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" By mutual confidence and mutual aid
Great deeds are done and great discoveries made."

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"As geology plainly proclaims that each land has undergone great physical changes, we might have expected to find that organic beings have varied under nature, in the same way as they have varied under domestication. And if there has been any variability under nature, it would be an unaccountable fact if natural selection had not come into play. It has often been asserted, but the assertion is incapable of proof, that the amount of variation under nature is a strictly limited quantity. Man, though acting on external characters alone and often capriciously, can produce within a short period a great result by adding up mere individual differences in his domestic productions, and everyone admits that species present individual differences. But, besides such differences, all naturalists admit that natural varieties exist, which are considered sufficiently distinct to be worthy of record in systematic works. No one has drawn any clear distinction between individual differences and slight varieties; or between more plainly marked varieties and subspecies, and species. On separate continents, and on different parts of the same continent when divided by barriers of any kind, and on outlying islands, what a multitude of forms exist, which some experienced naturalists rank as varieties, others as geographical races or subspecies, and others as distinct, though closely allied species!

"If then, animals and plants do vary, let it be ever so slightly or slowly, why should not variations or individual differences, which are in any way beneficial, be preserved and accumulated through natural selection, or the survival of the fittest? If man can by patience select variations useful to him, why, under changing and complex conditions of life, should not varieties useful to nature's living products often arise, and be preserved or selected? What limit can be put to this power, acting during long ages and rigidly scrutinising the whole constitution, structure, and habits of each creature,—favouring the good and rejecting the bad?"

DARWIN, *The Origin of Species.*

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EDITORIAL.

It is with great pleasure that we have to announce that Mr. Robert Adkin, F.E.S., who is already well known to our readers, has kindly consented to act on the Reference Committee of this Journal.

THE CYANIDE-REACTION WITH YELLOW LEPIDOPTERA.

By F. H. Perry Coste, B. Sc. (Lond.), F.C.S., F.L.S.

The present article is condensed from a paper read before the Linnean Society last June, and detailing an investigation into the red colour produced by wet potassium cyanide on certain yellow species of Lepidoptera. Referring my readers to my previous articles in the 'Entomologist'* for an account of the earlier stages of the work, I pass at once to describe the new results.

Having succeeded in my attempt to redden *C. edusa* and *G. rhamni* by exposing them to the action of cyanide in a sloppy condition, I next proceeded to test a number of yellow species in order to determine whether this phenomenon was peculiar to *edusa* and *rhamni*, or general among yellow species. I succeeded in easily obtaining fine red blotches in *Callidryas eubule*, *Terias nise*, *T. rubella*, *T. nicippe*, and (later) in *G. cleopatra*, *Catopsilia crocale*, and *C. catilla*, the reaction being remarkably fine with *G. cleopatra*, since nearly the whole wing assumed a blood-red colour.

In several of these experiments the fact was very noticeable that there was, so to speak, a race between the solvent, and the reddening, actions of the cyanide; the more quickly that the yellow was dissolved, obviously the less would be left to be

* Vol. xxiv. pp. 163—167 (1891).

reddened.* Although, however, thus far successful, I have found it utterly impossible to effect a reddening of a large number of other species, e.g., *Actias luna*, *Charaxes athamas*. *T. pronuba*, *C. hera lutescens*, *R. cratægata*, and various others. As I have pointed out in my previous articles, the failure to redden *pronuba* and *hera* was peculiarly disappointing, for reasons that I have already explained. Now, after experimenting on very many species with KCN, I found myself face to face with one general result of perhaps some significance, *viz.*, that all the reddened species belong to the Rhopalocera; in no case had the reaction been obtained with any Heterocera examined. It seemed to me especially striking that even in the Geometræ I got no results, for one would expect the yellow of the small brimstone-moth (*R. cratægata*) to be very similar to that of *rhamni* or *Colias* sp.; and, moreover, it is also affected by acids and alkalis in a similar way. However, the fact remains that, so far, this reaction cannot be obtained with Heterocera.

After further experimenting I was struck by another fact, *viz.*, that not only was the cyanide-reaction confined to the Rhopalocera, but within yet narrower limits, *viz.*, to the family of the Pieridæ. Although yellow or orange species from the families of Papilionidæ and Nymphalidæ have been tested, these fail entirely to give the reaction. On the other hand, species which are—superficially—of such different yellows† as *rhamni*, *edusa*, *hyale*, and (the under surface of) *Catopsilia crocale*, all yield this cyanide red. We must, therefore, conclude for the present that the yellow pigments of the Pieridæ, in spite of their strong resemblance in other respects to the pigments of other families,‡ have, nevertheless, a marked peculiarity of constitution, which is evidenced by their ready reaction with cyanide.

II.—Behaviour of Chestnut species.

Having in view the strong similarities between yellow and chestnut (*vide* my former articles), it seemed to me very desirable to ascertain whether the cyanide-reaction could be obtained with any chestnut species, many of which (chiefly species of Nymphalidæ) were accordingly tested. In no case was any reddening effected. This reaction remains, therefore, confined to the yellow and orange Pieridæ.§

* The intense yellow with which the mass of cyanide was stained in many experiments was very notable. *In one case* I noted a slight reddish tinge on the cyanide. This is of interest in connection with the Lithium results, to be considered further on.

† This meets the objection, which might be otherwise raised, that the orange Nymphalidæ and the yellow Papilionidæ are superficially dissimilar from *Colias* and *Gonepteryx* sp.

‡ See my previous articles in 'Entomologist,'—Yellow and Red *passim*.

§ It would be exceedingly interesting to test any chestnut species of Pieridæ, if any such are known.

III.—Experiments with other Cyanides.

Having established the occurrence of this reaction, the next step was to endeavour some explanation of it. It seemed to me almost certain, originally, that the effect was due to the cyanogen radicle in the compound KCN; and it therefore was important to determine whether or no other cyanides would have a like effect. A series of experiments was therefore instituted to clear up this problem.* Of course the nearest analogue to KCN is sodium cyanide, and the action of this reagent† was therefore tested by exposing to it several yellow species that were known to react readily with KCN. These included *Catopsilia crocale, rhamni, edusa, hyale.* Although no bright red was produced as in the potassium cyanide experiments, yet there is a clear, though weak, tendency in the same direction, for a distinct patch of dull claret-red appeared on the *cleopatra* wing; and it appears to me especially interesting that in *Catopsilia,* although no red was found, yet the dull yellow or lemon-yellow of the natural insect was transformed into orange, since my former experiments led me to conclude that orange was a stage usually passed through in the evolution of red from yellow. Another noticeable point was the very rapid solvent action of the damp sodium cyanide on the yellow pigment of *cleopatra.*

Having thus detected a faint action of this kind in sodium cyanide, I thought it of interest to experiment with a few other cyanides, and accordingly the effect of mercury, zinc, and copper cyanides was tested upon *G. cleopatra* and *C. crocale.* These reagents, however, proved to be unworkable, as indeed might be anticipated in view of their physical characters. It was, however, observed that in the wings of *G. cleopatra* placed upon mercury cyanide and copper cyanide the veins had become of a bright *holly-green.* It is clear that the reddening reaction can only be expected in the case of a cyanide that can be kept in the sloppy-solid condition already referred to; and consequently when the physical character of any cyanide is such that it cannot well be kept in this condition, *i. e.,* when it is comparatively insoluble, it is useless to attempt any experiments with it.

Besides testing these simple cyanides, I also tried what could be done with the sulphocyanide (thiocyanate) of ammonium, and the ferri and ferrocyanides of potassium. In no case was any sign of reddening observed, although the experiments were made upon species that had been proved to be very susceptible to the

* These experiments are not detailed in the chronological order in which they were made.

† This is by no means so easy a reagent as KCN to work with, on account of physical differences between the two salts. It will be understood that in the whole of the experiments detailed in this paper the reagents used were in a sloppy-solid or stiff-mud condition.

action of potassium cyanide. This result, although at the time disappointing, is in no way surprising, if we take into account the constitution of these compounds, and the differences existing between them and potassium cyanide; but to this it will be necessary to return very shortly. Nevertheless, although supposing that the reddening reaction were due to the cyanogen radicle, it would still be very interesting to ascertain whether nitrogen in any other form would have a like effect. A series of experiments was therefore made with a number of ammonium salts. In *no* case was any "cyanide reaction" obtained.*

In addition to these a number of nitrates were tested in order to determine whether nitrogen in this form would effect the reaction. The result was that in no case was any reddening observed.

Lastly, a few experiments were made with trinitrophenol (picric acid) and morphine hydrochloride on wings of *C. edusa* and *G. cleopatra*, in order to test the behaviour of nitrogen in yet other forms. The results were in both cases entirely negative.

We have arrived, then, at this result: that potassium cyanide produces this red rapidly and markedly; that sodium cyanide shows indications of the same tendency, but in a feeble degree only; that the ferrocyanides and sulphocyanides are entirely without action, as is also nitrogen, in the form of ammonia, of nitrates, &c. Now everybody of course is familiar with the fact that potassium cyanide, but especially when damp, smells strongly of hydrocyanic acid; in fact there is always present free hydrocyanic acid; and, considering the feeble affinities of this acid, it is not surprising that water should increase the amount of free acid present by dissociating the potassium cyanide. Sodium cyanide also smells of hydrocyanic acid, but far less strongly; while the cyanides of zinc, copper, and mercury† are odourless. These facts, together with the experiments just detailed and the comparative efficacy of the several cyanides, led me to conjecture that my original supposition was practically correct, that the efficient agent in producing the reddening effect was free hydrocyanic acid produced by the dissociation of potassium cyanide. On this supposition one could understand both the superior efficacy of potassium to sodium cyanide, and the inefficacy of the ferro- and ferricyanides, since in these cases there would be no free hydrocyanic acid present, as also none in the sulphocyanides. The facts thus pointed very strongly to hydrocyanic acid as the active agent.

* It will of course be understood that in all these experiments made to test the efficacy of various reagents in producing the "cyanide reaction," the test was made by submitting to their action yellow species which were known to react readily with KCN to produce the red.

† The strong affinity of mercury for HCN is well known.

In order to test this hypothesis, a weak solution of hydrocyanic acid was obtained,* and some experiments made therewith. To my great disappointment it was found, however, that this weak solution of HCN had *no effect at all* upon the wings immersed in it. The experiments were varied in several different ways, but the attempt to produce the cyanide red proved a total failure; and the result, up to the present, is, therefore, that the reddening is due not to hydrocyanic acid as such, but to potassium cyanide, or to potassium cyanide and hydrocyanic acid together. That an actual combination does take place between the yellow pigment and the potassium cyanide (or the hydrocyanic acid, under the influence of potassium cyanide), I can hardly doubt. The weak but positive effect of sodium cyanide on the one hand, and the great number of wholly negative results obtained—as now to be related—from a number of varied reagents, seem to justify this view; but it is proposed, as opportunity offers, to carry forward this investigation in several directions.

(To be continued.)

FURTHER REMARKS ON THE EARLIER STAGES OF *COLIAS HYALE*.

By F. W. Frohawk, F.E.S.

It is doubtful if either of our two species of *Colias* ever survive an English winter in a state of nature, excepting perhaps in the mildest and most sheltered spots on the southern coast, in whatever stage they might undergo hybernation. I believe it is generally supposed that they hybernate in the imago state, which, however, is contrary to my observations respecting *C. hyale*, and from the following notes I think it may safely be presumed that in a natural state *hyale* passes the winter in the larval condition; at the same time I feel positive that but very few survive the climatic changes of an English winter, which idea is strengthened by the mortality occurring among a large number of *C. edusa* larvæ, 170, which I had feeding and growing satisfactorily until the middle of last October, when a week of severe wintry weather set in, causing all the larvæ to cease feeding, and, with few exceptions, remain motionless. Many died daily, and, excepting a few full-grown larvæ, none survived the effects of that cold sunless week, although mild and bright weather reappeared. Undoubtedly the first severe frost would be fatal to larvæ feeding in exposed places, which would account to a great extent for the general absence of *Colias* throughout the country in ordinary years. When a "*Colias* year" comes round, it is occasioned by

* The ordinary B. P. 2 p. c. solution of the acid was used.

an invasion by the butterflies in the spring, which are the parents of the great flight in the following August, and as long as the weather remains suitable a succession of broods are produced. The following notes upon *C. hyale* are taken from my note-book verbatim, and refer to the larvæ mentioned, Entom. xxv. 274.

November 26th, 1892. Figured *hyale* larva hybernating, it having now reached its thirty-ninth day of hybernation, and has remained in the same position the whole time. It measures now three-sixteenths of an inch, having decreased one-sixteenth of an inch since entering hybernation. The other two larvæ have also remained motionless, and are now almost completely enclosed by the three leaflets of clover, having withered and folded loosely around them, which serves as a protective covering during the winter.

Of those larvæ which hatched from eggs deposited September 20th, I find upon examination there are four in the second skin; three of them are apparently hybernating, as they are resting upon a little carpet of silk spun down the centre of the leaflet. One, which is somewhat in advance of the others, is still feeding; another, making the fifth, is much more advanced, being in its third skin, *i.e.*, after second moult, and measuring three-sixteenths of an inch long; it is active, occasionally moving about from leaf to leaf and feeding. All these five are kept during the greater part of the day and night, from about 10 a.m. to 12 p.m., in a temperature of about 60° to 64°.

To-day, December 17th. The three larvæ first mentioned have now attained their *sixtieth day* of hybernation, and are apparently in perfect health, and have remained absolutely motionless throughout. The other five larvæ are hybernating; the one in the third skin (having now attained the same size as the first three) commenced hybernating on the 11th, it having until then fed daily. It rests upon a little layer of silk, precisely in the same manner as the others, and I cannot induce it to move, although for three days it was subjected to a warm temperature of 64°, and upon gently touching it, it remained perfectly still.

I have now placed the plants containing all eight larvæ in a fairly uniform cool temperature, averaging about 45°.

I think from the above, taking all into consideration, that without doubt *C. hyale* hybernates as a larva.

Under artificial means, in an unusual heat, *C. hyale* could be forced; and, in fact, at a recent meeting of the South London Entomological Society, Mr. H. Williams exhibited a full-fed larva and a pupa which he had reared by keeping them in a temperature reaching as much as 86°. They were from the same parent as my larvæ, the eggs being deposited on September 20th. I have purposely kept mine in as natural a condition possible, in the hope of clearing up the question—In what stage does

C. hyale hybernate? So far, I think it certainly may be said that it hybernates in the larval condition.

Firstly, for what motive other than hybernation did all three larvæ at the same time carefully spin upon the surface of the leaves little carpets of silk and thereon rest, which process was afterwards repeated by the other five?

Secondly, when placed in a temperature of 73° on October 23rd, five days after entering hybernation, two moved off their resting-places, but shortly returned and settled down as before (see Entom. xxv. 274).

Thirdly, why cannot they be induced to leave their hybernaculum?

Lastly, could a non-hybernating larva exist for sixty days without food and remain apparently in a healthy state?

Balham, December, 1892.

LIFE-HISTORY OF *COLIAS HYALE*.

By Herbert Williams.

In addition to the interesting notes by Mr. F. W. Frohawk on this species (Entom. xxv. 271), it may be well to record the successful rearing of the perfect insect during the late autumn of 1892.

On the 19th September last, Mr. F. W. Hawes and myself, whilst collecting together, had the good fortune to capture at Northfleet, Kent, two female *Colias hyale*, which, under the genial influence of the sun at North Finchley on the 20th and two following days, deposited eggs freely on plants of *Medicago lupulina* and clover; and from my share of the resulting ova I have taken the opportunity of making the following notes.

The egg in shape is very like the seed of the garden lettuce, very small in circumference at the base, and gradually increasing in thickness until about two-thirds of the distance towards the apex; it then narrows off rapidly to a blunt point. The egg stands erect, like those of the "whites," and has about fourteen longitudinal ridges, which do not, however, meet at the top, but terminate at the circumference of a small circle, the intervening depressions between these ridges being most delicately reticulated transversely. When first deposited, the egg is of a very pale straw-colour, inclining to white, but it rapidly deepens to a reddish orange, until about twenty-four hours before hatching, when it changes to a bluish black.

The first egg hatched on the 29th September, and the young larva emerged from an opening in the side of the egg, leaving the top intact. The colour of the newly-hatched larva is a greyish green, with a black head, and is entirely without markings,

except a green mid-dorsal stripe, which is very little darker than the remainder of the body. The whole of the body, including the head, is studded with minute bristles, and on the segment immediately following the head are about half a dozen short hairs of equal length, and terminating in an abrupt point; these project forward, and are very conspicuous against the jet black of the head. The young larvæ fed readily upon the leaf of the common clover, and rested along the midrib of the leaf. When first hatched they devoured the epidermis only, though in the middle of each patch which they had nibbled there was usually to be seen a hole breaking right through the venous structure of the leaf.

On the 9th October one larva changed its first skin, and the head now lost its black colour and assumed a light brown appearance, being studded with minute blackish spots, a very short light-coloured hair springing from the centre of each. The ground colour of the body is about the same tint as in its first skin, but the hairs now covering the body each spring from the centre of a whitish spot. Extending down the middle of the back is a furrow, entirely destitute of these hairs.

On the 20th October the second change took place, and the larva in its third skin exactly corresponds in colour with a clover leaf, both head and body being uniform in colour, and the latter densely wrinkled transversely. On each side of the body, extending the whole length in the region of the spiracles, is a whitish yellow line, the upper surface of which shades off gradually into the green, but having the line of demarcation on the lower side very distinct; midway between each spiracle there is a very faint pink spot, but at this stage it is only discernible in a very good light.

On the 2nd November another change took place, and the larva now appeared in its fourth and, as events proved, its last skin. When full fed the larva is about $1\frac{1}{8}$th inch long, cylindrical in form, and having a head very small in proportion to the body, which is of a unicolorous dark green, velvety in appearance, owing to the large number of short hairs, and having the pinkish spots in the whitish yellow line, previously referred to, very distinct. The full-fed larvæ of *C. hyale* and *C. edusa* are very similar, but *C. hyale* has longer and darker hairs, and a rougher and less rounded appearance.

On the 9th November the larva spun a few threads of silk, stretched across from two clover leaves to the side of the jar, and beneath this slight tent, which could afford no real protection, it turned to a green pupa on the 10th November.

The pupa is attached by the tail, and is also supported by a belt in a vertical position, head upwards, as is frequently the manner of *Pieris brassicæ*. It has a pointed head, rounded body, a ridge extending over the back of the thorax, most prominent at

the lower end, and ample wing-cases. The dorsal and ventral areas are completely divided by a light lateral stripe, which is conspicuous at the head, and then grows lighter until below the extremity of the wing-cases, when it becomes a well-marked yellow line, interrupted with faint pink spots. On each side of the body, below the wing-cases, is a dull red-brown mark parallel with the longest axis of the body, darkest at its upper extremity, and shading off gradually downwards. The pupa is much lighter on the back than the remainder of the body, and the wing-cases have one minute black spot in the centre, and six along that part which corresponds to the hind margin of the fore wings in the imago. The pupa of *C. hyale* is almost identical in shape, colour, and markings with that of *C. edusa*, but perhaps it is a trifle more slender and upright.

On the 19th November a slight change was perceptible in the pupa, the wing-cases appearing more opaque and of a yellower tint, and the position of the antennæ could be traced by their light brownish pink appearance, whilst on the following day the pink margins of the wings showed through quite plainly, the antennæ being still more defined, and the head and ridge on the thorax a light brown. By the next morning the dark markings of the wings were to be seen quite distinctly; and on the 22nd November the imago emerged, a male. This was followed on the 25th November by a second, also a male.

I believe this is the first time that *Colias hyale* has been recorded bred in captivity in this country.

There being apparently some doubt as to the state in which *C. hyale* would, under natural conditions, pass the winter in England, I should mention that, bearing in mind the late date at which the ova were obtained, the young larvæ, as soon as they hatched, were placed in a jar in a room where a fire was burning for about twelve out of the twenty-four hours of each day, in order to overcome, if possible, any inherent tendency towards hybernation. Generally speaking, the maximum temperature to which the larvæ were subjected was about 80° F., this reading being taken in the early evening; the minimum (during the morning) was, as near as possible, 40° F.

At the time of writing (December 10th) three larvæ, kept indoors in a low temperature, are still surviving, they having been absolutely quiescent for about thirty days, and are, so far as can be judged at the present time, settled for hybernation in the larval state. It will be an interesting point should these prove capable of undergoing the ordeal of a winter in our uncertain and often rigorous climate, and will tend to throw considerable light on the vexed question as to the state in which the genus *Colias* really does hybernate.

30, Hanley Road, Hornsey Rise, London, N., Dec. 10, 1892.

NOTES FROM THE NORTH-WEST COUNTIES.

By J. Arkle.

(Concluded from vol. xxv. p. 318.)

About a week after, on the 29th, I paid another visit to Witherslack, *viâ* Carnforth and Grange. *N. russula* was then comparatively scarce, and *N. plantaginis* so rubbed as to be not worth taking. The habit of the latter moth had quite altered; instead of flying somewhat lazily over the heath it shot up high over our heads, and, as a rule, made for the birch trees on the border of the Moss. The insects were as usual; *C. typhon* was still on the wing, but *C. imbutata* and *M. schulziana* were most numerous. The borders of many of the fields under tillage were beginning to look gay with the corn-marigold (*Chrysanthemum segetum*), a truly beautiful plant in its native habitat. I had only met with it once before—in Ireland, between Dublin and Bray. On the Kent embankment grows a wiry, olive-green sedge. Some of this, with the corn-marigolds, made a very stylish bouquet, which we took home. The chief locality, however, on this second visit to Witherslack, was the Pug Rocks, which we found alive with "whites"—*Pieris brassicæ* and *P. rapæ*, *V. urticæ*, *A. aglaia*, *Satyrus semele*, *E. ianira*, *C. pamphilus*, *Polyommatus phlœas*, and *L. icarus*. Other insects were *Pyrausta aurata* (*punicealis*), *Herbula cespitalis*, *Platyptilia ochrodactyla*, and *Mimæseoptilus pterodactylus* (*fuscodactylus*). I captured one specimen of the white-looking *Leioptilus osteodactylus* by the roadside near Grange. Searching the Pug Rocks, which are a mile or so away through the village from the 'Derby Arms,' rewarded us with a fine male *Stilbia anomala*, several *A. marginepunctata* (*promutata*), *Sciaphila penziana*, and another pretty species with a very distinct figure 8 marked obliquely on each of its grey upper wings—*Scoparia gracialis*. The local form of *A. aglaia* is a handsome one, and completely eclipses the Welsh specimens, in which the ground colour of the wings is a dull ochreous yellow. The Witherslack *aglaia* is altogether a brighter insect. The black spots and marks upon the wings are about as black as they can be, the basal suffusions are nearly black instead of dark russet, the marginal spots are whitish, there is a whitish suffusion along the region of the costal margin, and the ground colour is altogether brighter than, I may add, that of any specimens I have seen. The local form of *S. semele* also deserves comment. It is a very dark one, and the light-coloured patches on the upper wings, in which are placed the ocelli, almost disappear, especially in the females.

Three years ago, when I was last in the district, the additional way of reaching Morecambe from Lancaster was by the traps plying the four miles by road. These have almost disappeared, and there is now a capital tram-service all along the route and

thence to Heysham. It is, of course, the quickest way by rail; but if you have the day before you it is a treat to enjoy the morning breeze on the top of the spacious trams. The horses—all bays—are a fine set, and they take the hills gallantly at the charge. The summer day at Morecambe is nearly always a trippers' day, and the fun centres inside and outside the People's Palace.

