entitled "The Secretion of Potassium-Hydroxide by *Dicranura vinula*, and the emergence of the imago from the cocoon." The author stated that the imago produced, probably from the mouth, a solution of caustic potash for the purpose of softening the cocoon. The solution was obtained for analysis by causing the moths to perforate artificial cocoons made of filter-paper. Professor Meldola said that the larva of *D. vinula* secretes strong formic acid, and Mr. Latter had now shown that the imago secretes potassium-hydroxide, a strong alkali. He said he had long been familiar with the fact that secretion from the imago of *D. vinula* was alkaline to test-paper, but he had never investigated its composition; and he also stated that the fact that any animal secreted a strong caustic alkali was a new one. Mr. Merrifield, Mr. Hanbury, Mr. Gahan, Mr. Poulton, and Prof. Meldola continued the discussion. Mr. H. J. Elwes and Mr. J. Edwards read a paper, also illustrated by the oxy-hydrogen lantern, entitled "A revision of the genus *Ypthima*, principally founded on the form of the genitalia in the male sex." Mr. McLachlan said he attached great importance to the genitalia as structural characters in determining species, and he believed that he could name almost any species of European Trichoptera simply from an examination of the detached abdomens of the males. Mr. Osbert Salvin said he had examined the genitalia of a large number of Hesperidæ, with the view of considering their value in distinguishing species, but at present he had not matured his observations. Mr. Jacoby, Mr. Bethune-Baker, Colonel Swinhoe, Mr. Lewis, Dr. Sharp, Mr. Hampson, and Mr. Champion continued the discussion. Mr. S. H. Scudder communicated a paper entitled "New light on the formation of the abdominal pouch in *Parnassius*." Mr. Elwes said he had based his classification of the species of this genus largely on the structure of this abdominal pouch in the female. Mr. Jenner Weir remarked that a similar abdominal pouch was to be found in the genus *Acræa*; and Mr. Hampson referred to a male and female of *Parnassius* in Mr. Leech's collection, in which the pouch had come away from the female and was adhering to the male organs.—H. Goss and W. W. Fowler, *Hon. Secretaries.*

City of London Entomological and Natural History Society.—*Thursday, 20th October*, 1892.—Exhibits:—Mr. Hollis, *Colias hyale* and *C. edusa* var. *helice*, also a series of *Peronea variegana* and living larvæ

of *Aspilates citraria*. Mr. Battley, a variable series of *Apamea didyma* and *Noctua festiva*, all from the London district; also on behalf of Mr. Nicholson, a series of *Vanessa urticæ*. Part of these were bred from larvæ taken at Leigh, Essex, and showed a remarkable tendency to var. *ichnusa* (*i.e.*, without the two black spots in the centre of the forewings) two specimens being absolutely without these spots, and the rest only having them slightly developed. The other specimens, bred from Clapton larvæ, were all brightly coloured and dark. Mr. Clark, *Peronea cristana* and *P. umbrana* from the New Forest; also on behalf of Dr. Sequeira, a box of insects from the same district, including *Agriopis aprilina*, *Cidaria psittacata*, *Peronea cristana*, *Leptogramma literana*, *Sarrothripa revayana*. Mr. Hill, *Cymatophora or* from Forres and Winchester, the latter being larger and more distinctly banded, also *C. ocularis* from Wicken, and *Melanippe fluctuata* from Orkney. Mr. Smith, *Calligenia miniata* from the New Forest. Mr. Riches, a bred series of *Bombyx neustria* from Chingford. Mr. Prout, *Agrotis segetum* from Sandown. Mr. Goldthwait, dark forms of *Boarmia abietaria*. Mr. Bayne, *Lycæna bellargus* (*adonis*), *L. icarus* (*alexis*), and *L. corydon*. Dr. Buckell also exhibited these species, and made some observations respecting the differentiation of the males of *adonis* and *alexis*. After pointing out that *alexis* was occasionally bright blue and *adonis* lilac blue, he stated that the fringes of *alexis* were usually said to be white, but in all the specimens he had examined, it was divided into two zones, a dark one nearest the wing, and a pale outer margin, and although the dark portion was occasionally barred, as in *adonis*, the bars did not extend to the light zone. On the underside, this was still more marked, the bars in the fringe of *adonis* being quite distinct, and those in *alexis* disappearing almost entirely. Mr. Tutt stated that some years ago, he had taken a local form of *L. adonis* perfectly resembling *alexis* in colour, and further pointed out that the specimens of *alexis* from the North of Ireland were brightly coloured, and often had a row of black spots on the margin of the upper side of the hind wings, similar to *adonis*. He also stated that he agreed with Dr. Buckell in considering these species as quite distinct, for although he had repeatedly seen them in the same spot, he noticed no instance of interbreeding. Several other members made further remarks on the subject, and on the motion of Messrs. Goldthwait and Tutt, a vote of thanks was accorded to Dr. Buckell. Mr. Milton exhibited *Sesia philanthiformis*, *S. chrysidiformis*, *S. ichneumoniformis*, *Agrotis ripæ* and *A. corticea*; also in Coleoptera, *Ocypus ater*, *Leistotrophus nebulosus*, and *Atomaria fimetarii*. Mr. Heasler, *Colon serripes* and *Gronops lunatus* from Mitcham. Mr. Clark, a perfect albino of the House Sparrow, shot at Rayleigh, Essex. He also recorded the occurrence of the Great Shrike on the Hackney Marshes.

Thursday, 3rd November, 1892.— Exhibits, Lepidoptera:—Dr. Buckell, a series of *Agrotis saucia* from Freshwater, I.W., with London forms for comparison. Mr. Hollis, a series of *Lycæna adonis*, taken at Ventnor. Mr. Battley, a fine series of *Lycæna argiolus* from Southend, two males approaching the colour of *adonis*. Mr. Bacot, a series of *Xanthia silago* bred from sallow catkins from Epping Forest. Mr. Clark, two very fine vars. of *Arctia caja*, one being very pale, due to a failure of pigment, the other having a large splash of the fore-wing

coloration on the left posterior wing. Mr. Prout, typical *Cuspidia psi* from the London district, also *Eupithecia succenturiata* and *E. subfulvata* from Sandown, I.W. Mr. Quail, a number of Australian Heterocera. Mr. Smith, a variety of *Argynnis aglaia* from Blandford, Dorset, having additional silver spots on the underside. Dr. Sequeira, series of *Hyria auroraria* and *Nonagria typhæ*. Mr. Bellamy, a number of species taken on lamps in the North of London, including *Ennomos angularia*, *E. tiliaria*, and *Orthosia lota*. Mr. Milton, *Sphinx convolvuli*, *Chærocampa porcellus*, *Bombyx quercus* var. *callunæ*, and a fine series of *Agriopis aprilina* from Clevedon. Mr. Gates, a number of species taken near Hammersmith, including *Penthina salicella*, *Spilonota neglectana*, *Dicrorhampha petiverella*, *Gelechia populella*, *Batrachedra præangusta*, etc. Capt. Blaydes Thompson exhibited an example of *Chærocampa celerio* on behalf of Edward Halliday, Esq., of Halifax, and a specimen of *Deilephila livornica* on behalf of Peter Inchbald, Esq., F.L.S., F.Z.S., of Hornsea, near Hull. An interesting discussion on the occasional appearance of certain SPHINGIDÆ in Great Britain then ensued. Coleoptera:—Mr. Cripps exhibited a series of *Cicindela sylvatica* and *Ilybius fenestratus* from Aldershot. Mr. Heasler, series of *Homolota pagana* and *Monotoma rufa* from Hendon.

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY.—*October 10th*, 1892.—Mr. S. L. Mosley, F.E.S., of Huddersfield, read a paper entitled "Vegetable galls and their makers." The author referred to the difficulty in breeding these insects, and spoke of the theory of the ancients, who, because they could not understand how a caterpillar could be inside a gall which had no opening, believed that the egg must have been deposited in the seed of the plant. He remarked on the scarcity of literature on the subject, and described and exhibited specimens of many of the galls and their makers, including some species new to Britain. The president exhibited a rich variety of *Epione apiciaria;* Mr. Newstead an interesting case of *Steucus sacer* and Egyptian *Scarabidæ*, which were beautifully carved with hieroglyphics; Mr. Arkle, *Heliothis armigera*, bred from imported tomatoes; and Mr. Collins some nice forms of *Acronycta leporina*. Mr. Gregson, a series of *Agrotis ashworthii*, *Polia nigrocincta*, and *Dianthœcia cæsia*, bred and captured by himself this year. Mr. Harker, two specimens of *Hadena satura* from Aberdeen. Mr. Jones, Lepidoptera captured in Ireland, including some nice Irish forms. Dr. Ellis, series of *Cassida sanguinolenta* and *Bembidium saxatile*. Mr. Newstead drew attention to a record of *Polyommatus bœtica* captured at Heswall, Cheshire, by Master McFee, in 1886 or 1887, which had lately come under his notice.—F. N. PIERCE, *Hon. Sec.*, 143, Smithdown Lane, Liverpool.

BIRMINGHAM ENTOMOLOGICAL SOCIETY.—*October 10th*, 1892.—Mr. P. W. Abbott exhibited *Colias edusa* from Wyre Forest, *Triphœna subsequa* from Freshwater, Isle of Wight, and *T. orbona* to compare with them. Mr. G. W. Wynn, a bred series of *Vanessa io*, and *Grapta c-album* from Wyre Forest, two bred *Notodonta chaonia*, and a single specimen of *Sesia cynipiformis;* a bred series of *V. cardui* from Cannock Chase; and one specimen of *Colias edusa* from Meriden, near Coventry. Mr. R. C. Bradley, nice series of *Philonicus albiceps*, and *Thereva annulata* from Barmouth. Mr. W. Harrison, several species taken at Frankley, near Harborne, including *Cidaria testata*, *Thyatira*

derasa, etc.; also from Wyre Forest, *Eucosmia undulata*, *Phorodesma bajularia*, etc. Mr. A. H. Martineau read a paper upon the "Social Ants," in which he gave some account of the various species, and the most interesting facts in their life-histories, habits, etc. He showed nests of *Lasius niger*, *L. flavus*, and *Myrmica ruginoides*, with many individuals in each, also mounted specimens of several other species.—COLBRAN J. WAINWRIGHT, *Hon. Sec.*

THE SOUTH LONDON ENTOMOLOGICAL SOCIETY.—*October 13th*, 1892.—Mr. C. G. Barrett exhibited a variety of *Argynnis euphrosyne* from Godalming, the basal areas of both the fore and hind wings being very much suffused. Mr. Frohawk, *Sesia sphegiformis* from Tilgate Forest, with the empty pupa case *in situ* in a stick of alder. Mr. Barker, *Lycæna icarus* and *L. bellargus*, also *Colias edusa* var. *helice*, and forms intermediate between this variety and the type. Mr. R. Adkin, specimens of two broods of *Grapta c-album*, of which species eggs had been laid by two hybernated females. The larvæ hatched and fed on red-currant, pupating by June 29th. Imagines emerged from June 29th to July 23rd. Considerable interest attached to a ♀ specimen of the spring brood having the normal darker underside coloration of the autumn brood. Mr. B. Adkin, a series of *Satyrus janira* from the Scilly Isles, the females having the pale central patch divided by a transverse fuscous band. Two of the females had the ocelli, near the apex of the forewings, bipupillate. A series of *Dianthœcia nana* from Scilly were almost typical in colour, those from North Devon were of the form known as var. *ochrea*, whilst the Irish specimens were somewhat intermediate. Mr. Fenn exhibited *Lithosia muscerda*, captured near Sandwich. Mr. Tugwell exhibited a varied series of *Hypsipetes ruberata*, whilst Mr. Barrett had *Eugonia angularia* and *Syrichthus alveus*. A discussion took place on *Colias edusa*, Mr. Adye reading a note to the effect that the species was exterminated by cutting the clover, the browsing of sheep, etc., as soon as the eggs were laid. Mr. Adkin pointed out that the species was found abundantly in such years as the present in many other localities where these operations were not in action; Mr. Fenn also pointed out that it was very abundant in other localities. Mr. Tutt stated that in his opinion the failure of *C. edusa* to establish itself permanently lay in climatic causes. In those localities on the Continent where *C. edusa* regularly occurred, the winter usually came on rather suddenly, and appeared to drive the butterflies at once into hybernation. These appeared to emerge and lay their eggs the following spring, and it was the flight of these spring specimens that sometimes spread over parts of the Continent, not usually frequented by the species, of which countries Britain was one. Our August moths laid their eggs at once and these either produced imagines the same season or otherwise died off in the larval or pupal stages. If we had severe weather come on in September he should expect the moths to be driven into hybernation, and the species to be abundant the next year. Under ordinary circumstances, however, in Britain another partial brood was produced, the females (impregnated or otherwise) did not go into hybernation and hence the extinction of the species was rapidly if not immediately brought about. Mr. Frohawk supported this view, and said that larvæ which he had from the August parents would only feed in warm weather, and he did not expect they would hybernate in that stage.—ED.

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THE GENUS ACRONYCTA AND ITS ALLIES.

By Dr. T. A. CHAPMAN.

(*Continued from page* 253.)

THE pupa of *Diloba cæruleocephala* (Pl. IV., fig. 5) is 18 mm. in length, brown, sometimes darker, almost purple, or black, and with a bloom like *Cosmia trapezina* or *Halias prasinana*, cylindrical, tapering from the 6th abdominal segment, which is rounded, but for an anal armature (seen dorsally), of a bat's-wing or fish-tail outline. This ends in two points on either side, one in front of the other. There is a minor point in the ventral aspect of the anterior one. There are also four spines on either side, one quite on the dorsal aspect and three lying in a line between the ridges leading to the points. The general surface of the pupa is finely wrinkled, but dorsally it is rough, with numerous raised points.

There is a slight ridge along the dorsal hind margin of the 4th, 5th, 6th and 7th segments. The incisions of the free segments are darker than the rest of the pupa and very finely shagreened. There are two very minute hairs at the base of the antennæ, two in front between the eyes, and a rather longer one above the 1st spiracle. Each segment appears to have a pair of dorsal hairs, of which that noted as near 1st spiracle is the first; they are more dorsal afterwards, and extend to the 12th segment.

Affinities of Acronycta.—In *Diloba cæruleocephala* we have a species that is very difficult to locate, but I can see but very little affinity to *Acronycta* in any of its stages. The egg has a similar form, but the sculpturing is very different, the larva has no *Acronyct* characters, the pupa has some remote resemblance in anal armature to *Bisulcia*, and is certainly not very

like any other species I am acquainted with, but is more *Bombycid* than *Noctuid*. The imago has a very different facies, and has quite a different proboscis; the cocoon, and in some degree the moth, are more suggestive of *Cerura* than of Noctua. I do not know on what characters it is placed among the NOCTUÆ or near the *Acronyctas*.

The only ground for placing certain species amongst the NOCTUÆ would appear to be the sculpturing of the egg, which is unquestionably of the pattern nowhere common except amongst the NOCTUÆ, such species are *D. cæruleocephala*, *D. coryli*, *Panthea cœnobita*, *Diphthera ludifica*, *Petasia cassinea*, and *P. nubeculosa*. The *Nycteolidæ* have, however, never been placed amongst the NOCTUÆ, yet have a very *Noctuid* egg, and one that in flatness even exceeds that of *Acronycta*. *Coryli*, *cœnobita* and *ludifica* are certainly very close to, if not in, the *Liparidæ*, in which group we already have a very great variation in the characters of the ova:—*Orgyia antiqua* and *Dasychira pudibunda* with a hard smooth egg, not unlike a *Notodont*, except the flattening or hollow at the micropyle; *Leucoma salicis* with eggs glued together in a spumous material; *Liparis monacha* with quite a delicate egg, smooth, but with traces of sculpturing not very remote from the *Noctuid* character of *ludifica*.

When we look for the nearer relatives of the *Acronyctas*, the best guides we can take are probably to search for species presenting any of the peculiar characters of *Acronycta*, *e.g.*, the peculiar flattened egg of *Noctua* sculpturing, and with from 40 to 80 ribs, and tending to markings in circles of pale blotches on a chocolate ground; the young larva with pale and dark segments, the 11th always being pale and "weak" and the imago of a special facies, and with the approximating veins at the anal angle of the anterior wings.

The eggs of *Nycteolidæ* and of *D. cæruleocephala* resemble *Acronycta* in form, but the sculpturing suggests that this is merely an accidental resemblance. Again the larva of *Rivula sericealis* has "weak" 11th and 5th segments when newly hatched, but I do not think this species has any other character suggesting alliance with *Acronycta*.

When we come to the *Liparidæ* we find a considerable resemblance in the adult larvæ. We find also in *Liparidæ* newly hatched larvæ with "weak" segments. I have not met with one with the 11th segment weak. On Pl. IX., fig. 8 represents the newly hatched larva of *O. pudibunda*, in which the "weak" segments are 3. 4. 9. I think this probably is

a real relationship, the tendency to weak segments having taken somewhat different directions in the two groups. The *Noctuid* eggs of some *Liparids*, and the *Liparid* features of the larva of *M. orion*, being other points of connection.

Xylina and certain *Orthosids* have a somewhat flattened egg of very similar sculpturing to *Acronycta*, though quite different in coloration. The neuration is also similar, and the larvæ of both (unusual amongst NOCTUÆ) are arboreal feeders. These characters appear to imply some, though distant affinity.

In *Arctia* we have again traces of affinity to *Acronycta*. The most remarkable is perhaps the anal armature of the pupa. In *caja*, for example, we have an arrangement of spines very like that of *Cuspidia*, whilst the texture strongly suggests that of *Viminia*. The ova, though very different in form and sculpturing, tend to be of the same delicate glassy texture. It is therefore probable that the Arctioid character of the larva of *Viminia* is not a mere accidental resemblance, but the result of actual affinity. The red lateral line of *menyanthidis* (and others) is very like that of some *Arctias* (half-grown *caja*, for instance), though this form of marking is no doubt found in widely separated and unrelated species (*e.g.*, half-grown *Saturnia carpini*).

The *Bryophilidæ* are always associated with the *Acronyctæ*, being placed by Guenée with them and the *Cymatophoridæ* in his tribe *Bombyciformes*. I cannot resist the belief that they are much further from the *Acronyctas* than this arrangement implies. The egg of a *Bryophila* (Pl. IX., fig. 6. 6a) is rounded, and is sculptured and coloured like those of the tribe *Genuinæ*. The young larva (Pl. IX., fig. 7) is not a looper, but has all the prolegs long and well developed; it is remarkable for having, besides the ordinary tubercles, each marked by one hair, a number of dots several times as numerous as the tubercles and looking just like them, but without hairs and disappearing as the larva grows. None of the segments are stronger or weaker than the others.

I should like to be able to discuss the value of the character of the venation of the anal angle of the upper wing that I have mentioned as apparently characteristic of the *Acronyctas*, but to do so would require a knowledge of the venation of other families that I cannot pretend to. In *Bryophila* the space here is much wider than in *Acronycta* and by markings is evidently two spaces, but there is no "intermediate" vein. *Cærulcocephala* makes the nearest approach to *Acronycta* of any of

these doubtful species as regards this vein, but seems to be nearer *Notodonta* (say *dictæa*) in which a very similar arrangement occurs.

In *Xylina* the arrangement is very similar to *Acronycta*. In *Tæniocampa* and most NOCTUÆ the vein is very faintly indicated if it can be said to exist, yet the space is less reduced than in *Acronycta*. In *orion* the markings show this narrow space to be double, but the vein is more faintly indicated than in *Acronycta* and would at first view be regarded as absent. In *ludifica* the space and vein are nearly as fully developed as in *monacha*, but in *coryli* it appears to be absent.

ADDITIONAL NOTES.—I have since writing the account of the several species, made a few further observations on some of them, of which the most important may now be stated.

Cuspidia tridens.—I have stated that the ova have always much fewer ribs than has *psi*. This was true for several continuous broods of one race, and for not a few unrelated broods from isolated captured moths, but last year I captured a moth in August, which seemed to be a very late emergence, and was a very dark specimen; her eggs and those of her descendants this year, had 49 to 52 ribs, practically the same as *psi*. The moths are large and dark, identical I am told with the form found in the East of England, and certainly very rare here. Those I had previously dealt with were smaller, paler, and presented always (when bred) a proportion with rosy tinting that seems to be regarded as rare and interesting by many lepidopterists. I think we have here, then, evidence of two distinct races of *tridens*, with some possibility that the dates of emergence in this district are somewhat different. I have not seen the specimens, but Messrs. Farren and Jones (Cambridge) report having raised two broods of *tridens* with very different facies, and each following the form of the parent moth. I have some grounds for believing that even trifling differences in these species are strongly hereditary. Thus in *psi* there is also no doubt a tendency to have slightly different forms hereditarily continued, of which the most marked I have yet met with was my var. *bidens*. I think these species would well repay the trouble of breeding different races, and some interesting results would probably be obtained. Just as *psi*, *tridens* and *cuspis* (living examples of which I have not yet obtained) seem to have only just established themselves as distinct species, so each of them seems again endeavouring to split up into distinct races.

Viminia rumicis and V. venosa.—With regard to the close relationship of *rumicis* and *venosa*, Mr. Farren informs me that so common a species as *rumicis* is not found in the habitats of *venosa*, though one would suppose that stragglers would certainly from time to time occur. Indeed, Mr. Tutt informs me that a well-known Fen collector did take a specimen of *rumicis* last summer, and brought it to him as something very rare and unusual.

Cuspidia alni.—I bred a large number this year in order to get for figuring the form (in extra 5th skin) intermediate between the early and adult plumage, but not one occurred. "He that will not when he may," etc. In former broods as many as 5 per cent. have occurred. These were from long domesticated and somewhat inbred ancestry. Those this year were direct from wild specimens. I think it is very probable that the domestication had produced a tendency to their variation in the direction of reversion.

I had entirely omitted from my former notes a circumstance of some importance and interest, *viz.*, the strong odour that the adult larva of *alni* emits when irritated. It can also do so slightly in the previous skin. The odour is suggestive of an escape of ordinary illuminating coal gas. A friend of chemical and engineering experience to whom I submitted some examples says the odour is that of carburetted hydrogen. The scent is emitted most strongly when the larva is ready to search for a place to pupate in. It is so strong that I have several times wondered whether there was not an escape of gas in the room in which the larvæ were. It is perhaps proper to suggest that this odour is protective, and in this sense associated with the brilliant "warning" colour and conspicuous station (on the middle of the upper surface of a leaf) of the larva.

In reference to a record that the function of the spathulate hairs is to eject the chips made by the larva in excavating its pupating cavity, there is no doubt that an odd grain thereof may sometimes be so ejected, but this is rare and purely accidental. I have observed scores of larvæ engaged in this operation, and they all use the thoracic legs and the head bent down as a sort of scoop to drag out the debris, which they do at intervals, after having made a certain quantity. Rarely also a portion will be brought out held by the jaws. In forming the outer operculum of the burrow the larva will use anything it can get hold of, but it distinctly prefers to break off a little fresh material from the surface about the opening to

using any of the excavated chips. It no doubt thus secures a less conspicuous result.