The best way to the Heysham Moss is to leave the tram at the second lane from the left, past the 'Cumberland View Hotel,' then almost straight on for about a mile to the Fanny House Farm. A few yards on this side of the farm, a mile or so of rough road leads through the fields to the right and to the Moss. I made a couple of visits, and they were, comparatively, disappointing. Among the reeds growing in the ditches which border this rough road I netted a dragonfly, one of the little common blue species, *Agrion cyathigerum*, but the district strikes me as being rather deficient in dragonflies.

On the wayside nettles (July 25th) larvæ of *V. atalanta* were numerous enough. On the Moss the insect list was nearly the same as at Witherslack; *Agrotis strigula* (*porphyrea*) in fine condition, *Miana arcuosa*, and *Aphelia osseana* (*pratana*), which I mistook at first for *T. rufana*, being additional moths. Larvæ of *E. pulchellata* were again in the flowers of the foxglove, and I captured a few imagines of *E. nanata* which rose from the heather. *C. typhon* and *C. imbutata* were more numerous, and the former less worn, than at Witherslack. The form of *A. myrtilli* is here a very beautiful one; the ground colour of the upper wings is a rich purple. Flying swiftly across the Moss, and always in a high bee line, were great bat-like moths, which we put down as *Bombyx quercus*. It was a great pleasure to meet on this occasion with Messrs. J. B. Hodgkinson and son.

Our second visit took place on the 28th, with splendid weather and similar captures. I am sometimes asked to name a convenient centre from which to work this rich entomological district. I should recommend Carnforth, where there is plenty of good accommodation; and a pleasanter place wherein to eat, rest, or halt for the night could not be than the 'Crown Hotel,' Arnside.

Chester, September 27, 1892.

THE BUTTERFLIES OF ENFIELD.

By Henry D. Sykes.

The list of Middlesex butterflies compiled by Mr. Cockerell ("A Preliminary List of the Insect-Fauna of Middlesex, Entom. xxiv. 30—32 and 65) contains altogether forty-four species. I find, on examination, that twenty of these at least are old records,

—that is to say, records of species captured ten years or more ago; for the remaining twenty-four species records of capture apparently within comparatively recent years are given.

I have been collecting Lepidoptera in Enfield since the year 1887, and during these six years I have already met with all the species for which recent records are given, *Argynnis euphrosyne*, *Vanessa antiopa* and *Thecla w-album* only excepted; and I have also had the good fortune to meet with no less than four species for which only ancient records are given, viz., *Argynnis paphia*, *V. polychloros*, *Lycæna corydon*, and *Hesperia thaumas*.

Seeing, therefore, that my list of twenty-five species of Rhopalocera contains only species noticed by myself personally in Enfield during the past six years, perhaps a few notes concerning them may not be out of place in this Journal.

Pieridæ.

Pieris brassicæ and *P. rapæ*. Very common.

P. napi. This is also a very abundant species; at some periods of the year it is even commoner than *rapæ*.

Euchloë cardamines. Abundant.

Colias edusa. Fairly common this year.

Gonopteryx rhamni. Rather scarce; not more than two or three specimens seen on an average each year.

Nymphalidæ.

Argynnis paphia. A single male specimen, July 23rd, 1892. I regret to say that I failed to catch this specimen, but I feel certain of the species; it flew suddenly past me whilst I was standing in a clearing in a wood, and alighted on a flower just in front of me.

Vanessa polychloros. Two anterior wings and thorax discovered in a spider's web stretched in front of an open window of a loft, March, 1891. The markings on the wings were perfectly distinguishable.

V. urticæ. Abundant.

V. io. Common.

V. atalanta. Commoner than the preceding species. It is usually most abundant at the end of September and beginning of October, but this year (1892) it has been common all the year through, hybernated specimens being unusually abundant. The variety with "the red band nearly divided in two a little below its middle" not uncommon; I have one specimen in which the band is completely divided.

V. cardui. One specimen, August. 1888. Several seen this year.

Satyridæ.

Pararge megæra. A single specimen captured, August 17th, 1889.

Epinephele ianira. Extremely common. The form of the male with orange colouring on the fore wings is of frequent occurrence.

E. tithonus. A single specimen captured, July, 1888.

E. hyperanthes. I was this year informed of a locality for this species by a former resident of Enfield. I paid a visit to the spot in July last, and succeeded in capturing two specimens. This species is also mentioned by Mr. Watts as being abundant at Pinner and Ruislip (Entom. xxiv. 65).

Cœnonympha pamphilus. Common.

Lycænidæ.

Thecla quercus. Occurs in the same locality as *Epinephele hyperanthes.* The only record in Mr. Cockerell's list is that of a single larva taken by Mr. South at Mill Hill.

Polyommatus phlœas. Very common.

Lycæna icarus. Fairly common; abundant in 1887.

L. corydon. A single much-worn and battered specimen of the male taken in July, 1887; it was flying in a field where *icarus* was swarming. The only record in Mr. Cockerell's list is "Old Oak Common, one example, end of July, about 1869 (*Godwin*)." Newman also says, "Very rare near Whimbley—F. Bond." Mine is apparently the last recorded capture in the county.*

Hesperiidæ.

This family is well represented in the district. I have taken all the four species recorded below in one field, and (with the exception of *Hesperia thaumas*) take them there still.

Syrichthus malvæ. Fairly common.

Nisoniades tages. This species was omitted by Mr. Cockerell in his original list, but is subsequently recorded, in the same volume of the 'Entomologist,' by myself and by Messrs. Watts and Biggs (pp. 41, 65, and 98). It is quite as abundant in the district as ever, but is (as far as my experience goes) extremely local.

Hesperia thaumas. No recent record of the capture of this insect is contained in the "Preliminary List." As I have before stated (Entom. xxiv. 41, 269), I found a locality where it was swarming in 1888 and 1889, but since then have not seen a single specimen. I suppose it is now extinct in Middlesex.

H. sylvanus. Common, but local.

In addition to the above, I have heard on good authority that *Colias hyale*, which is not included in the "Preliminary List," was taken this year in a nurseryman's garden at Enfield Highway.

* Since writing the above, I have come across a record of the capture of this species by Dr. Percy Rendall, near Hounslow, on August 1st, 1887 (Entom. xx. 229), so that mine is *not* the last capture in the county.

I have not met with this species myself, and so have not included it in my list.

It is by no means improbable that other species of Rhopalocera may occur in the Enfield district, as the area I have worked is extremely limited; in fact, twenty of the species contained in the above list were captured in a single field, about three acres in extent, situate a few hundred yards from the house. Of the other five species, two (*V. polychloros* and *P. megæra*) were taken on "The Cedars Estate" itself, and the other three (*A. paphia*, *E. hyperanthes*, and *T. quercus*) in a wood which is distant about one mile.

The Cedars, Enfield, October 1, 1892.

ADRASTUS PALLENS, Fab., A BRITISH SPECIES.

By Rev. H. S. Gorham, F.Z.S., &c.

The species standing in our lists as *Adrastus limbatus*, Fab., is not that species according to Riesenwetter, but agrees with *Adrastus pallens*, Fab., and this appears to me to be the true determination. All the specimens in my own collection are to be referred to the latter. *A. limbatus*, F., is, among other points, to be separated from *A. pallens* by having the third joint of the antennæ much longer than the second, and the legs more or less infuscate. There is a little confusion in Riesenwetter's diagnosis of *A. limbatus* from the repetition of the word "*testaceis*," where "*infuscatis*" is plainly the word he intended. The antennæ in *A. limbatus* are also infuscate, with the base yellow. In *A. pallens* they are wholly yellow, at the most faintly infuscate in the apical three or four joints. There is a variety of *A. pallens* with the suture infuscate; this is (according to Herr von Riesenwetter) the *Elater limbatus* of Paykull and Gyllenhal. The synonymy of our species will therefore stand:—

1. Adrastus pallens.

Elater pallens, Fabr., Syst. El. ii. p. 242.
Adrastus pallens, Erichs., in Germ. Zeitschr. iii. 125; Riesenw., Nat. Ins. Deuts. iv. 2, 242.
A. limbatus, Waterh., Cat. Brit., and English authors, *nec* Fabr.

Var. *Elytrorum sutura infuscata*.

Elater limbatus, Payk., Faun. Suec. iii. p. 43; Gyll., Ins. Suec. i. p. 433.
E. pusillus, Herbst., Käf. x. p. 85, t. 165, f. 11.

2. Adrastus pusillus.

Elater pusillus, Fabr., Syst. El. ii. p. 246.
Adrastus pusillus, Erichs., in Germ. Zeitsch. iii. p. 128; Redt., Rüst., &c.; Riesenw., Nat. Ins. Deuts. iv. 2, p. 243.

Shirley Warren, Southampton, Nov. 4, 1892.

LEPIDOPTERA AT LIGHT.

Male *v.* Female Insects at Light.—I can corroborate Mr. Arkle's experience of males coming to light (Entom. xxv. 320). For some years I have taken *Neuronia popularis* abundantly, and they have all been males; also all the specimens of *Himera pennaria* that have been attracted by light have been males. I found the females of *H. pennaria* this season at rest on the tree trunks. *N. popularis*, I may add, is remarkably punctual in its appearance at light, for many years coming at 9.30 p.m., till this last season, when it came at 10 p.m.—George Bell Routledge; Stone House, Hayton, Carlisle.

Illuminated Moth-trap.—My moth-trap, which had been out of repair, was set going on Nov. 12th for a few nights. The weather was very favourable for light, and I obtained six *Ptilophora plumigera* (I have only taken one specimen of this moth here before), one *Pœcilocampa populi*, four *Asteroscopus sphinx*, besides a lot of *Hybernia aurantiaria*, *Oporabia dilutata*, *Himera pennaria*, and a few *H. defoliaria*. I have now put the trap away for the winter.—W. M. Christy; Watergate, Emsworth, Hants, Nov. 20, 1892.

Having read Mr. Christy's notes on the results of his illuminated moth-trap,* I constructed one very much on the same principle, and set it every night from Aug. 17 to Oct. 24, last year, at Oxton, near Exeter, with the following result:—*Psilura monacha* (male and female), *Cilix glaucata* (one), *Leucania pallens* (one), *Tapinostola fulva* (one), *Hydræcia nictitans* (one), *Neuronia popularis* (numbers, all males, sixteen in one night), *Luperina testacea* (several), *L. cespitis* (one), *Noctua plecta* (several), *N. umbrosa* (three), *N. xanthographa* (numerous), *Orthosia macilenta* (one, the first in the locality), *Anchocelis lunosa* (one), *Hadena protea* (one), *Miselia oxyacanthæ* (one), *Rumia luteolata* (several), *Eugonia alniaria (canaria)* (one), *E. quercinaria* (one), *Himera pennaria* (two males), *Cleora glabraria* (four, not taken here before), *Cleora lichenaria* (three), *Acidalia bisetata* (common), *A. aversata*, *Oporabia dilutata* (several), *Larentia viridaria* (several), *L. didymata*, *Thera variata* (one), *Melanthia ocellata* (two), *Coremia designata* (several), *C. ferrugata*, *Anaitis plagiata* (one), *Herbula cespitalis* (several), *Scopula ferrugalis* (one), *S. decrepitalis* (one), *Alucita hexadactyla (polydactyla)* (several), *Crambus tristellus* (several), *C. geniculellus* (common), *C. culmellus*. Some Micros not yet identified. The best night was Sept. 1–2; catch:—*Psilura monacha* (male), *Neuronia popularis* (sixteen males), *Noctua plecta* (one), *N. umbrosa* (two), *N. xanthographa* (three), *Eugonia alniaria* (one), Crambi and Micros. The bulk of the above insects were quite perfect, and, in the case of worn and injured insects, they do not seem to have suffered from being in the trap. Should your readers desire it, I will give a full description of the trap, with dimensions.—E. F. Studd; 130, Queen's Gate, S.W.

From Nov. 7th to Nov. 12th I had fine sport with *Pœcilocampa populi* on the gas-lamps, having taken forty during the week. The insect is generally considered rather rare here, and I have not heard of it being taken in such numbers before. The nights on which there was a thick fog seemed to be the most favourable.—Douglas H. Pearson; Chilwell, Notts, Nov. 17, 1892.

* See Entom. xxiii. 231.—Ed.

NOTES ON VANESSIDÆ IN 1892.

The great abundance of Pyrameis atalanta and P. cardui.—This year has not only been an *edusa* year, but also a great *atalanta* year. Early in the season I could not help noting the fact that hybernated specimens of *P. atalanta* were much commoner than usual, and, judging by their numbers, I should say that most of the specimens had migrated from the Continent. They continued on the wing until the beginning of July. From June to September the larvæ were found in abundance almost wherever nettles grew, and their variation was remarkable for concealed feeders. The principal forms were grey, dull green, black with white lateral stripe, and black with yellow lateral stripe. The larva was very common in Hants in July, and in Gloucestershire large numbers were still feeding during the first week in September; many quite small (possibly a second brood). The larvæ of *P. cardui* were found in some numbers in the western suburbs; but on the Hants coast almost every thistle bore indications that larvæ of *P. cardui* had been feeding. On the other hand, I did not find any larvæ of *Vanessa io*, nor do the imagines of this species and those of *V. polychloros* appear to have been commoner than usual.—A. T. Mitchell; 5, Clayton Terrace, Gunnersbury, W., Nov. 5, 1892.

Pyrameis atalanta was not common at Ramsgate during September, but *P. cardui* and *Vanessa io* were in abundance.—A. T. Mitchell; 5, Clayton Terrace, Gunnersbury, Nov. 5, 1892.

During the month of July the larvæ of *Vanessa atalanta* were very numerous, and we cleared out all we could find in some lanes near here. The imagines duly emerged throughout August, and I did not expect there would be another brood of them; but in September, in the same locality, we again saw signs of the larvæ, and in the course of that month we found a large number (more, even, than in July) in all stages of growth, from a few days old to full-fed, and often on the same plant. These pupated in due course, and the perfect insects emerged during October and the early part of the present month. On the 3rd inst. I discovered in the same lanes a half-fed larva of this species, and took two more yesterday and another to-day; the three latter were nearly full-fed, and I hope to get all four through this year. This surely points to two, if not three, broods this year. As to the white spot question, I do not think it has anything to do with sex. I have bred several in which the spot on one side was much fainter than that on the other, and one had only *one* spot, on the left wing; but, unfortunately, I was examining a great number at the time, and must have put it among those to be released, as I have not been able to find it since. I think the spot is nearly always present (more or less distinctly) on the *under side*, even when there is no trace of it above. Out of the hundreds reared I did not get any vars. save shades of colour.—E. Sabine; The Villas, Erith, Nov. 10, 1892.

Vanessa c-album in North Staffordshire.—Although a North Staffordshire *edusa* has not favoured me with a visit, notwithstanding that I have kept a good look out for it, I have had the luck to see and take what, in this North Staffordshire district, is a scarcer butterfly. On September 26th, in our own garden at Madeley Vicarage, on a white aster, I observed a *V. c-album* settled, and sending into the house for a net, one of my sons soon came and captured the insect. It proved to be a male speci-

men, darkly marked, and in perfect condition. This is only the third time that I have seen this butterfly in North Staffordshire, and I have only heard of two or three other specimens being taken in the last twenty-five years. I fancy this is one of those insects that is unfortunately on the decrease in this country.—(Rev.) Thos. W. Daltry; Madeley Vicarage, Staffordshire.

FURTHER DETAILS OF THE *COLIAS* INVASION.

A male *C. edusa* was taken in a turnip field near Wigtown on Sept. 22nd. At the same time and place a female was seen, but not captured. Another specimen was taken at Tarbert, Loch Fyne. Six males (besides several more seen) were taken at Kilmorie, in south of Arran, and another on the west coast of the island. — J. A. Mackonochie; The Hirsel, Coldstream.

I see that *C. edusa* has been reported as captured or seen in several places in Scotland; but the most important capture of this rather rare visitor to the North has not been noticed in the 'Entomologist.' An Edinburgh collector, Mr. Geikie, who was staying near to me in the South of Arran, took six specimens of *edusa*, and saw others, in *September*. This was made known by a letter to the 'Scotsman,' and the report elicited the information that *edusa* had also turned up at Tarbert (Loch Fyne), and in Wigtonshire. This is not the first time that *edusa* has been found in Arran; and I fancy that, whenever its "year" comes round, those who look carefully for it, in the beautiful island, will not be disappointed.—(Rev.) A. B. Watson; 10, London Street, Edinburgh.

C. edusa has been very common at Broadstairs, Kent, this year. My brother and I were there for a fortnight from Aug. 17th, during which time we caught about seventy *C. edusa*, two var. *helice*, and thirty-three *C. hyale*. The weather was very wet and windy; in fact, we had only about three good days for collecting; if it had been better we could probably have caught many more *C. hyale*, as we saw about twice as many as we caught. *C. edusa* var. *helice* was rare; we only saw the two we captured. For about the first week *C. hyale* was scarce and much battered; but the second week there were a great many more, and nearly all in good condition. I have also seen a few *C. edusa* round Acton this year, and in July I caught two on Wormwood Scrubs. The only time I have seen *C. edusa* before was in August, 1885, in which year I saw three at Broadstairs. — H. J. Dixon; 7, Leamington Park Villas, Acton, W., Nov. 3, 1892.

During September *C. edusa* occurred commonly near Ramsgate, but specimens in good order were hard to find. Three worn *C. hyale* were netted, and two others missed.—A. T. Mitchell; 5, Clayton Terrace, Gunnersbury, W., Nov. 5, 1892.

On the 5th of June last I succeeded in capturing a beautiful specimen of *C. hyale* in a lane near Maldon, Essex, flying in company with *C. edusa*. I have just been asked by an eminent entomologist to record this, as the date of capture may prove of interest.—T. M. Seesdale; 6, Frederick's Place, Old Jewry, E.C., Nov. 8, 1892.

My first captures, since 1877, of that capricious species, *C. edusa*, were on July 26th, near Milton (Hants); but, owing to the extremely rough

nature of the ground, I was only able to secure twelve specimens,—six males and six females, including one example of var. *helice* and one intermediate form. I considered the specimens taken small, and on comparison I find that they are undersized. *C. edusa* has not been uncommon in the neighbourhood of Willesden and Ealing; I know of over twenty captures (all males). At Chiswick three specimens were observed. Whilst staying a few days at Evenlode (Worcester) two males were seen, and one captured, in a locality where they swarmed in 1877. When beating near Esher, I noted a very good male as late as Sept. 28th. This species appears to have occurred very commonly on the S.E. and S. coasts, but does not seem to have been nearly so common in inland localities as in 1877.—Alfred T. Mitchell; 5, Clayton Terrace, Gunnersbury, W., Nov. 5, 1892.

CAPTURES AND FIELD REPORTS.

Sphinx convolvuli in Hants. — I captured six specimens of this beautiful moth in my garden, hovering over the blossoms of *Nicotiana affinis*, from Sept. 17th to 24th. I fear it was getting over before I observed it.—E. G. Meek; Fairmead, Brockenhurst, Hants.

Captures at Ivy Blossom.—During the early part of October insects were fairly plentiful at ivy in this neighbourhood. In company with a friend, I was only able to give three nights to it; but we took several species, mostly in very good condition. *Orthosia macilenta* and *Xanthia circellaris* were very abundant. *Orthosia lota*, *Anchocelis pistacina* (including some very variable forms), and *A. litura*, also turned up in fair numbers, together with *Cerastis vaccinii*, *Scopelosoma satellitia*, *Agrotis segetum*, and *Phlogophora meticulosa*. We took single specimens of *Hadena protea*, *Xanthia fulvago (cerago)*, and *Plusia gamma*. The only species out of the common run which we met with was *Xanthia aurago*, of which we took three on the first night; we were evidently rather late for it, as those we took were slightly worn.—Philip W. Ridley; 2, Camden Terrace, Bath, Nov. 21, 1892.

Sugar in November.—The evenings of the 3rd and 5th of November last being very mild, I tried sugar, more as an experiment than with any hope of success. I was much surprised at the result. On the evening of the 3rd numbers came to sugar; but on the 5th, although raining hard, the insects simply swarmed. I counted over sixty on one patch of sugar. The insects I saw were *Cerastis vaccinii*, *C. spadicea*, *Agrotis suffusa* (worn), *Calocampa exoleta*, and *Oporabia dilutata*.—R. A. Dallas Beeching; Tunbridge Wells.

Ennomos autumnaria at Ramsgate. — A female example of this species was taken in September, and a considerable number of apparently fertile ova have been obtained.—A. T. Mitchell; 5, Clayton Terrace, Gunnersbury, Nov. 5, 1892.

Apamea ophiogramma at Reading.—I have the pleasure to record the capture here, this season, of *A. ophiogramma*. It is, I believe, the first time it has been taken in this district.—W. E. Butler; Hayling House, Oxford Road, Reading.

Butterflies of the Eastbourne District. — The following is a list of butterflies captured or seen in the neighbourhood of Eastbourne: — *Pieris brassicæ* and *P. rapæ*, very abundant. *P. napi*, scarcer than usual. *Euchloë cardamines*, abundant; the females emerged very late. *Colias edusa*, common; var. *helice*, sparingly. *C. hyale*, one specimen in June. *Gonepteryx rhamni*, scarcer than last year. *Argynnis paphia*, common. *A. aglaia*, swarmed on some parts of the Downs. *A. latona*, one specimen shown to my brother at Polegate Railway Station, caught the same day, at Horsham, in a clover-field. *A. selene* and *A. euphrosyne*, abundant. *Melitæa aurinia*, one captured at Abbot's Wood; I also saw several more captured. *M. athalia*, abundant at Abbot's Wood. *Vanessa urticæ*, common. *V. io*, very scarce; I have only seen two. *V. atalanta* and *V. cardui*, abundant. *Limenitis sibylla*, none captured, but several seen. *Apatura iris*, common at Abbot's Wood; would not come to carrion; several times I saw them settled on a path, after rain, imbibing moisture, but they were wary and I did not capture any; my brother saw two larvæ, beaten from aspen. *Argɛ galatea*, abundant, but local, at Abbot's Wood. *Satyrus megæra*, common. *S. semele*, extremely abundant at Beachy Head. *S. ianira*, abundant. *S. tithonus*, rather scarce. *S. hyperanthus*, abundant. *Cœnonympha pamphilus*, abundant. *Thecla rubi*, first brood common, second brood very scarce. *T. quercus*, abundant. *Polyommatus phlœas*, common. *Lycæna agestis*, common. *L. adonis*, one specimen. *L. alexis*, abundant. *L. alsus*, very abundant, but extremely local. *L. corydon*, abundant; the commonest of all butterflies here from July to September, on Downs. *Syrichthus malvæ*, common. *Thanaos tages*, abundant. *Hesperia sylvanus*, abundant. *H. linea*, abundant at Abbot's Wood. In June my two brothers and an entomologist from Brighton distinctly saw a *Papilio podalirius* at Robbin Post Lane, Abbot's Wood. — F. Bromley; Bineham, St. Leonard's Road, Eastbourne, Oct. 6, 1892.

NOTES AND OBSERVATIONS.

A Suggestion for Recording.—It has occurred to me that much useful information might be accumulated if those entomologists who reside in the country, and are able to make observations day by day, would keep a record of the dates when first and last specimens of any insects occurred in their districts during the year. Additional interest would be given to such records if the time was also entered when each species appeared in greatest force. It would also add considerably to the scientific value of any records of this kind if meteorological data were incorporated. The greatest accuracy would perhaps be arrived at if the recorder only entered the result of his own observations, but there would be no objection to his obtaining information from fellow-workers in his own district. Of course dates of first and last appearances should be, as far as possible, absolute, and not dependent on the fact that the recorder had not been able to carry on observations previous to the day on which he saw his first specimens or after that on which he saw his last. When such a course is practicable the specimens to be recorded should always be captured and examined, so that the species may be properly determined and its sex ascertained. If any reader of this note should feel disposed to co-operate, I shall be glad to hear from

him. Is it too much to hope that at least one entomologist in each county will respond?—Richard South; 12, Abbey Gardens, St. John's Wood, N.W.

Notodonta dromedarius on Hazel.—*Re* Mr. Gervase F. Mathews' remark on hazel being an unusual food-plant (?) for *N. dromedarius* (Entom. xxv. 321), Dr. Ernst Hofmann, in his new work on European lepidopterous larvæ (part x. p. 67), now publishing in parts (Stuttgart, 1890–92), says, "It lives in two broods, in July and September, on birch, alder, and hazel."—F. Bromilow; Nice, France, Dec. 9, 1892.

Ocneria dispar.—About 1840 this species was abundant in England. The late Mr. Henry Doubleday sent me a large number of specimens, and I have forty-five of these in my collection at the present time. These old specimens are quite one-third larger than the examples now bred in confinement, and the females have scarcely any markings. I have also fourteen male specimens, bred by a collector at Darlington, which are very similar to ordinary females in coloration.—J. B. Hodkinson; Ashton-on-Ribble.

"Apple-trees and Wingless Moths."—Those who can refer to the 'Standard' for October 19th, 22nd, and 25th, will find a curious and interesting correspondence under this head. The two chief points brought out are:—(1) A ring of cart-grease should be frequently applied round the trunk to prevent the apterous females getting to the branches; but the grease should be put "on bands of specially prepared grease-proof paper tied tightly round the trunks," or the tree will be injured. (2) "All fruit-growers know that a small percentage of female moths *will always be carried up by the males.*" (The italics are mine.) Point No. 1, of course, is beyond dispute. Can the same be said of No. 2?—J. Arkle; Chester.

[The following extract from a letter in the 'Standard' of October 19th, 1892, is possibly what our correspondent refers to:—"I am informed by a most experienced gardener and keen observer of insect pests that this ring is of no use at all. That the female moth is wingless he admits, but the male moth is provided with enough wing to carry two, and, as a fact, by the aid of a lantern, he has observed the male moth hold the female moth and fly up into the tree bearing her with him, an effectual way of passing the cart-grease ring.—A. B. Morling; Ross, Herefordshire, Oct. 18."]

Unusual situation of the Pupa of Spilosoma lubricipeda.—In the autumn of 1891 my children told me that they had found a lot of "ermine" cocoons in a blanket. Fortunately they had not disturbed them, and I was therefore able to note the following particulars. The blanket in question is one of the ordinary brown description, and is used during the winter months for covering over some rabbit-hutches, and had lain throughout the summer, folded up, on top of the hutches, at a height of about eight feet from the ground, in an open shed under a corrugated iron roof, which effectually sheltered it from the rain. On going to look, there I found, sure enough, some score of cocoons of a *Spilosoma*, neatly packed between the folds of the blanket, and assimilating so closely with it in colour as to be hardly noticeable. These I carefully removed to a breeding-cage, and in due course they produced some fine specimens of *Spilosoma lubricipeda*. On examining the same blanket this autumn, after its summer rest in the same position, we again found it similarly tenanted. I am aware that the larvæ of this species are wanderers, often ascending to a consider-

able elevation in quest of food, and have found them on a "Virginia creeper" some twenty feet from the ground, but they appeared to descend to, and for some time travel about upon, the earth previous to pupation; and I can only account for the cocoons being placed in the situation where we found them by reason of the protection afforded to the insect, during its quiescent stage, by the close assimilation of the cocoons to their surroundings.—Robt. Adkin; Lewisham, November, 1892.

"Assembling" in Lepidoptera.—I have been rather surprised, in the notes which have appeared on this subject, that *Odonestis potatoria* has not been mentioned. It is, I have found, very easily "assembled;" *Callimorpha dominula*, I believe, also. A season or two past on one occasion in South Wales, having captured a rather dilapidated specimen, I found myself suddenly in company with some half dozen others. It was a very windy day, so that the insects had difficulty in flying, and did not again approach after once being frightened, and therefore I was unable to certify they were attracted by the specimen in my net, which I concluded must be a female.—T. B. Jefferys; Clevedon.

Two more Cases of "Assembling."—In an outhouse, where I have been in the habit of keeping a number of breeding-cages of one sort and another, *Endrosis fenestrella* has been of far too common occurrence during the past summer. Among the other receptacles in this outhouse stood four flower-pots, each covered with leno, and containing seed-heads of *Silene*, in which *Dianthœciæ* larvæ had fed-up during the previous autumn. Three of them I knew contained pupæ, but in the fourth I had been able to trace neither larvæ nor pupæ, and therefore concluded that it was devoid of any great attraction, in this respect, for the *Endrosis*. On visiting my cages just before dusk one evening at the end of June, I noticed some three or four *fenestrella* fluttering about on the top of the leno that covered the last-named flower-pot. I was annoyed at seeing so many at one time, and having killed them went away, and thought no more about it; but having occasion to go into the outhouse again later in the evening, I was surprised to find no less than seven of the little pests, all fluttering about in a great state of excitement, on the covering of the same pot. I at once concluded that there must be some cause of attraction at the particular spot where they were assembled, and upon removing the leno I found a fine freshly-emerged female *fenestrella*, sitting just beneath it on the inside of the flower-pot. Evidently this was the cause, and the individuals found on the outside were males attracted by it; having removed it I found the cover of this pot, on two subsequent visits, quite free of *fenestrella*, as the other three had been during the whole of the evening. Earlier in the spring I reared a considerable number of *Biston hirtaria* in a large zinc-covered cage standing in the open, and on several occasions, when freshly-emerged females were left in it over night, one or more males were found resting on the outside of the cage in the morning, the largest number found at one time being three. The species did not appear to be common in this neighbourhood; indeed, the only wild examples that I came across were those that rested on the cage.—Robt. Adkin; Lewisham, November, 1892.

Erratum.—Entom. xxv. p. 226, line 16 from bottom, for *seventeen* read *seven*.

SOCIETIES.

Entomological Society of London. — *December* 7, 1892. — Mr. Frederick Ducane Godman, M.A., F.R.S., President, in the chair. The President announced the death, on the 2nd December, of Mr. Henry T. Stainton, F.R.S., an ex-President of the Society. A vote of condolence with Mrs. Stainton was passed by the Meeting. Mr. Frank Bouskell, of 11, Lansdowne Road, Stoneygate, Leicester; Mr. George C. Dennis, of Tower Street, York; Mr. Charles B. Headley, of Stoneygate Road, Leicester; Mr. William Mansbridge, of Luther Place, Horsforth, near Leeds; and the Rev. George W. Taylor, of St. Barnabas, Victoria, British Columbia, were elected Fellows of the Society. Mr. Jenner Weir exhibited a species of Acræa from Sierra Leone, which Mr. Roland Trimen, who had examined the specimen, considered to be a remarkable variety of *Telchinia encedon*, Linn. It was a very close mimic of *Limnas alcippus*, the usual West African form of *Limnas chrysippus*. The upper wings of the specimen were rufous and the lower white, as in the model, and the resemblance in other respects was heightened by the almost total suppression of the black spots in the disc of the upper wings, characteristic of the usual markings of *T. encedon*. Mr. F. J. Hanbury exhibited a remarkable variety of *Lycæna adonis*, caught in Kent this year, with only one large spot on the under side of each upper wing, and the spots on the lower wings entirely replaced by suffused white patches. He also exhibited two specimens of *Noctua xanthographa* of a remarkably pale brownish grey colour, approaching a dirty white, obtained in Essex in 1891; and a variety of *Acronycta rumicis*, also taken in Essex, with a beautiful dark hind margin to the fore wings. Mr. H. J. Elwes exhibited a living specimen of a species of *Conocephalus*, a genus of Locustidæ, several species of which, Mr. C. O. Waterhouse and Mr. McLachlan stated, had been found alive in hothouses in this country. Dr. T. A. Chapman exhibited immature specimens of *Tæniocampa gracilis*, *T. gothica*, *T. populeti*, *T. munda*, *T. instabilis*, and *T. leucographa*, which had been taken out of their cocoons in the autumn, with the object of showing the then state of development of the imagos. Mr. F. W. Frohawk exhibited a living specimen of the larva of *Carterocephalus palæmon* (*Hesperia paniscus*), hybernating on a species of grass which he believed to be *Bromus asper*. The Rev. Canon Fowler and Mr. H. Goss expressed their interest at seeing the larva of this local species, the imagos of which they had respectively collected in certain woods in Lincolnshire and Northamptonshire. Mr. Goss stated that the food-plants of the species were supposed to be *Plantago major* and *Cynosurus cristatus*, but that the larva might possibly feed on *Bromus asper*. Mr. C. G. Barrett exhibited a long series of remarkable melanic and other varieties of *Boarmia repandata*, bred by Mr. A. E. Hall from larvæ collected near Sheffield. Mr. W. Farren exhibited, and commented on, four varieties of *Papilio machaon* from Wicken Fen; also a series of two or three species of *Nepticulæ* pinned on pith with the "minutien Nadeln," for the purpose of showing these pins. Canon Fowler exhibited specimens of *Xyleborus perforans*, Woll., which had been devastating the sugar-canes in the West Indies. Mr. C. O. Waterhouse stated that the larvæ had done great damage to beer-casks in India. Mr. E. B. Poulton showed, by means of the oxy-hydrogen lantern, a number of slides of various larvæ and pupæ,

in illustration of his paper, read at the October meeting, entitled "Further experiments upon the colour-relation between certain lepidopterous larvæ and their surroundings." He stated that he believed that nineteen out of twenty larvæ of Geometridæ possessed the power of colour adjustment. Mr. F. Merrifield, the Rev. J. Seymour St. John, and Mr. Jacoby, took part in the discussion which ensued. Mr. F. Merrifield read a paper entitled "The effects of temperature on the colouring of *Pieris napi*, *Vanessa atalanta*, *Chrysophanus phlæas*, and *Ephyra punctaria*," and exhibited many specimens thus affected. In the cases of *P. napi*, *C. phlæas*, and *E. punctaria*, he remarked that they corresponded with natural variations of these species in regions or seasons associated with similar temperatures; and some curious effects produced by severe temperatures on *V. atalanta* seemed likely to throw light on the evolution of the complex markings of the *Vanessas*. Mr. Poulton, Dr. F. A. Dixey. Mr. Elwes, Mr. Jenner Weir, Mr. Tutt, and Mr. Frohawk took part in the discussion which ensued. Mr. Kenneth J. Morton communicated a paper entitled "Notes on Hydroptilidæ belonging to the European Fauna, with descriptions of new species." Mr. McLachlan made some remarks on the subject of this paper. Dr. T. A. Chapman read a paper entitled "On some neglected points in the structure of the pupa of Heterocerous Lepidoptera, and their probable value in classification; with some associated observations on larval prolegs." Mr. Poulton, Mr. Tutt, Mr. Hampson, and Mr. Gahan took part in the discussion which ensued. Mr. J. Cosmo Melvill communicated a paper entitled "Description of a new species of Butterfly of the genus *Calinaga*, from Siam." Mr. W. L. Distant communicated a paper entitled "Descriptions of new genera and species of Neotropical *Rhynchota*." —H. Goss and W. W. Fowler, *Hon. Secretaries.*

Lancashire and Cheshire Entomological Society.—*December 12th*, 1892.—Mr. S. J. Capper, F.L.S., F.E.S., President, in the chair. Mr. J. Lea, Canning Street, was elected a member of the Society. The President referred to the death of the veteran entomologist, Mr. H. T. Stainton, and remarked that no one had done more to encourage the study of Entomology. Messrs. G. A. Harker and H. B. Jones gave a paper entitled "Notes on a fortnight's collecting in Galway," the principal insects taken being *Zygæna minos*, *Miana captiuncula*, two specimens of the rare *Triphæna subsequa* and *Rhodaria sanguinalis*, and exhibited specimens of, and pointed out differences between, English and Irish forms. The *Miana captiuncula* were especially interesting, being much more strongly marked than the English forms, the female having two entire cream-coloured fasciæ; *Lycæna icarus*, very bright females, with large and brilliant red spots. The President exhibited large Irish *Vanessa urticæ*. Mr. Gregson, a remarkably fine specimen of *Prodelia testaceoides*, Gn.,* bred by George Rose from a larva taken in a market at Barnsley. Mr. Stott (on behalf of Mr. H. S. Clarke), *Sphinx convolvuli* from the Isle of Man, and some fine varieties of *Smerinthus tiliæ*. Mr. Pierce, a specimen of *Ceratocampa regalis*. Mr. J. Herbert Stott, *Sirex gigas* from a North Staffordshire coal mine.—F. N. Pierce, *Hon. Sec.*

* ? *Prodenia littoralis.*

OBITUARY.

Henry Tibbats Stainton died at Lewisham on the 2nd December, 1892, aged seventy years. For more than forty-seven years Mr. Stainton has been a contributor to the literature of Entomology; and, within the limits of this notice, it is impossible to do justice to the great scientific value of all his work. He had essentially the mind of a true scientist, industrious, exact, most scrupulous in publishing nothing he was not prepared to support by the strictest rules of evidence; it is most remarkable that scarcely anything he ever wrote has been controverted; dealing as he did with no speculative views, he was singularly freed from the necessity of dissipating his energies in mere wordy contests. He could never have accomplished all that he did had it not been for his methodical economy of time. He often had to visit the city, and on those occasions usually returned at the time most others arrived; and about 11 or even 10 a.m. he might constantly be seen at the Cannon Street Station leaving London for Lewisham. If he made a scientific tour on the Continent, the whole journey was planned out, and he would invite his friends to meet him at the hotel he proposed to visit, fixing the date and hour of meeting at far-off German cities. He was always most careful to perform all that he had promised; and it is well known that when he once was unexpectedly called upon to support a friend politically, he travelled from a distant part of Europe simply to record his vote, leaving England immediately afterwards. In the year 1845 Mr. Stainton began to publish communications to the 'Zoologist'; and for many years afterwards some of the more important notes in that periodical were from his pen. In 1855 he established, and enriched by his own writings, 'The Entomologist's Annual,' which he continued to publish for twenty years. In 1864 he was one of the founders of 'The Entomologist's Monthly Magazine,' our valuable contemporary. In 1857–9 Mr. Stainton brought out 'A Manual of British Butterflies and Moths,' a perfect model of accurate condensation, making the work a useful compendium, which for the need it then supplied, and still supplies, has no equal. Mr. Stainton's classical work is the 'Natural History of the Tineina,' in four languages, of which more than a dozen volumes have been published. In this he was assisted by eminent continental naturalists. The work is finely illustrated, and will be referred to as long as the science of Entomology is studied. But Mr. Stainton's activities did not end here. So anxious was he to promote the well-being of Natural History that he was for several years secretary of the Ray Society; of the Zoological Record Association; of the Entomological Society, of which he was also an ex-president; and a member of the council of the Royal Society, to which he was elected a Fellow in 1867. Another excellent quality Mr. Stainton possessed,—he was always most ready to impart his vast stores of information to all who sought enlightenment. For many years he had monthly meetings at his house, to which all workers in entomological science were welcomed; and he also had at one time a class of students for observations in the field. Anyone who will turn to the works dealing with the Micro-Lepidoptera of the British Isles, published prior to Mr. Stainton's time, will be struck with the immense strides the knowledge of those interesting and beautiful insects has made, mainly through his exertions. It may truly be said of him that he lived highly esteemed, and died deeply regretted.

Chrysocoris dissimilis, n. sp.

Body above ochraceous, thickly and more darkly punctate. Head with the eyes, basal margin, central lobe, and antennæ, black; a spot at base of central lobe and basal joint of antennæ (excluding apex) ochraceous. Pronotum with a broad central transverse fascia on anterior area, and a transverse series of six spots on posterior area, black. Scutellum with the basal margin, two transverse spots near base, and four rounded spots on disk, black. Margins of corium black. Body beneath and legs ochraceous; femoral streaks, tibiæ, tarsi, abdominal and sternal incisures, rostrum excluding base, a spot on each side of head near insertion of antennæ, sternal spots and abdominal stigmatal spots, black. Long. 10 millim.

Hab. Malayan Archipelago: Sumba (*Doherty*).

A small species unlike any other of the genus.

SYNONYMICAL NOTES.

Tetrarthria lineata, Walk., Cat. Heteropt. i. p. 18, n. 2, 1867 = var. *Tetrarthria variegata*, Dall., List. Hem. i. p. 20, n. 1, t. 1, f. 1 (1851).

I have received this form of the species from Perak, in the Malay Peninsula.

Tetrarthria lateralis, Walk., Cat. Heteropt. i. p. 21, n. 11, 1867 = var. *Tetrarthria variegata*, Dall., ibid.

This form of the species is also found in Assam.

Callidea aureocincta, Walk., Cat. Het. i. p. 41 (1867), *Callidea subapicalis*, Walk., ibid. p. 36, and *Callidea curtula*, Walk., ibid. p. 39, are three varietal forms of *Philia senator*, Fabr., Syst. Rhyng. p. 131, n. 14 (1803).

The above probably do not exhaust the varieties of *T. variegata* and *P. senator*, described by Walker, but only refer to specimens thus identified in my own collection.

DESCRIPTIONS OF SOME NEW SPECIES OF EUMOLPIDÆ AND HALTICIDÆ FROM AFRICA (GABOON).

By Martin Jacoby, F.E.S.

Menius subcostatus, n. sp.

Broad and robust, metallic green; antennæ black; head rather closely punctured; thorax more strongly but subremotely punctured; elytra rather strongly but not very regularly punctate-striate; the sides with a short costa near the apex; femora with a strong tooth. Length, 4 lines.

Head finely punctured, the punctures somewhat elongate, the eyes

surrounded by a deep sulcus; the clypeus separated from the face by a deep transverse groove, very finely punctured; antennæ bluish black, only extending to the base of the elytra, the terminal five joints slightly thickened and pubescent; thorax transverse, strongly widened at the middle, the sides straight, narrowed in front, the anterior angles acutely pointed, the surface transversely convex, rather remotely and distinctly punctured, the punctures a little finer at the sides than at the disc; elytra convex, the shoulders prominent, the punctures arranged in rather irregular rows, more closely placed at the sides and larger than near the suture, the interstices also very finely punctured; a short longitudinal costa is placed at the sides below the middle; abdomen bluish, stained with fulvous; the four posterior tibiæ emarginate at the apex, all the femora armed with a stout tooth, claws bifid; prosternum broad, rugosely punctured.

This is a large-sized species, of which I possess a single apparently female specimen; it is possible that the male is devoid of the elytral costa.

Menius (?) splendidus, n. sp.

Elongate, black; antennæ (the last joint excepted) and legs fulvous; head and thorax metallic greenish-cupreous, the latter remotely punctured; elytra metallic aureo-cupreous, regularly punctate-striate; femora unarmed. Length, 3½ lines.

Of elongate and rather subcylindrical shape; the head very finely punctured, with a deep longitudinal central groove; the clypeus separated from the face by an equally deep transverse groove, finely punctured; labrum piceous; antennæ extending to about half the length of the elytra, fulvous, the terminal joint black; eyes surrounded by a deep, posteriorly widened sulcus; thorax twice as broad as long, the sides straight, not narrowed in front, the anterior angles acutely produced, the anterior margins sinuate at the middle, the surface distinctly but not closely punctured, metallic greenish-cupreous; elytra bright metallic reddish-cupreous, without basal depression, strongly punctate-striate, the interstices very minutely punctured; under side black, the sides of the breast metallic greenish; legs fulvous, the four posterior tibiæ emarginate near the apex, claws bifid; prosternum subquadrate, its base slightly concave, the posterior angles pointed.

Of more elongate and cylindrical shape than most of its allies, and without femoral teeth, but possessing all other structural characters of the genus. A single specimen is contained in my collection.

Menius flavitarsus, n. sp.

Metallic greenish or bluish, above metallic green or obscure æneous: antennæ, the tibiæ more or less, and the tarsi, flavous; thorax subremotely punctured; elytra strongly punctate-striate, the interstices slightly convex, impunctate. Length 2½ lines.

Head finely and not very closely punctured; flat supra-orbital grooves narrow but distinct; labrum fulvous; palpi flavous; antennæ extending to about two-thirds the length of the elytra, entirely flavous, the third and fourth joints equal; thorax twice as broad as long, the sides slightly rounded, the surface finely, rather irregularly and not very closely punctured; elytra convex, deeply punctate-striate; the four posterior femora with a distinct tooth; the base of the tibiæ metallic green like the rest of the under side, their lower portion and the tarsi flavous; claws bifid.

The bright flavous colour of the greater part of the tibiæ and the tarsi will separate this species from any of its allies.

Pseudocolaspis tuberculicollis, n. sp.

Black, sparingly pubescent; basal joints of the antennæ fulvous; thorax remotely punctured, bituberculate; elytra strongly punctate-striate anteriorly, with some white stiff hairs; femora with a long curved spine. Length, $1\frac{3}{4}$ line.

Entirely black, shining, the head longitudinally strigose; antennæ short, the last six joints strongly thickened and transverse, black, pubescent, the basal five joints fulvous; thorax long, the sides without margins, the disc with two elongate ridge-like tubercles at the sides, remotely but distinctly punctured, furnished with some white bristle-like hairs; scutellum subpentagonal, the base with some punctures; elytra with a transverse basal depression, the shoulders produced into an acute ridge, the surface strongly punctate-striate within the depression, more finely so posteriorly, the interstices provided with white stiff erect hairs; under side strongly punctured, more closely pubescent, the femora with a long curved tooth, the tibiæ also with a fine tooth near the apex.

(Coll. Jacoby.)

Nerissus gabonensis, n. sp.

Metallic greenish-black below, sparingly pubescent; the antennæ, tibiæ and tarsi black, above metallic green; the thorax closely and strongly punctured, pubescent; elytra punctured like the thorax, the interstices transversely rugose, clothed with whitish pubescence. Length, $2\frac{1}{2}-3$ lines.

Head rather finely and not very closely punctured, sparingly pubescent, the lateral margins of the clypeus raised; palpi with pale basal joints; antennæ nearly as long as the body in the male, slender, filiform, black; thorax transverse, one-half broader than long, the sides rounded and serrate, the surface deeply and closely punctured, sparingly clothed with whitish hairs; elytra sculptured like the thorax, but the interstices near the base transversely wrinkled; underside more obscure metallic green; the flanks of the thorax very strongly, the breast more finely, punctured.

(Coll. Jacoby.)

N. gabonensis seems allied to *N. hispidulus*, Lefèv., but that species is described as bluish or cupreous, of having a mixed white and fulvous pubescence, the latter being also dense. *N. strigosus*, Chap., is a much larger species, and has the pubescence of the elytra arranged in rows; the female of *N. gabonensis* has shorter antennæ, and is of a more broad and shorter general shape.

HALTICIDÆ.

Lactica marginicollis, n. sp.

Flavous below, reddish-fulvous above; thorax impunctate, parallel, the sides narrowly margined; elytra finely and closely punctured. Length, $2\frac{1}{2}$ lines.

Head impunctate, reddish-fulvous, the frontal elevations oblique; the carina distinct, thickened; eyes moderately large, rather distant; palpi robust; antennæ scarcely extending to half the length of the elytra, fulvous, the third joint slightly larger and more elongate than the following joints,

much larger than the second; thorax with the anterior and posterior margins parallel; the sides rounded below the middle, with a narrow but distinct margin, the anterior margins oblique, the surface impunctate; elytra wider at the base than the thorax, of the same colour, not depressed below the base, very closely and finely punctured.

This *Lactica* resembles many of its South American congeners in colour, and may be known by the parallel and impunctate thorax in connection with the dark reddish colour.

Lactica gabonensis, n. sp.

Large, robust, entirely pale fulvous; thorax with strongly rounded sides, finely and closely punctured; elytra scarcely more distinctly punctured. Length, 4 lines.