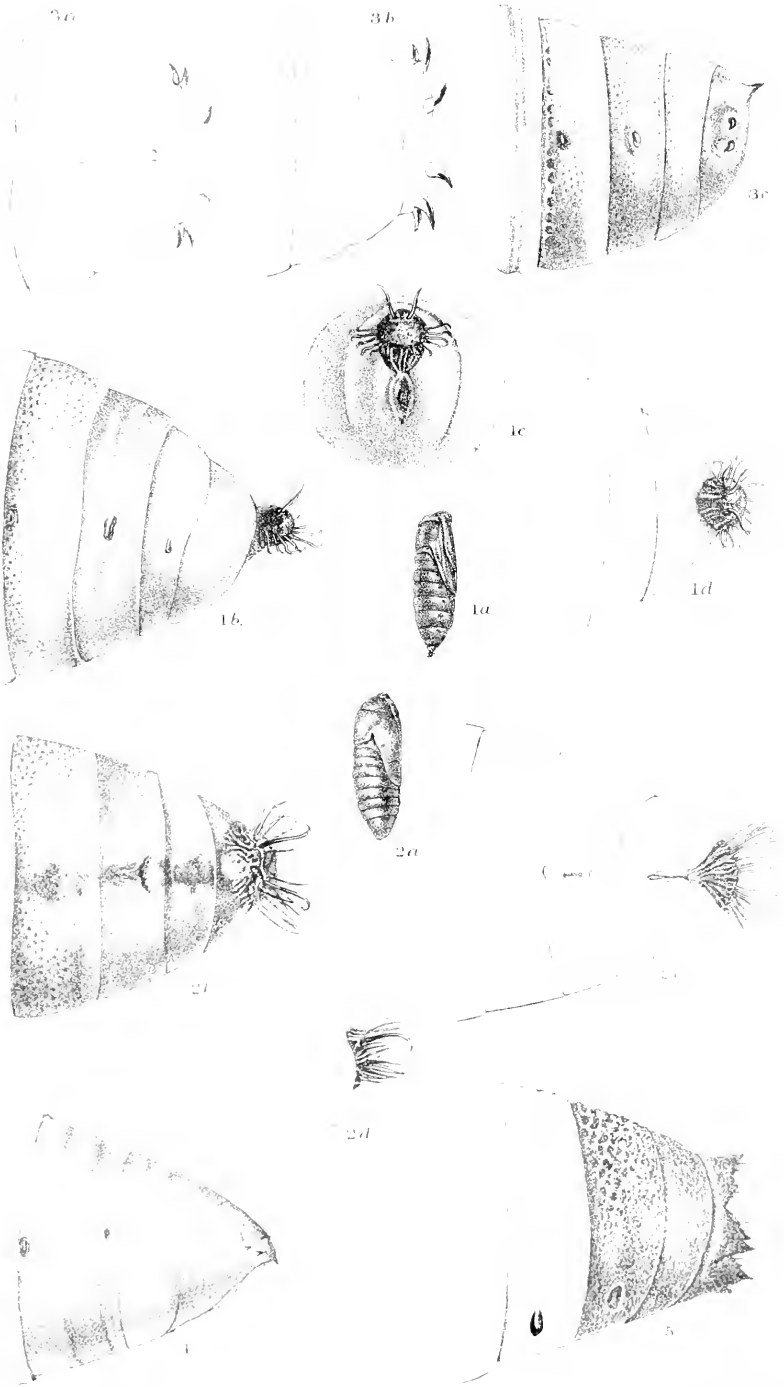
This year for the first time four specimens of *alni* emerged the same year as autumnal specimens, or efforts towards a second brood, they were four amongst the earliest larvæ to pupate.

Cuspidia leporina.—Various correspondents have kindly given me their observations on the two forms of this larva, which go to show that both forms are found in all parts of Great Britain, and that their connection with birch and alder and with a northern and southern habitat is only true in a general sense, and has everywhere many exceptions. I secured a brood of Lancashire and presumably yellow parentage this year, and fed some on birch and some on alder. Unfortunately I did not treat them as well as I ought to have done and the numbers dwindled, but the result points strongly to the conclusion that these forms are hereditary and are not directly affected by the actual foodplant. Out of eight fed on birch one was white, and seven yellow; of ten fed on alder one was white, and nine yellow. Mr. Poulton called my attention to an observation that young larvæ of *leporina* possessed clubbed hairs like those of *alni*. I therefore paid special attention to this point, and find that, strictly speaking, this is not the case. Each tubercle preserves throughout the larval existence one simple hair; in the posterior trapezoidals this hair remains evident enough when looked for, and unaccompanied by any others; this is the one that becomes clubbed in *alni*. On the anterior trapezoidals this primary hair or bristle also persists in a simple form, but is accompanied by the tufts of black hair often persisting in the last skin, but usually most abundant in the penultimate one. Each hair of these black tufts is expanded and spathulate just like the characteristic hairs of *alni*. They are, however, quite a different set of hairs. The anterior trapezoidals of *alni* have no secondary hairs, and the primary ones (in last skin) are nearly obsolete.

(*To be concluded.*)

DESCRIPTION OF PLATE IV.

Fig. 1a.—Pupa of *Acronycta* (*Cuspidia*) *leporina*, nat. size.
Fig. 1b. ,, ,, ,, ,, lateral view of anal armature, × 9 dm.
Fig. 1c. ,, ,, ,, ,, end ,, ,, ,,
Fig. 1d. ,, ,, ,, ,, dorsal ,, ,, ,,
Fig. 2a.—Pupa of *Acronycta* (*Cuspidia*) *aceris*, nat. size.
Fig. 2b. ,, ,, ,, ,, dorsal view of anal armature, × 8 dm.
Fig. 2c. ,, ,, ,, ,, ventral ,, ,, ,,



Pupæ of Genus Acronycta

DESCRIPTION OF PLATE IV.—(Continued.)

Fig. 2d.—Pupa of *Acronycta* (*Cuspidia*) *aceris*, lateral view of anal armature, × 8 dm.
Fig. 3a.—*Moma orion*, pupa, ventral view of anal armature, × 8 diam.
Fig. 3b. ,, ,, dorsal ,, ,, ,,
Fig. 3c. ,, ,, lateral view of anal armature, × 8 diam.
Fig. 4.—*Acronycta* (*Bisulcia*) *ligustri*, lateral view of anal armature, × 8 diam.
Fig. 5.—*Diloba cæruleocephala*, dorso-lateral view of anal armature, × 8 diam.

VARIATION.

SEASONAL VARIATION OF LARVÆ.—I have noticed that some larvæ alter the colour of their coats according to the season of the year. *Notodonta dictæa* affords a striking example of this, as one seldom or never gets a green larvæ in October, they are all brown, and *vice versa* in August. These two forms have different habits—the green form chooses the edge of a leaf for its resting-place, while the brown form rests on the twigs; a very wise provision of nature, for if it rested on the leaves in the autumn it would run a great risk of being blown away. When feeding it always grasps a twig with its hind claspers, and eats a contiguous leaf. What a wonderful outcome of evolution is this that a lowly caterpillar, a mere fœtal moth, should so adapt itself to the vicissitudes of a poplar tree in autumn! There are many wonders in the evolution of species, but none it appears to me more marvellous than this. *N. dictæa* will continue eating until it is ready to shed its larval skin, and does so a long time after its mode of progression becomes an ungainly wobble; and I should think in a state of nature it falls off the tree when ready to pupate, like an over-ripe plum. An insect with such an appetite surely requires some special adaptation to prevent it pupating supperless, and nature apparently supplies the want in this manner. The variation itself is, of course, protective. The yellow and brown form of *N. dromedarius* is always that found in late autumn, while earlier in the year I have occasionally met with a beautiful green and pink form. *Cuspidia* (*Acronycta*) *leporina* has also two forms of larvæ: the one green with whitish hairs, the other black with yellow hairs, the latter preserving the colours of the young larvæ. Dr. Chapman considers this variation to be geographical—the former being the southern form, the latter or yellow form occurring chiefly in Scotland. Here, as one might expect, I get both forms in fairly equal proportion, and they are probably seasonal, I never get the yellow form in early autumn, but it is the commoner when the leaves begin to turn. I know of two other species that exhibit this dimorphism. These are *Eupithecia absynthiata* and *E. assimilata*. The bright yellow form of the former is only found on those plants (I get it here from ragwort) still in bloom (I have taken pink forms from tansy), while those found on the seeding blossoms exhibit the V-shaped markings and are brown. *E. assimilata* has an early green and late brownish form, also *E. lariciata* but it is not so marked. *Mamestra brassicæ* gets blacker and more dingy as the season advances, and the brown forms of *Hadena oleracea* and *H. chenopodii* are more common in late autumn.—RICHARD FREER, Rugeley, Staffs.

SMERINTHUS OCELLATUS, VARIETY OF LARVA.—Larvæ of the above

species have been more than usually plentiful in this neighbourhood during the past season. Among those taken were two examples having two rows of reddish-brown patches along the sides, the lower ones being the larger, and covering the spiracles. I am aware that a similar variety often occurs in *S. populi*, and occasionally in *S. tiliæ*, but I had hitherto noticed no marked variation in larvæ of *S. ocellatus*, although a large number have come under my observation.—A. T. Mitchell. *November 5th*, 1892.

NOTES ON COLLECTING, Etc.

Retrospect of a Lepidopterist for 1892.—This has been a real "butterfly" year. Not only have *Colias edusa* and *C. hyale* paid us another of their periodic visits, but very large numbers of other species of Diurni put in an appearance during the season just past, *Apatura iris*, *Limenitis sibylla*, *Argynnis paphia* and its var. *valezina* being among the number. I have a note in which a thousand specimens of *Hesperia lineola* are stated to have been captured in one locality in one day, and there is no doubt that many others, local species, have been almost equally abundant. The *Vanessidæ* have all occurred rather commonly, and a walk through the New Forest during the second week of August, showed fully one third of the British butterflies to be on the wing there. But no great rarities have been captured in this group. They rarely are in good seasons, when old stagers, remembering their boyhood days, chase *Colias edusa* etc., and set them in hundreds "for exchange." But mixed up with their excessive collecting, a little good work has been done, and the Rev. Mr. Hewett, Messrs. Frohawk, Hawes and Williams are to be congratulated on their successful attempts to clear up the life-history of our two species of *Colias*, whilst the larval stages of several other butterflies have been described by Messrs. Frohawk and Hawes. Mr. C. G. Barrett has stirred the butterfly workers by reporting *Syrichthus alveus* as captured some twenty years ago in Norfolk, but the record is too ancient for any great value to be placed on it, at least, until the species turns up again. Much more interesting is the record of the capture of *Lycæna arion* in its old locality at Bolt Tail, by Mr. Prideaux. Of the Sphingidæ, records of several of the rarer species have come to hand:—*Sphinx convolvuli*, much more regularly taken now than formerly, perhaps because it is more keenly sought for, has not been rare; *Deilephila livornica* and *celerio* have been recorded. These are very different in their habits, and whilst the specimens we capture in Britain of the former are almost certainly imported in the pupa stage by florists, the latter is a strong-winged species of great migrating tendency. Perhaps the most important species captured of this group is *S. pinastri*. Some years ago the editor of *The Entomologist* exposed a suggestion he overheard to try to acclimatise this species. Whether such a thing was done or not is uncertain, but since that time, the pine woods of Aldeburgh in Suffolk have yielded the species almost every year. The species is now well settled, and this year, Lord Rendlesham not only got several imagines, but fertile ova. The

species is reared in such abundance on the Continent, that there should be no difficulty with the species here. Of the *Sesiidæ*, *Sesia scoliæformis* is reported as bred from three distinct parts of Scotland, whilst, thanks to one or two hard workers, *S. sphegiformis* is no longer a rarity in our collections. *Zygæna exulans* was taken at Bræmar, and *Z. nubigena* commonly in Galway. I myself captured a remarkable race of a *Zygæna*, some specimens five, others six, spotted; which might with equal propriety be called *Z. trifolii* or *Z. filipendulæ*. They were out from about the 20th May, and over by the 26th of June, before the ordinary *filipendulæ* were on the wing. Of the BOMBYCES, *Bombyx trifolii* still maintains its ground at Wallasey, whilst a note sent to me in the early part of the year, stated that some British male *G. ilicifolia* had been captured by assembling with females bred from foreign larvæ. This must be taken in faith! The success of Mr. Holland with *Stauropus fagi* has been quite phenomenal, and many friends besides myself have to thank him for his generosity. Of the *Lithosidæ*, *Lithosia sericea* has again been taken by the Warrington collectors, on whom the mantle of the Liverpool collectors of a quarter of a century ago seems to have fallen. *Deiopeia pulchella* has been an insect of the season, several immigrants having been noted, but the number of late autumn specimens, probably the progeny of the early ones, has been very small. *Callimorpha hera*, probably like *Sphinx pinastri* originally introduced, is now always to be found in its favoured haunts. With relation, however, to such species as these, it is much to be regretted that the early records are not buried in oblivion. The method of dragging up histories, in which no one believed at the time, is much to be regretted, as it tends to obscure the facts of the case to our younger collectors, who do not know the particulars of each instance. Among the GEOMETRÆ we have but few rarities which are obtainable even in the best seasons. If rare members of this group are *bona fide* British, a female is almost sure to be obtained, and a number bred. *Lythria purpuraria* and such species never had a right to a place in our lists. *Eupithecia extensaria*, *E. togata*, *Cidaria reticulata*, *Phorodesma smaragdaria*, and similar species have been bred so largely for "exchange" purposes, that they are no longer to be compared with the rarer NOCTUÆ, SPHINGES, etc. As a matter of fact, *Camptogramma fluviata* is a rarer species by far than any of those mentioned. There are no records yet of *Phibalapteryx lapidata* or *Eupithecia innotata*, but probably both species have been taken by those who specially work for them; whilst *Eupithecia helveticata* was taken in fair numbers in Scotland. Of NOCTUÆ, great takes are recorded. During the lovely weather of the latter part of May and June, lasting until about the second week of July, NOCTUÆ simply swarmed at sugar. To mention species of the calibre of *Moma orion*, *Bisulcia ligustri*, *Cuspidia alni*, which came freely, in some cases abundantly, would fill half a page, and perhaps it will be best only to mention the specimen of *Cloantha perspicillaris*, captured by Lieut. Brown, and *Ophiodes lunaris*, captured by Mr. Austin, both in the Folkestone district, and both by hard working entomologists who well deserved their luck. In the early part of the year, fen insects were in great abundance, *Meliana flammea* being especially abundant. *Nonagria cannæ* has been again captured, and *Tapinostola concolor* has, I believe, again occurred in some plenty

in its old haunts. Scotch insects have swarmed, even when compared with the way they can "swarm" in Scotland, and *Noctua sobrina*, once so rare, was literally taken in dozens by Messrs. Mutch, Horne and other collectors. *Laphygma exigua* was captured by Mr. Hodges in the Isle of Wight. I hear of some mysterious specimens of *Thalpochares ostrina* and *parva* wandering about, but these want careful attention. Mr. Bankes, however, reports an undoubted specimen of the latter species taken at Poole, in June last. *Heliothis armigera*, strangely enough turned up as a "tomato" species, several imagines being bred from imported tomatoes, but I have heard of no *Prodenia littoralis*. *Plusia moneta* has been both captured and bred, and this very common Continental species seems to have quite made up its mind to settle with us, whilst Mr. Farren's hints have enabled Capt. Robertson to find *P. chryson* at Swansea. Mr. Holland reports a great "*Xanthia*" year at Reading; certainly the score of specimens of *X. aurago* he sent me were exquisite, both from the condition and varietal point of view, and it is interesting to know that *Dasycampa rubiginea* has again been bred, this time by Dr. Riding. Of the PYRALES and CRAMBITES, a large take of *Aglossa cuprealis*, by Mr. King at Wicken, an extraordinary abundance of *Botys hyalinalis*, a few specimens of *B. cinctalis* in the southern counties, with a comparatively large number of *Crambus myellus* from Scotland, are among the best. Besides these, Dr. Mason records the detection of a specimen of *Hercyna phrygialis* taken in Scotland a few years ago. Of the PTEROPHORINA, a fair take of that species, for a long time almost lost in Britain,—*Oxyptilus pilosellæ*, in the Dover district, is perhaps the best thing. Not a single new species among the TORTRICES has been discovered, and in this group, indeed, there is quite a dearth of scientific work, Dr. Wood's discovery of the larva of *Ditula woodiana* being the best record. However, long series of *Leptogramma scotana*, *Retinia duplana*, *posticana*, *Sericoris irriguana* and *daleana* were taken in Scotland. Among the TINEINA, Dr. Wood is again almost alone in his scientific observations, his detection of several new species among the *cæspititiella*-group of the genus *Coleophora*, being quite an unusually good piece of scientific work in this direction. Mr. Hodgkinson's supposed new species of *Coleophora* for which he suggested the name *metallicella*, has been determined to be only a form of *fuscedinella*.

Of short scientific articles showing original research, there are very few published this year, Mr. Robson's paper on "The Hepialidæ" (*Ent. Record*); Dr. Chapman's on the "Oviposition of *Adela viridella*" (*E.M.M.*); "Variation in the colour of the Cocoons of *Halias chlorana*" (*Ent. Record*); "Effects of temperature on the colouring of Lepidoptera" (*Trans. Ent. Soc. of Lond.*) by Mr. Merrifield; "Butterfly life before leaving the egg," by the Rev. H. H. Higgins (*Brit. Nat.*); "The Genetic Sequence in the Colours of Lepidoptera," and "Secondary Sexual Characters in Lepidoptera," written as Introductions to vols. ii. and iii. of *The British Noctuæ and their Varieties*; "The Duration of the Ova State in Geometræ," by Mr. Fenn (*Ent. Record*); "Further experiments upon the colour relation between certain Lepidoptera and their surroundings," by Mr. E. B. Poulton (*Trans. Ent. Soc. of Lond.*); "On the Variation in the colours of Cocoons and Pupæ of Lepidoptera," by Mr. Bateson (*Trans. Ent. Soc. of Lond.*); and

"Our rush-feeding Coleophoræ," by Dr. Wood (*E.M.M.*), are probably the most noticeable. Mr. Perry Coste has brought his series of papers on "The Chemistry of Insect Colours" (*Entom.*) to a close. These were, in the beginning, so full of errors, and the generalisations arrived at were so crude from insufficiency of experiment and material, that it was a great pity the papers were not submitted to a competent friend who would have advised the writing of a short summary of some three or four pages, which would readily have comprised the facts worth recording, instead of spreading them in useless fashion over so many pages. One good scientific paper by Mr. Pierce on "The genital organs of *Coremia ferrugata* and *unidentaria*" (*Entom. Record*) was almost ruined by the accidental transposition of the names. Dr. Chapman's papers on "The Genus Acronycta and its Allies" are now practically completed, and there can be no doubt that such a scientific overhauling of a genus has never before been given to any of our NOCTUÆ, and at the same time, the papers will undoubtedly long remain a standard reference work on the species described and discussed.

Of individual efforts, none has been more disappointing scientifically than the *British Lepidoptera* of Mr. C. G. Barrett. Advanced entomologists had looked forward to a scientific work on the lines of Edwards and Scudder, and not for another elementary and popular treatise of which we have already enough and to spare. Nothing but praise can be bestowed upon Dr. Cooke's "Entomogenous fungi, or Fungi parasitic on Insects," a work which all entomologists should buy. English bibliographists must be proud of Mr. Kirby's work "A Synonymic Catalogue of Lepidoptera-Heterocera,' vol. i., a work which is far beyond anything of the kind ever before attempted. The same author has brought out a revised edition of his "Elementary Text-Book of Entomology." "The British Noctuæ and their Varieties," vols. ii. and iii. have been published, whilst vol. iv. is almost ready for publication. This work is the only text-book on the subject ever published, and has already proved a success. Very few local lists have come to hand; those of Bognor, by Mr. A. Lloyd, F.E.S., and that of Burton-on-Trent, Dr. Mason, being the only ones of importance.

Of the Societies, there is little to be said and that little chiefly of a congratulatory nature. The Entomological Society of London is as evergreen as usual, and does excellent work. Its *Transactions* are, as they should be, the best entomological publication produced, and the excellent Secretary, Mr. Goss, asks for an increase of members to enlarge and improve them still more. The City of London Entomological Society, with all its vicissitudes as to a meeting place, is probably the most active of all the entomological societies, and its meetings show probably a higher average of attendance for the year than any other society in Britain (Ent. Soc. of London included). Its success is undoubtedly due to two causes—first, its excellent Secretary, second, the number of young members. The Secretary's activity has resulted in a thoroughly complete list of subjects to be discussed at every meeting, and in this way compares more than favourably with its friendly rival the South London Entomological Society, which has been left this season to chance discussions and chance exhibits. The Society must feel this in time, as members will not save an evening with the probability of wasting it. Of the provincial societies, an excellent

Secretary places the Lancashire and Cheshire Society in an enviable position, and the same may be said of the Cambridge and Birmingham Societies. The various entomological branches of the Yorkshire Naturalists' Union always do good work, that held at York being especially active just now. A new Society at Aberdeen should prove successful if properly taken in hand. Where is the old Glasgow Society now? Surely this Society should have held out, and not have been allowed to collapse. The publications of the Societies are, as a rule, unsatisfactory. The South London Society has published nothing this year; but the City of London brought out its modest *Transactions* as soon as the year had closed. It is much to be regretted that the Lancashire and Birmingham Societies cannot see their way to publish independently annual *Transactions*, including the papers read at the meetings. There can be no doubt of their scientific utility, and perhaps some kind friends will yet offer the money necessary to do so.

The Magazines have changed but little in their respective channels. *The Entomologist's Monthly Magazine* has perhaps rather more of so-called unscientific matter than usual; whilst the fauna of China and Japan have been less prominent in the pages of *The Entomologist*. *The British Naturalist* shows perhaps most improvement, but its continuation articles, as Mr. Dale's paper on "The Sphingidæ," tire out people from their slow rate of appearance. This, indeed, is the weakest spot in an otherwise excellent magazine. *The Naturalist* does excellent scientific work; and the same may be said of *The Annals of Scottish Natural History*, an excellent publication, which, at the beginning of the year superseded the *Scottish Naturalist*; whilst a new magazine, *The Irish Naturalist*, has also been started, and deals with the Natural History of the sister island.

Altogether the year has to be looked on as having given a great deal of pleasure to the collector, and it is to be hoped that the abundance of insects will lead to the publication of more scientific notes of lasting interest than has been the case so far. There will then be but little to regret in the year 1892.—J. W. Tutt. *December 1st*, 1892.

Notes of the Season.—*Clevedon.*—Ivy moths are to the fore this season, the following species being very abundant, *viz.*:—*Orrhodia spadicea*, *O. vaccinii*, *Orthosia lota*, *O. macilenta*, *Mellinia ferruginea*, and *Anchocelis pistacina*, in great variety; *Scopelosoma satellitia*, *Phlogophora meticulosa*, *Xanthia citrago*, *X. cerago*, and *X. silago*, *Agrotis saucia* and *A. suffusa* (the last-named species I have not seen since 1885), *Hadena protea*, *Polia flavicincta*, *Xylina petrificata* (not so common as usual), *Cidaria miata*, *C. psittacata*, sparingly (never abundant at Clevedon); *Agrotis segetum*, *Miselia oxyacanthæ*, *Anchocelis lunosa*, *A. litura*, *A. rufina*, (the last three scarce), with a sprinkling of *Xylina rhizolitha*, *Scopula ferrugalis*, and one or two others, make up a tolerable list this season, which I hope may be supplemented shortly with *Dasycampa rubiginea* and *X. semibrunnea*, weather permitting.—J. Mason, Clevedon. *October 19th*, 1892.

Kent.—I am glad to add my testimony to the fact of this having been a good season, the first part of it remarkably so. Had it not been so rough and windy I should have had very good sport during my stay of nearly five weeks at Deal, but as everyone knows, in coast collecting, the absence of wind is one of the things requisite for

success. Common species were not scarce, but sugar had little attraction until the repeated thunderstorms had washed the sweetness out of the blossoms of the marram grass, and then moths came in hundreds. However, it was then too late for me, and except *Agrotis saucia*, of which I took a good if not a long series, the attendance was more remarkable for quantity than quality. Commoners like *Noctua rubi*, *N. c-nigrum*, *Agrotis suffusa*, *A. valligera*, *A. puta*, *A. segetum* and *Hydræcia nictitans* were in abundance. *Cerigo cytherea* was not un common but, as usual, terribly dilapidated. I suppose they hide among the marram and other grasses in the daytime. *Colias edusa* was common in the daytime all over the downs and the fields, and did not confine itself to clover fields. I got several good varieties of the ♀, including one with quite spotless margin, but two var. *helice* and one *C. hyale* were all I saw or caught. Of the better species *Crambus contaminellus*, a nice series, *O. dentalis*, bred from the *Echium*, *Lithosia muscerda* (3), *Camptogramma fluviata* (1), *Mamestra abjecta* (1) and *Melissoblaptes anella* (a few) were perhaps the best. I took a few *Calamia phragmitidis*, *Apamea ophiogramma*, *Collix sparsata*, etc., but the wind made collecting TORTRICES out of the question. Since my return I have devoted most of my spare time to larva hunting, and I have found larvæ more common than last season, although 1891 was supposed to be good in this respect. I was fortunate enough to get about a dozen *Asphalia fluctuosa* one day by hard beating, with a varied collection off the birch. *Geometra vernaria* is now common by beating *Clematis*, and will be worth collecting for about three weeks longer. I took nearly fifty on Saturday afternoon with a few *Phibalapteryx vitalbata*, *Eupithecia coronata*, etc. With regard to the foodplant of *Cidaria silaceata*, it is the little *Epilobium montanum*, which is a very common weed and grows in woods, woodsides, lanes, along ditches, etc., on which the larva feeds. I have never been able to get the larva to eat any other species of *Epilobium* although I have taken the moth among *E. angustifolium*, but if supplied with *E. montanum* it is one of the very easiest of Geometers to rear. As Dr. Riding very correctly remarks it is double-brooded *invariably* in the south. I have had a great number of larvæ feeding this year, mostly bred from ova, and the position of the larvæ when at rest is well worthy of record. I have now about 100 larvæ of *Notodonta dictæa* feeding, and find their position at rest on the petiole of the poplar leaf is extremely characteristic. I heard a few days ago that a *Plusia moneta* was taken in a garden at Dartford this year flying round the monkshood growing there. If this plant were cultivated more in our gardens I daresay we should find the insect common enough. It has evidently established itself in this country.—C. FENN. *September 22nd*, 1892.

Devonshire.—In south-east Devon, insects have been fairly abundant this summer, the commoner Fritillaries, *Argynnis euphrosyne*, *aglaia*, *paphia*, *adippe*, sporting themselves freely on the slopes and in the openings of the woods of the higher grounds; *Thecla quercus* and *rubi* have been local, but numerous; *T. betulæ*, scarce. *Colias edusa* has been flying in most parts, but I noticed only two of the pale varieties, and failed to take either. Among the rarer Geometers taken, were two *Macaria alternata*, both males, one at night and the other flying at dusk, early in June. My son netted several *Lobophora sexalisata*, but

only one female, which did not lay eggs. They were started by the beating stick in several localities, both during the day and at dusk. He also took fine specimens of *Euthemonia russula*, *Melanthia albicillata* and *Selenia lunaria*. One of the latter laid a good many eggs, and the larvæ fed up indifferently on oak, blackthorn, elm and bilberry. A fair number pupated towards the end of August and the beginning of September. Early in July we took a good series of *Melanippe unangulata* and three *Cidaria picata*. From a few eggs laid in May by *C. suffumata*, I have obtained about a dozen pupæ, the larvæ feeding up rapidly on *Galium mollugo*, and changing early in July. The *C. suffumata* taken in the spring were all typical, no dark varieties. A worn *C. silaceata* laid a few eggs in May, the larvæ in which, hatching in June, fed up on *Circæa lutetiana*, and pupated towards the end of July. I find them, as Mr. Fenn says, very easy to rear, but with me they refused *Epilobium montanum*, though that, as well as the enchanter's nightshade, grows wild in parts of my garden. The larvæ, when nearly full-fed especially, are just like the stalks of the *lutetiana*, indeed, in changing the foodplant I have often mistaken them, and found out my error only by touch. Their resemblance, too, to the pod of *Epilobium montanum*, is very striking, as Mr. Holland remarks, though I have never found them on that plant. Out of some eight or nine, two imagines emerged on August 14th and 20th, neither have the transverse band divided, and they are somewhat smaller than most of the spring brood. We also netted a few fresh specimens at light about the same time. It seems that in these cases of a double brood, only a few imagines come out in the autumn, unless the season is unusually favourable, in this case, some six or seven are going over. I noticed the same with the second brood of *Ephyra omicronaria*, only three emerged in the autumn, the majority hybernating. *Asthena luteata* occurred generally, but sparingly, considering the abundance of maple. *Venilia maculata* and *Bapta temerata* were common in May, the first local, the second generally dispersed. One *V. maculata* has the upper wing pale primrose,[1] whilst the under is of ordinary deep yellow colour, forming a singular contrast. I think this variety has been noticed elsewhere. *Heliaca arbuti* was very abundant. NOCTUÆ have been scarce, as sugar has been unproductive, the best insect attracted by sweets being *Cosmia pyralina*. This we took in apple orchards. Does not the larva feed on blackthorn in the hedges, or on apple, rather than on elm? There are but few elms, and those a long way off, where we took the insect, and it was very local. I kept several females, but could not induce them to lay eggs, though I found their bodies full of ova after death. The first *C. pyralina* was taken at light on July 11th, and the remainder making between two and three dozen, mostly in one orchard, at sugar, between July 13th and the end of the month. We took none this year in August. The pupæ of *Emmelesia unifasciata*, reared last year, began to emerge early in July, but only seven came out, the remainder (of some three dozen) have gone over for another season. On the coast, some eight miles from here, we took *Hesperia actæon* freely, early in August, and in the same place, *Phytometra ænea*, *M. procellata*, *Eubolia bipunctaria*, *Leucophasia*

[1] I have often noticed this form, but believe it to be caused by exposure.—ED.

sinapis, *C. edusa*, etc.; whilst *M. galatea* was also abundant. My son took two *Cleora glabraria*, one, in a fir wood, another at rest on an oak, on August 4th and 12th. I believe the insect has been noted before to occur in Devonshire. *Bupalus piniaria* and *Macaria liturata* were flying freely in the fir woods about midsummer. *Ptilodontis palpina* came to light in August, and *Ennomos fuscantaria* in September. At heather, in August, we took *Agrotis agathina*, resting on the flowers (but only in one locality)) *Noctua castanea* var. *neglecta*, with one var. *lævis*, also *Stilbia anomala* flying (male and female), and larvæ of *Anarta myrtilli* feeding, besides commoner insects. One of our party beat out a larva of *Cuspidia alni*, just as it was preparing to put on its characteristic coat, at Harpflow woods, towards the end of August.—W. S. Riding. *September 24th*, 1892.

Aberdeen.—This is one of the best seasons here that I have ever enjoyed. Sugar, during August, was very productive, it was quite a treat to see *Orthosia suspecta*, *Noctua neglecta*, *N. dahlii*, *N. glareosa*, *Lithomia solidaginis* and *N. sobrina* fighting for a place on the sugared trees. The frost is spoiling it now, but *Epunda nigra*, *Calocampa vetusta*, *Anchocelis rufina*, *A. litura* and *Mellinia ferruginea* are turning up in numbers. I took a few *Stenopteryx hybridalis* on ragwort flowers on the sandhills, although I never took it here before. It is wonderful how abundant this species has been all over the country. *Plusia gamma* is common, but not so abundant as in most other places. *Bombyx rubi* larvæ are in thousands almost on every piece of high grounnd.—A. Horne, Aberdeen. *September 9th*, 1891.

Aberdeen.—Mamestra albicolon has never been so common in Aberdeen before as it has been this year. In fact, it has been a stranger here except in a few cases. One or two was about the most ever taken in a season. I obtained ova from a female, and the larvæ were running about in my box, but before I found out the right foodplant they had all died. *Xylophasia rurea* is a very common insect with us, in fact, they are a pest at times, and we take very dark varieties, some of them almost black. *Lycæna* var. *artaxerxes* is, as a rule, very common at Muchalls every year. *Orthosia suspecta* has been very scarce this year, *Noctua dahlii* especially abundant. There are some very fine varieties of *dahlii* taken in the district, they vary in colour from light to dark, and also in markings and size. *Noctua neglecta* was very scarce, but the larvæ were common. I think it was the abundance of heath bloom that prevented them being attracted by the sugar.—J. Sinclair, Aberdeen. *Sept. 23rd*, 1892.

Cornwall.—In July *Eupithecia pulchellata* was plentiful in fox-gloves around Penzance, but though I collected a great number I have very few pupæ, as more than two-thirds were ichneumoned; when they attempt pupation they become distended and rigid with the larvæ of the ichneumon. Just in the same manner I have noticed *Eupithecia valerianata*. *Satyrus semele* was very abundant from the Porthguiana to Land's End, especially wherever the softer granite formation occurred, and the cliff sides were covered with small fragments; where the boulders are the rule, *S. semele* was absent. Can anyone give me any information as to the locality near the Bolt-tail for *Lycæna arion*? I first saw this year's brood of *Colias edusa* at Prawle Point on the 31st July, and got one var. *helice* just emerged, the males were very

numerous, but females hardly out; they abounded, however, around Penzance throughout August, and were still numerous at Teignmouth last week, but I never saw *C. hyale*. Bradley Woods, Newton, produced me no *Leucophasia sinapis* this August, as the undergrowth was too thick where I generally get it. *Liparis monacha* was on tree trunks, and *Argynnis paphia* with *Lycæna argiolus* on the brambles. *Bryophila glandifera* I got every now and then, but only solitary specimens. I got the first on the 25th of July, the last on the 21st September, and still in good condition.—E. A. Bowles, Waltham Cross. *Oct. 7th*, 1892.

["*Arion* occurs chiefly beyond the Bolt to the westward, where, between it and the next point, a slope sweeps down from the brow of the high land to the edge of the cliffs below, and here, at times, when the turf is dry and slippery, it is decidedly dangerous to approach too near the cliffs."—Mathew, *Entomologist*, vol. x., p. 36.—Ed.]

Epping Forest.—I first took *Colias edusa* on August 14th, and found the species plentiful. They were most plentiful at Hawkwood, where one of the var. *helice* was taken. I have also seen or taken the species at Chingford, Sewardstone, and Clapton.—Ambrose Quail, Stamford Hill, N.

Margate.—From September 3rd to September 10th *Colias edusa* (mostly males) were plentiful in the lucerne fields and were in an exceedingly battered condition, one ♀ and ♂ I took *in copulâ*, and although the typical *edusa* were so battered, yet on the 9th I took a perfect specimen of the var. *helice*. Of *C. hyale*, I took fourteen, of which one ♂ and one ♀ (taken on the 9th) were in very good condition. Is there normally a second brood of *C. edusa* on the Continent?—Id.

North Devon.—I stayed at Ilfracombe from the 16th August to the 21st September, and did a little entomological work there. *Colias edusa* were very plentiful on the railway banks going down, especially near Templecombe and Yeovil, but only a dozen rewarded my endeavours in North Devon. These are all males, the majority being small in size, probably on account of the larvæ feeding upon stunted plants of the rugged hillsides. One var. *helice* was seen on Sunday, August 28th, but as I was without my net it escaped capture. The *Vanessidæ* were very plentiful, *atalanta* and *cardui* swarming on the flowery roadsides. *Thecla quercus* were taken on 17th August, in Chambercombe Woods. They seem fairly easy to obtain late in the afternoon. Among Noctuæ, *Agrotis suffusa*, *saucia*, and *segetum* appeared in the largest numbers, sugar only attracting for the last fortnight of my stay. *Charæas graminis* occurred on Hillsboro' hill, flying over the short grass about 8 a.m. Three specimens of *Epunda lichenea* came to sugar and one to light, the latter being a female, and obliging me with a nice batch of eggs. Single specimens of the following were also taken:—*Noctua c-nigrum* and *N. glareosa* at sugar; *Heliophobus popularis* and *Triphæna fimbria* at light; *Xylophasia scolopacina*, flying after dark in Score Wood; *Cirrhœdia xerampelina*, at rest on an ash trunk at Clovelly, and *Stilbia anomala*, "tramped" from bracken on Hillsboro'. The Geometræ show a resemblance to those of the chalk districts, *Aspilates citraria*, *Anaitis plagiata* and *Eubolia bipunctaria* being noted. *Gnophos obscurata* were plentiful on valerian blossom on Lantern Hill. *Cidaria russata* occurred, including a very pretty yellow banded variety (*comma-*

notatum). *C. ribesiaria*, *C. silaceata* and *Thera variata* also turned up singly, and some very white forms of *Melanippe fluctuata* rewarded a good deal of picking. Larva beating was almost useless, sallow being the only tree from which anything could be obtained. From this I took one *Dicranura furcula*, and a fair number of GEOMETRÆ. Other larvæ taken were *Dianthœcia cucubuli*, *D. capsincola*, *Arctia fuliginosa*, *Bombyx rubi*, *Eupithecia lariciata*, etc., and one pupa of *Agriopis aprilina* completes the list of captures.—A. U. BATTLEY, 28, Amhurst Park, N. *October 6th*, 1892.

Folkestone.—My opportunities for collecting have been very few since the spring, with the exception of one week towards the end of September, and then the weather had commenced to break up, so that the result was not very satisfactory. I was then staying at Folkestone, where, of course, *Colias edusa* was found, but not in anything like large numbers, and I saw neither var. *helice* nor *C. hyale*, but I saw a splendid lot of both the latter taken by Mr. Austin, of Folkestone, some few weeks before. I believe some entomologists consider that 1892 will compare favourably with 1877 as an *edusa* year; but from my experience, I should certainly say not, which was confirmed by Austin, who took a far larger number in 1877. I was fortunate in taking a nice variety of *Lycæna adonis* (underside) while at Folkestone.—A. W. MERA. *October 27th.*

Galway.—I have been in the neighbourhood all the summer, except from the end of June to the middle of August; but I have not been able to explore the district nearly as thoroughly as I should have liked. In the butterflies, perhaps the most remarkable thing has been the abundance of *Vanessa urticæ*. Fresh specimens were out before the end of June, and larvæ were still feeding in September. I have not seen much of the Sphinges. Two footmen were to the fore—*Lithosia lurideola*, abundant in the larva state, and feeding even on bramble leaves; and *L. rubricollis*, lying about the dusty roads wherever they were overshadowed by trees. Does anyone know the larva of this species? I have found a curious mottled-green larva, with six red warts on each segment, which I think must be those of *L. rubricollis*. *Eriogaster lanestris*, *Cilix glaucata* (*spinula*), *Dicranura vinula*, and *Clostera pigra* (*reclusa*) have been common in either the larva or imago state. Among NOCTUÆ may be mentioned *Bryophila muralis* (*glandifera*), *Viminia menyanthidis*, *V. rumicis*, *Cuspidia psi*, *Helotropha fibrosa*, *Celæna haworthii*, *Agrotis lucernea*, *Polia chi* (disappointingly like my Lancashire specimens), *Euclidia glyphica*. I have hardly taken anything at treacle, otherwise the list of NOCTUÆ species would be larger. Among Geometers, the most noticeable are *Iodis lactearia*, *Hemithea strigata* (*thymiaria*), *Hyria muricata*, *Eupithecia satyrata*, *E. nanata*, *E. lariciata*, *E. castigata*, *E. scabiosata*, *E. togata*, *Cidaria corylata*; not a very remarkable record, but I never had a chance of trying for such species as *Zygæna nubigena* and *Phothedes captiuncula*, so I have to look forward to making their acquaintance next season.—J. E. R. ALLEN, Galway. *October 14th.*

Ireland.—Among the insects mentioned as numerous in England this season, *Vanessa cardui* and *Macroglossa stellatarum* have been also abundant in Ireland, especially the latter, which was as plentiful in the north as in the county Dublin. I observed the females on several

occasions depositing ova singly on *Galium verum*, and reared severa larvæ therefrom, which pupated from the middle of August to the 6th of September. About the middle of September I left home, and before the middle of October a member of my family noticed that two imagines had emerged. On the Continent the imago is in flight all winter on sunny days in mild climates. I think that this is one of the insects whose presence in this country is maintained by immigration. Mr. Mera mentions that *M. bombyliformis* has disappeared from its former haunts near Ipswich. I am inclined to think that this change of locality is habitual with this species, as after receiving from a friend in England very full notes as to the habit of the larvæ, I and a friend searched most carefully a spot where it used to be very numerous, and which has not been disturbed, but in vain. I was not successful in Monaghan in obtaining *Sphinx convolvuli*, though I planted extensive beds of *Nicotiana affinis* and other flowers, but a friend in Waterford took a specimen, and another was captured in Sligo. I heard of but one *Colias edusa* in Ireland, *viz.*, at Howth. The weather this autumn has been so extremely wet and cold in the north that I have done no entomologising. The ivy is coming out, but I have not been able to try my luck between engagements and bad weather. I may mention that I have been successful in breeding *Emmelesia tæniata*, some twelve or fourteen having fed up rapidly and gone down to pupate.—W. F. DE V. KANE. *October 26th*, 1892.

New Forest District.—The past season has been distinctly good for the New Forest district. Insects came to sugar very freely in June and the first fortnight of July:—*Boarmia roboraria* was fairly plentiful, also *Argynnis paphia* var. *valezina*; but, on the other hand, *Cleora glabraria* was exceedingly scarce; *Catocala promissa* was very scarce, but *C. sponsa* occurred freely, though rather later than usual. No great rarities, however, have turned up, but on the whole I am inclined to think we are entering on a series of better seasons for entomologists. One of the features of this season has been the abundance of larvæ of *Selenia illustraria*. In this immediate neighbourhood *Nemoria viridata* was very plentiful in one or two localities, but I was too much engaged at the time to collect them. This autumn *Agrotis saucia* has been quite abundant at sugar; and *Colias edusa* has been very common, in fact, anyone so disposed might have taken two or three thousand specimens here and round Swanage. I could only give a very limited time to them, and so only took five var. *helice*, but another collector secured between twenty and thirty. I had the good fortune, however, to take two ♀ *edusa* with scarcely a trace of the yellow blotches on the black borders of the wings. *Hesperia actæon* was very abundant this year. A curious thing about this insect is that it seems to appear earlier in the season than formerly. This year it was well out on the 12th of July, though it continued to emerge up to the 8th or 10th of August.—PERCY M. BRIGHT, Bournemouth. *November 5th*, 1892.

Cambridge.—*Xanthia gilvago* has been fairly plentiful on the gas lamps here, and I have taken a nice variable series. *Chauliodus chærophylellus* larvæ here are fairly thick on *Pastinica sativa*; the imagines are now coming out and producing a large proportion of almost unicolorous specimens, either black or brown. The larvæ of this species seem to straggle on over a long period, full-fed larvæ being

found from the last week of August to the end of September. It is not to be wondered at that the moth is rarely caught, since it is such a sluggish species, requiring careful searching even in the breeding pots. *Agrotis ravida* seems very erratic. Mr. Tutt found it at Wicken in the beginning of August, and Mr. Jones took three specimens here in the middle of September in very decent condition. I was pleased to come across *B. pinicolella* here this June. It was fairly plentiful in bright sunshine among some small firs.—W. FARREN. *October 7th*, 1892.

Clevedon.—I only noticed three specimens of *Sphinx convolvuli* this season, and they were much later than usual. I had a fine healthy pupa of *Acherontia atropos* brought me about a month since from a friend's garden, which I at once placed in a small breeding-cage, laying it in about 2 inches of very damp moss, and covering it with about an inch of the same material; the cage was then placed in a shady corner of a small humid plant stove in a temperature ranging from 65° to 80° Fahr.; the moss covering the pupæ was sprinkled with water every other day, and at the end of the third week I was delighted to find that a fine male had emerged in splendid condition.—J. MASON, Clevedon. *October 21st*, 1892.

Swansea.—Light and sugar are beginning to pay a little now, for the past three weeks they have been useless. About a month ago *Neuronia popularis* came freely to the moth trap with a few *Luperina cespitis*, the latter does not come to light now, strangely enough, but I have taken three during the last two days at sugar within twenty or thirty yards of the trap. *Agrotis suffusa* is common now at sugar, with an occasional *Anchocelis lunosa*, *Agrotis saucia* and *Asphalia diluta; lunosa* also comes to light. Mr. Holland was staying with me the last fortnight in July, and we did fairly well at sugar. *Gonophora derasa*, *Thyatyra batis*, *Xylophasia hepatica*, *X. rurea* and *Aplecta nebulosa* being common, and we turned up some things new to the Swansea district, such as *Dyschorista suspecta*, *Charæas graminis*, *Hypenodes costæstrigalis*, *X. scolopacina Leucania turca;* but what we were particularly keen on was *Calymnia pyralina*, of which we generally took two or three of a night, our best night totalling fourteen *pyralina* between us. My moth-trap during July and August produced such good species as *Noctua ditrapezium*, *Camptogramma fluviata*, *Plusia orichalcea*, *C. pyralina*, *Geometra papilionaria*, *Cilix spinula*, *Luperina cespitis*, *Ennomos erosaria* and *Plastenis retusa*. On 21st July Mr. Holland took at sugar a beautiful variety of *Triphæna pronuba*, the fore-wings being nearly pure white, the hind ones being a cream colour with a pink tint.—R. B. ROBERTSON, Sketty Park, Swansea. *September 14th*, 1892.

Bakewell.—I have noticed a striking abundance of *Polia chi* in this district during the last three weeks sitting on numerous stone walls about here: they seem to take up their position quite indifferently in the sun and out of it, as well as upon the limestone walls and on those built of millstone grit; on the latter of which they are, of course, very conspicuous. I mention this as a noteworthy fact in connection with the question of "mimicry." I used to take this species on Cannock Chase early in August, and was surprised to find it so much later here, only a few miles further north. Can any one suggest a reason?—C. F. THORNEWILL, Bakewell. *September 20th*, 1892.

Sligo.—*Polia chi* has been very abundant here this season, and any

taken at rest have always been on the stone walls, which they closely resemble in colour, as remarked by the Rev. C. F. Thornewill and Mr. Farren. *Chi* has not only been plentiful, but has been out a longer time than usual. My first capture this season was on August 24th, and it is not yet over; I got one at ivy two nights ago. Has any one remarked that in Ireland tree trunks are almost useless as a collecting medium? I have never been able to get anything excepting *Ellopia fasciaria*, *Diurnæa fagella*, and one or two species of *Scoparia*, all on spruce fir; no other trees seem to be of the slightest use. Perhaps it may be they are usually covered with ivy or moss.—P. H. Russ. *November 10th*, 1892.

New Forest and Sydenham.—My own experience of this season is that it has been far better than the last five years, both here and in the New Forest. The first insects to turn up were *H. rupicapraria* and *Anisopteryx æscularia* (Feb. 24th), followed by *Hybernia leucophæaria* (March 16th), and all the usual spring insects. At the sallows I got nothing, except one *Tæniocampa populeti* (April 7th). *Cymatophora ridens* began to emerge from pupæ, in which they had been four winters, on April 1st. During April and May a large number of *Ephyra orbicularia*, *Eurymene dolobraria*, *Lithosia rubricollis*, *Bisulcia ligustri*, *Eupœcilia ambiguana*, and *Lobophora sexalisata* emerged from pupæ, all from the New Forest last year. From May 14th to 16th I was in the New Forest, and obtained a few larvæ of *Boarmia abietaria*, but they were very scarce. Sugar was quite useless in May at Sydenham. In the New Forest from June 1st to 12th, *Tephrosia extersaria* and *Eurymene dolobraria* were much more abundant than usual, *Stauropus fagi* (1), *Notodonta trepida* (2), *Cerura furcula* (1), and several of the usual Forest insects; *Zygæna meliloti*, however, being very scarce. A day after *Eulepia cribrum* only produced a few worn males; perhaps the hot weather in May brought them out much earlier than usual. In August I returned to the New Forest. *Apatura iris* was fairly plentiful, and I bred a few from larvæ which I took in June, they were rather small; I have bred them several years, but the specimens have been always small, although I have sleeved them in large sleeves. *Colias edusa* was common, but only one var. *helice*. Sugar produced *Catocala sponsa*, *promissa*, *Noctua rhomboidea* (2), *Triphæna subsequa*, *Cerigo matura*, and any number of common things. At light the best insect was *Aventia flexula* (4). Larvæ beating was the most paying work. *Cuspidia alni* (6), *Stauropus fagi*, *Moma orion* (32), *Cuspidia leporina* (41), *Notodonta trepida* (5), *N. dictæoides* (11), *Ennomos erosaria* (5), while *Eurymene dolobraria*, *Demas coryli*, *Lithosia helveola*, *Notodonta dodonæa*, *N. chaonia*, and other common species were abundant.—R. S. Sellon, Sydenham. *September 19th*, 1892.

Isle of Man.—On the 8th November I had brought to me a beautiful specimen of *S. convolvuli*, which was captured by Mr. C. Bacon in his grounds at Seafield, Santon, the latter end of September. It is in very good preservation, and measures almost five inches across the wings from tip to tip. The taking of *S. convolvuli* in the island is generally recorded every year, and as a rule the specimens are found close to the coast.—H. Shortridge Clarke, 2, Osborne Terrace, Douglas, Isle of Man. *November 19th*, 1892.