Of broad, elongate, and parallel shape, pale fulvous; the head impunctate, the elevations indistinct; the carina broad; labrum darker fulvous; the antennæ scarcely extending beyond the base of the elytra, the second joint short, the third and fourth equal; thorax twice as broad as long, the sides strongly rounded at the middle, the anterior angles blunt and broadly oblique, the base with a perpendicular groove at each side, the intervening space rather depressed, the surface very minutely and closely punctured; elytra much wider at the base than the thorax, rather convex, as closely and scarcely more distinctly punctured than the thorax; under side and legs coloured as the upper side; posterior tibiæ mucronate.

One of the largest size species of *Lactica* known to me, and differing from most of its allies in the absence of a thoracic transverse groove, but in other respects typical.

Œdionychis impressicollis, n. sp.

Obscure testaceous: antennæ (the apical two joints excepted) nearly black; thorax impunctate, transversely sulcate at the base; elytra strongly and rather closely punctured. Length, $2\frac{1}{2}$ lines.

Of posteriorly slightly widened shape; the head impunctate, the frontal tubercles strongly developed, the carina strongly raised; labrum piceous; antennæ short, not extending to half the length of the elytra, the three basal and the two apical joints obscure testaceous, shining, the others black and pubescent; thorax twice as broad as long, the sides rather strongly rounded with a broad margin, the base with a deep sinuate transverse groove, the rest of the surface entirely impunctate; elytra with a short depression below the base, strongly punctured; the first joint of the posterior tarsi short, the claw-joint strongly swollen.

Principally distinguished by the deep thoracic transverse groove.

Physoma Haroldi, n. sp.

Fulvous: antennæ dark fuscous; head sparingly punctured; thorax smooth, shining, finely and sparingly punctured; elytra more closely and distinctly punctured, the anterior half metallic blue, the posterior one pale fulvous. Length, 4 lines.

Head strongly punctured at the base and round the eyes; clypeus in shape of a transverse ridge, the anterior portion strongly truncate and deflexed; mandibles black; palpi strongly incrassate; antennæ not extending to half the length of the elytra, nearly black, the basal joint dilated, the third and following joints of equal length; thorax more than twice as broad as long, the sides rather broadly flattened, the lateral margins nearly straight,

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DOUBLE NUMBER. Publication of several communications is unavoidably postponed until February, when a Double Number of the 'Entomologist' will be issued. Subscribers who have prepaid at 54, Hatton Garden, E.C., will receive the Double Number without extra payment. The price will be One Shilling to non-subscribers.

Subscriptions *for* 1892 *have now expired. Prepayment for* 1893 (6s., *including postage to any part of the world*) *is now due, and may be made to* West, Newman & Co., 54, *Hatton Garden, London.*

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PROFESSOR J. O. WESTWOOD.

John Obadiah Westwood, Nestor of contemporary entomology, Hon. Life-President of the Entomological Society of London, and Professor of Zoology in the University of Oxford, died in that city on the 2nd of January last.

To write a full account of the work done in our science by the deceased during his long life, would almost entail a history of the progress of entomology during the last sixty years, for it can only be properly estimated by comparison with the contemporary advancement made in the knowledge of the insect world. Judged by that standard it will always be found to represent much of the best work of the day. Studying all orders of insects, describing many of the most striking and remarkable species, and illustrating the same with his ever facile pencil, his contributions from the years 1827 to 1891 comprise a small entomological library, and reflect the different phases in the entomology of those years.

Prof. Westwood was born at Sheffield on December 22nd, 1805, and had, therefore, just completed the eighty-seventh year of his life. He was originally intended to follow the profession of the law, and was actually at one time a partner in a solicitor's business, but happily for himself and the cause of entomology he was able to devote himself to more congenial studies. This was largely incidental to his friendship with the Rev. F. W. Hope, whose collection with his own were presented to the Oxford University Museum, concurrently with his appointment as Zoological Professor.

Of his published writings we can say nothing here that is unrelated to entomology, though his joint-authorship with Spence Bate, in the 'History of the British Sessile-eyed Crustacea,' and his very considerable and valuable contributions to Palæographic Art, are alone sufficient to perpetuate his memory. In entomology his best and most enduring work is,

doubtless, the two volumes devoted to the 'Modern Classification of Insects,' a publication which, appearing more than fifty years ago, still maintains its ground in the face of other and more recent compilations; and this is the real test of scientific reputation as compared with popular notoriety. Of the beautifully illustrated books he delighted to produce, the 'Arcana Entomologica' and 'Cabinet of Oriental Entomology' are sufficient examples. These were published in a day when descriptive entomology and monographic revision were practically in their infancy, and they would almost be impossible now in an age of greater specialism. *Facile princeps* an authority on economic entomology his many contributions to the 'Gardeners' Chronicle' sufficiently testify. In many Orders he will be remembered by the attention paid to particular Families, as the "Paussidæ" in Coleoptera, the Orthopterous "Mantidæ" and the "Uraniidæ" and genus *Castnia* in Heterocerous Lepidoptera. In Rhynchota he described the Heteroptera contained in the Hope collection, and monographed the "Fulgoridæ"; whilst in Diptera he described many species and contributed much information. Last, and certainly not least, was the assistance he always gladly gave to correspondents. The writer is under several such obligations, and has even received coloured drawings of obscure species.

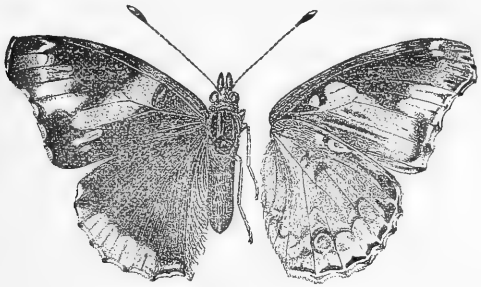
In private life Prof. Westwood was particularly respected, and all who enjoyed his hospitality at Oxford will remember not only the good cheer and the quaint adages on the walls, but also an original and charming personality. This long life came to a peaceful close through the effects of old age and its attendant weakness, perhaps hastened at the very last by bronchitis. The Professor was even ignorant of a serious internal complaint, which his medical attendant not only knew would ultimately prove fatal, but might also necessitate a most painful operation. Preserving his faculties to the last, he read the notice of Mr. Stainton's death in the last number of the Entomological Monthly Magazines, and remarked that the next one would record the passing away of another old entomologist. This anticipation has been fulfilled.

Prof. Westwood was buried in St. Sepulchre's Cemetery, Oxford, and his body was followed to its last resting-place by all the principal men of the University then in residence.

W. L. D.

REMARKS ON VARIATION IN *VANESSA ATALANTA* AND *V. CARDUI.*

By Richard South.



Vanessa atalanta, ab.

In the above exceedingly interesting aberration of *Vanessa atalanta* the scarlet band of fore wings does not extend beyond the subcostal nervure, and terminates, apparently, on the first median nervule; the continuation, however, of this band is represented by a small scarlet dash placed on the internal edge of a white spot in the submedian interspace; there is a rather large white spot on the scarlet band in the first median interspace, and two elongate white patches immediately above it; the abbreviated white band from costa, so conspicuous in typical *atalanta*, is completely eliminated. The black spots in the scarlet border of hind wings are entirely absent on the left wing, and only faintly indicated on the right wing. On the under surface of the fore wings the scarlet band is broader, but does not extend further in either direction than above; the white spot in first median interspace is placed on the inner edge of a diffuse pale grey patch, and there is a similar patch below it. The hind wings are less finely mottled than in the type; the whitish blotch on costa is represented by a C-like mark; the subanal ocellus is distinct, and the marginal line is rather broad, interrupted by the nervules, and very black.

Mr. E. Howis Marston, who has most obligingly entrusted me with the specimen to figure, informs me that it was taken in Jersey last August by Mr. H. Burg, a member of the Oxenford House School at St. Lawrence, in the immediate neighbourhood of the school. He adds that *Vanessa atalanta* was abundant, and the specimens very fine, in Jersey last year.

A somewhat similar aberration of this species is figured in the 'Entomologist' for 1878 (xi. pl. II.), but that specimen, which was bred in 1867 by Mr. W. Smith, of Birmingham, from a larva found at Ashton, differs from the present one in having the scarlet band of the fore wings suffused with yellowish, and a

large bluish patch, interrupted by the nervules, on the under surface of these wings, occupying the position of the usual short white band from costa.

In many respects this form of *V. atalanta* is analogous to *V. cardui* var. *elymi*, Rambur, of which slightly modified examples have been observed in England, and one of these is figured, Entom. xiii. 73. Rambur's variety of *V. cardui*, as figured by Honrath (Berl. Ent. Zeit. xxxii. pl. vii. fig. 3), has the fore wings black; the tawny colour forms a patch in discoidal cell, almost bisected by an encroachment of the black from above, and a patch in the submedian and each median interspace, decreasing in size upwards; on the apical area there is a series of five elongate white spots, and a similar shaped pale spot in each interspace below, forming with the apical ones a transverse series of spots. Hind wings tawny; venation black, widening out on hind marginal area; the basal half of costal area is black, and there are some internervular white streaks becoming fainter towards abdominal margin.

A transverse series of white or whitish spots on the submarginal area and absence of white markings about the middle of costal area of primaries are characters common to *V. cardui* var. *elymi* and the variety of *V. atalanta* here figured. In otherwise typical specimens of both species an extra white spot in first median interspace is found, and modification of the other white markings is also exhibited.

V. cardui would appear to have a greater range of variation than has yet been observed in *V. atalanta*, as, in addition to aberration in the markings of fore wings already adverted to, there is considerable variation in the pattern of hind wings; thus we find that some examples have the black transverse markings very broad and intensely black, sometimes they are only faintly interrupted, but in a few examples completely obliterated; the black spots of central series are sometimes almost united with those of the submarginal series, in other examples the central spots are pupilled with blue, as in var. *kershawi;* and in others, again, both series are entirely absent, as in var. *elymi*.

Var. *kershawi*, McCoy, differs from typical *V. cardui* only in its darker colour on both surfaces, and in the size of the blue pupils on the ocelli of hind wings. This form was originally described as a distinct species peculiar to Australia, but the same aberration occurs in Europe, and has been found in England. A figure of this form will be found, Entom. vi. p. 345, and Newman's Brit. Butt. p. 64.

At a meeting of the South Lond. Ent. and Nat. Hist. Soc., held 25th November, 1892, Mr. Jenner Weir exhibited specimens of *Pyrameis* (*Vanessa*) *cardui*, which he had received from Larimer County, Colorado, captured at an elevation of upwards of 7000

feet. "These, if they had been Australian, would have been undoubtedly deemed to be *Pyrameis kershawii*, the blue pupils to the three inner ocelli of the upper side of the lower wings being even more strongly marked than in that subspecies. A pair of the true *P. kershawii* were shown for comparison, and also because one of them showed the small white spot between the 1st and 2nd nervule of the upper wings, which was sometimes found also in *P. atalanta*, and was normal in *P. huntera*. Thus these three species were linked together by a very insignificant dot, always present in one species, and occasionally appearing in the other three."

In the above remarks, colour aberrations have not been specially referred to, because, in the majority of cases, these can only be regarded as abnormalities.

VARIATION OF LEPIDOPTERA AT RINGWOOD. 1891–92.

By J. Henry Fowler.

Probably it may be interesting to note the variation observed in some species of Lepidoptera taken in this district during the past two seasons.

I will refer to the Rhopalocera only at present, having plenty of material to work upon in this division.

Gonepteryx rhamni. This species has a form of the female quite intermediate in colour between its typical form and that of the male: it is very much yellower than the type, occurs annually, so I think may be considered more than an aberration; one specimen is the largest of any in my series. Some males have a whitish bloom over all the wings.

Colias edusa. The males vary much in the borders and ground colour of the fore wings. Borders (1) black, nervules yellow from the costa to anal angle; (2) quite black; (3) faded, satiny-brown, not irrorated with yellow scales, but from the costa —along the border internally, for some distance—capped with deep black; (4) very dark, with three or four yellow nervules towards the tip, slightly irrorated; some have the border continued quite half-way along the inner margin of fore wings. Ground colour: in some examples this is deep orange; a few very pale, almost yellow. I have arranged a series of each, and the difference is striking; many have the upper surface of the hind wings beautifully shot with purple; a few have the spots on under surface of the hind wings enlarged, and with the brown circles elongated and pointing towards the anal angle. I took a male which is as large as any of the females—a perfect giant.

The females vary in colour, similar to the males: this sex differs mostly in the width of borders, and area of the yellow

spots therein; as a rule, when the border is broad the spots are small, and *vice versâ*. All the spring females which I observed had the yellow much more developed than those taken later. I only took three of this description; all the others are mean in comparison; a few are almost spotless. This species has been about the commonest butterfly here this season, but I did not see a single example of var. *helice*. It undoubtedly in its migration followed the course of the River Avon, being common along the banks and meadows in the spring. In August it was quite a treat to see such numbers; they were only active when the sun shone brightly; the meadows were its head-quarters.

Pieris rapæ. Males, upper surface pure white; some females suffused with brown.

P. napi. Several females, very dark, the central black spots and tips much enlarged; one with the former almost united, and several with an additional spot upon the hind wings, between the fourth and fifth nervule from the inner margin; the two broods are most distinct here.

Euchloë cardamines. Males with a fine black spot in the centre of the hind wings (several).

Satyrus egeria. Varies considerably in both sexes; the spring form of male has the spots enlarged and brown. A fine specimen, with extra central markings, forming an interrupted broad band from the tip to the hind margin similar to *megæra;* another with the four spots surrounding the eye much reduced, all the others nearly obsolete; the row of eye-spots upon the hind wings reduced to white dots very slightly surrounded with black: this form approaches the var. *arete* of *hyperanthus*. Some have the ground all brown; one has a greasy appearance, and looks as if it had been soaked in oil. Many females have an extra spot between the two near the anal angle and that above; others, though rare, have two inside the anal ones, which are generally suffused (these nearly correspond with the male described above like *megæra*).

Satyrus megæra. A female, with the transverse lines upon the upper wings filled in with dark brown, forming a broad band; the tip has the large black spot which is double-eyed, above it another single eye-spot, and below these a small dot, otherwise typical.

Hipparchia semele. A male, plain sooty-brown all over upper surface. This species varies mostly on the under side; a nice example has a broad white band nearly through the inferiors. These bands range from white to many rich shades of brown.

Epinephele ianira. Females with double eye-spots; one, with same, broadly surrounded with yellow, lower portion fulvous.

E. tithonus. Very variable. Several males with blind ocelli; one, a little gem, has the bar continued to the costa, and into the base, hind wings dark, with small central fulvous spots. Several

of each sex have one extra dot, or sometimes two dots, inside the hind margin. A female has the middle one on under surface centred with white; others are very pale, almost yellow, upon the upper surface.

E. hyperanthus. Several of the var. *arete*, both sexes. Females with spots upon the fore wings, surrounded with yellow; one or two have lanceolated spots underneath; several bleached; sometimes the ground is very dark upon the hind wings.

Cœnonympha pamphilus. A male, with the spots near tip much enlarged, some obsolete, others ringed with yellow; a male with hind wings dark brown, with small central spaces; a very large female which approaches *davus*, ground quite reddish, spots near tip surrounded with paler, hind wings each contain three large black spots near outer margin (this specimen is totally different to many others I have with similar spots); two males with double elongated eye-spots upon hind wings; the ground colour varies much.

Vanessa cardui. Varies mostly in the red markings. Some are light red only; a few brick-red; others extremely pale, the beautiful pink ones being scarce. I have some in which the dark ground predominates, and with the row of spots upon the hind wings nearly banded throughout; some have the spots finely centred with blue.

V. atalanta. One very beautiful; upon the hind wings, *inside* the scarlet band, the obscure black lunules are each centred with blue, most noticeable and uncommon; several with the spots running through the band blue centred also.

The larvæ of the last two species have been very abundant this season. I had no difficulty in finding several hundreds of each. *V. cardui* I took upon mallow, three kinds of thistles, also stinging-nettles; but neither species were seen commonly upon the wing in the autumn.

V. io, with the yellow replaced by white, occurs annually in the Forest.

Argynnis euphrosyne. Males very pale, almost yellow, the border spots absent, replaced by fine black lines; a fine one with central spots much enlarged and banded; another has the central row of spots upon hind wings confluent with the margin, the latter broad and containing another row of fulvous spots, under surface with central area yellow, a pearly streak in the middle, with a border of closely-set white spots, inside of which is a band of brick-red, the black spots reduced to minute rings filled in with yellow (this specimen looks unlike *euphrosyne*).

A. selene. About the most variable butterfly here. Several with the dark markings much enlarged, and with all the margins broadly banded; some, in addition, have all the wings irrorated with black scales, which gives them the appearance of being almost black. The females differ considerably in ground colour,

rarely two similar, some light, others very dark and reddish; a pretty form has all the marginal spots yellow.

A. paphia. A male with the hind wings bronze-green; a female quite blue, with usual silvery streaks.

Var. *valesina.* Varies in itself; one suffused with blue scales; another with nearly all the ground yellow. I bred a form which I have sought for in vain upon the wing; it is shaded all over, and is an extreme specimen: altogether I have above twenty, but this one attracts attention at once; several have the wings brownish, and are intermediate between the type and *valesina.*

Polyommatus phlæas, one of the var. *schmidtii* (Gerh.). Several approaching it; two fine males, finely irrorated with black all over, the copper scarcely visible. (Meadows.)

Lycæna ægon. Males often have the margins broadly black, and with the nervules finely pencilled for some distance towards the base; others reduced to marginal lines; ground, three shades, very light blue; dark and purplish; a rarer form light and suffused with grey. The females are more constant; the blue-marked ones do not occur here, and it is difficult to find specimens with the "silver studs" upon the hind wings, the spots being quite black. I have a female with a broad zigzag orange line upon all the margins.

Pamphila thaumas. I take a most interesting form every year; the superior wings, from the base to the anal angle, right round to some distance into the costa, broadly suffused with dark greenish ground; all the hind wings quite as dark as *actæon.* This form occurs in both sexes; the small proportion of tawny shows up vividly; under wings greenish; the type is very light in comparison. (New Forest, amongst rushes.)

Hesperia malvæ. Several rich brown, one var. *taras* (Bergstr.). Several other species vary considerably, but the above are in many instances constant.

I have noticed, for some years past, that the butterflies of this district are much darker than from any other that I have ever collected in.

Ringwood, January, 1893.

REMOVAL OF GREASE FROM THE BODIES OF MOTHS.

By W. M. Christy, F.E.S.

For several years past I have adopted Mr. Greene's method of treating greasy insects, and have operated on some hundreds of moths, large and small, from *Cossus ligniperda* down to *Lobophora sexalisata.* The plan I mean is described in the 'Insect Hunter's Companion,' p. 76, and it seems to me the only way of keeping a collection in good order with respect to "grease." My

object in the following remarks is to show that by a little modification of Mr. Greene's plan the process may be made comparatively simple, and need not interfere with ordinary collecting work to any considerable extent.

Excavation.—Mr. Greene says: "When the insect has been on the setting-board a sufficiently long time to render the contents of the body firm and viscid (not *hard* or *dry*), remove it." . . . "If the wings of the insect, when removed from the setting-board (in order to prepare the body), are not thoroughly dried or stiff, it must of course be replaced and reset. . . . Take a a pair of sharp fine-pointed scissors and cut from the under side of the body a small slip, *i. e.*, beginning at the extremity of the abdomen, on the *left*-hand side, cut up to the thorax; and having done the same with the right-hand side, remove the slip thus made. Care of course must be taken not to cut too deep. Take now a sharp pen-knife, and inserting the point at the thorax draw it gently down each side of the body. It will be found this can readily be done if the contents are not *hard*. The interior, when thus loosened, can easily be picked out with the point of the knife or a pin or needle. In very small insects, as *Eupithecia*, &c., instead of a knife a fine needle must be used, and great care and caution are necessary." Of course the insect should be held in your left hand, upside down, and with its tail pointing towards you; the head of the pin being between your left fore finger and thumb.

I never excavate anything smaller than, say, *Notodonta camelina* or *Luperina testacea*. Firstly, because I cannot; and, secondly, because I do not find it necessary. The benzine appears to soak all the grease out of small insects without the body being opened at all, and I am not at all sure that the benzine would not do so even with large insects, but I have never relied solely upon it. The body sometimes breaks off before the excavation is complete. When this happens you must be satisfied with what has been already done; you cannot hold the body so as to take any more out of it; you must leave it, and trust to the benzine.

Break off the body.—Before doing so, cut the junction of the abdomen and thorax underneath with a pair of scissors, or you may find that the hind wings come off with the abdomen.

Pinning.—Pass a very fine (No. 18 K. & B.) pin well through one side of the detached body, and push the body high up along the pin. You can then, by means of the pin, transfer the body about from one place to another without handling it, and the body need not come in contact with anything.

Labelling.—A paper label, with a number corresponding with a similar label on the insect, must be attached to the pin, so that you may know to which insect each body belongs. The numbers must be written on the labels with lead pencil; benzine would obliterate ink.

Soaking.—The bodies, whether excavated or not, must be

soaked in benzine collas. The most convenient bottle that I have tried is one holding 4 ozs., not more than 3 inches in height, and having a mouth fully 1½ inches wide. From this bottle the bodies can easily be removed, one by one, by means of a pair of forceps. The bodies should remain several days at least in the benzine; and if the benzine becomes much discoloured by the grease, it should be poured away, and a fresh supply put into the bottle before the bodies are removed. Large bodies or hardened ones, and those not excavated at all, should remain a week or a fortnight in the benzine.

Drying.—Lay the body on blotting-paper, *but only for a few seconds*, and then bury it immediately in powdered French chalk, and leave it there until next day. Then remove it from the chalk, and shake and blow off the powder from the scales. The same chalk may be used again and again.

Mending.—Pull the body off its pin as carefully as possible, and, holding it with a pair of *pin-pointed* forceps, attach it to its place on its own insect with some shellac, and steady the body in its proper position, by means of a pin or two, while the shellac is drying. Mr. Greene says, "If well done, the operation will escape the most critical eye"; and this is perfectly true.

Now if it were only possible to doctor an insect when it was at that particular state of partial dryness, which Mr. Greene considered so essential, it would often entail setting an insect twice over; or if the whole process, such as I have described, was obliged to be done straight away and at the same time, then it would often interfere most dreadfully with other collecting work, and for many people would be quite out of the question. But the process may be completed bit by bit. The insects need not be taken off the boards before they are thoroughly dry. The "greasers" may generally be put aside until a number have accumulated, and a convenient time for the operation presents itself. I often do them weeks after they have been killed, and I always keep many until the winter before attacking them. After excavating, pinning, and labelling, the bodies may be put aside for a time; they may be allowed to remain in the benzine, or buried in the chalk, as long as one likes. After drying, the bodies may be pinned beside their respective insects in the store-box, and be left there, to be stuck on during the winter evenings.

I think that by dividing up the process in this sort of way that time enough can be found by most collectors to doctor, at any rate, the good specimens of rare species that are known to be confirmed "greasers;" and that means the males of most Bombyces and many others. The females need not, as a rule, be doctored at all, except the Sesiidæ, Hepialidæ, and Cossidæ.

Watergate, Emsworth, Hants.

THE DRAGONFLIES OF THE CHESTER DISTRICT.

By J. Arkle.

Some three or four years ago, in my entomological wanderings, it occurred to me, when a dragonfly crossed my path, that it might be interesting to give some attention to these extraordinary creatures, and ascertain, as far as I could, how many species were to be found in this district. The Chester Natural Science Society covers the northern half of Wales, as well as the county of Cheshire. In this district we have heaths and mosses, lakes and meres, rivers and streams,—all favoured haunts of the order *Odonata*.