Highgate.—Few people, I imagine, even naturalists themselves, were

aware that the damp, dark fogs of last week were suitable for the pursuit of lepidopterous entomology in the open air; and fewer still, probably, ventured to put the matter to the test of practical experience in the face of such propitious (?) atmospherical conditions. I think, therefore, an account of my own sport at the time may be interesting to the readers of the *Record*. Wishing to avoid the "Guys," I accordingly picked my way through mud and mire on the 5th into Highgate Wood. The fallen leaves made the moist ground afford a fairly good foothold, and after a couple of hours' hard work I obtained five *Lemnatophila phryganella* (three male and two female), several *Hybernia defoliaria* (females), and one *H. aurantiaria* (male). Not a very large bag, yet it was very enjoyable to wander through the wood at a time when the colouring was at its best! For the benefit of those who are unacquainted with the habits of *L. phryganella* I would observe that the males (of a brown colour) may be beaten[1] out of the undergrowth, and that then they take a short, slow, sailing kind of flight; but they are very provoking, for, if not caught on the wing, they soon settle and appear to vanish in the most unaccountable manner. I lost several owing to this cause, as they seldom rise to the beating-stick a second time. The females (white with black markings, and having very pointed wings) I found at rest on the trees. They are very inconspicuous, and easily missed. On the 9th, when the fog was very thick, I visited the lamps near the wood, and found the moths coming to the light. This determined me to go round the next day, but the fog became so dense in the morning that it required some resolution to carry out my intention. Everything was reeking with moisture, and the roads were a quagmire. However, when I came to the lamps, a most curious sight met my gaze. Hundreds upon hundreds of *Hybernia defoliaria* of every possible type, and scores of *H. aurantiaria* were adhering to the lamps (on one lamp I counted over forty moths), not only on the lamp-glasses and the framework surrounding them, but also under the glass, inside, on the lamp-post itself, on the ground close by, and even on adjacent palings or hedges. Now what could have been the attraction to account for such immense numbers? It was really surprising, too, how they managed to obtain foothold on the moist greasy surfaces! When touched they usually fell on their backs into the mud, unless intercepted; though occasionally they took to flight. As I wished to obtain a good series of the various forms of *H. defoliaria*, I was at first in high feather, but became embarrassed when I discovered how difficult was the task of merely picking and choosing! I took four *Himera pennaria* just before meeting the lamp-cleaner with ladder and duster, and so I fear I may have missed others further on. He said he had never seen so many moths in his life before. Putting aside all imperfect specimens (and these were numerous) I find my bag of picked specimens for the week (November 5th—12th) amounts to:—*L. phryganella*, 5 (3 males and 2 females); *H. pennaria*, 3 (males); *H. aurantiaria*, 14 (males); *H. defoliaria* (males) 22, (females) 10. I might have increased the number greatly had I been so minded. It is a curious circumstance that (comparatively speaking) I scarcely saw any *Cheimatobia brumata* or *Oporabia dilutata*, though I took one or two of

[1] We have found them flying naturally in the morning sunshine in abundance.—ED.

each species, as well as some smaller fry in the wood.—GEORGE HOLLIS, Dartmouth Park Hill. *November*, 1892.

Wye Valley.—Since my note on the 30th July, I have taken here *Charæas graminis*, *Neuronia popularis*, *Neuria reticulata*, *Luperina testacea* and *cespitis*, *Noctua xanthographa*, *rubi*, *c-nigrum*, and *glareosa*, *Cerastis vaccinii* and *spadicea*, *Anchocelis pistacina*, *rufina*, *litura*, and *lunosa*, *Agrotis segetum*, *suffusa* and *saucia*, *Hydræcia micacea*, *Orthosia macilenta* and *lota*, *Hadena protea*, *Gortyna ochracea*, *Calocampa exoleta* and *vetusta*, *Xylina ornithopus* and *socia*, *Agriopis aprilina*, *Asphalia diluta*, *Catocala nupta*, *Polia flavicincta*, *Amphipyra tragopogonis* and *pyramidea*, *Miselia oxyacanthæ* var. *capucina*, *Diloba cæruleocephala*, *Xanthia fulvago*, *citrago* and *aurago*, *Cidaria miata*, *Hemerophila abruptaria*, *Scotosia rhamnata* and *Chesias spartiata*. A good many species appeared to be partially double-brooded this year, in September (late) I took a *Cuspidia psi* and *Viminia rumicis*, *Notodonta dictæoides*, *Pterostoma palpina*, *Spilosoma menthastri*, and *Xylophasia monoglypha*, apparently just out. In October I took a pair of *Agrotis segetum* (black var.), the reniform in the female was very distinct and white, and, contrary to Mr. Newman's experience of the October broods of this species, I obtained ova. Out of some three hundred larvæ of *Aplecta prasina* eight fed up quickly, pupating in September (the rest are hybernating), the first imago appearing on the 2nd inst., two more emerging this day. —A. NESBITT, Llandogo. *November 5th*, 1892.

Cannock Chase District.—I regret to say, that owing to a variety of circumstances I have not been able to devote as much time to entomology as I should have wished. Perhaps this in some measure accounts for my having taken no rarities, and (judging from the entomological journals, I should think I am alone in that respect) not a single "clouded yellow" of any description gladdened my eyes. The farmers about here, with a singular lack of enterprise, in my opinion, seem to consider clover not worth growing. I only know of three fields within a radius of some miles, and on these I kept a watchful eye to no purpose. The early spring insects, *Asphalia flavicornis*, *Larentia multistrigaria*, *Brephos parthenias*, etc. were quite as common as usual. *Thecla rubi* came out intermittently from the 10th April to the middle of June, but was always scarce. *Saturnia pavonia* simply swarmed all over the heather in March, April and May, and a young and guileless entomological friend of mine tried to catch them. If I had had a virgin female, I have no doubt I could have got hundreds. I heard of a great flight of *Lithosia mesomella* one evening, but alas, I was not there, and the next night I went up fully armed, but never saw one. I, however, took two or three at light in the town of Rugeley. *Notodonta dictæoides* was decidedly scarce: I got about six females and three males, and obtained ova from all the females. It is a weary, weary insect to rear, prone to all manner of diseases, and takes about three months to feed up; I tried them all ways and the result is about twelve pupæ. I bred a large number of *Diloba cæruleocephala*, and among them was a specimen with bright yellow stigmata; I don't know whether this is a common var. or not, it is not mentioned in *The British Noctuæ and their Varieties*, and is a very striking form. *Bryophila perla* var. *flavescens* was not uncommon (I got about a dozen). The yellow lichen theory does not hold good here, as there is

none. *Hadena thalassina* swarmed at light, and I got *H. glauca*, *H. contigua*, *H. protea* at rest on palings; *Xylophasia rurea* with vars. *combusta* and *alopecurus* was fairly plentiful at light, the vars., which occur in equal numbers, being much commoner than the type, of which I only got one, and that had a greenish ground colour. *Miana strigilis* was very common; there were many hundreds at sugar one night, all var. *æthiops*, and I have never taken any other form in Rugeley, which is not a manufacturing town of any importance, not at all smoky, and is situated two miles from the Chase. Why this "thusness" I know not; but that malnutrition, damp, cold, environment, etc., do not apparently satisfactorily account for all[1] forms of melanism is certain.[2] *Stilbia anomala* turned up again in plenty, but I could not get hold of a female, although I searched the heather carefully with and without a lantern. I got a fair number of *Hydræcia nictitans*, which here exhibits markedly the effect of environment. Those I get in the town at light are large and red, those from the Chase are small and dark, some almost black. The sub-species *lucens*, which one might expect to get on the Chase, I have never found. *Xanthia citrago* was common in the larval stage and *Polia chi* was more abundant than usual; it seems to prefer brick to stone here, and generally sits on the mortar, which it simulates in a wonderful manner. *Calocampa solidaginis* kept up its character for abundance and stupidity; I took this year at light about a dozen *Mamestra furva* which is entirely new to this locality. *Habrostola tripartita* (*urticæ*) and *H. triplasia* were common in both broods. *Plusia iota*, *P. chrysitis* and *P. gamma* were all very common. *P. pulchrina* was scarce, and I never saw a *P. interrogationis*; *Odontopera bidentata* was excessively abundant at light, and *Tephrosia biundularia* and *punctulata* were fairly plentiful, the dark form of the former called, I believe, *delamerensis*, is the usual form here, the type is very rare. I took one pregnant female of *Geometra papilionaria*, which laid about 150 ova, these I sleeved on a birch tree, and they have done famously so far. *Asthena luteata* and *Eupisteria heparata* were both common; *Ematurga atomaria* was as common as usual; the Chase form is at times quite black, and is always very dark. *Bupalus piniaria* was common among the firs, but *Aspilates strigillaria* was decidedly scarce. I got some nice forms of *Oporabia dilutata* and *Hybernia defoliaria* in an oak wood near here. *Eupithecia pulchellata* was a victim of enterprising excursionists, who seem to consider it the height of bliss to lop off the heads of all the foxgloves they see. I got larvæ of *E. subfulvata*, *E. fraxinata* (I get two larvæ a year regularly), *E. nanata*, *E. indigata*, *E. absynthiata*, *E. minutata*, *E. assimilata*, *E. castigata*, *E. lariciata*, and *E. rectangulata* and bred a nice yellow form of the last; *Cidaria immanata*, *C. testata*, *C. populata*, *C. dotata*, *C. pyraliata*, *C. fulvata* and *C. prunata* were all fairly common I don't take *C. russata* here, I have some from Cambridgeshire, and, I think there is little difficulty in distinguishing it from *immanata* by Mr. Fenn's method. *Anaitis plagiata* was also common. In addition to the insects mentioned above, I took larvæ of *Notodonta dictæa* and

[1] Perhaps Mr. Freer will tell us what geological strata are characteristic of the district, what the surface soil is like, and how it varies?—ED.

[2] Can Mr. Freer suggest a cause for this form of melanism, which he records?—ED.

N. dromedarius, and one larva of *Bombyx quercus* var. *callunæ* in May. What a thing this is to feed! It did not spin up until the end of August. I may add in conclusion that no insect was markedly more common than usual, with the possible exceptions of *P. gamma*, *O. bidentata*, and *M. strigilis*.—RICHARD FREER, Rugeley, Staffs.

Tring District.—As notes on the Coleoptera, occurring about this part of the country do not seem to have appeared often in the entomological journals, perhaps an account of the more uncommon ones noticed by myself, during some portion of the season of 1892, may not be without interest. The greater part of the district is dry and chalky; but towards the north of the town there are many marshy spots lying on the gault and greensand, especially at the outcrop of the latter from under the chalk. The Chiltern Hills, which here rise to a considerable height, are capped by gravelly and loamy soils, which produce in several parts ground of a heathy character. The woods on the slopes of the hills are chiefly composed of beech and ash; but in the woods on the higher ground there is a fair amount of oak. In a district giving us this variety of soil and contour, we should naturally expect to find any order of insects well represented; and as far as Coleoptera are concerned, I have felt well satisfied with the results of my work. The good things among the Geodephaga that I noticed are not numerous. I took one specimen of *Licinus depressus*, under a flint, on March 20th; *Lebia chlorocephala* (1), beaten from small hawthorn bush; *Dromius nigriventris* (2), running on a pathway; *Bembidium gilvipes* and *Amara livida* (1), under stones; *Pterostichus minor*, common under stones and dead reeds. I took a single *Pterostichus gracilis* last autumn in the locality, but have not seen the species since. Hydradephaga.—*Haliplus cinereus*, a few in a coombe on the chalk; *Cælambus impressopunctatus* (2); *Rhantus bistriatus*, *R. grapii*; *Ilybius fenestratus*, not common. Palpicornia.—*Philhydrus nigricans*, fairly common in a stagnant pond; *Cercyon obsoletus* (4); *C. lugubris* (2), in wet moss. Brachelytra.—*Aleochara tristis*; *Tachyusa atra* (2), under dead reeds; *Encephalus complicans* (1), in wet moss; *Gyrophana gentilis* and *G. minima*, both common in fungi; *Hygronoma dimidiata*, taken sparingly by sweeping marsh plants, and with it *Myllæna dubia* (4); *M. gracilis* (1); *M. brevicornis*, I found in moderate numbers in moss, in winter; *Tachyporus pallidus* (3), under dead reeds; *T. formosus* (1), by sweeping in marshy field; *Mycetoporus punctus* (1); *Staphylinus fulvipes*, I took one specimen only of this rare species, it was running on a chalky bank, in the bright sunshine; *S. latetricola* (15), all caught on the wing, or just settling after flight, on hot sunny days at the beginning of May. They occurred at the same spot as *S. fulvipes*, and a few *Leistotrophus nebulosus* were flying with them. These large "staphs" greatly resemble some of the Hymenoptera when on the wing, and possibly some are passed over on that account. *Staphylinus cæsareus* (1), also taken on the wing; *Ocypus brunnipes* and *O. compressus*, a specimen of each caught, running on one of the chalk downs; *Philonthus splendens*, in moss and dung; *Lathrobium longulum* (2), on a pond bank; *Cryptobium glaberrimum*, in moss from marshy ground, with *Stilicus orbiculatus*; *Erœsthetus scaber*, in haystack refuse; *E. lævisculus*, in wet moss; *Stenus bipunctatus*, very common about the reservoirs and ponds; *S. canaliculatus*, *S. binotatus*, and *S. pallitarsis* (2), about the banks of

ponds; *S. erichsoni*, in moss and haystack refuse in dry situations; *S. solutus* (3), by sweeping rushes; *Trogophlæus pusillus*, under dead reeds; *Philorinum sordidum*, common on furze in May; *Eusphalerum primulæ* (3); *Homalium iopterum* (2), under bark; *Megarthrus affinis* (2), in haystack refuse. Clavicornia.—*Bythinus bulbifer*, in wet moss with *Bryaxis juncorum*; *Claviger foveolatus* (25), all in quite a small nest of *Formica flava*, under a flint—a number of nests of the same ant examined at the same spot did not yield a single specimen more; *Orthoperus atomus*, under cut grass in the garden; *Calyptomerus dubius* (4), in haystack refuse; *Colenis dentipes*; *Hydnobius strigosus* (1); *Colon brunneum*, all by evening sweeping under old beech trees; *C. serripes* (1), sweeping on marshy ground; *Choleva anisotomoides*, in moss; *Necrophorus ruspator* (2), in dead rabbit; *Silpha lævigata*, running across pathways; *Phalacrus caricis* (2), sweeping *Carex*; *Epuræa longula* (1), under bark; *Omosiphora limbata* (2), under bark of dead ash in April; *Meligethes umbrosus* and *Merythropus*, both on *Helianthemum*; *Pria dulcamara*; *Psammœchus bipunctatus*, on *Juncus*; *Anthrophagus nigricornis* (1); *Atomaria gutta* (2) and *A. mesomelas*, both in wet moss; *Endomychus coccineus*, under bark; *Chilocorus renipustulatus*, bred from a pupa found on bark of a willow; *Subcoccinella 24-punctata*, sweeping on the chalk downs; *Scymnus hæmorrhoidalis*, in haystack refuse; *Mycetophagus atomarius* (5), *M. multipunctatus* (3), *Litargus bifasciatus*, the last three species I took under bark of decaying beech trees, they seemed only to affect bark, which was ramified by the hyphæ of some fungus; *Tiresias terra* (4), bred from larvæ found under elm bark, in February; *Anthrenus claviger*, in the house; *Elmis æneus* and *Limnius tuberculatus*, both in a small running stream. Serricornia.—*Lucanus cervus*, rare in the district—a female was brought to me, but I have not taken it myself; *Aphodius pusillus* and *A. lividus* (1), in sheep's dung; *Hoplia philanthus* (3), flying in sunshine; *Homaloplia ruricola*, plentiful, but very local, flying on sunny mornings in June and July, over the short grass on chalky ground. I had no difficulty in securing over fifty in a short time one morning. There were a number of dark forms among them, but I only got two perfectly black varieties. I also found a few specimens under stones on dull days; *Limonius minutus*, one crawling on a grass stem; *Corymbites tessalatus* (5), sweeping in a marshy field; *C. holoceriseus*, abundant, flying on the chalk downs, in the sun; *Dascillus cervinus*, common by sweeping; *Cyphon coarctatus*, by sweeping *Carex*; *Scirtes hemisphæricus*, swept off a species of *Juncus*; *Malthodes fibulatus*, beaten from hazel and hawthorn blossom; *Malachius viridis* (1) and *Anthocomus fasciatus* (2), by sweeping in a hedgerow; *Hedobia imperialis* (2), beaten from old hedge; *Cis bidentatus*, on an old beech stump; *C. alni*, under bark of beech.

Heteromera.—*Cistela luperus*, beaten chiefly from flowers of *Pyrus aria* (white beam tree); the flowers of this tree, by the way, seem to be as attractive as any to Coleoptera, but they only last for a short time. *Orchesia minor* (2), evidently hybernating under the bark of a dead holly tree, in January; *Rhinosimus ruficollis*, common under beech bark; *Mordellistena brunnea* (1), beaten from hawthorn hedge; *M. pumila* (1), beaten from hawthorn blossoms; *Anaspis pulicaria*, on *Umbelliferæ*; *A. subtestacea* (2). Rhyncophora.—*Phyllobius viridicollis*, common on a chalky pasture; this is, I suppose, about

the most southern locality for the species. *Tropiphorus carinatus* (1), beaten from birch; *Polydrusus micans*, *Sitones crinitus*, on clover; *Hypera trilineata* (2), in moss in winter; *Orthochætes setiger* (1), by sweeping; *Errithinus nereis*, on *Carex*; *E. scirrhosus*, at the base of the leaves of *Sparganium ramosum*, the parenchyma of which they were devouring; evidently this is the foodplant; *Orchestes avellanæ*, scarce on oak; *Tychius squamulatus*, a few; *T. lineatulus* (1), by sweeping; *Cionus pulchellus*, fairly common with *C. hortulanus* and *C. scrophulariæ*, on *Scrophularia nodosa* and *aquatica*, I bred a fair number of each species by collecting the little hemispherical cocoons, which are prominent on the foodplant; *Gymnetron pascuorum*, in clover field; *Miarus graminis*, rare on *Campanula glomerata*, on chalky ground; *M. campanulæ*, occurring with the preceding; *Orobitis cyaneus*, rare, by sweeping; *Ceuthorrhynchus asperifoliarum* (2); *C. chalybæus*, on chalky pasture; *Ceuthorrhynchus horridus*, sparingly on thistles; *Apion conquens* (2), on *Matricaria*; *A. atomarium*, in moderate numbers on *Thymus vulgaris*, but difficult to get; *A. pallipes*, common on *Mercurialis*; *A. ononis*; *A. loti* and *A. livescerum*, sweeping on chalky ground; *A. waltoni*, common in several places on the chalk; *A. pubescens*, a few with the preceding. All the above *Apions* occurred during July and August. *Rhynchites ophthalmicus* (1), on hazel; *R. minutus* (2), also on hazel. *Attelabus curculionoides*, on oak. *Apoderus coryli* (3), on hazel. *Hylesinus oleiperda* (2), under bark of ash; *Xylocleptis bispinus*, common in old clematis bushes; *Bruchus cisti*, occurred in moderate numbers on *Helianthemum*. The Longicornia were not at all well represented. A few *Aromia moschata* were found early in August, sunning themselves on the willows, their presence being made known by the agreeable scent which they produce; not, by the way, very much like musk; *Pogonocherus hispidus* and *P. bidentatus*, a few of each beaten from old hawthorn bushes. Phytophaga.—*Donacia bidens*, fairly common on *Potamogeton* in ponds on the hills; *D. sparganii*, a single specimen by sweeping on the canal bank; *D. typhæ*, not common, in an old moat; *D. semicuprea*, abundant on the canal bank; *D. lemnæ*, rare on *Sparganium*: *D. affinis*, fairly plentiful, in a moat: I took the greater number by searching at the base of leaves of a *Carex*. The two common species, *D. linearis* and *D. sericea*, were plentiful in many parts of the district; *Lema puncticollis*, on thistles; *Crioceris asparagi*, was common in a friend's garden; *Cryptocephalus aureolus*, common in the flowers of *Ranunculus repens* at first, later in the blossoms of *Hieracium pilosella*; *Chrysomela varians* and *C. hyperici*, both species in all stages on *Hypericum hyperici* was by far the more plentiful; *Gonioctena viminalis*, rare on sallow; *Adimonia capræa* (2); *A. sanguinea*, on hawthorn blossom; *Galeruca sagittariæ*, common in marshy ground, by sweeping, and hybernating in stems of dead reeds, sometimes as many as seven or eight in one stem; *G. viburni*, on *Viburnum opulus*; *Hermeophaga mercurialis*, on *Mercurialis perennis*; *Haltica pusilla*, occurred freely on the chalk downs; *Hippuriphila mooderi*, in moss gathered from a marshy meadow; *Epitrix atropæ*, very local but plentiful on *Atropa belladonna*, the leaves of which were riddled by the insect; *Mantura matthewsi*, on *Helianthemum*, this is a sluggish member of the *Halticidæ*; *Batophila rubi*; *Aphthona venustula*, in the thick part of a wood on *Euphorbia amygdaloides*; *A. atratula*, in moss at roots of *Thymus* in

winter, and on the plant in summer; *A. herbigrada*, very common on nearly every piece of uncultivated ground on the chalk: *Phyllotreta nodicornis*, a few on *Reseda*; *Thyamis pusilla*; *T. piciceps*; *T. gracilis*, the last two on *Senecio jacobææ*; *Cassida vibex* (2), on thistles; *C. equestris* on *Mintha aquatica*. Many of the above insects were taken in Bucks; nearly half the district worked being in that county. Some of the best parts of the district (entomologically speaking) are very strictly preserved; but I had free access to these, owing to the courtesy of the principal landowners.—E. G. Elliman, Westcroft, Tring.

Rarities and Exchangers.—We have received during the past two months several communications from subscribers asking whether we thought that Mr. —— of —— was to be relied on for the supply of such species as *Hadena satura*, *Xylomiges conspicillaris*, *Nonagria sparganii*, etc. as British rarities. Now, from the commercial point of view on which many amateur entomologists arrange exchanges with strangers, the fact remains that no one takes these and equally rare species in sufficient quantities to arrange an exchange in such species, and those who do not know the gentlemen personally who take these and similar species are only aiding fraudulent persons in getting rid of such species as British by advertising for them. It is the collector's place, even if he have no interest in entomology as a science, to keep himself *au fait* with these things, but a glance at the exchange lists in all our magazines is sufficient to show how ignorant in this matter some of our collectors are. They appear to take a list and write off:—"*Desiderata.—Bœtica*, *arion*, *euphorbiæ*, *pulchella*, *ilicifolia*, *purpuraria*, *sacraria*, *cannæ*, *sparganii*, *conspicillaris*, *conformis*," etc. Occasionally "*daplidice*, *antiopa*, *musculosa*, *scutosa*, *erythrocephala*, *oleagina*, *ostrina*, *paula*, *parva*, *circellata*, *strigaria*, *fuliginaria* and *ononaria*" are added. And then the writers of such lists of *desiderata* complain that a certain class of collectors cheat them. Is it not palpably their own fault, and do not the lists of duplicates they themselves offer prove their ignorance? It is of course deplorable that in the study of entomology there are men who are willing to supply so-called British specimens of these species to a collector for some local species which he foolishly considers is an equivalent, and so, perhaps, it is, as it leaves a fraudulent person a monetary margin between the value of the foreign specimen and that of the local species he gets in exchange, but not from the British standpoint. A Continental specimen of *ostrina*, *paula*, *parva*, *fuliginaria*, *ononaria*, etc. has a commercial value equal to such British species as *hyperborea*, *sobrina*, *bombyliformis*, *convolvuli*, or any of our most desired local species, and therefore, the exchanger gets a *quid pro quo*, perhaps a good one, but not what he pretends that he expects. It is not our province to point out those of our friends who take our rarest insects. Generally they are entomologists, and not simply collectors, and would not thank us to subject them to the annoyance of receiving letters offering them *euphrosyne*, *selene*, *festiva*, *brunnea* and other species which occur in their own gardens, for the specimens which they prefer to give to those entomologists with whom they have a personal acquaintance. Collectors who exchange on a commercial basis can make a collection up to a certain point, but that they can ever hope to finish their collection is ridiculous. All *bona fide* collectors know that the British rarities of such collectors are a fraud, and that they have no actual value. There must be many collectors who have never read

"Young Barnes," published in *The Intelligencer*, thirty years ago, and the epithet "Young Barnes" is nowadays on many an older collector's lips as he reads down the exchange column, and sees what "duplicates" certain collectors offer for their "desiderata." We only, however, want now to draw attention to that inconsistent class of persons who encourage fraud, and then wonder if they are being swindled, and who, if only half the energy they display in worrying people in order to fill up a "blank," was put into working out the life-history or observing the habits of some familiar species, would be creating a pleasure for themselves, and doing service to science.—ED.

ENTOMOLOGICAL PINS.—In the *Record*, p. 240, Mr. Bankes, in an interesting and instructive article on pins, speaks of the Minuten Nadeln rusting. So they do if you use the steel ones, but they are to be had made of silver, which I suppose will not rust. I have not found them to do so, and I maintain that it would be an advantage to use them for all *Nepticulæ*. True they are easily bent when stuck in cork, but I find they go easily into, and hold well in, strips of well-dried elder pith; and setting boards can be made of the same material fastened on to wood. The first time I used them it struck me that they filled, as nearly as pins could, the want Mr. Stainton mentioned some thirty years ago in the *Entomologist's Companion*, of a perfect pin for Neps.—W. FARREN. *October 24th*, 1892.