If we turn to a list of British dragonflies—say, that of Mr. W. Harcourt Bath—we find ourselves among "nymphs," true "dragonflies," "emeralds" and "elfs," "darts" and "sphinxes," "demoiselles," "sylphs," and "fays." Such are the quaint, mother-tongue names given to the weird and beautiful insects which are the subjects of this chapter. A closer study of the list shows an additional and more scientific nomenclature. First of all, we find there are forty-six species claimed as British. But so many of these rest on such slender claims that the author referred to, in his 'Illustrated Handbook,' p. 13, estimates the number of truly indigenous forms at no more than thirty-seven. Still keeping to our list, we find the forty-six species divided into two great sections—Libellulina and Agrionina.

Section I. is subdivided into two tribes—Libellulinæ and Æschninæ. Tribe 1 is again divided into two families—Libellulidæ and Corduliidæ. Then we get the Libellulidæ separated into genera—the *Leucorrhinia*, *Sympetrum* (nymphs), *Platetrum*, *Libellula*, and *Orthetrum* (dragonflies). The Corduliidæ are a single genus, *Cordulia* (emeralds). Tribe 2 (Æschninæ) is divided into the two families Gomphidæ and Æschnidæ. The Gomphidæ are subdivided into the genera *Onychogomphus*, *Gomphus* (elfs); *Cordulegaster* (darts); the Æschnidæ into *Anax*, *Brachytron*, and *Æschna*—all sphinxes.

Section II.—the Agrionina—comprises two families, the Calopterygidæ and the Agrionidæ. The Calopterygidæ are represented by the solitary genus Calopteryx, or demoiselles, but the Agrionidæ by six genera—*Lestes* (sylphs), *Platycnemis* (fairies), *Erythromma*, *Pyrrhosoma*, *Ischnura*, and *Agrion*—all fays.

So far, I have taken fourteen species in the Chester district. They are as follows, together with a very brief description, localities, and times of appearance:—

Leucorrhinia dubia. This is, perhaps, our best dragonfly. It has a large, black, triangular spot at the base of each under wing. Heaths in the Delamere district. Very local. June and July.

Sympetrum vulgatum. Reddish olive. The pterostigma (the conspicuous spot on the costal margin of the wings near the tip) is also reddish. Heaths in the Delamere district. Evidently scarce and local. The Delamere form, which is exceptionally large, has been honoured with the varietal name of *major.* June.

Sympetrum scoticum. The wing-bases have a deep yellowish suffusion or blotch. Abundant on the Delamere heaths in August and September. The sexes in *L. dubia* and *S. scoticum* differ very much in coloration.

Libellula quadrimaculata. Easily distinguished, for, as the name implies, it is the four-spotted dragonfly. Further, the lower wings possess a large, triangular, basal patch of dark brown beautifully reticulated with yellow. I have only met with this insect on one of the Delamere heaths. June.

Orthetrum cærulescens. The male, especially, is powdered with "cobalt blue." Merionethshire; near Parkgate; Bidston, near Wallasey. Scarce. July.

Brachytron pratense (ÆSCHNIDÆ). This is one of the largest species of dragonflies. Spotted with blue. I have only taken it near the Black Falls, Maentwrog, Merionethshire. July.

Æschna juncea (the wood sphinx). Another of the large blue-spotted dragonflies. Occurs on all the wooded Delamere heaths. August and September.

Æ. grandis. A large russet-coloured dragonfly, with blue spots and russet-tinted wings. It is easily distinguished by the blue spots on the thorax at the base of each wing. This is our commonest and best distributed species. I have a specimen which flew into a house in Chester. Perhaps the best locality is by the pond on the top of Helsby Hill where, on September 10th, I came across nearly a dozen flying about and resting on the stone wall by the roadside. August and September.

Calopteryx virgo. This handsome insect, all aglow with peacock green, I found by the wooded streams in Merionethshire. The variety *eversmanni*, in which the wings of the male are smoky, is the form on the banks of the Dee. June and July.

C. splendens. The wings of the male are transparent with a broad, dark, central band. I mention this lovely species as I have a strong recollection I saw three or four specimens on the lower reaches of the Dee, a mile or so above Chester, some years ago. But, "as both species of *Calopteryx* never occupy the same stream or brook," I fear I was mistaken. June and July.

Lestes sponsa. One of the small, blue and black dragonflies. The colours, however, are bronzed, and therefore permanent. On one or two of the pools on the Delamere heaths. July and August.

Pyrrhosoma minium. Easily identified by its ruby-coloured body. Wooded Delamere heaths. June.

Ischnura elegans. A small black-bodied insect with the eighth segment blue. Sedgy ditches; Sealand, near Chester. July.

Agrion puella. Another of the small blue and black dragonflies. Common generally throughout the summer, on the long grass and rushes of damp meadows, and by the edges of ponds.

A. cyathigerum (the heart-spotted fay). Very similar to the last in appearance. "The second segment of the abdomen of the male possesses a heart-shaped spot." ('Illustrated Handbook of Dragonflies'). Found throughout the summer, and in situations similar to those frequented by *A. puella.*

Dragonflies, in spite of a formidable name, are perfectly harmless. Their capture, and, it may be remarked, their intelligence, are matters which may be estimated according to their size. Many of the smaller species (AGRIONIDÆ)—the fairies and fays—seem almost insensible to the approach of the collector, and can often be taken by hand. The capture of the largest species (ÆSCHNIDÆ)—the sphinxes—is frequently a more difficult matter. *Æ. juncea* is the most intelligent dragonfly I know. I can conjure up before me a vision of a certain pool, on one of the Delamere heaths, fringed with a margin of rush and sedge. Here, in August or September, a couple of these handsome insects —the intrusion of a third is at once resented by the male—can be seen skimming up and down almost within reach of the net. The word "almost" faithfully represents the narrow distance between your net and the insect. But it is quite enough on the side of the dragonflies. There they go, along and back again. They are only some five feet above the water, and so close that you can see every spot on their gaily decked bodies. Do not strike until you are sure, for, if you miss, off goes the insect, and you may see it no more. But here is a little point of only a foot or so of bank projecting into the water. Let your insects get thoroughly accustomed to their line of fancied safety, and then, as one returns, stretch yourself out from the little cape and you stop the astonished dragonfly! Some species show, to a marked degree, the faculty of curiosity. Quite half-a-dozen *L. scoticum* have, at different times, settled upon my net—apparently for a period of examination and inquiry! I always let these go in return for their professions of fraternity.

I use a common cane net with a bamboo or oak sapling handle. The bag is about two feet deep, *rounded at the bottom*, and made of the material known in milliners' shops as "Paris net." The starch, or stiffening, is previously washed out in warm water. The cane hoop runs through a calico hem at the top of the bag. The whole instrument is so light that it responds to every action of the wrist, and it offers the smallest possible obstruction to the air. I prefer the white—for even if you are taking Lepidoptera, and at night, you can always see your captured insect by holding the bag

against the sky. I have seen green nets and even black nets, but give me a white one.

Dragonflies are best set as soon as they are killed—say, by a pinch on the thorax, or, better still, by the cyanide bottle. The cyanide does not seem to produce *rigor mortis* as in the case of Lepidoptera. I use a flat setting-board. It gives the dragonflies a smarter appearance; but this is, perhaps, a matter of opinion. If unset and dried they can be easily relaxed by being placed in a well-corked pickle bottle half filled with cut and bruised laurel leaves with a piece of perforated card on the top. By this method there is no fear of "mould," and the same may be said in relaxing Lepidoptera. Insects may be left, in splendid condition for setting, as long as a fortnight, according to the time of year.

The great objection against most of the dragonflies is that their colours fade. But their identity does not depend exclusively on these fading colours. And, even in a faded dragonfly, the markings reappear under a pocket microscope. At any rate a collection of these insects is a beautiful and interesting sight, and will well repay the exertions of, I venture to prophesy, many a future collector.

Chester, October 28th, 1892.

DEIOPEIA PULCHELLA IN HAMPSHIRE.

By G. B. Corbin.

For every recorded occurrence of this and other similarly erratic species no doubt many specimens pass away without ever coming under the eye of an entomologist. This uncertainty of its occurrence in each year is amply verified by the table, Entom. xxv. 154; for while in 1870 thirty specimens are recorded, the five years from 1887 to 1891, inclusive, are without a single record, and this surely not from want of observers, for we must conclude they are ever increasing, if we take into consideration that at present there are three or four journals devoted exclusively to entomology, whilst within the memory of many of us, 'The Weekly Entomologist,' 'The Entomologist's Annual,' and other publications of a like nature, died from sheer lack of support. An unrecorded specimen of *D. pulchella*, from the neighbourhood between Ringwood and Christchurch, came into my hands about the end of June. It is bodiless, but I relaxed and "set" the wings, which are in tolerable condition, considering the rough handling it must have passed through, as it was taken some time previously, and its incarceration in the tobacco-box of a labouring man added nothing to its perfection. A second specimen of the moth is said to have been seen at the same time and place, but I

suppose it escaped; indeed, I should not have believed my very non-entomological informant about the species at all, if I had not *seen* the specimen in question. My cabinet previously contained one, taken at Bournemouth in September, 1875 (Entom. viii. 280), and on comparison I find the red spots on the wings of the 1892 specimen are larger and *brighter* than in the other; but this would naturally be the case when the age of each is taken into account. Whether the *size* of the spots has anything to do with their supposed British or Continental origin I must leave, but if, as we may suppose, the 1875 specimen is British born, and the other a "migrant," it seems to point in that direction, although such evidence is much too slender for generalization. The fineness and perfect condition of several of those described as taken in the early summer, would lead us almost to doubt their flight across the Channel from France to our own shores; and yet, I suppose, with a favourable wind the journey would not be of long duration. That the species is a wanderer is well known, and in the comparatively recent work, 'Darwinism,' by Dr. A. R. Wallace, page 359, two separate instances are cited—one from the pen of Mr. MacLachlan in the 'Entomologist's Monthly Magazine' for June, 1885, and the other from an account of a voyage of the 'Rattlesnake,' in which this particular species of moth was taken some thousand miles from the nearest land, so that its flight across the "silver streak" would be a matter of very little moment. Hitherto it seems the anticipated autumnal appearance has not been realized; but we may almost ask if *migrant Colias edusa* produced its anticipated brood, why not *D. pulchella*? The rapid flight of the one, and consequent wider distribution, compared with the lowly flight and comparatively sluggish habits of the other *with us*, may in a slight degree account for the difference, if indeed our changeable and humid climate is not answerable for most of it. It may be argued that what I have said about long flights on the one hand, and sluggish habits on the other in connection with *D. pulchella*, seems contradictory, but is it so? Do we not find an analogy in many of our migrating summer birds, as the warblers, landrail, &c.? For if the knowledge we possess of these feathered visitors was limited to what we see of them in our midst, we should scarcely imagine they made journeys to and fro beyond the seas, although the "cause and effect" in the bird and insect may be, and no doubt is, different.

As *D. pulchella* is sometimes absent, or at least unrecorded, for several consecutive seasons, are we to suppose that it fails to establish itself on British soil, and that for a future supply we are entirely dependent upon migrants from the Continent? Its more frequent occurrence on or near our southern coast is somewhat affirmative of such a supposition, and yet its position in the British list is, in a measure, far more satisfactory than such

species as *L. dispar*, *E. alniaria*, &c. (shall I name *E. cratægi* in the same catalogue?), in its indigenous claim.

The specimen that led to these wandering remarks must have come from a locality not very far removed from that in which one of the earliest—if not the first—recorded British example was taken by my old and very respected correspondent, the late Mr. J. C. Dale, of Glanvilles Wootton, Sherborne. He has more than once described to me how he met with the moth in the *early morning* in the autumn; and though at first inclined to pass it by as some common species, when captured he had no idea what it was, and was more than delighted when he discovered what a prize he had got (Entom. vii. 290). If statistics of captures were taken, I think the county of Hampshire would yield its fair quota to the list of specimens met with in Britain, or at least hold its own with Kent, Sussex, Devon and Cornwall, compared with which the adjoining county of Dorset has few records; this, no doubt, arising from lack of observers, although the rare beauty of this lovely insect would recommend itself even to the uninitiated.

Ringwood, Hants.

CLOSTERA ANACHORETA.

By H. G. Knaggs, M.D., F.L.S.

After nearly twenty years' withdrawal from the world of Entomology, the old love has prompted me to read up the literature which has accumulated since my retirement.

Whilst perusing your excellent periodical, a few days ago, I found a surprise in store for me in the shape of an article entitled "*Clostera anachoreta*," by the Rev. Joseph Greene, M.A. (Entom. xiv., 1881, 117; xxi., 1888, 31), the gist of which seems to be to prove that the above species was imported; though Mr. Greene is good enough to add, "Anyone acquainted with my friend and correspondent, Dr. Knaggs, would not dream of even hinting at his taking part in such a transaction."

Perhaps not; but as the Reverend gentleman addresses himself to a generation of entomologists, few of whom can have any knowledge of me, I must ask you, in justice, to permit me to reopen this question once more,—not for the purpose of imputing to my quondam friend and correspondent any unworthy motive, but merely to lay before your readers certain recorded facts which the author of the paper referred to has thought proper to omit, I do not say knowingly, from his argument, but which, in my humble opinion, completely knock the bottom out of his theory.

Before doing so, however, I must apologise for encroaching on your valuable space by reprinting Mr. Greene's article *in extenso*, this being necessary for the purposes of comparison and reference.

Mr. Greene's Paper.

"I am very anxious to once more re-open the question, 'Is *Clostera anachoreta* an indigenous British insect?' I have never thought it to be so. My last communication to 'Entomologist' was in 1881, nearly seven years ago. As it is necessary to my enquiry, and as probably most of your present readers know little as to the particulars of its appearance in this country twenty-eight years ago, I reproduce it here: 'In the year 1859, Dr. Knaggs announced that he had discovered eleven larvæ of this, till then, reputed British species. Ten pupæ resulted, and eggs were produced in due course. These, more or less, were distributed among various entomologists (myself included), and they having, in their turn, obtained eggs, the insect was bred for some years in such vast numbers as to become an absolute drug, and people ceased to keep up the brood any longer. Can any of the numerous readers of the 'Entomologist' inform me whether it has ever been taken since then in a 'state of nature?' I observe in the 'Zoologist' (1863, p. 8694), a notice from Mr. Sidebotham that he had taken a larva at Folkestone, very near the place where Dr. Knaggs made his discovery; and a similar notice from Mr. Meek, in the 'Ent. Mo. Mag.' (i. 123). These instances are all that I can discover, and they do not answer my question in the way I desire, as these larvæ were found in the same place as Dr. Knaggs's, and the 'home-breeding' had, perhaps, scarcely fallen through (Entom. xv. p. 117). Two, and only two, replies to my question appeared in the same volume (pp. 133, 160). The latter I dismiss for the present. The first was extremely interesting, and very much to the purpose. From it I make the following extracts:—'In answer, &c., I send an account of my own experience. In September, 1861, my father found a larva feeding on poplar, in some small plantations below West Cliff, Folkestone; but I did not recognise the species till the pupa hatched on April 27th, 1862. . . . This larva of *C. anachoreta* and the subsequent ones of this species we found in 1862-3, were only on this "balsam poplar." In the autumn of 1862 my brother and I found twelve larvæ; one died when young, the other eleven changed into pupæ, all of which hatched in the following spring. . . . In October, 1863, we found *Notodonta ziczac*, *N. dictæa*, and one larva of *anachoreta*, which we did not keep, as we had bred them in plenty. During that month we turned out eighty-four nearly full-fed larvæ of *anachoreta*, but not all bred from the same parents, in different places among these plantations. We put the larvæ on the same species of poplar we had first found them on, in order thoroughly to establish the species there; but *since that date* we have neither of us *seen the larva* of *anachoreta* there, although we have been at Folkestone *every autumn up to the present time*, . . . not having seen an *anachoreta* larva *for eleven years*, I was deceived in the spring of 1874, by finding some young larvæ in these plantations, which proved to be those of *S. salicis*.—T. H. Briggs, May 14th, 1881.' (The italics are mine.)

"From the above it will readily be seen that, even in its birth-place, the insect steadily diminished in numbers, until in 1864 it disappeared altogether, though eighty-four full-grown larvæ had been

distributed in the locality; and though carefully sought for eight successive autumns, not a single specimen was taken. It is further to be observed that the *one* larva taken by Mr. Sidebotham, and that by Mr. Meek, were both captured at the *original* locality and prior to 1864.

"In the other reply Mr. S. Norman refers me to Entom. vol. ix. 232. Mr. Norman states there that he found a pupa, but did not know what it was, until it emerged the following May; and in his more recent communication adds, that he found it under loose bark on *willow*. This seems strange, as every record gives *poplar* as the food of *anachoreta*. Is Mr. Norman quite sure that he did not mistake *Clostera curtula* for *anachoreta?* Until this be clearly ascertained I cannot attach much value to this communication. Since I wrote in 1881 I have again carefully examined the pages of the 'Zoologist,' 'Entomologist,' and the 'Ent. Mo. Mag.,' with the result that (putting aside Mr. Norman's statement as doubtful, and the announcement of a single larva having been bred in confinement) no mention of the capture of *anachoreta* in *any* stage has been recorded since 1864, a period of twenty-three years.

"I said, in the commencement of this paper, that I did not believe *anachoreta* to be an indigenous British insect years ago. Still less do I believe it to be so now. All who had the opportunity of breeding it, after its discovery in 1859, must agree with me in saying that it was a most *prolific* insect. I myself have had three broods within twelve months, and, as mentioned above, the larvæ multiplied to such an extent that collectors grew tired of it, and ceased to keep up the breed. Now, from about 1854 to 1864 was one of the most (if not the most) energetic periods in the history of British Entomology (Lepidoptera). At no time, during my forty years' experience, has there been a more numerous or more skilled body of collectors, larva hunters, pupa diggers, &c. And yet I am asked to believe that an 'indigenous' British insect, which has two or three broods in the year, whose larva is easily detected, and whose food is found all over the country, could have eluded the searching gaze of hundreds of keen-eyed collectors before 1859, and finally have turned up in *one* spot in England, with a reduced family of eleven! Again, is it credible that an *indigenous* insect so prolific as *anachoreta*, and whose larva could so easily be found by a practised hand, should so completely disappear after 1864 (when the home-breeding ceased) that no record of its capture, either as imago, pupa, or larva, can be found up to the present time, a period of twenty-three years. This statement is of course subject to correction. But unless it be very considerably modified, I unhesitatingly express my conviction that *Clostera anachoreta* is not a British insect. It may be asked by some of your readers who may trouble themselves to read these lines, 'Is it not a fact that some insects will reappear after long intervals?' To which I reply undoubtedly, but not, I venture to think, under the conditions above referred to. If it be further asked, 'How then do you explain Dr. Knaggs's discovery?' I answer in one word, 'importation.' Anyone acquainted with my friend and correspondent Dr. Knaggs would not dream of even hinting at his taking part in any such transaction; but that *C. anachoreta*, in one or more of its stages, was ignorantly or intentionally introduced into this

country about 1858 or 1859 is my fixed conviction. Hence its *non*-appearance before those years ; hence its *dis*appearance after 1864.

"Rostrevor, Clifton, Bristol, January 2, 1888."

(Entom. xxi. pp. 31–33.)

In the first place, why was not the following published ? (The italics and small capitals are mine.)

Mr. Greene's first omission.

"At page 7681, 'Zoologist' (1861), the late Mr. Edward Newman, after describing the larva of *C. anachoreta*, goes on to say :—

'THIS BEAUTIFUL LARVA WAS FIRST FOUND BY MY FRIEND MR. SIDNEY COOPER, FEEDING, AS HE BELIEVES, ON SALIX CAPRÆA (SALLOW); afterwards by Dr. Knaggs, feeding on *Populus nigra* (black poplar); Mr. Cooper took only two specimens, not being aware of the value of his captures until the perfect insect emerged. Dr. Knaggs was more fortunate, and, although he obtained but few individuals, has succeeded in maintaining a succession of broods: to this gentleman I am indebted for the opportunity of describing the larva. *In confinement it fed voraciously on either of the plants mentioned.*' . . . ."

The remainder is omitted because it is quite irrelevant to the question, and would, moreover, require the publication of explanatory notes from the 'Zoologist' and 'Intelligencer' of the period, thereby occupying space quite unnecessarily.

Not having the pleasure of knowing Mr. Sidney Cooper, either personally or by correspondence, or even by sight, I can only go to records for the date of that gentleman's captures, and at 'Zoologist,' 6213, I find a note showing that Mr. C. was collecting at Folkestone in the middle of June, 1858. There is no recorded evidence of his having collected there in 1859; still he may have done so—I am open to correction.

Mr. Greene seems to have an idea that balsam poplar is the only food which *C. anachoreta* will eat in this country, and consequently rejects the captures of Mr. Norman and his friend Mr. Harbour, at Deal (Entom. ix. 232 and xiv. 160), because the pupa found by the former was under willow bark. Mr. Cooper's captures are declined, I presume, for a similar reason.

N.B. Mr. Cooper has since given his locality as Saltwood, an inland locality about six miles from Folkestone (page 112, 'Entomologist,' 1888).

Mr. Greene's second omission.

If the reader will kindly refer to Mr. Briggs's paper (Entom. xiv. 133) he will find that the words left out by Mr. Greene between "following spring" and "In October, 1863," are as follow :—

" . . . . *We also found in that autumn* (1862) *larvæ of* C. CURTULA, C. RECLUSA, NOTODONTA ZICZAC, N. DICTÆA, *and* DICRANURA VINULA, BUT ALL THE SPECIES OF CLOSTERA WERE ON THE BALSAM POPLAR."

It certainly does seem strange that all the three *Closteræ* should have been found feeding together on balsam poplar, a plant which is not the ordinary food of either of them. The most rational way of accounting for the phenomenon would appear to be that they were all in the same category, so that, if *C. anachoreta* was imported, the other two were also imported.

Let us suppose that they were all foreigners, and let us further suppose that I was aware of the fraud, and was dishonest enough to avail myself of it, does it not seem rather extraordinary that I, at that time a mere tyro, visiting Folkestone for the first time since my childhood, should have contented myself with only one of these prizes?

Let us now take it that *C. anachoreta* was imported, and that *C. curtula* and *C. reclusa* were indigenous, and see how it will work that way.

Mr. Greene's third omission.

The reader must now please again refer to Mr. Briggs's note (Entom. xiv. 133), where he will find that the words missing between "every autumn up to the present time" and "not having seen an *anachoreta* larva for eleven years" are—

"*This may be partly owing to the fact that most of these young poplars have died, or had their lower branches trimmed and grown too high to search;* NEITHER HAVE WE SINCE THAT DATE (1863) FOUND THERE THE OTHER LARVÆ JUST MENTIONED. . . . ."

Where are we now? According to Mr. Greene's reasoning the reply would be that *C. anachoreta*, being a foreigner, died out from sheer inability to acclimatise itself, and that *C. curtula* and *C. reclusa* . . . . . Mr. Greene has not suggested any separate theory as to their disappearance. Surely it is more logical to conclude that the same meteorological influences which played such havoc with its food-plant, and at the same time annihilated its congeners as well as *N. dictæa* and *N. ziczac*, were also the cause of the vanishing of *C. anachoreta*, and consequently of Mr. Briggs failing to find it *in that one littoral locality only:* no one appears to have looked for it elsewhere, though captures have been recorded from Deal and from Walmer.

Its non-appearance prior to 1858 is very easily explained by the fact that until Mr. Brewer, the Coleopterist, chanced to find *Sesia chrysidiformis* in the "Warren" hard by, Folkestone was almost a *terra incognita* to the collector: that was in 1855 (*vide* 'Zoologist,' 4818), consequently it was not until 1856 that attention was turned to this El Dorado of the Lepidopterist; even then it was not likely that the eager hunters who, in the Warren,

had found such a Tom Tiddler's ground, would be tempted away for the purpose of collecting on the beaten high road between Folkestone and Sandgate.

Further remarks seem unnecessary, as it must be obvious, from the three omissions cited, that Mr. Greene's inferences have been drawn from wrong premises.

Camden Road, London, N.W., Jan. 13, 1893.

NOTES ON THE SYNONYMY OF NOCTUID MOTHS.

By Arthur G. Butler, F.L.S., F.Z.S., &c.

(Continued from vol. xxv. p. 286.)

Crioa, *Walk.*

Crioa acronyctoides.

Crioa acronyctoides, Walker, Lep. Het. xiii. p. 1111, n. 1 (1857).

Xylina? applicata, Walker, *l. c.*, xv. p. 1736 (1858).

Briarda? indistincta, Walker, *l. c.*, Suppl. 3, p. 894 (1865).

Moreton Bay. Types in Coll. B. M.

All the types are from the same locality, and two of them were obtained by the same collector.

Felinia, *Guen.*

Briada, Walk.

Felinia spissa.

Felinia spissa, Guenée, Noct. iii. p. 322, n. 1783 (1852).

Briarda (sic) *decens*, Walker, Lep. Het. xiii. p. 1098, n. 1 (1857).

India and Ceylon.

Felinia precedens.

♀ *Briarda* (sic) *precedens*, Walker, Lep. Het. xiii. p. 1098 n. 2 (1857).

♂ *Briarda* (sic) *antecedens*, Walker, *l. c.*, p. 1099, n. 3 (1857).

India, Ceylon, and Sumatra. Types in Coll. B. M.

Pandesma, *Guen.*

*Pandesma quenavadi.**

Pandesma quenavadi, Guen., Noct. ii. p. 438, n. 1310 (1852).

Thria robusta, Walker, Lep. Het. xiii. p. 1112, n. 1 (1857).

* *P. anysa*, Guen., appears to be a stunted specimen of this species; *Cerbia partita*, Walk., the Australian representative; and *P. jubra*, Swinh., probably only a fine variety. The latter, however, has no pale apical spot to the secondaries, the entire fringe of which wings is white, and the black discal patches below are more prominent; so that at present it must be considered distinct. *Michera submurina*, Walker, is an allied, but unquestionably distinct, species, though certainly not a distinct genus.

Cerbia fugitiva, Walker, *l. c.*, xiv. p. 1365, n. 1 (1857).

Asia and Africa. In Coll. B. M.

Guenée's genus *Pantydia* (type *P. sparsa*, from Australia) is closely allied to the European *Pseudophia illunaris*. It has not at all the aspect of a Polydesmid.

POLYDESMA, *Boisd.*

Polydesma umbricola.

♀ *Polydesma umbricola*, Boisduval, Faune Ent. de Madag. p. 108, n. 1, pl. 13, fig. 5 (1833).

P. laudula, Guenée, Noct. ii. p. 441, n. 1313 (1852).

♂ *P. boarmoides*, Guenée, *l. c.*, n. 1314 (1852).

Madagascar, Mauritius, Africa, India, Ceylon, Moulmein, Java. In Coll. B. M.

Guenée's type of *P. boarmoides* has the tufts on the front of the anterior tibiæ rather more orange than usual. I have very little doubt that *P. scriptilis*, Guen., is also identical with *P. umbricola*. That species is in our collection from Silhet, and the characters upon which *P. scriptilis* is separated are trivial in the extreme.

The Nilgiri specimens, identified by Mr. Hampson as *P. boarmoides*, are doubtless Guenée's *P. otiosa*, the description of which they fit admirably. I think *P. otiosa* may be distinct, though closely allied to *P. umbricola:* it is smaller, has blacker costal spots on the upper surface of primaries, and the under surface is creamy whitish; the secondaries in the male being almost devoid of markings.

The *P. umbricola* of Walker's Catalogue has very little in common with Boisduval's species.

Polydesma otiosa.

Polydesma otiosa, Guenée, Noct. ii. p. 442, n. 1316 (1852).

Alamis brevipalpis, Walker, Lep. Het. xiii. p. 1051, n. 12 (1857).

Nilgiris and Punjab. In Coll. B. M.

DIATENES, *Guen.*

Setida, Walk.

This genus is closely allied to *Polydesma*.

Diatenes gerula.

Diatenes gerula, Guenée, Noct. ii. p. 443, n. 1317 (1852).

D. aglossoides, Walker (not Guenée), Lep. Het. xiii. p. 1043, n. 2 (1857).

Tasmania. In Coll. B. M.

As this species is figured by Guenée (pl. 18, fig. 5), there ought to have been no difficulty in correctly identifying it.

Diatenes aglossoides.

Diatenes aglossoides, Guenée, Noct. ii. p. 443, n. 1318 (1852).
♀ *Homoptera costalis*, Walker, Lep. Het. xiii. p. 1072, n. 43 (1857).
♂ *Setida quadrisignata*, Walker, *l. c.*, xv. p. 1853, n. 1 (1858).

North and South-East Australia. In Coll. B. M.

I think it highly probable that this is only a smaller form of *D. gerula;* and it is possible that *D. chalybescens* may be only a slight variety. Fresh examples of *D. aglossoides* are of the colours described by Guenée as characteristic of his *D. chalybescens;* but the latter appears to have one or more extra lines across the primaries.

Ericeia, *Walk.*

Girpa, Walk.

Ericeia inangulata.

Hulodes inangulata, Guenée, Noct. iii. p. 210, n. 1612 (1852).
Ericeia sobria, Walker, Lep. Het. xiii. p. 1089, n. 1 (1857).
Remigia congressa, Walker, *l. c.*, xiv. p. 1510, n. 20 (1857).
R. optativa, Walker, *l. c.*, n. 22 (1857).
R. pertendens, Walker, *l. c.*, p. 1512, n. 24 (1857).
R. congregata, Walker, *l. c.*, xv. p. 1847 (1858).
R. optatura, Walker, *l. c.*, p. 1848 (1858).
R. amanda, Walker, *l. c.*
Girpa aliena, Walker, *l. c.*, p. 1849, n. 1 (1858).
Remigia comitata, Walker, *l. c.*, Suppl. 3, p. 1018 (1865).
Hulodes umbrosa, Walker, Char. Undescr. Lep. p. 91 (1869).
Girpa fraterna, Moore, Lep. Ceylon, iii. p. 94, pl. 156, fig. 5.

Asia, Africa, and Australia. In Coll. B. M.

Ericeia eriophora.

The synonymy of this species occurs in full in Moore's 'Lepidoptera of Ceylon.'

Ericeia maxima.

Girpa maxima, Butler, Trans. Ent. Soc., 1886, p. 410, n. 49.
G. carnea, Butler, *l. c.*, p. 411, n. 50.

Vavao, Friendly Islands. Types in Coll. B. M.

Judging by the undoubted variability of the species in this genus, it is no longer possible to regard *E. maxima* and *carnea* as distinct species.

Pericyma, *H.-Sch.*

Staudinger gives this name priority over *Alamis*, Guen., and, so far as date of publication goes, he is correct in so doing; but *Pericyma* is not characterized in such a manner that it can be recognized:—the characters given are, "Border of all the wings

round. Marginal line acutely undulated." If this be considered a sufficient description to supersede Guenée's proper characterization of the genus, Hübner's "Verzeichniss" genera have a better claim to stand, inasmuch as the characters given by him are frequently less general. Most moths have a more or less rounded outer margin to the wings.

Guenée's *Alamis* contains several genera, and it is evident, in the absence of any distinct specification, that the species figured by him (*A. albicincta*) must be his type. The character given by him—"Antennæ hardly pubescent, even in the males"—will not apply to *P. albidentaria* or to "*Alamis*" *polioides*, which have fasciculate-ciliated antennæ in the males; the latter species also differs from the European insect in having the antennæ of this sex denticulate-serrated, the little group of fine bristles being emitted from the serrations; its palpi also have the second article broader and more densely scaled, and the third article porrected and shorter than in *P. albidentaria*. This will, therefore, form the type of a new genus, which may be called *Synalamis*.

Alamis umbrina.

Alamis umbrina, Guenée, Noct. iii. p. 4, n. 1321 (1852).
A. continua, Walker, Lep. Het. Suppl. 3, p. 877 (1865).
Var. *A. albicincta*, Guenée, Noct., *l. c.*, n. 1322 (1852).

India generally. In Coll. B. M.

Dugaria, *Walk.*

Alamis, Guen. *Alamis & Homoptera*, Walk.

Dugaria glaucinans.

♀ ? *Alamis glaucinans* ♂, Guenée, Noct. iii. p. 6, n. 1326 (1852).
♂, ♀ *A. ligilla*, Guenée, *l. c.*, n. 1327 (1852).
♂ *A. mendax*, Walker, Lep. Het. xiii. p. 1047, n. 3 (1857).
♀ *Homoptera infligens*, Walker, *l. c.*, p. 1063, n. 35 (1857).
H. solita, Walker, *l. c.*, n. 36 (1857).
Dugaria cilipes, Walker, *l. c.*, p. 1076, n. 1 (1857).
Homoptera delineosa, Walker, *l. c.*, xv. p. 1798 (1858).
H. disjuncta, Walker, *l. c.*, Suppl. 3, p. 885 (1865).

Asia and Africa. In Coll. B. M.

The genus *Dugaria* is distinguished by the woolly legs of the male, and a thick silky patch on the under side of the secondaries in that sex. *A. glaucinans* and *disjuncta* belong to the varietal form of the typical species, having whitish bands on the primaries.

(To be continued.)

CAPTURES AND FIELD REPORTS.

Report on the Season of 1892.—The entomological season of 1892 was the best it has yet been my lot to experience. On the whole the weather was very favourable, and though no rarities turned up, there was an abundance of common species. Pupæ dug in Epping Forest, in the late autumn, yielded 13 *Nyssia hispidaria* (9 males and 4 females), 20 or 30 *Phigalia pilosaria*, also *Hybernia leucophearia* (females), *H. progemmaria*, *Tæniocampa gothica*, *T. stabilis*, *T. instabilis*, and *T. cruda*. Other winter pupæ, from Waldringfield, near Woodbridge, produced *Amphidasys betularia*, *A. prodromaria*, *Notodonta dictæa*, *N. camelina*, *Ptilodontis palpina*, *Dicranura furcula*, *Noctua plecta*, *Axylia putris*, *Hadena pisi*, *Dianthœcia capsincola*, *Acronycta tridens*, and *Cymatophora ocularis*. A nice series of *Hybernia leucophearia* and several *Phigalia pilosaria* were taken from tree trunks in Richmond Park on Feb. 18th, and on April 2nd single specimens of *Amphidasys prodromaria* and *Xylocampa lithorhiza* from oaks in Fairmead Bottom, Epping Forest. On the following Saturday the sallows near High Beech yielded *Tæniocampa gothica*, *T. stabilis*, *T. instabilis*, and *T. cruda* (all commonly), also 3 *T. munda*, 1 *Pachnobia rubricosa*, and a dozen or so *Cerastis vaccinii*, whilst *Selenia illunaria*, *Larentia multistrigata* and *Anticlea badiata* were netted; *X. lithorhiza* was again taken, this time on a pine trunk. The evenings of May 26th, 27th, 28th, and 30th, at Highgate, were exceedingly close and dark, light proving very attractive; *Plusia gamma*, *Rumia cratægata*, and several other common species, came in the window much quicker than I could put them out, and among them 12 *Odontopera bidentata*, with occasional *Hadena pisi*, *H. thalassina*, *Habrostola triplasia*, *Cucullia umbratica*, and *Notodonta camelina*. A couple of hours at Chingford, on the evening of May 31st, turned up *Iodis lactearia*, *Numeria pulveraria*, *Ephyra punctaria*, *Lithosia aureola*, *Thyatira batis*, and *Odontopera bidentata*, the latter very abundant just at dusk. *Dicranura bifida*, just emerged, was found at rest on a poplar on Clapton Common on June 5th, and on the following day (Whit Monday) I saw the first 1892 *Colias edusa* at Darenth Wood, where I spent the earlier part of the day. *Argynnis euphrosyne* and *Anthocharis cardamines* were plentiful, but moths were scarce, and the best ones taken were *Phibalapteryx vitalbata* (4 from *Clematis*), *Venilia maculata* (abundant), *Lomaspilis marginata*, *Platypteryx falcula*, *Tephrosia biundularia*, *Halias prasinana*, *Numeria pulveraria*, *Iodis lactearia*, and *Anaitis plagiata*. June 9th, at Chingford, was a repetition of May 31st, with the addition of 3 *Eurymene dolabraria*, but on the following evening, and again on June 16th, treacle attracted swarms of Noctuæ. Among these were *Thyatira batis*, *Xylophasia rurea* and var. *combusta*, *X. hepatica*, and *Aplecta nebulosa* (all very common), *Leucania comma* (2), *Apamea gemina* (3 only), *Noctua festiva* (very fine and in great variety), *N. brunnea*, *N. plecta*, *Miana strigilis* and var. *æthiops*, *M. fasciuncula* (both abundant), *Rusina tenebrosa*, *Mamestra anceps*, *Hadena suasa*, *H. thalassina*, *H. dentina*, and also 2 *Iodis lactearia;* whilst 3 *Amphidasis betularia* were taken on tree trunks, and *Halias prasinana*, *Tephrosia biundularia*, *Platypteryx hamula*, and *Numeria pulveraria* were beaten out. A week at Folkestone (June 18—26) was interrupted by the only thoroughly wet day during the month, which totally spoiled one day and the best part of the next. The principal feature of this visit was the immense number of the Lycænidæ: *L. adonis*, *L. alsus* and *L. icarus*

rivalled one another in quantity, whilst *L. medon* occurred sparingly; *Thecla rubi* was common but very battered, and *Polyommatus phlæas* abounded; *Arctia villica, Nemeophila russula* (8 or 9 in all), *Euclidia glyphica, E. mi, Venilia maculata, Lomaspilis marginata, Melanippe galiata,* larvæ of *Bombyx quercus* and *Odonestis potatoria* (the latter exceedingly abundant at dusk), *Phytometra ænea, Emmelesia albulata, Strenia clathrata, Saturnia carpini* (2 larvæ on sweet brier), *Euchelia jacobææ,* and *Zygæna filipendulæ* (larvæ and pupæ), were all more or less plentiful in the Warren, the latter in countless numbers. Other butterflies noted were *Hesperia malvæ, H. tages,* and one *Colias edusa;* whilst treacle, which I tried on three evenings, produced quantity if not quality. *Agrotis exclamationis* and *Miana strigilis* were the leading spirits, and of the former I secured some nice varieties; besides the above many other species turned up, but nothing good. Among them were *Noctua rubi, N. festiva, N. plecta, Grammesia trilinea, Leucania comma* (all common), with occasional *L. pallens, Hadena suasa, H. pisi, H. dentina, Agrotis suffusa* (quite fresh), *Apamea gemina, Mamestra anceps,* and *Phlogophora meticulosa.* My efforts in this direction were very much restricted, owing to a nervous landlady, who objected to anyone being out after about 10.15; but as we were very comfortable. I could not object. The same week my cousin, Mr. W. J. Ogden, was at Waldringfield (Suffolk), and took *Aplecta herbida* and *Hecatera serena* off tree trunks, larvæ of *Cleora lichenaria, Asphalia ridens, Lasiocampa quercifolia,* and *Nudaria mundana.* Treacle attracted, amongst others, *Aplecta advena, Dipterygia pinastri, Noctua c-nigrum, N. rubi, N. festiva, Hadena pisi, Leucania comma, L. pallens, Gonoptera libatrix, Mamestra anceps,* and *Axylia putris* (all more or less commonly), also *Notodonta camelina* at light. Two nice dark vars. of *Abraxas grossulariata* were bred in June from Stamford Hill larvæ; and in July a fair number of *Geometra smaragdaria* emerged from Benfleet larvæ, from which eggs were obtained and the brood continued. Three nights' treacling during July again attracted large numbers of moths at Chingford: *Noctua brunnea, N. augur,* and *N. triangulum* were exceedingly abundant and fine, but *N. festiva* was almost over, and *N. plecta* very sparing. *Xylophasia polyodon* and *Tryphæna pronuba* swarmed, the latter varying to a great extent; *X. lithoxylea* was very scarce, *Thyatira batis* still plentiful and *T. derasa* by no means uncommon and in fine condition; also *Dicycla oo, Caradrina blanda, Apamea gemina, A. oculea, Mamestra anceps, Miana strigilis* and var. *æthiops, M. fasciuncula, Boarmia repandata* (frequently), *Leucania pallens, X. hepatica* (still a few), *Tryphæna orbona,* and *Cosmia trapezina.* Insects netted at dusk, on the same evening, included *Angerona prunaria, Hemithea thymiaria,* and *Miana arcuosa,* and one *T. derasa* was found at rest on a tree trunk. This latter species turned up at Finchley on July 12th, at treacle; and, on July 16th, an afternoon visit to Benfleet for *Hesperia lineola* was fairly successful. Owing to the train being very late I did not arrive until 5 p.m., and immediately commenced working along the sea-wall towards Leigh, taking 13 specimens at rest on the grass and kicking up 2 *Acidalia immutata.* From July 20th *Nudaria mundana* began to emerge, and on the same date the first of a number of *Ennomos angularia* appeared, all of which, however, showed little variation. On July 22nd, the first of the Folkestone *O. potatoria* showed up, and out of only twenty specimens the females varied considerably; one is of quite a greyish tint, and another has assumed the colour of the male, whilst two or three others are more or less suffused with the same colour. The males, however, show

no variation. On Aug. 2nd light again proved attractive at Crouch End, amongst others *Caradrina blanda* and *Orthosia upsilon* putting in an appearance, whilst, on the following evening, treacle utterly failed at Lark's Wood, Hale End, only three moths coming at all, including one quite fresh *T. batis*. Aug. 8th to 14th was spent in a boat on the River Thames, between Oxford and Taplow, so that I had little opportunity for collecting; but twice when I treacled it totally failed. At Clifton-Hampden, honey-dew on the brambles was very attractive to *Noctuas;* among them *Triphæna orbona, Noctua rubi, N. umbrosa, Leucania pallens, L. impura,* and *Agrotis nigricans,* whilst *Acidalia emarginata* and *Cilix spinula* were netted. Near Pangbourne (Aug. 10th), on the slope of a hill, *Anaitis plagiata* abounded, and was in fine condition. *Strenia clathrata* was also kicked up, and *Lycæna corydon, Colias edusa,* and *Epinephele janira* (a blotched female) taken. On the following day *Colias edusa* was seen in some numbers near Reading, flying across the river; also *Gonepteryx rhamni,* and a great number of *Vanessas* and other common butterflies. *Colias edusa* was occasionally seen down to Taplow, and also six counted from the train between there and London, one close to Paddington. *L. corydon* was again seen near Marlow. On Aug. 13th *Apamea ophiogramma* was netted over some ribbon-grass in the garden here (Highgate), and on Aug. 17th *Agrotis nigricans* was taken at light. As already recorded, on Aug. 23rd 11 *C. hyale,* 15 *C. edusa* and one var. *helice* were taken at Lowestoft in one small lucerne field, and also a rather small form of *V. atalanta,* with very dark bands more or less suffused with black. The Vanessidæ were in the greatest abundance, especially *V. atalanta.* and *Agrotis tritici* was frequently seen flying in the sun over the lucerne. Once, also, was *T. pronuba* seen, hovering from flower to flower, and looking like a small *stellatarum. Ennomos angularia* and *Catocala nupta* began to appear very sparingly on the fences with the first days of September, but were soon over. Between Aug. 10th and Sept. 10th my cousin at Waldringfield took 25 *C. hyale,* besides seeing a good many more, and a nice series of *C. edusa* (which were very common), including 11 of the var. *helice.* One male *C. edusa,* though quite fresh, has the hind wings and the black spots on the fore wings very thinly scaled, giving the insect a pale and semi-transparent appearance, and two others (also males) have a purple gloss on the hind wings. Other captures included *Vanessa polychloros, Satyrus semele, Macroglossa stellatarum, Heliothis dipsacea, Tethea subtusa, Cosmia affinis, C. diffinis, Luperina cespitis, L. testacea, Heliophobus popularis, Charæas graminis, Habrostola urticæ, Noctua rubi, Agrotis puta, Miana captiuncula, Melanippe unangulata, Cidaria picata, Acidalia emarginata, Epione apiciaria, Ennomos fuscantaria* (3 imagines and 1 larva), *Cilix spinula,* and *Nudaria mundana.* Larvæ of *Notodonta camelina, Ptilodontis palpina, Thyatira derasa, Orgyia pudibunda* (common), *Acronycta psi, A. tridens* (both common), *Amphidasis betularia* (very common), *Halias prasinana.* and *Platypteryx hamula.* Pupæ of *Agrotis saucia, Hadena protea,* and *Smerinthus ocellatus.* On Sept. 23rd *Gortyna flavago* was found on a brick wall at Finsbury Park, and on the 29th *Agrotis saucia* on a wall in Cornhill, City: this was fairly fresh, except that one side seemed to have received a blow. *Oporabia dilutata* appeared on Oct. 5th, *Miselia oxyacanthæ* on Oct. 15th, and *Hybernia defoliaria* on Oct. 20th, all at Crouch End. The season wound up with a night's treacling at Chingford, on Oct. 15th, when moths again swarmed. *Cerastis vaccinii* was almost rivalled in numbers by *Scopelosoma satellitia,* both varying considerably and in fine

condition. *M. oxyacanthæ* was not far behind in number, and, though some were a bit worn, many were quite fresh, and some nice dark forms were taken. 1 *Cerastis spadicea*, 5 *Xanthia ferruginea*, 1 *Anchocelis pistacina*, and 1 *Amphipyra pyramidea* complete the list, and, I regret to say, end up the season of 1892 as far as imagines are concerned.—Russell E. James; Chesterville, Hornsey Lane.

Chœrocampa celerio at Nottingham. — A specimen of this rare hawk moth was taken at Nottingham on Oct. 12th, 1892, on a shutter, in St. Anne's Well Road, by Mr. A. Pike, President of the Nottingham Amateur Entomological Society, and was exhibited at the Society's rooms during last meeting.—W. Ferris.

Gerris rufoscutellata in Surrey.—I took this species on a pond at Norbury, April 18th, 1892.—R. M. Leake; 15, Alleyn Park, West Dulwich, S.E.

Cremastogaster scutellaris.—My wife purchased some apples at a shop in Plymouth, about the 8th of November last, and a few days after was about to make use of one, when she discovered a hole where apparently an apple moth larva, *Carpocapsa pomonella*, had escaped; to her surprise she found the core inhabited by the above-named ant, a female, and a Cicade in the pupa stage; both were sent to Mr. E. Saunders, who identified the ant, and remarked, "The Homopteron I do not know, but it reminds me of an immature *Issus*." He also drew my attention to the fact that I am not the first to record its capture in England, by a note in the E. M. M. for July, 1889. Dr. Mason exhibited a number of specimens at the meeting of the Entomological Society of London on the 5th of June; his specimens were all taken in a fernery at Burton-on-Trent, and supposed to have been imported from the South of Europe with cork.—G. C. Bignell; Stonehouse, Plymouth, Dec. 31, 1892.

Gnophria rubricollis in June. — A friend took this insect in June last in Somersetshire. Is not this early in the season? I have never myself taken this moth, but relatives used to take it in Gloucestershire in August. I see Newman gives August as the time of its appearance.—T. B. Jefferys; Clevedon, Dec. 9, 1892.