FOODPLANTS OF CUCULLIA LYCHNITIS.—It may be generally interesting to note the fact that larvæ of *C. lychnitis* will eat *Scrophularia aquatica*. I had eighteen larvæ sent to me on the 15th August, varying in size from three parts grown to small ones in about their second skin, which had been taken feeding on the white mullein, and was surprised to find that I could not call to mind that I had seen any mullein in these parts; and on inquiry, found that it does not occur near here or is very rare. I was then in a fix as to what to feed them on, as I could only see mullein (white or black) given as the foodplant; but tried them with *Scrophularia aquatica*, judging from analogy that as *C. verbasci* will eat both *Verbascum* and *Scrophularia*, another member of the family might possibly do so. The larvæ did not seem to take kindly to it at first, and crawled over it restlessly; but on looking at them again about an hour afterwards I found them all busily occupied in eating the buds and blossoms. The result so far is that twelve of the larvæ have pupated, and the other six died. I cannot say until next year what the ultimate result will prove to be, and have not opened any of the cocoons. Two days ago I came across a note by Mr. J. E. Robson (*Entom.*, xxiv., p. 146) in which he says:—"I think it probable that the larvæ of all three (*viz.*:—*verbasci*, *scrophulariæ*, and *lychnitis*) will feed on any of the mulleins or figworts.—E. W. BROWN, Shorncliffe. *September 12th*, 1892.

FOODPLANT OF COSMIA PYRALINA.—Mr. Holland is anxious to know whether this species feeds naturally on blackthorn. That I cannot say, but I can relieve his mind with regard to elm, for in the early part of June, 1885, I beat from some elms near Brentwood a number of *Cosmia* larvæ, most of which turned out to be *affinis*, whilst two or three were *diffinis*, and a single one was *pyralina*. I still possess the imago which resulted from the latter, and see from its label that it was

born on July 10th, 1885.—(Rev.) G. H. Raynor, Panton Rectory, Wragby.

Early Appearance of Pœcilocampa populi.—On October 21st I took a small male *P. populi* at rest in the waiting-room at E. Barkwith Railway Station, whither it had evidently been attracted by light on the previous evening. On looking through my diary, which has been kept for many years, I cannot find a record of any capture earlier than November 3rd, and this in the south of England. Have any of your readers taken it in October? It is certainly somewhat of a misnomer to call it the December moth.—Id.

Failure of "Sugar."—Thirty years ago I could take from forty to sixty Noctuæ, but now on the same trees not a moth comes. The main reason to which I attribute this change is the ivy, which in these parts has been allowed to run wild for many years at its own sweet will, and has now got to bloom upon a large number of trees, and with us it begins early in September—according to position—and continues for two months. Another reason, I believe, is the great revolution wrought in all our good gardens of late years by the introduction of herbaceous and sweet-blooming flowers. I will name a few which I find attractive :—sunflowers (in many varieties), single dahlias, Aaron's rod (*Solidago*), scabious (*Achillæa*), Japan stonecrop (*Sedum spectabile*). One evening in 1891 I took sixty-five moths in over twenty varieties upon a bed of this last, including many that never come at all to sugar or ivy; nevertheless, I consider that ivy is far and away the most attractive thing we have for all kinds of insects, and recently I have taken several of the very local long-horned grasshopper *Meconema varia* upon the blooms. As a rule the flowers which bees frequent by day are attractive to moths by night, and are worth visiting *immediately* after dark.—W. H. Tuck, Tostock, Bury St. Edmunds, Suffolk.

Ennomos autumnaria.—On September 2nd a large female of this species was discovered at Holborn Viaduct Station. It was fluttering on one of the trucks of a goods train, which had recently arrived from the coast. It had probably been attracted by the lights when loading. About fifty ova have been deposited, but they are apparently infertile.—A. T. Mitchell, 5, Clayton Terrace, Gunnersbury, W. *November 5th*, 1892.

Sphinx convolvuli.—I have been very keen on *Sphinx convolvuli* this year, and been out every favourable night after night looking for them over a heap of *Nicotiana* planted in the kitchen garden. So far I have taken a dozen, my last being on September 18th—a very worn female. I have her still alive in a glass filter with *Convolvulus*, but as far as I can see she has not yet laid. Has any one found out whether they hybernate or lay during the autumn. The weather here at present is very bad: rain, hail, etc., every day, and bright moonlight at night, so there is no good setting my moth-trap or sugaring. Is *Eupatorium cannabinum* a well-known plant for *Gortyna ochracea* to feed on? This is the only thing, bar fox-glove, I can find the pupæ in.—R. B. Robertson, Swansea. *October 6th*, 1892. [Living pupæ of *S. convolvuli* are largely advertised in the Continental magazines during the winter months.—Ed.]

Habit of Stauropus fagi larva.—I noticed a nearly full-fed larva of *Stauropus fagi* drinking from a spot of water, with which the cage

had been sprinkled. This habit was not shown by any others of the many larvæ of the same species contained in the same cage.—F. B. NEWNHAM, Church Stretton, Salop.

USE OF AMMONIA.—The editorial note (*ante*, p. 233) seems to suggest that I do not know the proper way to use ammonia. Perhaps I do not; but it seems to me that ammonia is always ammonia, and will have the same effect however applied. However, the way I use it is very convenient, and might be worth imparting to the general public. I get a shallow tin box, half full of sand, and set in it a wide bottle with the bottom cut off. Upon the sand I pour a sufficient quantity of .880 ammonia, and then use the apparatus like a cyanide bottle, throwing the insects into it out of the pillboxes, in which I have carried them home. There is no need of a stopper, the moths are dead as soon as they get in. When they are all in, I take away the bottle, put the lid on the tin box, and put it aside till next morning, when the moths are in fine order for setting. I find sand the best medium for carrying the ammonia, with sponge or blotting paper, the ammonia is apt to come into contact with the wings.—G. A. HARKER, 100, Huskisson St., Liverpool. *October 29th*, 1892. [We take it that by the method mentioned by our friend Mr. Harker, the insects come in contact with the sand containing the ammonia. If so, it explains everything, for there is the greatest possible difference between throwing the insects on sand containing ammonia, and subjecting them to the fumes of ammonia. We throw chip boxes, with the living moths in them, into a close-fitting tin. Our moths, therefore, are killed by the fumes which pass through the chip boxes.—ED.]

COLEOPTERA CAPTURED ROUND LONDON IN THE AUTUMN OF 1892.—On August 1st, it being a fine day, I went to my old locality at Bexley, to see what Coleoptera were to be had there. I left home early in the morning and walked the whole way, as I wanted to try Kidbrooke Lane first, in order to obtain some insects for the London list. This part of the excursion, however, was not very successful, as the only insects that were taken were four *Lathridius angusticollis* and single specimens of *Micropeplus porcatus*, *Brachypterus gravidus* and *Gymnetron noctis*. I then went on past Bexley, and by some means or other succeeded in losing my way and got round to some woods at the back of the station, where I took a series of *Brachypterus gravidus* and *Gymnetron noctis* from the toad-flax, and although not a bug collector myself, it may interest that part of the entomological fraternity to know that *Gargara genistæ* was common on the broom. I now discovered my mistake and started afresh on the right track, and began sweeping vigorously and insects soon began to pour in, especially the *Apions*, of which I succeeded in taking seventeen species, the best being *viciæ*, *tenue*, *flavimanum*, *pallipes*, *punctigerum* and *hydrolapathi*; by sweeping at the sides of the ash woods two *Colenis dentipes* and two *Colon rufescens* turned up, the former when going, and the latter when coming back. I went as far as the chalk pits, where insects were not so plentiful, but I took *Microglossa nidicola*, *Homalota dilaticornis*, *Tachyporus solutus* and three *Ceuthorrhynchus troglodytes* var. *chevrolati*.

On Septe nber 17th I went to Southgate to try the locality, which was new to me. At Southgate I only took *Homalium striatum* and *Apion cruentatum*, and as the place did not look very promising I walked on to

Totteridge where the sport was better, four *Apion spencei* turning up (the insect that I really went for). The weather now turned very cold so I gave up sweeping and tried searching and soon came across a large piece of fungus on an old oak stump which yielded about sixty *Gyrophæna strictula*, and some refuse on a piece of waste land close to Woodside Park produced *Homalium planum* and *oxycanthæ*.

On September 24th I went to Coombe Wood to see what was to be got by sifting the dead leaves there. I did not get there till somewhat late in the afternoon, so instead of looking over the siftings there I brought them home to examine, and the result was that I got far more than I expected, which is accounted for, I think, from having more siftings to look at and having a better light to look it over by than the semi-darkness of Coombe Wood about four o'clock on a September afternoon. Among the insects that were common may be mentioned *Alexia pilifera*, *Oxypoda pallidula* (I took ten), *Quedius picipes*, *nigriceps* and *peltatus;* I also took two specimens of *Lithocharis brunnea* and single specimens of *Homalota decipiens*, *Mycetoporus lucidus*, *Philonthus decorus*, *Agathidium nigrinum*, *Ocalea badia*, *Cychramus luteus* and *Cœliodes rubicundus*. Just before going into Coombe Wood I tried the gravelly bank of the Beverley (by the wooden bridge leading over into the wood), and took three *Homalota hygrotopora* by throwing water over it.

On October 8th I took the train to Hammersmith and walked along the tow-path to Barnes railway bridge and from there to Kew. Along the tow-path I noticed some large masses of fungus growing on one of the willows, so I at once set to work to examine the bits on the ground which are more productive this time of year than the growing fungus on the tree itself. *Homalota nigra* was present in swarms and also four *Homalota occulta* (none of which can be referred to Dr. Sharp's description of the var. *fungivora*), this latter insect does not appear to be particular as to its food so long as it is strong, as later in the day I took two more in very rotten vegetable refuse, and on November 5th I took a specimen from a dead bird in Richmond Park. The prize of the day's outing was a specimen of *Euthia schaumi* which was also taken from the same lot of fungus. A little further down the tow-path I succeeded in taking two *Choleva nigricans* and four *C. nigrita* in some ground fungus, and coming back from Kew I found a specimen of *Homalium iopterum* under bark of an old stump in one of the hedges.

On October 15th I went to see if I could not find a decent locality in the north-west part of the London district, so I took the train to Willesden and walked up Dollis Hill to Hendon where there appear to be some very decent lanes for sweeping and which I shall certainly visit next summer. In some dead leaves by the side of the road up Dollis Hill I took two *Oxypoda vittata* and a single specimen of *Homalota pagana*, the latter being rather interesting, as all I have from North London; this specimen (and three in Mr. Newbery's collection) have the abdomen lighter only at the apex and the thorax pitch-black, thus giving the insect a very different appearance from the type form. In one of the fields close by I found a fermenting manure heap with some hay on the top, this I shook over some india-rubber sheeting and *Micropeplus margaritæ* came out in swarms, and also a good number of *Monotoma rufa*, but this insect wants good eyes and

patience to obtain, as it is rather a sluggish insect and the colour is such a good protection that unless the insect moves it is impossible to see it. I also took from the same heap *Microglossa suturalis*, *Oxypoda hæmorrhoa* and a male *Choleva angustata* (I have taken this *Choleva* several times before but they have always been females).

On October 22nd I paid a visit to Wanstead Park with very satisfactory results, the fact being, that I had taken a number of good beetles at Loughton which I was anxious to obtain within the ten mile radius, and as Wanstead Park seemed the most likely spot I went there with the following result. As soon as I got in the Park I took a series of *Prognatha quadricorne* under the bark of some sticks which were piled up just by the entrance. There was a large quantity of ground fungi growing in various parts of the Park, but no insects in it with the exception of one specimen of *Oxypoda alternans*. I also took one *Homalota æquata** from tree fungus, and under the bark of some felled beech trees I found three *Phlœcharis subtillisima*, three *Epipeda plana*, one *Coryphium angusticolle** and one *Homalium punctipenne*.* (Those marked * are some of the Loughton insects referred to.)—H. Heasler, 17, Danby Street, Peckham.

Explanations as to Liparis monacha.—Perhaps you will allow me, in justice to myself, to make a few remarks *re* the melanic race of *Liparis monacha*, which Mr. Clark described and figured. No doubt Mr. Clark has been deceived in them, but Mr. W. Salvage could not have been. Mr. Clark says (*ante*, p. 222):—"In July, 1891, I received from a correspondent at Scarborough a male and female of *L. monacha*, which had been captured in that neighbourhood;" and further states that "the female laid a batch of eggs, numbering 110." In the *Ent. Record* for November 15, there is a statement to the effect that Mr. Clark "received them from Mr. Salvage, who received them from me, and supposed them to be Scarborough specimens." As a matter of fact, I never sold Mr. Salvage any living imagines of *L. monacha*, and did not send him any specimens in July, 1891. I supplied him with some ova of *L. monacha* in October, and some set specimens in November of that year, after which Mr. Salvage sent me a post-card for the locality, which was duly answered. Had Mr. Salvage not been informed of their origin, the ridiculously low price that I asked him for them was sufficient, I should say, to convince any entomologist that they were not true British specimens. With reference to my way of doing business, I am under the impression that it is exactly similar to other dealers in general. I believe it is not customary for any dealers, when supplying specimens, to say where they have come from, unless asked to do so. When my correspondents write me for British specimens they are supplied with British specimens, and full data of same are given when required. Had I known Mr. Salvage dealt only in authentic British lepidoptera, I should not have sent him the *L. monacha*; but he simply wrote to me for any varieties I had for disposal. —H. W. Head, Scarborough.

When I purchased the specimens and ova of *Liparis monacha* from Mr. Head of Scarborough, he did not send me their history, and I very naturally thought they were from that district and true British. Indeed, I had no doubt of their authenticity until Mr. Clark wrote and said that he had been attacked about their origin, and that it had been

hinted that they were not British at all. I immediately wired and wrote to Mr. Head for full particulars, and my surprise and disgust may be judged on receiving a reply that they were from a cross between New Forest and Continental specimens. Mr. Head remarks that the low price he put on them should have been a sufficient guarantee to convince entomologists that they were not true British specimens. Is it possible that Mr. Head does not think it necessary to make any distinction between British and Continental insects when selling, unless specially asked by his correspondents? This seems to me a strange way of doing business, and most certainly will not be a sufficient guarantee for me in future.—W. SALVAGE, 12, Montreal Road, Brighton. *December 2nd*, 1892.

By the courtesy of the Editor, I have seen the letters written by Messrs. Head and W. Salvage to the *Entomologist's Record*. The facts are practically as I stated them, and I simply gave in my paper (*ante*, p. 222) the information given me by Mr. Salvage. In the second note (*ante*, p. 257) are the facts derived from letters afterwards received by me from Mr. Salvage, and from letters written from Mr. Head to Mr. Salvage. The following apology has been sent to me by Mr. Salvage :—"Dear Sir,—I see I am referred to in the current number of the *Entomologist's Record* as being the one from whom Mr. Clark obtained the ova of *L. monacha*, whose origin has been called into question, and felt that an apology is due to Mr. Clark for all the trouble and inconvenience he has been put to about them. When I had the ova from Mr. Head of Scarborough, he certainly did not tell me that they were not of pure British origin, and very naturally I was led to believe they were taken in that district. Mr. Clark, in stating their British authenticity, was guided by what I told him, and as I deal in nothing but British insects, I considered them strictly as British, and let Mr. Clark have them as such. Until their authenticity was called in question, I never had a doubt about them. However, it seems that one cannot be too careful now-a-days in purchasing rare species and extreme forms. Again expressing my deep regret for the great inconvenience which I have caused Mr. Clark,—I am, yours faithfully, W. SALVAGE, Nov. 21st, 1892."—J. A. CLARK, The Broadway, London Fields, Hackney, N.E.

[We do not propose to allow a recriminatory discussion on this matter, but simply lay before our readers the opinions of the two dealers implicated. To the outsider it appears clear that there must be more broods of this species in existence in Britain which their possessors have fondly hoped were British, and for which they have paid dearly in that belief. It does not appear that British *monacha* have suddenly grown dark, and it seems probable that the many dark races of *monacha* at present in existence in Britain are simply from originally imported ova, and that those who have recently devoted time, care and money to breeding black *monacha* have been duped, and that such specimens should have no place in British collections. This black aberration of *monacha*, known as *eremita* on the Continent, is not at all uncommon in many localities, and has a commercial value of about 4d. to 6d. for fine specimens. Truly, people who make collections without caring about entomological science have much to answer for, because if there was not such a competition to possess, there would be no incentive to fraud. It is satisfactory to know that an exposure has been made, and the

matter may fairly be left to public opinion, to settle who, and in what degree each has offended. To the scientist who finds his data crumbling from beneath his feet, such matters are more than disgusting.—ED.]

EPHESTIA KÜHNIELLA IN JAMAICA.—To-day I examined a lot of larvæ of *Ephestia kühniella*, found in oatmeal bought here. No doubt they came out with the oatmeal from England, or at least their ancestors did.—T. D. A. COCKERELL, Institute of Jamaica, Kingston. *August 9th*, 1892.

ERRATUM.—Page 232, line 13 from bottom, for "*adippe*" read "*aglaia*."

SCIENTIFIC NOTES.

CANNIBALISM.—Apropos of cannibal *Scopelosoma* (*Ent. Rec.*, p. 153), there is, in *Natural History Notes*, vol. ii. (1882), pp. 7-8, an account of cannibalism in this species. But it so happens that the author of the article showed me one of the supposed *Scopelosoma*, and it was *Mamestra brassicæ*. It may be worth while to note this correction while the matter is under discussion.—THEO. D. A. COCKERELL, Institute of Jamaica, Kingston. *August 9th*, 1892.

CURRENT NOTES.

Tanyzonus holitophilæ, the name given by the Rev. T. A. Marshall to a species of *Belytidæ* (*E.M.M.*, p. 275), sinks under the earlier name of *Belyta fulva* (*Mem. Manch. Lit. and Philos. Soc.*, vol. ii., 1889) of Cameron.

Mr. Luff records (*E.M.M.*) that Mrs. Boley bred from eggs of *C. edusa* var. *helice* two fine female var. *helice*, and five or six males of the normal type. The remaining chrysalides died, "probably from the effects of cold."

Mr. Eustace R. Bankes records *Micra parva*, captured on June 8th last on a saltmarsh on the edge of Poole Harbour. This is another addition to the few recorded localities for this species in Britain. A full account of the British records is to be found in *The British Noct. and their Vars.*, vol. iv., pp. 10, 11.

A "Life-history of *Lampronia capitella*," by Dr. Chapman, appears in the *E.M.M.* The eggs are laid in red currants rather more than half grown, the moth penetrating the lateral region of the currant. Two eggs appear to be laid at each penetration. This takes place in May. At end of June the larva leaves the currant, and hybernates in a small firm white cocoon, placed among the dead scales at the bases of the buds. It mines the shoots in spring and, unlike *Incurvaria muscalella*, does not make a case. Dr. Chapman also makes some critical remarks on the ADELIDÆ.

Mr. W. G. Blatch describes a new species of *Rhizophagus* under the name of *oblongicollis*, which he found in Sherwood Forest, October, 1886, and June, 1889; also in Bagot's Park, Staffordshire, June, 1892.

Compared with *R. nitidulus*, it differs from that species in the following particulars :—" Colour different (ferruginous throughout), head not so wide and with longer neck, eyes smaller and less distinctly prominent, antennæ with longer third joint and club more ovate, thorax not narrowed behind and more strongly punctured, interstices of elytra less shiny, abdomen without any impression on last ventral segment" (*E.M.M.*).

The rare *Acrolepia marcidella* is recorded by the Rev. C. R. Digby as being captured on the Purbeck coast on June 15th.

British Lepidopterists have not sustained so great a loss for many years as they have during the last week in the person of Mr. H.T. Stainton. The genial and kindhearted author of *The Manual of British Butterflies and Moths* and *The Natural History of the Tineina*, died on the 2nd inst., at the age of 70. An excellent observer, his work in the above volumes and notes scattered throughout the pages of the *Ent. Mo. Mag.* still remain to us, and was not fated, as is so often the case with that of British lepidopterists, to be lost with the worker. The *Intelligencer* of some forty years ago did much to make the entomology of to-day, and a great share of the pioneer work of that period fell to the lot of the friend whose loss we now mourn. In conjunction with Mr. McLachlan, the entomological magazine work of Britain was raised by Mr. Stainton to a higher level than has been known before, and under the same friendly care has not only been maintained, but has shown a steady progress. A past President of the Ent. Soc. of London, he has been an active member of that Society since 1848, and both the City of London and South London Entomological Societies were gratified to count him as one of their patrons. He was known to be in failing health, but the news of his death will come as a shock to many who did not dream that the end was so near. It is impossible to do justice in a short notice to a man to whom we owe so much. A teacher and counsellor has gone from among us! We mourn his loss most deeply and sincerely.

Mr. Poulton exhibited on a screen, at the Ent. Soc. of Lond. meeting on the 7th inst., photographs of the larvæ of *Ennomos angularia*, *Hemerophila abruptaria*, *Rumia cratægata* and *Amphidasys betularia* to illustrate colour variation in these species in response to environment. The most marked results were with regard to *R. cratægata* and *Amphidasys betularia*.

SOCIETIES.

The Yorkshire Naturalists' Union held their thirty-first Annual Meeting on November 15th, in the Huddersfield Town Hall, which was well attended by members of the Union from various parts of the county. In the afternoon, an exhibition, organised by the Huddersfield Society and referred to later on, was opened, and remained so till late in the evening, for the inspection of members and associates. Sectional meetings were held for the election of officers of sections, and

to receive the annual reports of the secretaries. At 3.30 the General Committee met, under the presidency of Dr. Sorby of Sheffield, in the unavoidable absence of Mr. C. P. Hobkirk, the president of the Union. There was a very good attendance of members. The address of the retiring president (Mr. C. P. Hobkirk, unable to be present) was read in a very clear and interesting manner by Mr. E. R. Waite, one of the hon. secretaries. He said:—"In dealing with the origin of natural history societies in Yorkshire, it was mentioned that a Literary and Philosophical Society was founded in Huddersfield before 1840; and about that time a grand exhibition was held in the Huddersfield Philosophical Hall; and this and other such societies in Yorkshire covered almost the whole field of human knowledge. Further development and specialisation of scientific research led, at a later date, to the establishment of field clubs and natural history societies, for the investigation of local phenomena. To Huddersfield belonged the honour of the foundation of the first naturalists' society in Yorkshire. The Huddersfield Naturalists' Society, under whose auspices the present meeting was being held, was founded in 1847, and it had never lacked in able, zealous and energetic naturalists to maintain its existence, and to keep alive the love of natural history in the district. The Union was formed in 1861, under the title of the West Riding Naturalists' Society, which title it retained for fifteen years; and the credit of suggesting and originating the formation of a confederation of societies, was due to the late Mr. William Talbot, of Wakefield. In September, 1861, at a meeting held in Heckmondwike, at which representatives were present from Huddersfield, Wakefield and Halifax, Mr. Talbot introduced the subject of combined and organized intercourse, and on his proposition, seconded by Mr. W. H. Charlesworth, and supported by Mr. R. Jessop, both of the Huddersfield Society, it was resolved to form the Union for the purpose of holding joint meetings periodically at the various places where societies had been already established. A further meeting was held at Huddersfield, on the 18th January, 1862, at which four societies—Huddersfield, Wakefield, Heckmondwike and Holmfirth—were represented. The decision of the previous meeting was confirmed, and the Union was constituted. The first honorary secretary was Mr. Jas. Ellis of Heckmondwike, and he was succeeded in 1863 by Mr. B. Bradley of Sheepridge, who held office till January, 1867, and he was followed by Mr. R. Smith, Dewsbury Moor, and he again was succeeded, about 1870, by Mr. J. M. Barber of Heckmondwike, and he remained secretary till the society was reorganized in 1876. Concurrently with the change of style and title to that of the Yorkshire Naturalists' Union, Messrs. W. Dennison Roebuck and George Brook were chosen joint secretaries. In 1864, *The Naturalist*, the journal of the Society, was published on their own responsibility, by Messrs. Geo. Tindall of Huddersfield (now of Newmarket) and G. H. Parke of Halifax (now of Wakefield), but the magazine was really edited by Mr. Tindall and Mr. C. P. Hobkirk. The publication was discontinued in 1867, in the middle of the third volume. In August, 1875, a new series of the *Naturalist* was commenced under the editorship of Messrs. Hobkirk and G. T. Porritt—(applause)—and published regularly at Huddersfield, and afterwards at Leeds, down to the present time, by these and subsequent

editors." The address was continued at some length, and at its conclusion the members inspected the exhibits, which were made by the different sections. In the Lepidoptera, Mr. Geo. T. Porritt, F.L.S. exhibited the specimens of *Arctia mendica* from Grimescar, Huddersfield (figured in *Trans. Ent. Soc. Lond.*, 1889) and which are considered to form the finest series of the species in existence. This case also contained some fine varieties of *Arctia lubricipeda* from York, and an olive-banded *Bombyx quercus* (a very rare form in Britain) from Crosland Moor, Huddersfield. Another case contained fine melanic forms of *Boarmia repandata*, from Netherton Wood, Huddersfield. Case 3 contained fine Yorkshire series of *Ypsipetes elutata*, *Cidaria russata*, *Hybernia progemmaria*, etc., also an almost complete collection of British Pterophori. Mr. Geo. Jackson of York, showed three cases containing extraordinary varieties of *Chelonia caja*, *Arctia lubricipeda* and *Abraxas grossulariata*; Mr. S. L. Mosley, F.E.S. exhibited a museum collection of British butterflies for students, arranged on an entirely new plan, so as to be of the greatest scientific service; also a selection of drawings of varieties of *Chelonia caja*, *Abraxas grossulariata*, etc. Mr. G. T. Porritt also showed his collection of Neuroptera and Trichoptera. Mr. Mosley showed his collection of British galls and gall insects (about forty cases), the Yorkshire species being especially indicated; and he also had a number of life-histories of all orders on view, prepared for the museum, illustrative of insect life. In economic entomology, Mr. Mosley exhibited fourteen large cases containing a complete collection of British injurious insects, prepared by order of the Agent-General for Victoria, for the Museum of Economic Entomology, Melbourne; also cases, similar to those fitted up for Kew Gardens, illustrating some Yorkshire injurious insects; as well as a collection of agricultural seeds and grasses. In educational natural history, Mr. Mosley showed a number of cases illustrating various branches of natural history, as prepared by him for schools, including cases intended to aid the teacher in giving instruction, cases intended to be given as prizes to children, cases for school walls, etc.—Ed.