Eugonia fuscantaria and E. erosaria at Chester. — Among the numerous *E. alniaria* (*tiliaria*)—unusually numerous here last autumn—I took, about the 23rd of last September, two specimens of *E. fuscantaria* and one of *E. erosaria* (males) from the gas-lamps in the suburbs. My apparatus, as usual, was a short ladder and a well-charged cyanide bottle. I am not aware that the two species have been taken previously at Chester. Mr. A. O. Walker, in his District List, quotes *E. fuscantaria* in the Upton Valley and at North Birkenhead, but "scarce." *E. erosaria* he records at Tranmere and Rock Ferry, but also "scarce."—J. Arkle; Chester.

Collecting in Arran.—The months of August and September, and a few days of October, were spent by me in the South of Arran, where I hoped to make many additions to my collection; that this was not done is due to many causes. The weather was, on the whole, as unfavourable as it well could be. Little sunshine, a heavy rainfall, and boisterous winds were its prevailing characteristics. "Breezy Bennan" fully maintained its unenviable notoriety. Standing close to the southern shore, but from three to four hundred feet above the sea, it seemed to be the special mark of all

the winds. There were days, and weeks of days, when not an insect was upon the wing; and if any butterflies or moths were beaten out of their snug retreats, one had but a moment's chance of capturing them. They were either netted at once—which happened seldom—or were swept helpless away on a wild course, which, since Arran is an island, would surely land them—if one may venture so to put it—in the sea; and when, by some rare benignity of Nature, the sun did show himself, and the winds were laid so that one could be abroad, and yet breathe regularly, it seemed to be altogether incongruous and almost profane—like whistling on a Sunday—to go with a net to catch butterflies. And the fishing in the streams, and in the sea when it was safe to venture out, was so good that many days were given to it which, had they been otherwise used, might have added much to a meagre list of captures. But when trout are rising, or when saithe and big lythe are on the take, there are flies, other than Rhopalocera, that have an engrossing interest. Sugar was a total failure until the end of September. Such moths as were out preferred the flowers of the ragwort, of which there was more than could be worked. Bennan does not lend itself to sugaring. There are no trees upon its wind-swept heights; there are no palings, and the field fences are chiefly made of old telegraph-wire, concerning which the only recommendation that the collector can discover is, that here a little sugar goes a long way: and the scanty supports, put up with evident reluctance, as if the "hang" of the thing was of little account, were a few hedge-stakes, more than sufficiently tarred, or a bar or two of iron that could carry nothing rustier than itself. But there were some grand old boulders upon the beach, and some old gate-posts showing the rough dressing of the Stone Age, and these—notwithstanding their venerable antiquity—were sugared; so was a barn-door that was handy, but, although it got the first touch of the brush, and was always looked at last, it was not hit off. There never was a Noc-tua at that door. Rhopalocera:—*Pieris brassicæ*, a few on the wing, the larvæ swarming in the kale-yard and in the turnip-fields. *P. napi*, common. *Colias edusa*, as has already been recorded, was seen and captured close to Bennan, unhappily *not* by the writer. Of *Argynnis aglaia* about a dozen were seen, and four were taken, but they were faded and worn. *Vanessa urticæ*, common, richer in colouring than southern specimens. *V. atalanta* and *V. cardui*, two newly-emerged examples of each taken late in September. *Satyrus semele* was everywhere on the cliffs, and almost as common as *Epinephele janira*. *Erebia æthiops* and *Cœnonympha typhon*, although searched for, were not met with; very likely they were not looked for soon enough. *C. pamphilus* was far from being common, and the Lycænidæ had as representatives only *Polyommatus phlæas*, very common in September, and three specimens of *Lycæna icarus*. Heterocera:—Whenever there was a glint of sunshine, *Charæas graminis* darted here and there over the heather,—oftener there than here,—so that it was no easy matter to catch it. On the moor, in the afternoon, *Cidaria testata* swarmed; it might have been taken by hundreds. The heather yielded up *Noctua glareosa* (1), *Melanippe hastata* (1), and many examples of *Cidaria fulvata* and *Ypsipetes sordidata*. Eighty larvæ of *Bombyx rubi* were taken on the heath, and one larva of *Trachea piniperda* resting on bracken—a wanderer, no doubt, from some neighbouring fir tree. On the ragwort flowers there were got *Leucania pallens* and *D. littoralis*, one only of each. *Hydræcia nictitans* and *H. micacea*, common. *Apamea oculea*, abundant and variable. *Miana strigilis*, *M. furuncula*. *Caradrina quadripunctata*, very common. *Agrotis tritici*,

A. suffusa, *A. segetum*, *A. nigricans*, *Noctua xanthographa*, *N. plecta*, *N. c-nigrum*, *Xanthia fulvago* (1), and *Amphipyra tragopogonis* At sugar, *Agrotis exclamationis*, *Tryphæna orbona*, *T. pronuba* (some fine dark forms), *Orthosia macilenta*, *Anchocelis litura*, *Xanthia circellaris*, and *Phlogophora meticulosa*. On the 6th of October saw the only real success at sugar; need I add that it was the last night of my stay in Arran? The night was mild and drizzly, what the natives call "soft," and so I took about forty Noctuæ, some of which are named above, and, in addition, *Calocampa vetusta*, *C. exoleta*, and *Epunda nigra*, all of which then appeared for the first, and for me *last*, time. On the top of the cliffs, among the long grass and dwarfed bushes, were found *Rumia luteolata*, *Eubolia cervinata* and *E. limitata*, *Dasydia obfuscaria*, *Anaitis plagiata*, and *Camptogramma bilineata*. And here, from the middle of September, whenever there was sun, *Plusia gamma* swarmed in thousands, darting from flower to flower; and hardly less numerous, on almost every weed, the larvæ of *Spilosoma menthastri* rested or crawled.—A. B. Watson; Edinburgh.

Coleoptera in Arran.—As we do not often get any records of Coleoptera from the Isle of Arran, it may be of interest to mention a few species taken by Mr. A. B. Watson in the months of August and September, 1892. Mr. Watson, who has very kindly presented me with the insects, says that the specimens were just packed up as he chanced to meet with them while looking for Lepidoptera. The following is a list of the species sent me:—Among the Carabidæ are several specimens of *Notiophilus aquaticus*, L., and *N. substriatus*, Wat. *Carabus catenulatus*, Scop., appears to be very plentiful, while there are several specimens of *C. granulatus*, L., *C. monilis*, F., and *C. violaceus*, L., and a solitary one of the (var.) *consitus*, Pz. *Nebria brevicollis*, F., seems very common, while *Leistus* is represented both by *fulvibarbis*, Dj., and *rufescens*, F. There is also a single male *Clivina fossor*, L., *Dyschirius salinus*, Schaum., and *Lebia cyanocephala*, L., several of *Broscus cephalotes*, L., *Calathus cisteloides*, Pz., *C. mollis*, Marsh, and *C. melanocephalus*, L. *Pterostichius cupreus*, L., *P. lepidus*, F., *P. nigrita*, F., *P. niger*, Schal., and *P. melanarius*, Ill., seem plentiful. *Amara fulva*, De G., *A. spinipes*, L., *A. bifrons*, Gyll., and *A. acuminata*, Pk., are well represented, as are also *Harpalus ruficornis*, F., *H. æneus*, F., *H. rubripes*, Duft., and a single specimen of *H. caspius*, Stev. *Bembidium rufescens*, Guér., *B. biguttatum*, F., *B. pallidipenne*, Ill., *B. flammulatum*, Clair., and *B. punctulatum*, Drap., represented this group, a single specimen of *Tachypus flavipes* terminating the list of Carabidæ. The other families do not appear to be well represented, as in all cases I have but a single individual of each; but, bearing in mind the fact that Mr. Watson was not specially searching for Coleoptera, this is not surprising. The Dytiscidæ were represented by *Hyphydrus ovatus*, L., *Hydroporus* 12-*pustulatus*, Oliv., and *H. assimilis*, Pk. *Quedius fuliginosus*, Gr., *Q. nigriceps*, Kr., *Q. semiæneus*, Steph., and *Philonthus laminatus*, Creutz., were the only representatives of the Staphylinidæ. Among the Silphidæ were *Agathidium nigripenne*, F., *Silpha thoracica*, L., and *S. lævigata*, F.; *Meligethes rufipes*, Gyll., and *M. viridescens*, F., being the only types of Nitidulidæ; as also *Adalia bipunctata*, L., *Halyzia* 14-*guttata*, L., and *Scymnus frontalis*, F., were of the Coccinellidæ. The Scarabæidæ were much better represented in *Aphodius erraticus*, L., *A. fossor*, L., *A. fimetarius*, L., *A. rufescens*, F., *A. tessulatus*, Pk., *A. punctato-sulcatus*, L., *A. luridus*, F., and *A. rufipes*, L., as well as by *Geotrupes typhæus*, L., *G.*

stercorarius, L., *G. mutator*, Marsh., and *G. sylvaticus*, Pz. Amongst the Telephoridæ were *Telephorus darwinianus*, Shp., *T. fuscicornis*, Ol., *T. pallidus*, F., and *Malachius æneus*, L., as also *Anthocomus sanguinolentus*, F., *Dolichosoma nobile*, Ill., and *D. lineare*, Rossi. Amongst the Curculionidæ were *Otiorrhynchus septentrionis*, Hbst., *Barynotus schönherri*, Zett., *Anthonomus ulmi*, DeG., and *A. pomorum*, L., as also a fine male of *Rhopalomesites tardii*, Curt., the Chrysomelidæ having only two representatives in *Chrysomela varians*, F., and *Crepidodera transversa*, Walk. —in all, seventy-eight species. There can be no doubt, had Mr. Watson given particular attention to the Coleoptera, we should have had a much more extended list to record from the Isle of Arran.—T. R. Billups.

Collecting in Somersetshire, 1892.—I have to report another poor season as regards sugar: general collecting I have not done. Almost all common insects were very few, or absent, save *Anchocelis pistacina*. *Agrotis saucia* was more plentiful than usual; and I took, for the first time for several years, *Xylina petrificata* (*socia*), some dozen specimens. I noted three or four *Colias edusa* in my garden, the first I have seen here since 1877. *Vanessa atalanta* was most abundant, but of *V. cardui* I did not see a single specimen. Several pupæ and one imago of *Acherontia atropos* were brought to me, and a brood of ten larvæ of *Chærocampa elpenor* were taken on the hairy willow herb (*Epilobium hirsutum*). *Pieris rapæ* and *P. brassicæ* were very abundant.—H. W. Livett; Wells, Somerset.

Collecting in Reading and Dorset, 1892.—During the past season, amongst many other things, I have taken *Dicycla oo* (the second recorded for the district), one *Epunda lutulenta*, a series of *Aplecta tincta*, a few *A. advena*, *Boarmia roboraria*, *B. cinctaria* (new last season to the list). *Angerona prunaria*, *Geometra papilionaria*, *Asthena blomeri*, and was fortunate to net one black male *Fidonia piniaria* (somewhat worn). The latter end of June and first part of July I was in Dorset, and on Powerstock Common *Argynnis aglaia*, *A. adippe*, *Melanargia galatea*, and *Satyrus semele* were common. *Zygæna trifolii* was very abundant, in great variety and splendid condition. *Thyatira derasa* and *T. batis* were more plentiful at sugar than I have ever noticed before. Returning to Reading, *Noctua rhomboidea* came to sugar on the 16th and 19th of August, but was much wasted; from thirty taken, not more than six were worth setting; of the others, the males were rejected and the females boxed. The latter end of August and beginning of September *Asphalia diluta* was frequent at sugar, while in the middle of the month *Xanthia citrago* swarmed on the sugared twigs of lime trees. *Agrotis saucia* has been got all over the district. On Sept. 19th *X. aurago* appeared, and till the end of first week in October was taken in astonishing numbers, and of almost every conceivable variety, from a pale yellow to the deep orange-red of some winter sunsets. On Oct. 20th I tried in a likely place for *Dasycampa rubiginea*, but failed to get it; others, who sugared right through the month and into November, were, however, more successful. The only insect above the common I got on my last attempt was *Calocampa vetusta*, a species seldom taken here. Butterflies have been out in goodly numbers, but a few species have not appeared so numerous in the autumn as in the spring. *Vanessa polychloros* I saw frequently in May; it has not, so far as I know, been captured since. *Gonopteryx rhamni* could be got here and there in ones and twos, but it did not appear in anything like plenty. As in other places, *V. atalanta*, *V.*

cardui, and *V. io* have been out in unusual force.—J. Clarke; Reading, Jan. 20, 1893.

Notes from the New Forest.—Having been located at Brockenhurst nearly the whole of last summer, it may be of interest to give an account of my doings there in the way of Lepidoptera. I arrived in the evening of June 28th, after a hot day, and just as a thunderstorm was threatening, which, however, did not come to anything, but nevertheless rendered the evening very favourable for sugaring; consequently insects flocked to the sugar, every tree being completely smothered, increasing each time for four consecutive nights, when I noticed sometimes as many as 150 specimens, or more, on a single patch; I also reckoned that upwards of 55 species (Macros) made their appearance, not to say anything of Micros, which were thick enough. Some of the very commonest Geometræ were present, which seldom are seen at sugar. Four species were a continual pest—*Noctua brunnea*, *Triphæna pronuba*, *Aplecta nebulosa*, and *Boarmia repandata*, with a good sprinkling of *A. prasina* (some only in fine condition), *Thyatira derasa*, *T. batis*, *Xylophasia lithoxylea*, *Apamea gemina*, *Miana strigilis*, *Rusina tenebrosa*, *Agrotis exclamationis*, *Noctua triangulum*, *N. festiva*, *Hadena thalassina*, *Eurymene dolobraria* (worn), *Boarmia repandata* v. *conversaria*, *B. roboraria*, *Tephrosia luridata* (not many good); also a few each of *Leucania turca*, *Xylophasia hepatica*, *Mamestra sordida* (2), *Noctua plecta*, *Nola strigula*, *Boarmia abietaria*, *Metrocampa margaritata*, *Triphæna subsequa* (one fine specimen), two each of *Aventia flexula*, *Macaria alternata*, *M. liturata* (several), and other common species. I then shifted my quarters, and found *Leucania turca* (very plentiful), *Acronycta ligustri* (2), *Cymatophora duplaris* (1), *Agrotis cortícea* (1), and another fine *Triphæna subsequa* (and saw two or three others taken by friends). *Boarmia roboraria*, *Thyatira derasa*, *Calliginea miniata* became quite common, and remained so throughout July, the last two during part of August. By this time *Triphæna fimbria* and *Euplexia lucipara* were fairly plentiful in some places, *Cleora glabraria* (1); *Catocala promissa* (which turned up as early as July 6th) was not common, but *C. sponsa* in fair numbers; *Lithosia helvola* (fairly common), *Gnophria quadra* (very few), *Zonosoma annulata* (several), *Noctua stigmatica* (8), a few on ragwort), *N. baia* (common), *Hydræcia nictitans* (common at ragwort), and others. In September, *Asphalia diluta* (very abundant), *Agrotis suffusa* (several), *A. saucia* (fairly common), *Noctua castanea* (2), *Agriopis aprilina* (abundant), and others. In October, *Xylina ornithopus* (fairly common), *X. socia* (several), *Calocampa exoleta* (1), *Cerastis vaccinii* and *Scopelosoma satellitia* swarmed on every tree. Captures at light: *Geometra papilionaria* (1, about middle of July). *Camptogramma fluviata* (2, in trap), *Asteroscopus sphinx* (1, on Nov. 23rd). By day: *Stauropus fagi* (1 female, at rest, on June 29th), *Eugonia erosaria* (1), *E. quercinaria* (2). I went several times in search of *Apatura iris* in July, but did not get it until the last week in the month, when in company with Mr. T. A. Mitchell, who took a fair male flying near a stream; this he gave to me; we saw several others the same day: two days later I visited exactly the same spot, and at once captured a fine female in almost perfect condition, and saw again many others: as this was the first specimen that I had netted, I was not a little pleased. *Limenitis sibylla* had been in its usual force, also the large fritillaries; but *Argynnis paphia* v. *valezina* was no doubt commoner than I had ever previously seen it. By larva beating I found *Hylophila prasinana*

(a pest), *Gnophria rubricollis* (abundant), *Dasychira pudibunda* (abundant), *Stauropus fagi* (got several), *Notodonta trepida* (3), *N. chaonia* (6), *N. trimacula* (several), *Momia orion* (plentiful in a favourite locality), *Acronycta alni* (2, full fed), *Panolis piniperda* (common in some places), *Eurymene dolobraria* (abundant), *Amphidasys strataria* (several), *A. betularia* (common), *Zonosoma punctaria* (several) *Cidaria siderata* (abundant), and many others unknown to me.—J. M. Adye; Jan. 17, 1893.

On the Middlesex North Border, 1892.—The following notes represent the observations and captures made by me and Mr. C. R. Peers, of Harrow-Weald Rectory, during the past year, and among them will be found perhaps some additional insects to those already recorded by Mr. Cockerell in his Middlesex fauna. My own notes were commenced early in July, when I returned to the neighbourhood to find that the rare and beautiful *Plusia moneta* had, as already recorded (Entom. xxv. 193), fallen to the net of Mr. Peers. They close with the record of *C. celerio*, taken in a garden almost immediately adjoining our village churchyard. The twelfth milestone from London is situated about equidistant between the two houses. Harrow-Weald Rectory is built on the gravel; Oxhey Grove on the stiffest London clay. The country is generally well wooded, and there are two fairly large stretches of common land within the radius of our operations. The great majority of the following captures have been made at light, as we have little opportunity for collecting during the day. *P. palpina* turns up again after ten years' absence, and *G. papilionaria* (3 specimens) I have not before met with here. Of the Rhopalocera, *H. thaumas* is new to me in the district, and *C. edusa* has not paid us a visit since 1877 (*cf.* Entom. xxv. 209, 282); of *A. euphrosyne* I have, heretofore only, caught a single specimen (Harrow-Weald Common, 1888), but I found it in abundance on June 3rd in Pinner Wood. *V. atalanta* was about early (July 23rd); and a week later (July 29th) I met with *T. quercus* in Oxhey Wood (2 specimens), a butterfly that I have not observed on the Middlesex border since 1876. The same day I saw a single *V. polychloros*. *L. argiolus*, however, seems to have disappeared, though Mr. Peers took it in 1887. On the whole, insects have been remarkably plentiful. Subjoined is a detailed list, comprising in all—Heterocera only—148 species. Mr. Peers' observations commence May 31st (except *A. badiata* and *H. defoliaria*, March) and terminate October 26th. *Sphinges* (3).—Chœrocampa celerio, Ino statices, L. filipendulæ. *Bombyces* (18).—Lithosia complanula, Euchelia jacobææ (larvæ), Arctia caia, A. lubricipeda, Porthesia chrysorrhœa, P. similis, Leucoma salicis (larva), Bombyx neustria, Odonestis potatoria, Drepana lacertinaria, D. falcataria, D. binaria, Cilix glaucata, Pterostoma palpina, Lophopteryx camelina, Asphalia diluta, Thyatira batis, T. derasa. *Noctuæ* (68).—Acronycta pisi, A. tridens, Diloba cæruleocephala, Leucania conigera, L. lithargyria, L. comma, L. impura, L. pallens, Tapinostola fulva, Hydrœcia nictitans, H. micacea, Xylophasia rurea, X. lithoxylea, X. monoglypha, X. hepatica, Dipterygia scabriuscula, Neuronia popularis, Cerigo matura, Mamestra brassicæ, M. persicariæ, Apamea basilinea, A. didyma, Miana strigilis, M. fasciuncula, M. bicoloria, M. literosa, Grammesia trilinea, Caradrina morpheus, Agrotis saucia, A. segetum, A. corticea, Noctua augur, N. plecta, N. triangulum, N. festiva, N. rubi, N. umbrosa, N. baia, N. xanthographa, Triphæna ianthina, T. pronuba, Amphipyra pyramidea, A. tragopogonis, Mania typica, M. maura, Tæniocampa gothica, Pachnobia leucographa, Scopelosoma satellitia, Tethea

subtusa, Calymnia trapezina, C. pyralina, C. diffinis, C. affinis, Dianthœcia cucubali, Cleoceris viminalis, Miselia oxyacanthæ, Euplexia lucipara, Phlogophora meticulosa, Hadena protea, H. oleracea, H. thalassina, H. genistæ, Asteroscopus sphinx, Gonopteryx libatrix, Plusia chrysitis, P. moneta, P. iota, P. gamma. *Geometræ* (59).—Urapteryx sambucaria, Epione apiciaria, Rumia luteolata, Metrocampa margaritaria, Selenia bilunaria, S. lunaria, S. tetralunaria, Odontopera bidentata, Crocallis elinguaria, Eugonia querciniaria, Himera pennaria, Phigalia pedaria, Hemerophila abruptaria, Boarmia repandata, B. gemmaria, Geometra papilionaria, Hemithea strigata, Acidalia dimidiata, A. virgularia, A. aversata, A. remutaria, Timandra amataria, Cabera pusaria, Macaria alternata, Halia vauaria, Strenia clathrata, Abraxas grossulariata, Lomaspilis marginata, Hybernia defoliaria, Oporabia dilutata, Larentia viridaria, L. didymata, Emmelesia alchemillata, Eupithecia satyrata, E. castigata, E. lariciata, E. vulgata, E. absinthiata, E. pumilata, E. rectangulata, Hypsipetes sordidata, Melanthia bicolorata, Melanippe rivata, M. montanata, M. fluctuata, Anticlea badiata, A. nigrofasciaria, Coremia designata, C. ferrugata, C. unidentaria, Camptogramma bilineata, C. tersata, Triphosa dubitata, Cidaria miata, C. corylata, C. immanata, C. testata, C. fulvata, Eubolia limitata.—H. Rowland-Brown, Oxhey Grove, Harrow-Weald December, 1892.

NOTES AND OBSERVATIONS.

In the 'Mark Lane Express' (Dec. 19th) there is an account of a Meeting of the Royal Agricultural Society of England, held on December 7th, 1892, at which Mr. Whitehead is reported to have said "that the question of an appointment of a consulting naturalist had received very careful and lengthy consideration by the Seeds and Plants Committee. They had hoped to have been able to recommend to the Council the appointment of an eminent authority conversant with Zoology as an honorary officer of the Society. One distinguished gentleman had been approached with this object, but he had said that he had not sufficient time to devote to such an office, although he appreciated very highly the honour proposed to be conferred upon him. Upon further consideration the Committee came to the conclusion that it would be impossible to expect to get the services of any such distinguished authority on Zoology; and therefore they resolved to recommend to the Council to appoint, after careful selection, a young man, of course highly educated and having a distinct bent towards zoological knowledge, who might be trained to the practical work of the department. Under these circumstances the Committee made their recommendation to the Council, as the best possible solution of this difficult question. They recognised that it was impossible to get, *per saltum*, an accomplished economic entomologist; and the best plan, therefore, was to get a young man, and induce him, by a fair salary and the prospect of an increment, to devote himself to the study of natural history as applied to agriculture." It is quite possible that no "eminent authority conversant with Zoology" may be inclined to accept the honorary office referred to in the above extract; but is it also a fact that "an accomplished economic entomologist" cannot be found to fill the position at the same remuneration as that proffered to a young man with zoological know-

ledge? In his Presidential Address to the Lancashire and Cheshire Entomological Society (Jan. 9th), Mr. Capper discusses at considerable length the progress of economic Entomology in this country during the past half-century, and remarks that several County Councils have appointed entomologists as lecturers on this subject. In addition to those who have already given evidence of their ability to deal with injurious insects, we must remember that there are many entomologists who possess all the necessary qualifications for the work. Any man, in fact, who is able to work out the life-history of an insect in a thorough manner, and can intelligibly convey the result of his investigations to others, possesses the primary accomplishments of an economic entomologist. In the matters of methods for the prevention of insect attack, and the means of destroying injurious insects, there is a vast amount of information ready to hand, and anyone of ordinary intelligence should easily make himself acquainted with all that it would be useful for him to know on these heads. Remedial or preventive measures that may be effective in one locality, and under certain conditions, might be quite inoperative in another locality and under other conditions; therefore the most suitable treatment can only be ascertained by careful experiment and practice in the field. Is there any reason to suppose that "a young man having a distinct bent towards zoological knowledge" would be better qualified to deal with injurious insects than a practical entomologist?—R. S.