City of London Entomological and Natural History Society. —*Tuesday, November 15th*, 1892.—Exhibits.—Mr. Prout, long series of *Hybernidæ*, to illustrate local variation; also an abnormally large example of *Anisopteryx æscularia* from Sandown, I.W. Mr. Battley, series of *Agrotis suffusa* and *A. saucia* from Ilfracombe. He stated that he found the form of the latter with the dark costa (var. *nigrocosta*) comparatively scarce. Mr. Bacot, series of *Hybernidæ*, including a fine series of suffused forms of *H. defoliaria* from Epping Forest. Mr. Quail, banded forms of *Hybernia leucophearia*. Mr. Clarke, a long and variable series of *Cidaria psittacata* from Lyndhurst. Mr. Nicholson, an example of *Noctua neglecta*, and a fine series of *Xylina petrificata* taken on sugar at Lyndhurst this autumn. Mr. Prout then read his paper, entitled "Random Notes on the *Hybernidæ*." Treating of the classification of the genus *Hybernia*, he remarked that it had but little affinities with the species usually placed in lists directly before it, *viz.*, *Pachynemia hippocastanaria*, but seemed closely allied to the *Larentiidæ*, as introduced by *C. brumata*, the connecting link being *A. æscularia*. With regard to the grouping of the species of *Hybernia*, *inter se*, he remarked that there were two pairs of species, and one odd one:—(*a*)

aurantiaria and *marginaria*, agreeing in the broad wings, semi-apterous ♀, and comparatively slender larva; (*b*) *rupicapraria*, approaching the first group in the imago, but widely different in the larva; (*c*) *leucophearia* and *defoliaria*, wings more elongated, markings and variations similar, apterous ♀, and stouter larva. He was uncertain, however, whether group (*b*) or (*c*) should come next to *æscularia*, the former being nearer to it in the larval state, the latter in the imago. On the subject of variation, he remarked that this was chiefly owing to protective colouring, and dependent on the habits of the species. Thus, the natural resting-place of *rupicapraria*, *leucophearia*, and *æscularia* was on tree trunks and fences, the insects being all brown or grey-brown. On the other hand, *defoliaria*, *aurantiaria*, and *marginaria* rested among dead leaves, and their colour was ochreous. *Defoliaria* and *marginaria*, however, had acquired the habit in some localities of resting on fences, and in these districts the dark unicolorous specimens became more common. The females usually hid among leaves and rubbish at the roots of their foodplant by day, and ascended the trees at night; and he had noticed a tendency in them to become gregarious, on one occasion finding four female *defoliaria* on one tree. With regard to the occasional superabundance of some of the species, he expressed an opinion that the females sometimes migrated short distances; but that the chief factor of these swarms must be looked for in local influences, or in the migration of a large number of males, as suggested by Mr. Adkin. Remarking on the time of year at which these species appeared, he stated that with *defoliaria* and *aurantiaria* temperature had but little to do with it, as pupæ kept indoors emerged at the usual time, but that the spring species seem to wait for a few mild days before they made their appearance. *Defoliaria*, however, sometimes lay over in pupa until January or February if the autumn were very severe, and *rupicapraria* had passed over the time of its emergence entirely, and died in pupa during the following summer. All the species emerged about mid-day, the limits in Mr. Prout's experience being from 9 a.m. to 4 p.m., both in captivity and nature. On the subject of breeding, he stated that *defoliaria* seemed to require a good depth of earth for pupation, and that *rupicapraria* and *æscularia* made firm cocoons, after the manner of *brumata*. The earth should be kept damp, as the larvæ otherwise dried up when full-fed; but he had found it necessary to dig up the pupæ just before the imagines were due, so as to allow of the emergence of the moths. A discussion took place, in which most of those present joined; and a vote of thanks, proposed by Mr. Nicholson, and seconded by Mr. Battley, was accorded to Mr. Prout for his paper.

Tuesday, December 6th, 1892.—Exhibits:—Mr. Clark, a specimen of *Vanessa cardui*, taken in the New Forest, part of the wings having a bleached appearance. Mr. Bacot, a variable series of *Hybernia defoliaria* from Epping Forest, some specimens being very dark, others well banded. Mr. Prout, a long series of *Caradrina blanda*, and one specimen of *C. alsines*, from Sandown. Mr. Battley, *Orrhodia vaccinii* and *O. ligula*, taken this autumn, including specimens of each with a pale band on the hind margin. Mr. Tutt pointed out that the banded form was the type of *ligula*, but that the parallel form in *vaccinii* was very rare. Mr. Bayne, variable series of *Oporabia dilutata*, some specimens being pale and others dark, although all from the same

locality. Mr. Smith, varieties of the undersides of *L. adonis*. Mr. Riches, a fine bred series of *Xylophasia scolopacina* from Highgate Woods; some specimens being rather suffused. Coleoptera.—Mr. Heasler, specimens of *Homalota æquata, Epipeda plana, Coryphium angusticolle, Prognatha quadricorne* and *Phlœcharis subtillisima*. Mr. Rosevear, a living larva of *Melalontha vulgaris*.

The following gentlemen were then elected as officers for 1893:—President and Treasurer, Mr. J. A. Clark, F.E.S.; Vice-Presidents, Mr. J. W. Tutt, F.E.S., and Dr. Buckell; Curators, Messrs. Smith and Heasler; Librarians, Messrs. Gurney and Nicholson; Council, Messrs. Prout, Hollis, Lewcock, Bayne and Newbery; Secretaries, Messrs. Battley and Simes. The Secretary read the report for the past year. After reviewing the progress of the Society during 1892, he congratulated the members on their improved position, both financially and otherwise, and mentioned the publication of the "Annual Transactions" and the compilation of the list of the London Fauna. The President then read his annual address. He referred to the great progress made by the Society during the thirty-five years of its existence, and commended the growing interest in Natural History, as evinced by the attention which is paid to the subject in our schools. Captain Thompson proposed that a vote of thanks be accorded to Mr. Clark for his address, and for his services during the past year. This was seconded by Mr. Tutt, and carried unanimously. The proceedings concluded with a vote of thanks to the retiring officers.—A. U. Battley and J. A. Simes, *Hon. Secs.*

Erratum.—Page 270, line 12, for "Forres" read "Rannoch."

South London Entomological Society.—*November 10th*, 1892.—Mr. Williams exhibited larvæ of *Colias hyale* in the fourth skin, and one pupa of the same species, obtained from August-laid ova. Mr. Purdey exhibited some fine vars. of *Peronea comariana*, from the Folkestone district, the specimens agreeing mainly in colour with the three allied forms known as *schalleriana, comparana* and *perplexana*, which latter almost certainly form but one variable species. Mr. South exhibited series of *Coremia unidentaria* and *C. ferrugata;* he considered them very distinct and had never seen specimens that could not be distinguished. Mr. Kane exhibited a large number of species from Ireland, including *Dianthœcia luteago* var. *barrettii*, which he considered was wrongly referred to *Luperina*; *Bryophila muralis*, varieties which had been referred by Mr. Warren to his *impar*; intensely dark *Camptogramma bilineata* and *Xylophasia polyodon; Notodonta bicolor* and many other interesting species; Mr. Mera, two beautiful underside varieties of *Lycæna bellargus* from Folkestone, and some strongly-marked *Abraxas grossulariata* bred from London larvæ.

November 24th, 1892.—Mr. Adkin exhibited *Peronea hastiana* from Sutherlandshire; one specimen with the costa broadly whitish, another with the inner margin yellow. The race was dark and looked very much like that from St. Anne's-on-Sea; *P. rufana* (fed on *Myrica gale*), the males paler, with a red line passing through the wing from the base to the apex; the females redder and smaller; also four *Zygæna filipendulæ* with the red of a pale salmon-colour. Mr. Williams, a pupa of *Colias hyale* on the point

of emergence (since emerged.—Ed.). Mr. Frohawk, a variable series of *Smerinthus tiliæ*, two males with only a central spot (var. *centripuncta*, Clark, *Ent. Rec.*, vol. i., pl. A, fig. 7), two other males, with another small spot below this central spot and other specimens leading up to an almost complete band. There was also considerable colour variation in the specimens. Mr. South, three malformed *Lycæna bellargus*, a malformed *Papilio machaon*, a specimen of *Melitæa athalia* with a small right hind wing, the other wings being normal, also a bred specimen of *Tortrix piceana* without the right hind wing.[1] Mr. Dennis, an autumn brood (six specimens) of *Colias edusa*, very small and very pale. The eggs were laid August 30th, larvæ hatched September 12th, imagines November 13th. Mr. Frohawk had also bred specimens from eggs laid August 23rd, the remainder of this brood being pupæ, but larvæ from ova laid in September were still feeding, and he thought these would either finish feeding or die, as, unlike those of *C. hyale*, they did not appear to wish to hybernate. Mr. Barrett, extremely dark forms of *Cuspidia leporina* var. *bradyporina*, bred by Mr. Collins of Warrington. Mr. West, a specimen of *Coremia unidentaria* with a very narrow central band. Mr. Tugwell, a series of *Dianthœcia luteago* var. *barrettii* from Howth.

December 8th, 1892.—Mr. Frohawk exhibited for Mr. Merrifield a series of *Vanessa atalanta*, bred after subjecting the pupæ to varying temperatures; those that were exposed to the greatest and most continued cold showing considerable contraction of the red band and consequent spread of the dark-ground colour on the upper side. On the underside, on the contrary, the colour was more pallid in these specimens than usual, and there was a decided pale band to the hind wings. A series of *Polyommatus phlæas*, on the other hand, showed suffusion when subjected to a very high temperature, and became brighter at a temperature of about 64° F. to 70° F. A series of *Pieris napi*, showing suffusion at low temperatures, was also exhibited. To compare with this exhibit Mr. Hawes showed a long series of *P. napi*, consisting of a large brood which partly emerged in the summer of 1891, producing the bright and strongly-marked summer form; the other part emerging in the spring of 1892, and producing the ordinary dusky spring form. After various other interesting exhibits, a vote of condolence was passed on the lamented death of Mr. H. T. Stainton, Messrs. C. G. Barrett, J. Jenner Weir, Tugwell, Fenn, and Tutt, referring to the services of the deceased gentlemen to science, and expressing their greatest regret at the loss of so esteemed and cultured an entomologist.—Ed.

Lancashire and Cheshire Entomological Society.—*November 14th*, 1892.—Mr. W. R. Scowcroft, of Manchester, read a paper entitled, "Switzerland, a Naturalist's Paradise," in which he described a nine days' journey through Switzerland, and gave an account of the Lepidopterous and Coleopterous insects seen and captured, one of the most interesting being a pale form of the female *Colias palæno*, similar to the var. *helice* of *Colias edusa*. In all seventy species of butterflies, fifty-nine species of moths, and forty species of Coleoptera

[1] We bred a specimen of *Peronea hastiana* the first week in November, with the same wing absent.—Ed.

were taken. The paper was illustrated by the specimens captured. The president exhibited a gynandromorphous specimen of *Halias prasinana;* Mr. Newstead, *Vedalia cardinalis*, which was imported into Alexandria in 1885 by Professor Riley, of U.S.A., as a means of exterminating *Icerya egyptiaca*, a Coccid injurious to orange trees, under the supervision of Admiral Bloomfield; also the specimen of *Polyommatus bœtica*, captured at Heswall, by Master M'Fee, in 1886 or 1887. Mr. Gregson, *Sesia scoliæformis* and *Æcophora grandis* from North Wales. Mr. Harker, a pale variety of *Triphœna orbona*, with the transverse lines very strongly marked; Mr. Jones, autumnal Lepidoptera; Mr. Prince, two varieties of *Bombyx rubi*, the wings of which were semi-diaphanous and the middle lines distorted; Mr. Stott, a number of Coleoptera from the Swiss Alps; Mr. Newstead also exhibited a case containing the life-history of *Anthonomus pomorum*, the apple-blossom weevil.—F. N. Pierce, *Hon. Sec. November 16th*, 1892.

The Cambridge Entomological and Natural History Society. —*October 28th*, 1892.—Exhibits:—Lepidoptera:—Mr. Wells, a fine series of *Colias edusa* var. *helice* from Sidmouth, and some good varieties of *Smerinthus tiliæ*, bred from pupæ dug up at Cambridge, one being dark slate-grey with the posterior wings nearly black; the best variety, however, was one quite normal in markings, but with all the wings much suffused with bright crimson, the usual dark green blotches in the anterior wings standing out like crimson velvet. Mr. Farren, a long and variable series of *Xanthia aurago* and *Stauropus agi*, including the black variety from Reading, and *Callimorpha hera* and its var. *lutescens* from Devon. Mr. Moss, a box of Lepidoptera from Windermere and neighbourhood, and said he had this year found the larva of *Cidaria reticulata*, taking twenty-seven in one afternoon, he exhibited a larva which he had preserved, this, apparently having faded in colour, was a very pale yellowish green, with a pink line on the back from the second to the fourth segments, and dots of the same colour on some of the last segments, supporting the conclusion that in a living larva the line might extend the whole length. Mr. Moss said they appear to feed almost exclusively on the seed of their foodplant (wild balsam), entering the seed-pod about the middle; in the daytime they were to be found resting at full length along the midrib on the underside of the leaves. Birds, etc.— Mr. Jones, a pair of the common buzzard, *Buteo vulgaris*, which he had recently received from Wales. Mr. Farren reported the breeding of the tufted duck, *Fuligula cristata*, in the Orkneys, and exhibited a clutch of eggs received from there this year, he also exhibited a quantity of small molluscs taken from the crop of a longtailed duck, *Harelda glacialis*, and some parasitical insects from a gannet *Sula bassana*.—William Farren, *Hon. Sec.*

Birmingham Entomological Society.—*November 14th*, 1892.— The following insects were exhibited:—Mr. W. Harrison, living larvæ of *Trochilium apiformis* from Arley; also a preserved larva of the same species. Mr. C. J. Wainwright, examples of the genus *Dicctria*, including *reinhardi* from Wyre Forest, *rufipes* from Sherwood Forest and Sutton, and *baumhaueri* from Sherwood Forest. Mr. R. C. Bradley, series of *Limnobia bifasciata* and *Amalopis littoralis* from Wyre Forest.—Colbran J. Wainwright, *Hon. Sec.*

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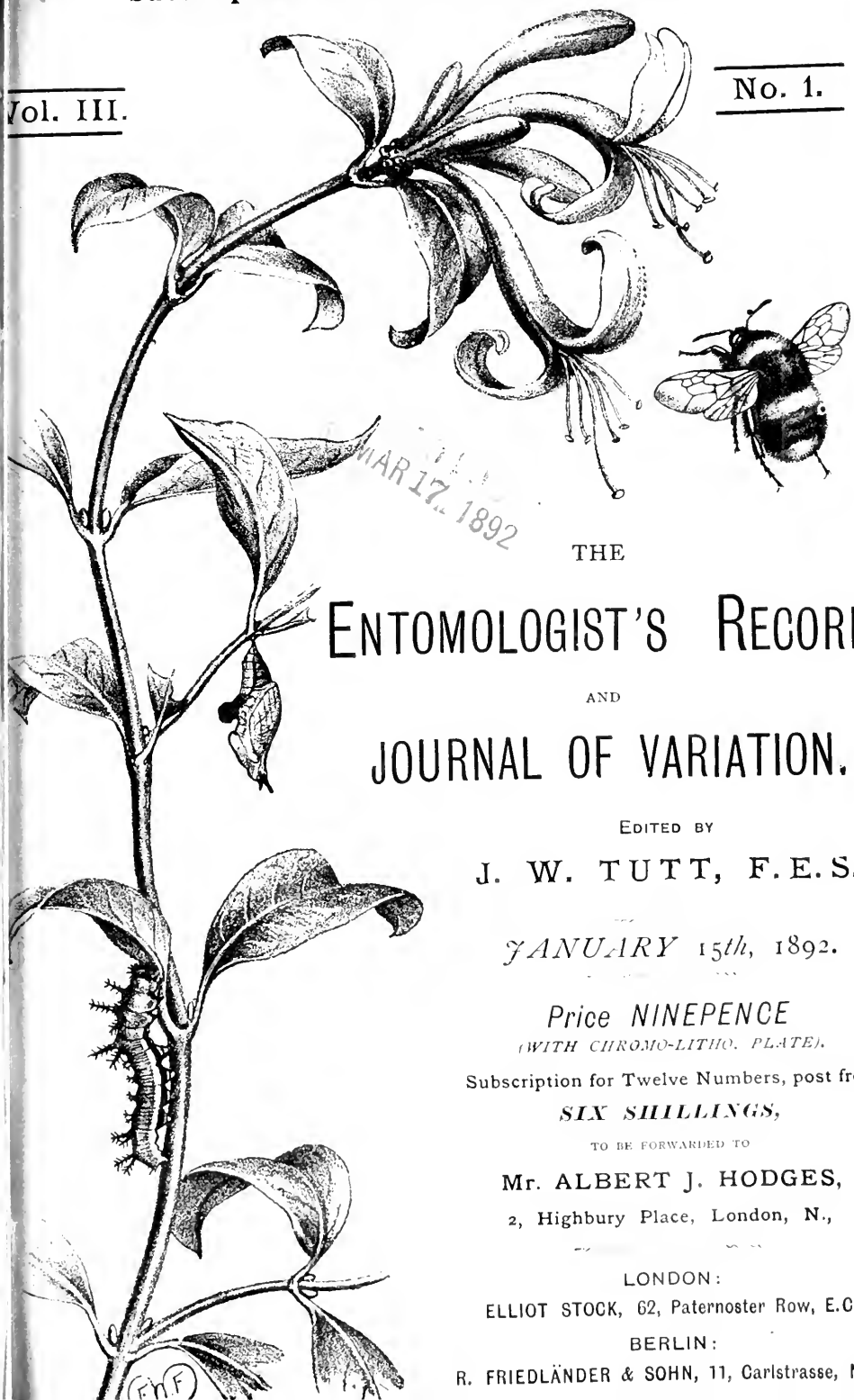

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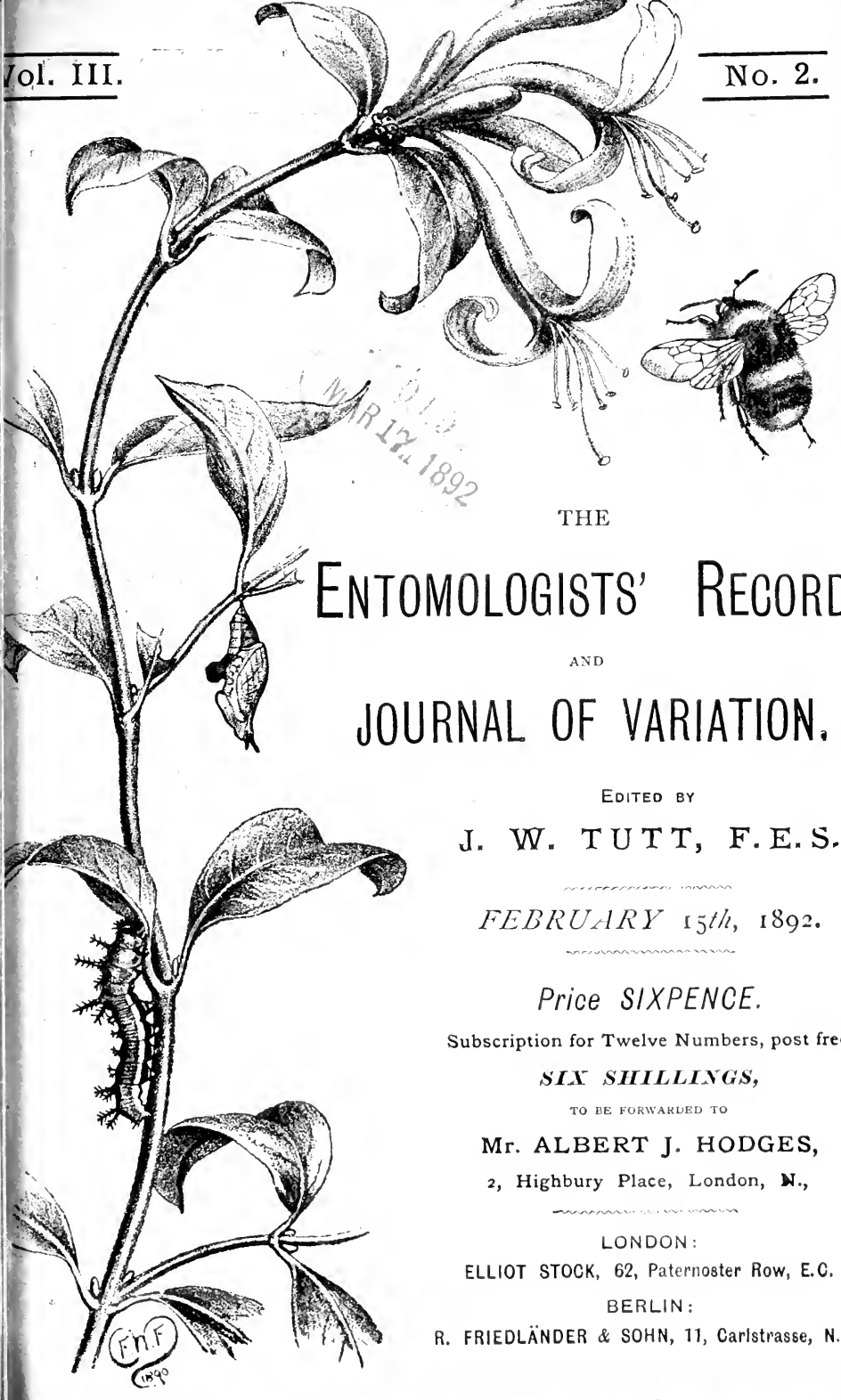

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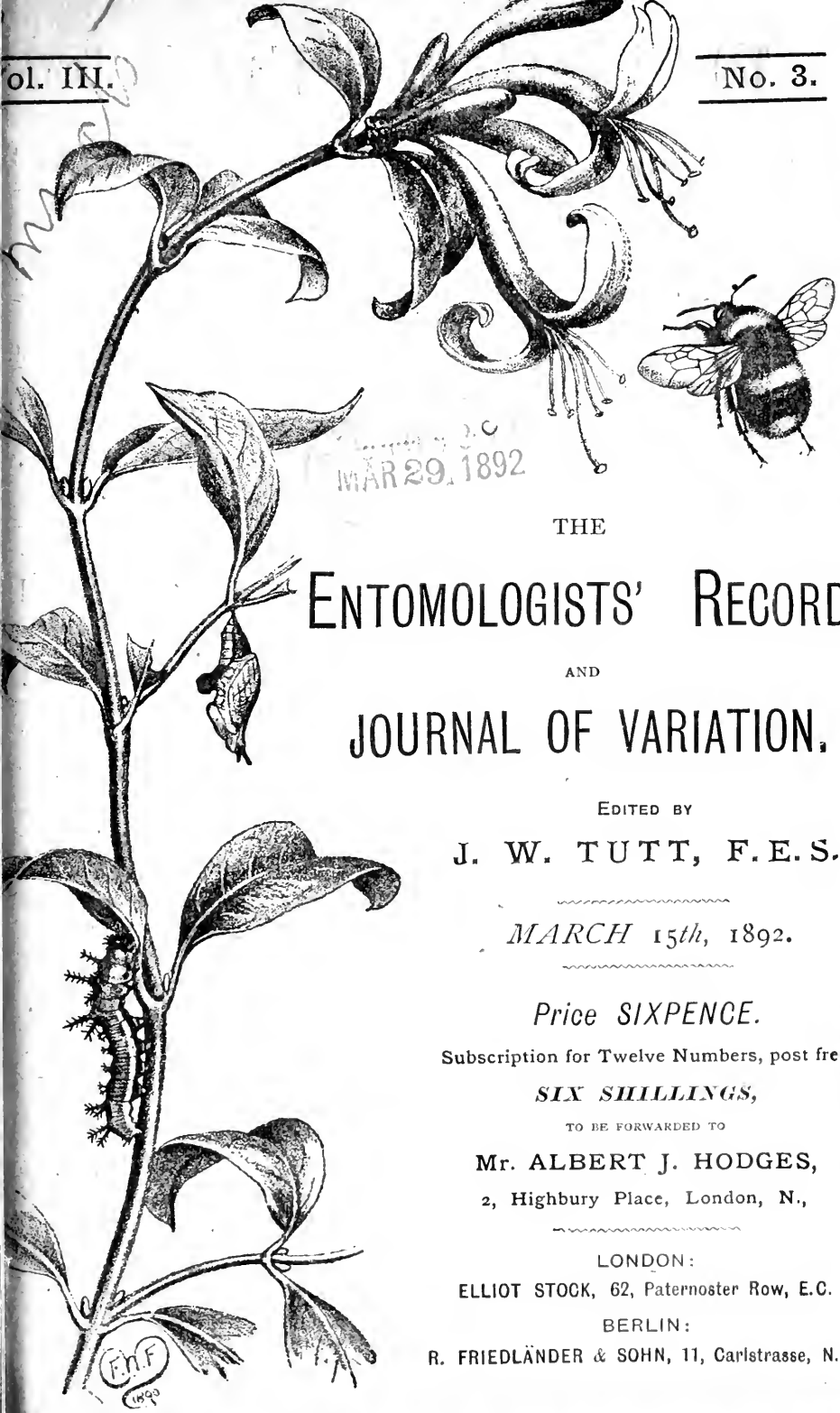

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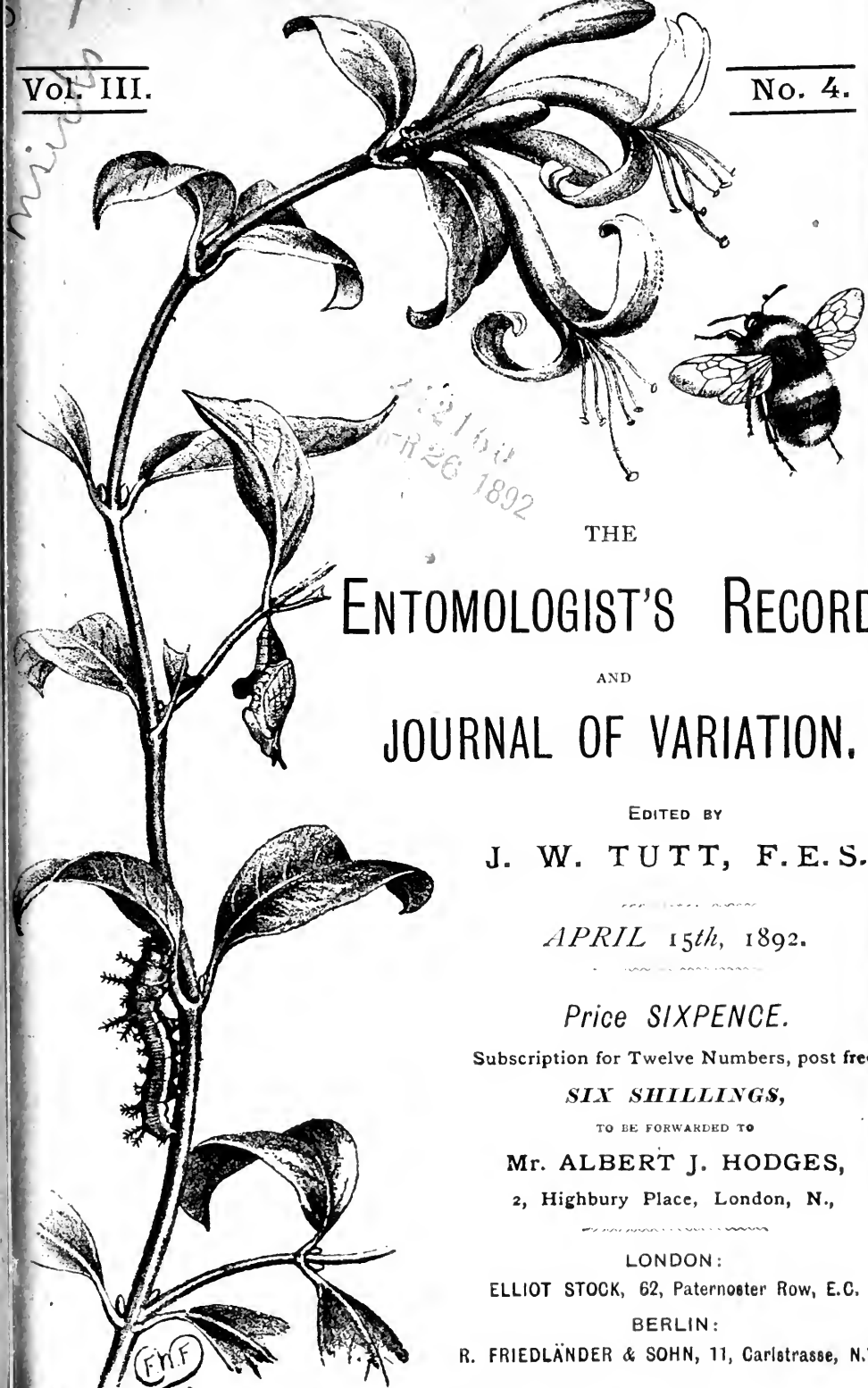

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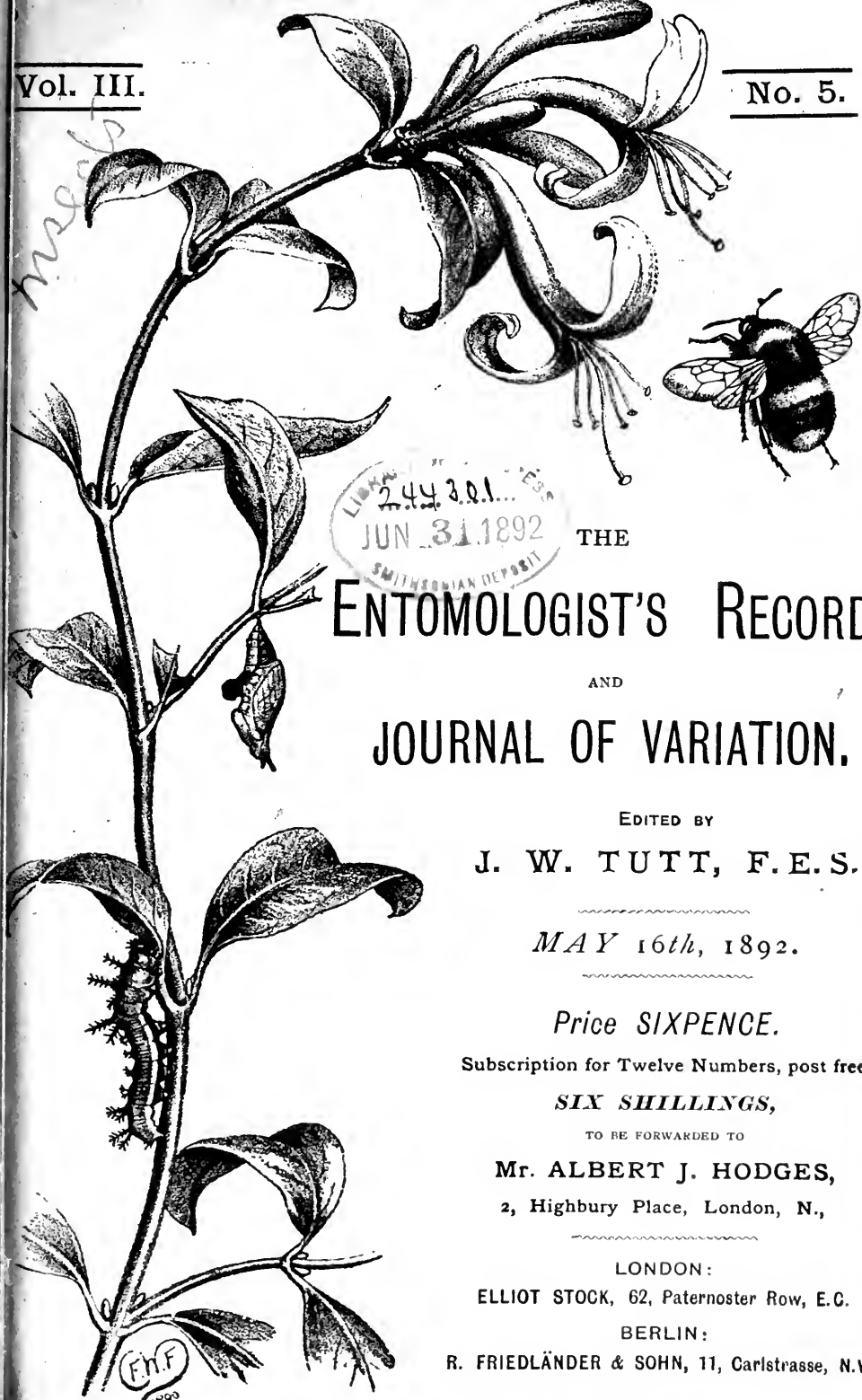

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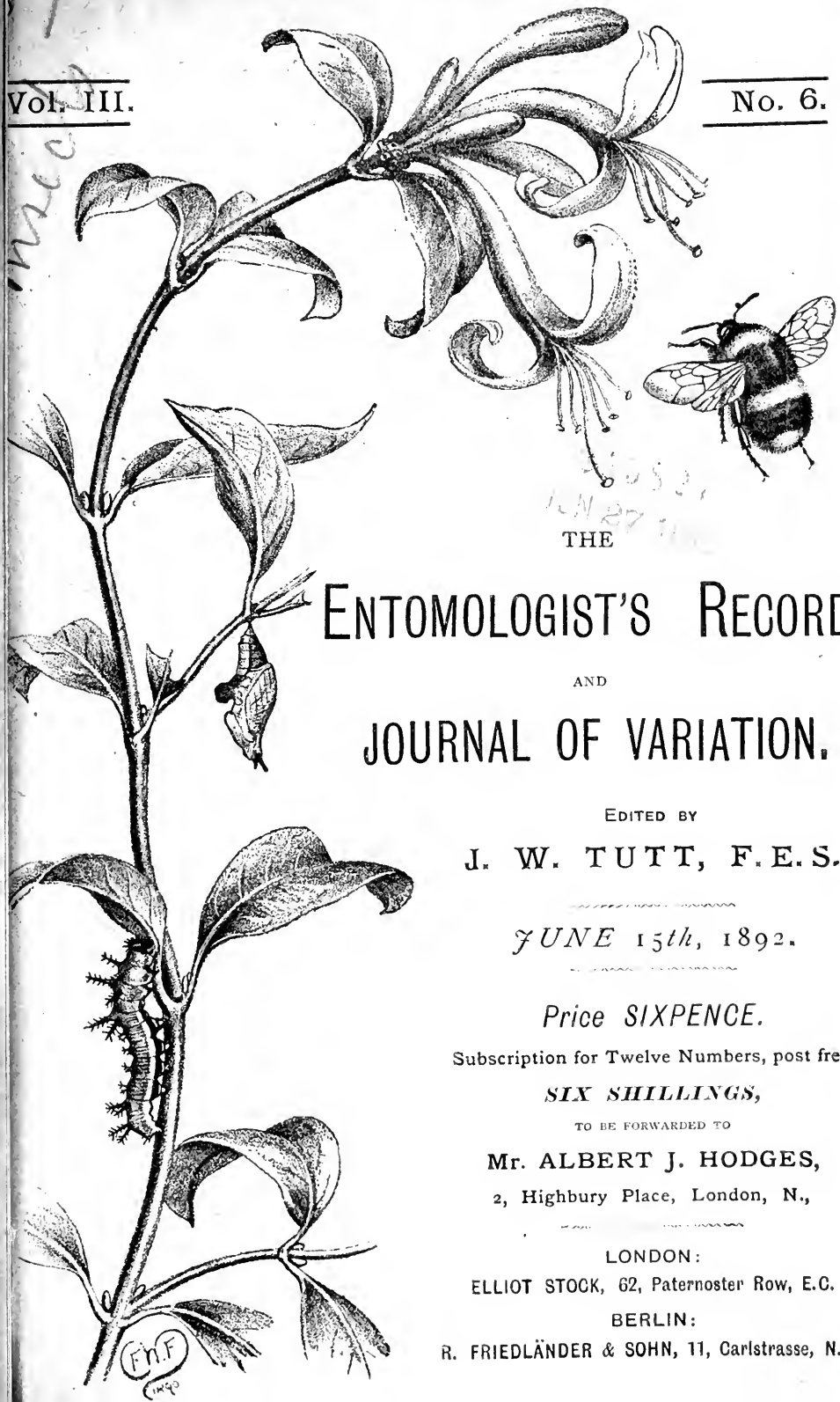

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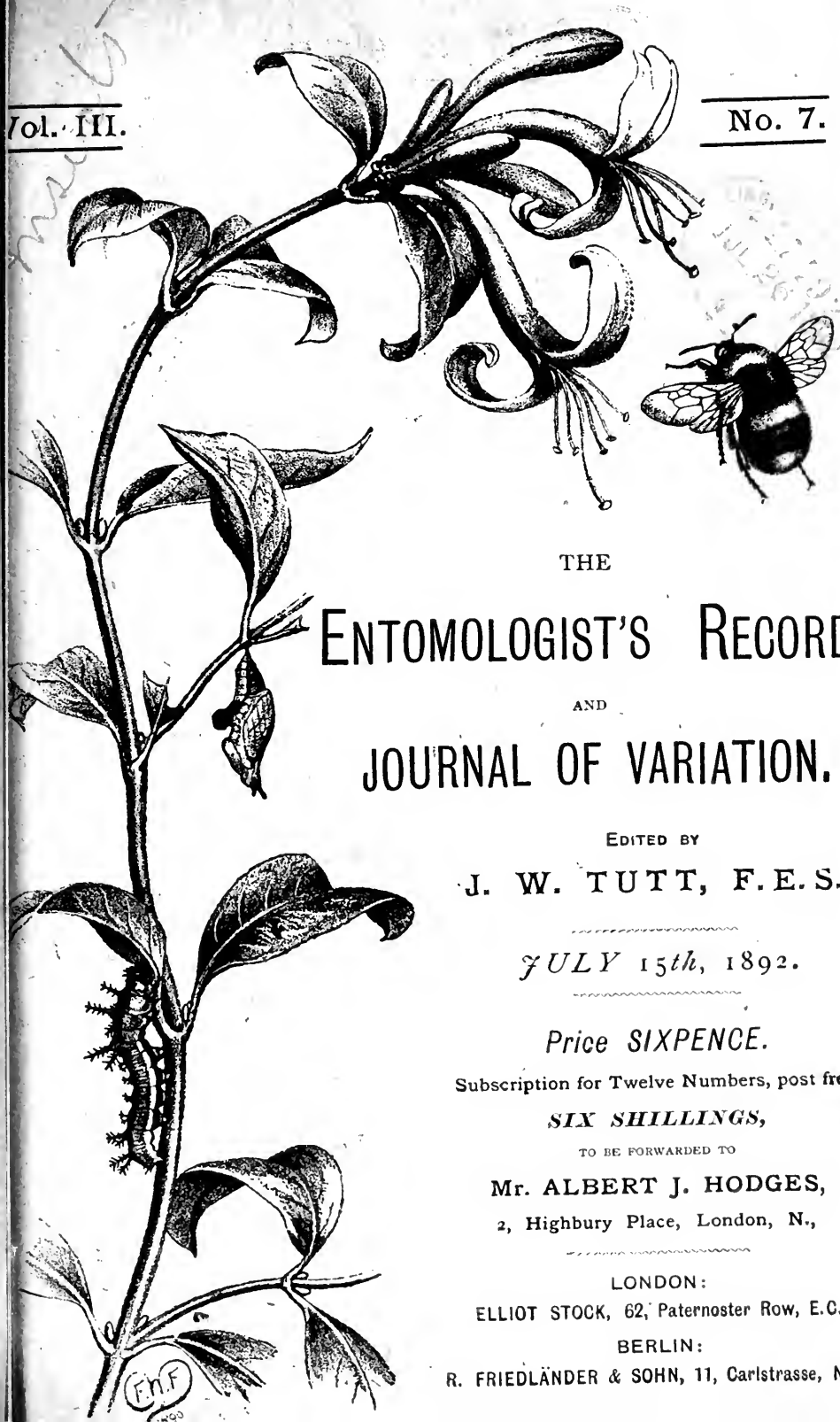

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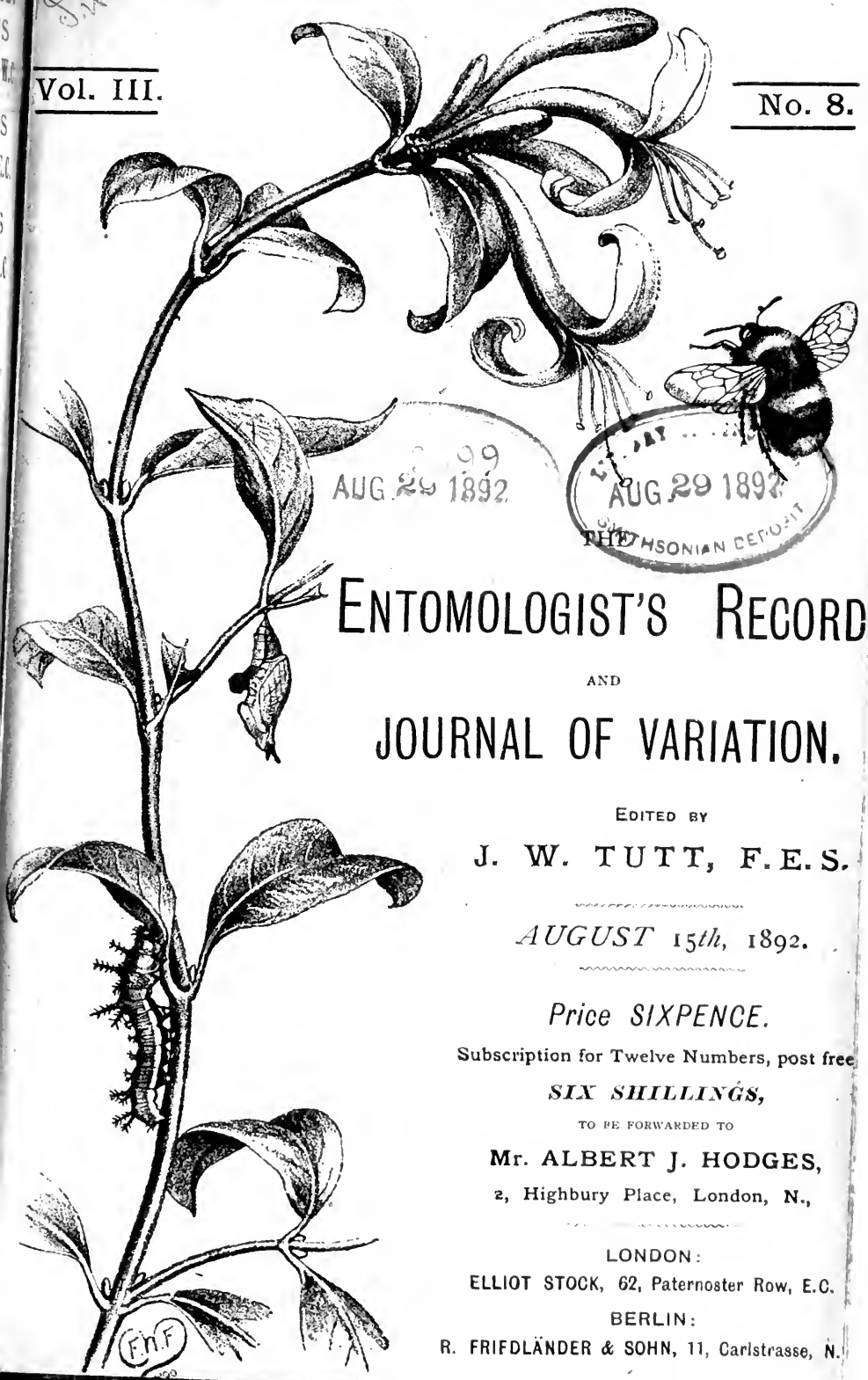

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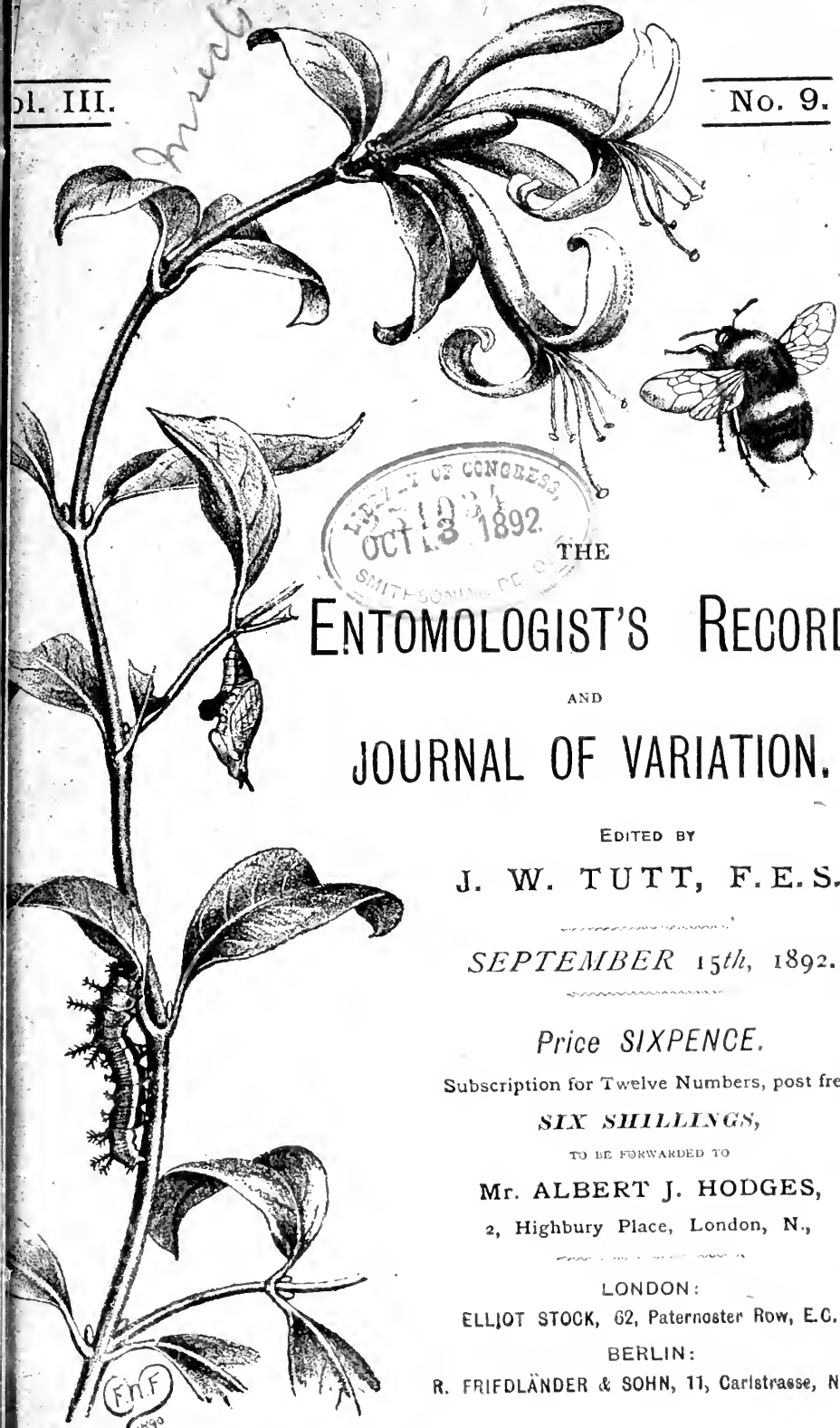

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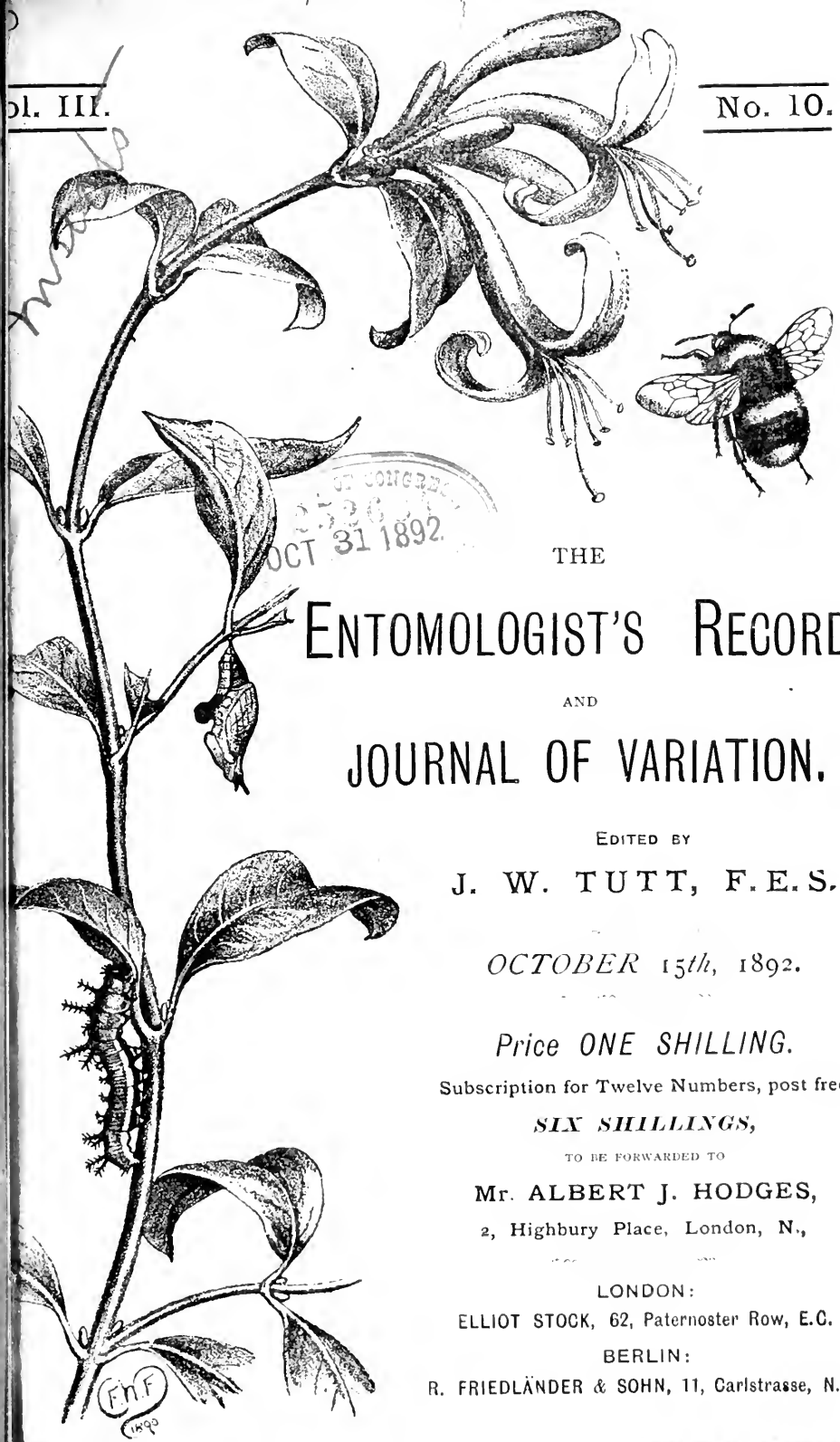

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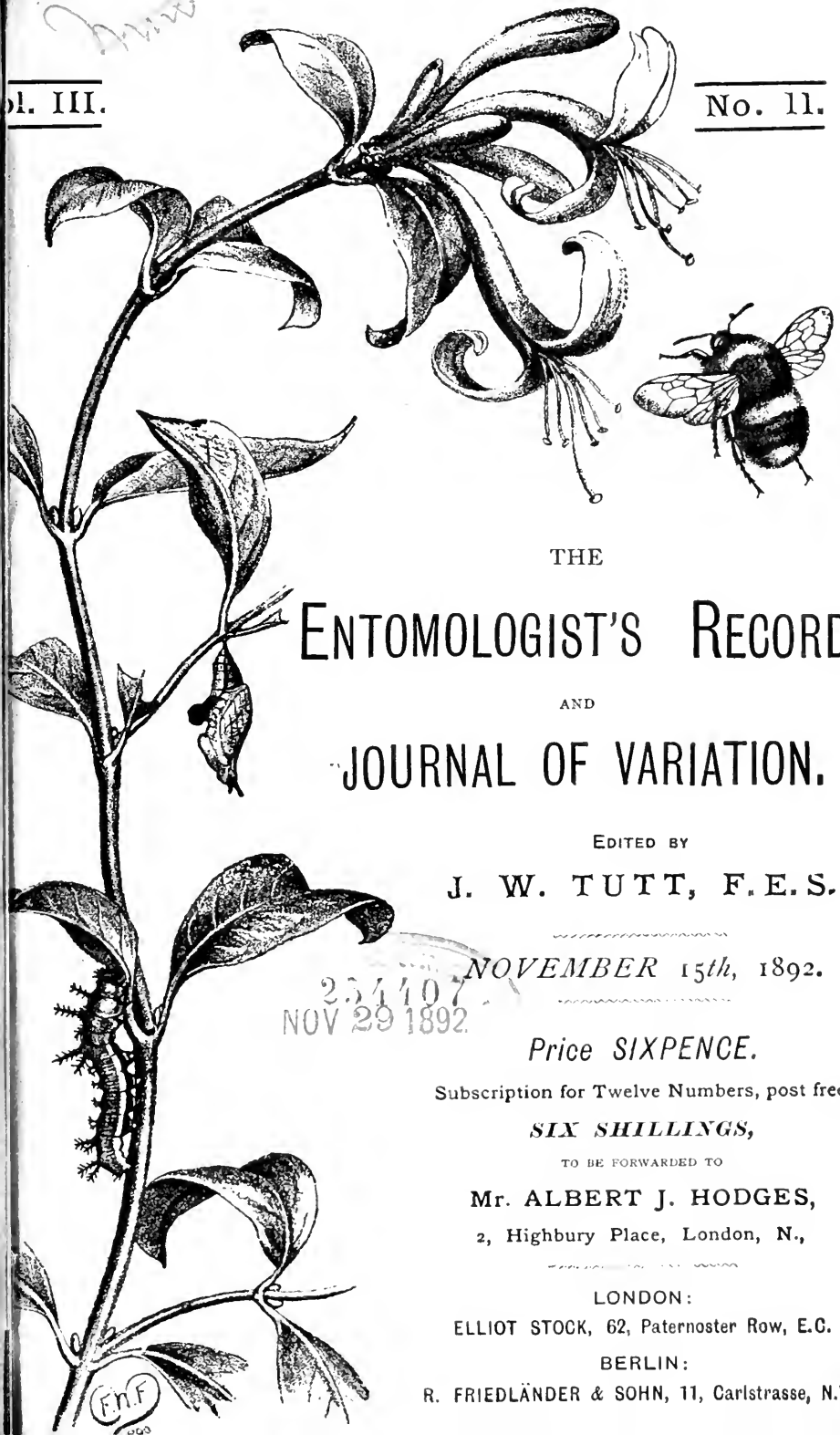

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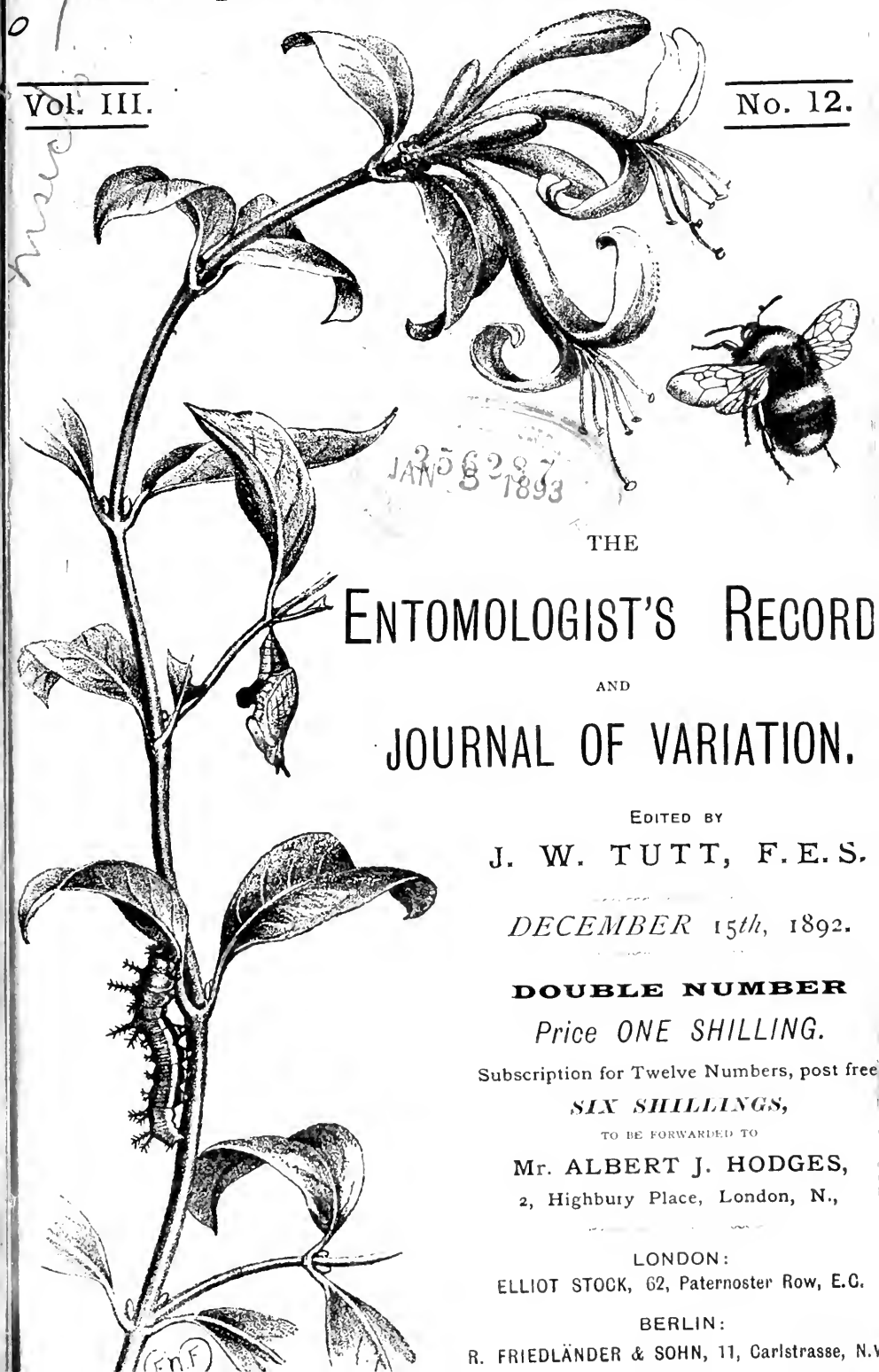

THE

ENTOMOLOGIST'S RECORD

AND

JOURNAL OF VARIATION.

EDITED BY

J. W. TUTT, F.E.S.

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EXCHANGE.

[Notices of Exchange, which should consist only of the specific names of Duplicates and Desiderata are inserted without charge. Entomological Books wanted may also be inserted in this column.]

[The Editor wishes to state that the publication of Exchanges, Advertisements, etc., in this Magazine, is in no way to be taken as a guarantee of the authenticity, good condition, etc., of the specimens. This Notice is not intended to throw doubt upon the *bona fides* of Advertisers, etc., but to free the Editor from responsibility, should the privilege be abused.] *Marked* are bred.* Exchange Lists, addressed to J. W. Tutt, Westcombe Hill, S.E., must be received before the 8th for insertion in the current month

The City of London Entomological Society has decided to compile a list of the fauna of the London District. This district is understood to mean a circle of about 10 miles from Charing Cross, and includes on its outskirts Epping Forest (south of Chingford), Plumstead Marshes, Shooter's Hill Wood, Shirley Common, Richmond Park, and Wimbledon Common. Lists may be sent in to Mr. J. A. Clark, 48, Broadway, London Fields, N.E. (Birds); Dr. F. J. Buckell, 32, Canonbury Square, N. (Lepidoptera); Mr. H. Heasler, 17, Danby Street, Peckham, S.E. (Coleoptera).

EXCHANGE CLUB.—Will those members who have a basket in their possession kindly drop me a card as per rule?—*J. W. Tutt, Westcombe Hill, S.E.*

Duplicates.—Rhomboidea (Stigmatica),* T. Ianthina* (a few), D. Barrettii, etc.. etc. *Desiderata.*—Octogesima, Or, Fluctuosa, Leporina, Strigosa, Auricoma, Albovenosa, Musculosa, Albipuncta, Flammea, Maritima, Sparganii, etc., etc.—*G. V. Hart*, 14, *Lower Pembroke Street, Dublin.*

Duplicates.—A large number of well set (carded) and correctly named British Coleoptera, including many rare and local species. *Desiderata.*—Lepidoptera, Coleoptera, and other orders.—*A. Ford, Claremont House, Upper Tower Road, St. Leonards-on-Sea.*

Duplicates.—Silaceata,* Dromedarius,* Tristata,* Unidentaria,* Advenaria,* Filigrammaria,* Piniaria (♀), Falcula,* Immanata* (fine), Mendica* (fine), Lubricipeda* (fine), Arcuana, Sponsana, Sauciana, Bilunana, Ramella, Occultana,* Similana, Betulella,* etc., etc. *Desiderata.*—B. Trifolii, Bajularia, Porata, Rubricata, Carbonaria, Pygmæata, Irriguata, Constrictata, Dodoneata, Ruberata, Impluviata, Undulata, Derivata, Chaonia, Dodonea, Atriplicis, Lychnitis, Dipsacea, Notha, etc., etc.—*Jno. Harrison*, 7, *Gawber Road, Barnsley.*

Duplicates.—Galatea, Angularia, Illunaria, Biundularia, Crepuscularia, Bidentata, Spartiata, Petraria, Tersata, Cerago, Lucipara, Lota, Macilenta, Fasciuncula, Strigilis, Nictitans, Thalassina, D. Pinastri, Rurea, Trilinea, Pistacina, Basilinea, L. Comma, Satellitia, Suffusa, Chrysitis, Iota, Rufina, Illustraria, Zicrac, Curtula, etc. *Desiderata.*—Very numerous, to complete series. Lists exchanged. Insects set on black pins preferred; good condition only.—*H. Alderson, Hilda Vale, Farnboro' R.S.O., Kent.*

Duplicates.—D. Rubiginea var.* *Desiderata*—Acis, Galii, Hera, Hicifolia, Bicuspis, Erythrocephala, Bractea, Nubeculosa, Barrettii, Cæsia, Albimacula, etc., and offers. Fine and well-set specimens only required. Accepted offers answered within a week.—*W. S. Riding, Buckerell Lodge, Honiton, Devon.*

Duplicates.—Cinxia, Statices (Guernsey), Edusa, Cardui, Z. Trifolii, Citraria, Viretata, Derasa, Conigera, Lithoxylea, Hepatica, Gemina, Blanda, Puta, Suffusa, Saucia, Nigricans, Obelisca (few), Lucernea, Lunigera, Plecta, C-nigrum, Triangulum, Brunnea, Lucipara, Pyramidea, Spilodactyla, all in long series. Lists exchanged. *Desiderata.*—Numerous, including Formicæformis, Myopæformis, Cynipiformis, Bombyliformis, B. Trifolii, Tiliaria, Fuscantaria, Erosaria, Bajularia, Quadrifasciaria, Elymi, Ditrapezium, Subtusa, Retusa, Gilvago, Nigra, Lutulenta, Ochroleuca, Marginata, Dipsaceus.—*Albert J. Hodges*, 2, *Highbury Place, N.*

Duplicates.—Adusta, Suspecta, Neglecta (a few), Glareosa, Solidaginis, Lucernea, Litura, Gemina, Festiva, Myricæ (few), Spartiata, Rurea vars., Polyodon (dark), Conspersa (few, Scotch), Pupæ of Vinula and Myricæ. *Desiderata.*—Numerous.—*A. E. Cannon, Mannofield, near Aberdeen, N.B.*

Duplicates.—Paphia, Egeria, Semele, Edusa, Cardamines, Tages, H. Sylvanus, Alveolus, Rhamni, Mundana, Bucephala, Antiqua, Psittacata, Piniaria, Remutata, Ocellata, Alniaria, Mensuraria, Didymata, Variata, Albulata, Fasciaria, Proteus, Janthina, Oleracea, Dentina, Baja, Forficalis, Tarsipennalis, Pascuellus, Literana, Arcuana, Ulicetana, etc. *Desiderata.*—Numerous.—*Reginald S. Sellon, The Hall, Sydenham, S.E.*

Desiderata.—A. Prunaria, G. Obscurata, E. Heparata, L. Flavicinctata, M. Rubiginata, M. Hastata, S. Undulata, C. Russata, Immanata, and many common Noctuæ. I will endeavour to make a good return.—*John E. Robson*, 15, *Northgate, Hartlepool.*

Duplicates.—Viretata, Lobulata, Edusa, Solidaginis, Suffusa, Testacea, Loniceræ, Citraria, Pyramidea, Cardui, Selene, Euphrosyne, Statices, Saucia, Dentina, Egeria, Consonaria, N. Rubi, Rufina, Puta, Segetum, Geryon ; all on black pins. *Desiderata.*—Very numerous.—*P. W. Abbott, Four Oaks, near Birmingham.*

Duplicates.—H. Defoliaria (♂ and ♀ fine forms), L. Cæsiata (Scotch), C. Vaccinii, etc. *Desiderata.*—Numerous, especially Rhopalocera, to extend series ; on black pins.—*J. P. Mutch*, 359, *Hornsey Road, London, N.*

Duplicates.—Pudorina, Umbrosa, Immutata, Statices, A. Cratægi,* Anachoreta,* etc. *Desiderata.*—Rufina, Lota, Spadicea, Fimbria, Croceago, Citrago, Dahlii, Haworthii, Saucia, Subtusa, Oxyacanthæ (dark), Herbida, Rhizolitha, Myrtilli, Parthenias, Verbascalis, etc.—*J. W. Tutt, Westcombe Hill, S.E.*

Duplicates — Sinapis, Edusa, Cardui,* Atalanta,* G. Flavago,* Lanestris,* T. Cratægi,* Absynthiata,* Pisi,* Flavicincta, Marginata, Corylata, Ferrugata, Arcuosa, Variata, Miata, Aprilina,* Bipunctaria, C-nigrum, Batis, Anceps, Derasa, Boreata, Triangulum,* Pupæ of Tiliæ and Ocellatus. *Desiderata.* — Luctuosa, Flammea (Empyrea), Argiolus, Æthiops, Retusa, Subtusa, Tincta, Scutosa, Smaragdaria, Glabraria, Leporina, Bifida, P. Populi, C-album, Fascelina, Pruni, Betulæ, Olivata, etc., etc.—*J. Richardson*, 127, *Church Street, Wolverton, Bucks.*

Duplicates.—Saucia, Derasa, Turca, Citraria, Brunnea, Miniata, Fimbria, Pinastri, Griseola, Stramineola, Edusa, Paphia, Semele, Colonella, Geoffrella. *Desiderata.*—Rubricollis. Dominula, Velleda, Nupta, Fulvago, Oo, Ochroleuca, and many others.—*R. E. Brameld, Ivy Cottage, Mudeford, Christchurch.*

Duplicates.—Betulæ, Ocellatus, Asella, Callunæ,* Sobrina, Togata,* Rectilinea, Formiciformis, Obfuscaria (Scotch), Rubricata, Pyrophila, Agathina, Xerampelina, Conspersa (few), Albicolon, Furva, Dodonea, Australis,* Juniperata (Scotch), Lucernea, Neglecta (red), Dahlii, Bajularia, Occulta, Pyralina, Caja* (dark forms, few light), Venosata, Haworthii, Exoleta, Myricæ,* var. Olivacea, Alni* (2), Cursoria, N. Glareosa, Suspecta, Solidaginis, Unca, Roboraria, Vetulata, B. Trifolii* (4). *Desiderata.*—Rubiginea, or good offers.—*A. H. Center*, 8, *John Street, Aberdeen.*

Duplicates.—Aglaia, Selene, Cinxia, Janira, Artaxerxes, Icarus, Adonis, Napi, Hectus, Velleda, Z. Trifolii, Filipendulæ, Caja,* Mendica,* Hirtaria,* Repandata, Menyanthidis, Myricæ,* Psi,* Rumicis, Batis, Impura, Rurea, Polyodon (dark), Nictitans, Basilinea, Gemina, Orbona, Glareosa, Augur, Triangulum, C-nigrum, Festiva, Brunnea, Dahlii, N. Rubi, Baja, Neglecta, Suspecta, Rufina, Litura, Citrago, Silago, Conspersa, Chi, Adusta, Pisi,* Dentina, Rectilinea, Gamma, Solidaginis, A. Urticæ.* *Desiderata.*—Daplidice, Cardamines, Latona, Helice, Artemis, Iris, Epiphron, Cassiope, Egeria, Betulæ, W-album, Pruni, H. Dispar, Bætica, Arion ; also several of the Sesiidæ and Hawk Moths.—*Wm. Milne*, 83, *Leslie Terrace, Aberdeen.*

Duplicates.—Pupæ of Rubricollis. *Desiderata.*—Sylvinus, Eupitheciæ, Dianthœciæ (except Capsophila).—*J. C. Moberly*, 9, *Rockstone Place, Southampton.*

Wanted.—Back numbers of the *Entomologist*, viz., June to December, 1885 ; January to April, and October to December, 1890. State cash price.—*J. H. Leslie*, 44, *Cheriton Square, Upper Tooting, S.W.*

Wanted.—Entomologist's Weekly Intelligencer, vol. iii. ; and Wilkinson's *British Tortrices*. State price.—*B. A. Bower, Langley, Eltham Road, Lee, Kent.*

Wanted.—Nos. 1, 3 (1864) of the *Entomologist*. State cash price.—*J. W. Tutt, Westcombe Hill, S.E.*

Changes of Address.—Leonard S. Sellon, from Switzerland, to Hume Tower, Bournemouth. G. B. Routledge, from Carlisle, to 50, Russell Square, W.C. W. H. McLachlan to 70, Croxted Road, Dulwich, S.E.

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MEETINGS OF SOCIETIES.

Entomological Society of London, Chandos Street, Cavendish Square, W.—Wednesdays, at 7 p.m. Next meeting on January 18th, Annual Meeting.

The City of London Entomological and Natural History Society, London Institution, Finsbury Circus, E.C. — Tuesdays, at 7.30 p.m. December 20th, January 3rd and 17th. All Entomologists cordially invited.

December 20th, "Colias edusa in 1892" by Mr. A. U. Battley. Jan. 3rd, "Pocket Box Exhibition." Jan. 17th, "Notes on Stauropus fagi" by Mr. A. F. Bayne.

The South London Entomological and Natural History Society, Hibernia Chambers, London Bridge.—Thursdays, at 8 p.m. December 22nd; January 12th and 26th (Annual Meeting).

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