Coleophora metallicella, *Hodgk.*, = C. fuscedinella, *Zell.*—I agree with Dr. Wood, who has most carefully worked out the matter, that the *Coleophora* to which I gave the name of *metallicella* (Entom. xxv. 44), must be merged in *C. fuscedinella*. I sent Dr. Wood a large supply of the larvæ in all stages of growth; they were all found on birch, and not one on elm. This is singular, because Dr. Wood bred his long series from elm. Some of the specimens, in both Dr. Wood's and my own series, are larger and darker than others. The insect I have in my collection, under the name of *C. orbitella*, is nothing but very pale, captured *C. fuscedinella*, and I think the former name will have to sink.—J. B. Hodgkinson; Ashton-on-Ribble.

Stauropus fagi in the Reading district, 1892.—I started working the beech on the 12th May, and continued to do so till the 20th June, resulting in a total capture of 104 *S. fagi*. The black variety occurred as one in six, and was much more difficult to detect on the tree trunks. The moth always sat with its head pointing directly upwards, with the wings folded "lappet fashion." They ranged from a few inches to ten feet from the ground, but were most numerous between three and five feet; on one occasion only was a climb necessary. The fact of their preferring the smaller trees as a resting place, which I first published in this Journal, was amply confirmed by myself and others. When I left them the species was hardly on the wane, it being taken in some quantity well into July. One or two other facts I noted. Firstly, that it occurred in colonies, a few stragglers only being found outside a limited area; and, secondly, if a female was taken you would usually get a male, or sometimes two or three on the same tree, or within a short distance of it; this of course being due to the female's power of assembling. The ordinary form is, to a practised eye, easily seen on the smooth bark of the beech, at a distance of four to eight yards; but the black ones can only be detected by close inspection,

or by getting the insect in profile. The latter is protected by its assimilation to the dark brownish green, sometimes almost black, colour of the weather-stained trunks. Why then, one asks, do we not find the black form dominant? It occurs to me that the probable explanation is, that at some former period oak prevailed and beech was the exception, the opposite to that which now obtains. The grey coloured, generally accepted type, would, under such conditions, be as much protected by conformation of colour to its environment as the black variety is now. I have concluded that the species in this particular place is in a transition state, *i. e.*, from a less to a more protected form of coloration. That oak may have flourished, where the beech now occupies the ground, is evidenced by the remains of a great tree, whose prime must have passed some two or three centuries since, and that occasional oaks (planted?) still over-top the lofty beeches which surround them. The grey *fagi* of earlier times would have found a secure retreat in the crevices of the grey oak bark, which the smooth and often dark-coloured rind of the beech certainly does not now afford them. *S. fagi*, in its beech wood home, has few natural enemies; birds and other animals likely to prey on it are scarce, and the larva is peculiarly free from the attacks of ichneumons; hence black *fagi* are not likely to supplant the grey just yet. The regular pursuit of it by energetic collectors would accelerate such an event; the grey would go out, and the black, as the fittest, would have the sole chance of perpetuating the race. As bearing on the above, I should like to know if the black form is taken in oak woods, and, if so, in what proportion to the type.—J. Clarke; Reading, January 8, 1893.

Cucullia verbasci bred in January.—I found, to my astonishment, on the 12th of January, that a fine imago of *Cucullia verbasci* had hatched in the pupa-box. The larva I found on June 24th, and it went down in a few days. Surely this was extremely early, particularly as the box stood in a cold north room without a fire, and the weather was very severe.—John N. Still; Seaton, Devon.

Colias edusa bred in January.—I have just bred four specimens of *Colias edusa*. The eggs were laid at the end of August, so the insects have been nearly five months in coming to maturity, which is surely far more than the normal time. It was not discovered that there were any larvæ until about the 20th of October, nearly two months after the eggs were laid, and they were then only one-third of an inch long. As soon as noticed they were placed in a warm greenhouse, where they pupated about Dec. 20th, and since then have been kept warmer than they would have been in summer out of doors. When young they lay extended on the top of the clover-leaf, and resembled it so much in colour that they were difficult to find. When full-fed the lateral stripe was a brilliant orange, being composed of a mixture of red and yellow speckled mottlings. I only had six larvæ altogether.—W. M. Christy; Watergate, Emsworth, Hants, Jan. 19, 1893.

The earlier stages of Colias hyale. — Upon reading Mr. Williams's notes on the rearing of *C. hyale*, I was somewhat surprised to find that his descriptions of the earlier stages were to some extent erroneous, and, being so, at variance with the descriptions I published (Entom. xxv. p. 271). It is obvious, from the description given by Mr. Williams of the egg of *C. hyale*, that he did not examine it microscopically, and did not examine more

than one specimen. He says the egg (Entom. xxvi. p. 7) "has about fourteen longitudinal ridges, which do not, however, meet at the top, but terminate at the circumference of a small circle, the intervening depressions between the ridges being most delicately reticulated transversely." I closely examined a number of eggs — about eighteen — with both a high and low power, and found the longitudinal keels to vary in number from nineteen to twenty-two, in no case less than nineteen, the average number being twenty-one instead of "fourteen"; the spaces between the keels have a flattened surface, and are most delicately but irregularly *ribbed transversely* by about forty-six in number, and *not* "*reticulated*." Mr. Williams states "the newly-hatched larva is a greyish green," whereas all the number I examined had the ground colour ochreous-yellow, the dull olive colouring being caused by the minute black warts being so densely sprinkled over the surface; the "minute bristles," alluded to by Mr. Williams, are not bristles, but short club-shaped tubercles. After the first moult the head is olive-green mottled with dark olive-brown, which he describes as having a "light brown appearance, being studded with minute blackish spots," and also "extending down the middle of the back is a *furrow*." Such I entirely failed to detect, as no furrow exists, but simply that part of the surface is devoid of hairs. After the second moult the body is deep clover-green and the head pale ochreous-green, whilst Mr. Williams says "both head and body uniform in colour." For further details relating to the above stages, see Entom. xxv. pp. 271–4.—F. W. Frohawk; Balham, January, 1893.

Lepidoptera at Light.—I see, under the above heading (Entom. 15), that Mr. G. B. Routledge corroborates Mr. Arkle's experience in males and females at light. I know of only one exception to the rule, viz., *Bombyx rubi*. The females only of this species come to my trap, although there are hundreds of males flying about the park from 4 p.m. till dusk. I took a female *P. populi* at light on November 24th, 1892; but though I took over a hundred *Anchocelis lunosa* by same means, not one was a female.—T. B. Robertson; Sketty Park, Swansea.

Male *v.* Female Lepidoptera at Light.—The following notes on males *v.* females at light concern such species as I have frequently met with in the Bristol neighbourhood:—*Dasychira pudibunda*, males abundant every season; proportion to females about 20—1. *Amphidasys prodromaria*, a few males most years; never a female. *Selenia illustraria*, proportion of males to females, 10—1. *Odontoptera bidentata*, males very abundant every May; as many as six on a lamp, sometimes; not one female taken at light. *Crocallis elinguaria*, males also abundant at light; no female recorded. *Ennomos tiliaria*, common; males to females about 30—1. *Tephrosia crepuscularia*, common; males to females about 12—1. *Notodonta dictæoides*, a few males at lamps most years; a female never. The only specimen of *Bombyx rubi* I have ever taken at light was a female; this perhaps was to be expected, as, contrary to the males, the females fly after dusk, I having once taken one fluttering over the herbage at about 9 p.m. —R. M. Prideaux; Ashtead, Surrey, Jan. 8, 1893.

Contribution towards a List of the Insect Fauna of Surrey.—The following list may be of interest as a contribution to the statistics of the fauna of the district south of London. The species enumerated were chiefly taken in the neighbourhood of Kingston, Surrey, including Coombe

Wood and Richmond Park, but one or two are from Croydon and Esher. Of course the chief part of them are well known to occur in Richmond Park. I have compiled the list from the cabinet of my cousin, Dr. H. N. Kane, of Lanherne, Kingston Hill. It makes me exceedingly envious, I confess. Gnophria quadra (1), Arctia villica, Dasychira pudibunda, Drepana lacertinaria, Lophopteryx camelina, Notodonta dictæa, N. dictæoides, N. chaonia (not very rare), Asphalia diluta, A. flavicornis (abundant), Cymatophora or, Bryophila muralis, Acronycta leporina, A. aceris, A. megacephala, A. auricoma (several), Leucania turca, Xylophasia hepatica, Dipterygia scabriuscula (pinastri) (abundant), Luperina cespitis, Apamea unanimis, Rusina tenebrosa, Panolis piniperda (abundant at Esher), Pachnobia rubricosa (very abundant), Tæniocampa opima, T. populeti (not rare), T. munda, Xanthia fulvago, X. gilvago, Calymnia pyralina (1), Hecatera serena, Polia flavicincta, Cleoceris viminalis, Aplecta nebulosa, Hadena advena, H. protea, H. genistæ (1), Xylocampa areola (= lithoriza), Heliaca tenebrata (= arbuti), ab. (Richmond Park), Habrostola tripartita (= urticæ), H. triplasia, Catocala nupta (abundant). *Geometræ.*—Pericallia syringaria, Selenia bilunaria, S. lunaria, Nyssia hispidaria (sometimes abundant in Richmond Park), Amphidasys strataria, A. betularia, Hemerophila abruptaria, Boarmia roboraria (not very rare), B. consortaria (not very rare), Tephrosia biundularia, T. extersaria, T. punctulata, Geometra papilionaria, Larentia viridaria, Iodis vernaria, Phorodesma bajularia, Zonosoma porata, Macaria alternata (Coombe Wood), M. notata (Coombe Wood), M. liturata (Coombe Wood), Panagra petraria, Bupalus piniaria, Ligdia adustata, Hybernia leucophæaria (very abundant), H. progemmaria (very abundant), H. defoliaria (very abundant), Eupithecia linariata, E. pulchellata, Lobophora viretata, Anticlea badiata (very abundant, Cidaria miata. Euthemonia russula, Epione vespertaria, E. apiciaria, Melanippe procellata (specimens of all these from Croydon); Brephos parthenias, Selidosema ericetaria (= plumaria), B. piniaria (all from Esher).—W. F. de V. Kane; Sloperton Lodge, Kingstown, Ireland.

SOCIETIES.

Entomological Society of London. — *18th January*, 1893. — *The Sixtieth Annual Meeting.*—Frederick DuCane Godman, Esq., F.R.S., President, in the chair. An Abstract of the Treasurer's accounts having been read by one of the Auditors, the Secretary, Mr. H. Goss, read the Report of the Council. After the ballot it was announced that the following gentlemen had been elected as Officers and Council for 1893:—President, Mr. Henry J. Elwes, F.L.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, Mr. Charles J. Gahan, M.A., Mr. F. DuCane Godman, F.R.S., Mr. Frederic Merrifield, Mr. Osbert Salvin, M.A., F.R.S., Dr. David Sharp, M.A., F.R.S., Colonel Charles Swinhoe, M.A., F.L.S., and Mr. George H. Verrall. The President then delivered an Address, which, though containing reference to the Society's internal affairs and an allusion to the successful resistance made by naturalists and others to the War

Office scheme for establishing a rifle range in the New Forest, consisted for the most part of full obituary notices of Fellows of the Society who had died during the year, special mention being made of Mr. Henry W. Bates, F.R.S., Professor Hermann C. C. Burmeister, M.D., Dr. Carl A. Dohrn, Mr. H. Berkeley-James, Mr. J. T. Harris, Sir Richard Owen, K.C.B., F.R.S., Mr. Henry T. Stainton, F.R.S., Mr. Howard Vaughan, and Professor J. O. Westwood, M.A., the Hon. Life President. A vote of thanks to the President having been proposed by Lord Walsingham, F.R.S., and seconded by Mr. J. H. Leech, Mr. Godman replied. Dr. D. Sharp, F.R.S., then proposed a vote of thanks to the Secretaries, Treasurer and Librarian, which was seconded by Mr. W. H. B. Fletcher. Mr. McLachlan, Mr. Goss and Canon Fowler then severally replied, and the proceedings terminated.—H. Goss and W. W. Fowler, *Hon. Secretaries.*

South London Entomological and Natural History Society.—*November 25th*, 1892.—C. G. Barrett, F.E.S., President, in the chair. Mr. J. Jenner Weir exhibited *Pyrameis cardui*, L., which he had received from Lurimer County, Colorado, captured at an elevation of upwards of 7,000 ft., and remarked thereon. Mr. R. Adkin, *Zygæna filipendulæ*, L., showing gradations of colour intermediate between the red and yellow forms; also *Peronea rufana*, Schiff. and *P. hastiana*, L. Mr. F. W. Frohawk, a bred series of *Smerinthus tiliæ*, L., showing variation in extent of markings and depth and hue of colour, one specimen being very red. Mr. R. South, malformed specimens of Lepidoptera, including *Papilio machaon*, L., *Melitæa athalia*, Rott., *Lycæna bellargus*, Rott., *L. icarus*, *Tortrix piceana*, L., and made some observations thereon. Mr. Dennis, a very dark form of *Vanessa cardui*, L., and examples of *Colias edusa*, Fb., bred from ova obtained in August. Mr. H. Williams, pupæ of *C. hyale*, L., reared by him from ova obtained from a captured female. Mr. Tugwell, *Dianthœcia barrettii*, Dbl. Mr. Barrett, on behalf of Mr. Collins, of Warrington, exhibited dark varieties of *Acronycta leporina*, L.

December 8th.—The President in the chair. Mr. Frohawk, on behalf of Mr. Merrifield, exhibited specimens of *Pieris napi*, L., *Polyommatus phlæas*, L., and *Vanessa atalanta*, L., the pupa having been subjected to various temperatures. Some of the pupæ of the last-named species, which were subjected to a temperature of 45 deg. to 32 deg. for 47 days and then from 6 to 24 days to a temperature of 90 deg. to 54 deg., produced some aberrations, the cold having a tendency to break up the bands, to increase the depth of ground colour, and to produce a suffusion of white scales. Mr. Farren showed four aberrations of *Papilio machaon*, L., a series of very dark brown and black varieties of *Chauliodus charophyllellus*, Göze., and some Nepticulæ pinned with very fine silver pins, and put on strips of soft pith. Mr. South, a specimen of *Eriogaster lanestris*, L. (female), with ova showing between the segments of the abdomen; Mr. South and Mr. Barrett were of opinion that the ova were showing through a transparent membrane, but Mr. Jenner Weir said the ova appeared to have ruptured the integument. Mr. Hawes, the two emergences of *Pieris napi*, L., both bred from the same female; also examples of the same species, the larvæ having been fed on different food-plants, and made some observations as to the effects produced. Mr. Tutt, examples of several species of the genus *Tæniocampa*, which Dr. Chapman had extracted from the pupa-cases in some cases as early as the 25th of October; some remarks were made as to the full development of these and other species which had hybernated as pupa.

Mr. Frohawk, hybernating larvæ of *Carterocephalus palæmon*, Pall. Mr. Elisha, two drawers, one of *Coleophora* and the other of *Nepticula*, with cases labelled to show the time of appearance, food-plant of the larva and locality; Mr. Elisha stated that he had adopted this system for the whole of his collection of the Tineina. Mr. Adkin, on behalf of Mr. Austin, some very fine examples of *C. edusa*, Fb. var. *helice*, Hb., three varieties of *Lycæna bellargus*, Rott., all taken at Folkestone. Mr. R. Adkin exhibited Lepidoptera collected by him at Folkestone during his summer holiday, and contributed notes with reference to the species exhibited.

December 22nd.—The President in the chair. Mr. W. H. B. Fletcher exhibited a long series of *Psilura monacha*, L., and said he obtained ova deposited by a normal female in 1887, from Mr. Tate, and by careful selection he had at last obtained a dark race, and had no doubt that in time perfectly black specimens would be produced. The specimens bred in 1888 were nearly all normal; the darkest parents selected from this brood produced banded specimens the following year, and those bred in 1890 were suffused on the outer margin, whilst those of 1891 and 1892 were mostly black. Mr. Tugwell said the black form occurred at West Wickham, and that he had taken it there, showing that the black specimens occur near London. Mr. Adkin pointed out the difference between the genuine British specimens and those from the Continent,—the latter had a smoky brown ground colour, approaching *O. dispar*, whilst the British specimens in many cases were really black. Mr. South supported Mr. Fletcher's remarks as to the production of black specimens at will. The discussion was continued by Messrs. Frohawk and Fenn. Mr. Adkin exhibited *Tæniocampa gothica*, and var. *gothicina*, H. S., and contributed notes; and Messrs. Barrett and Tutt also made remarks upon this exhibit. Mr. H. Williams, two males of *Colias hyale*, bred this year, from ova obtained from a female captured at Northfleet last September, and made some observations upon the life-history and the conditions under which they were bred. A discussion ensued, in which Messrs. Hawes, Frohawk, Barrett and Tutt took part, and Mr. Williams was congratulated upon his success, Mr. Barrett remarking that they were the only specimens he knew of that had been bred in this country.—H. W. Barker and A. Short, *Hon. Secs.*

Cambridge Entomological and Natural History Society.—*November 11th*, 1892.—The following addition to Rule V. was made:—"That corresponding non-resident members be admitted into the Society, paying an annual subscription of 2*s.* 6*d.*" Mr. Moss exhibited a specimen of *Vanessa atalanta*, having a pale buff border on the under side of the posterior wings, of the same width as the usual red one on the upper side. Mr. Wells, a variable series of *Cerastis vaccinii* from West Wickham. Mr. Rickard, a specimen of *Plusia moneta*, taken at Cambridge in 1890; specimens of *Achara chameleon*, taken by himself in South Africa; a series of *Ephestia kühniella*, bred from a mill at Cambridge; and some insects which he had found eating moths put into a box to relax; these were pronounced by Dr. Sharp to be larvæ of one of the Muscidæ. Mr. Jones, three varieties of *Nemeophila plantaginis*, one nearly black; they were all more or less crippled, and he gave as his opinion that the abnormal coloration and crippling arose from a common disease. Mr. Farren, long and variable series of *Peronea variegana*, *hastiana*, *schalleriana*, *comparana*, and othe Tortrices.

November 25th.—Mr. Bull exhibited a large box of Lepidoptera, collected at Cambridge in July and August. Mr. Farren, some strongly-marked specimens of *Arctia lubricipeda* bred from ova, both parents being var. *radiata*. Mr. Fitzroy, a series of *Xanthia gilvago* and other Noctuæ, chiefly taken at Cambridge gas-lamps during September. Mr. Rickard, some beautiful varieties of *Arctia lubricipeda* taken in a garden, and a good pale variety of *Abraxas grossulariata* and a specimen of *Epunda lutulenta*, all from the district. Mr. G. H. Bryan, M.A., read a paper on "Insect-hunting on the Riviera," being an account of five weeks' collecting, from the 22nd March last, at Alassio, Mentone, Hyères, Arles, Nimes, Avignon, Tarascon, &c., with long lists of Lepidoptera and Coleoptera, &c., capiured or observed, and many interesting notes on their habits. The paper was illustrated by an exhibition of several boxes of the specimens collected, the Lepidoptera and Coleoptera being especially well set and in excellent condition.—Wm. Farren, *Hon. Sec.*

Lancashire and Cheshire Entomological Society.—The Annual Meeting was held on Monday, January 9th, 1893, in the class-room of the Free Public Library, William Brown-street, Liverpool. Mr. S. J. Capper, F.L.S., F.E.S. (President), occupied the chair, and there was a good attendance. A number of interesting exhibits were laid on the table for inspection. The first business was the election of officers for the ensuing year. Mr. Capper was, for the seventeenth time, re-elected to the position of President; Mr. W. E. Sharp was appointed Vice-President; Mr. F. N. Pierce, F.E.S., Honorary Secretary and Treasurer; and Mr. C. H. H. Walker, Librarian. Mr. Walker, on behalf of the members of the Society, said it was his pleasing duty to ask Mr. Capper to accept a handsome gold-mounted silver case containing a pair of gold entomological forceps. The Society congratulated itself upon having again Mr. Capper as its President. During the sixteen years he had presided over them, he had sought only the advancement of the Society, and had encouraged the members to take an interest in their studies. They therefore desired to inaugurate that session by doing something more than merely thanking Mr. Capper for his past services; and they offered this slight token of regard, knowing that it would occupy an honoured place amongst his valuable collection. Mr. Capper, in acknowledging the gift, said that he thoroughly appreciated the kindness of the members, and would in future, as in the past, do all he could to benefit the Society. Before proceeding to deliver his presidential address, he referred to the death of Prof. Westwood. The President exhibited a melanic variety of *Timandra amataria;* the specimen was unicolorous soft olive-green. Mr. Gregson, a collection of autographs of naturalists, artists, and authors, including nearly all the entomologists of the last fifty years. Mr. Walker, a drawer of varieties of *Vanessa antiopa* from North America, probably the finest lot of varieties of this species extant. Mr. Collins, *Stauropus fagi* from Reading. Mr. Mosley, set of educational cases of Natural History, to be used as prizes at schools. Mr. Newstead, a specimen of *Vanessa antiopa*, captured in Cheshire in 1877 by Mr. Leather, of Vale Royal.—F. N. Pierce, *Hon. Sec.*

Birmingham Entomological Society.—*December 12th*, 1892.—Mr. R. C. Bradley in the chair. The following were exhibited:—By Mr. E. W. Wynn, one *Acronycta alni*, bred from a larva found at Knowle; also *Lithosia complana*, taken at Bewdley. Mr. C. J. Wainwright, *Isopogon*

brevirostris and *Neoctamus cyanurus* from Barmouth; and *Machimus atricapillus*, from Brendon, Devonshire. Mr. R. C. Bradley, *Chrysoclysta bimaculella*, *C. linnælla*, *Stigmonota nitidana*, and *S. regiana*, all from Sutton. A paper upon "Secondary Sexual Characters in Insects" was communicated by Mr. J. W. Tutt, and read by the Secretary, Mr. C. J. Wainwright.

January 16*th*, 1893.—Mr. W. G. Blatch, President, in the chair. A lecture was delivered by Col. Chas. Swinhoe, upon "Protective Resemblance and Mimicry in Insects." In the course of the lecture, which was illustrated by photographic lantern-slides, some of which were beautifully coloured, he gave a number of cases and facts of mimicry which were quite new and very interesting.—Colbran J. Wainwright, *Hon. Sec.*

York and District Field Naturalists' Society.—*November* 9*th*, 1892.—Mr. G. C. Dennis, President, in the chair. Mr. R. Dutton exhibited ten bred specimens of *Acronycta alni* from Marlow; *Dianthœcia conspersa*, *Chesias obliquaria*, *Eupithecia togata*, and *Cleora lichenea*, from Kenley. Mr. W. Hewett, *Plusia festucæ* (bred), *Polia chi* and *Larentia cæsiata*, from Bolton in Lancashire; large examples of *Lycæna icarus*, from Galway; and *Trichiura cratægi* (bred), from larvæ obtained at York.

December 14*th*.—Mr. W. R. Robinson in the chair. Mr. J. Hawkins exhibited a specimen of *Colias edusa*, taken within a mile of the cathedral, York. Mr. R. Dutton, *Epunda lutulenta*, Castle Moreton; *Noctua sobrina*, Aberdeen; specimens of *Dasycampa rubiginea*, Buckerell; *Lithosia sericea*, Manchester; *Psodos coracina*, Rannoch; and a specimen of *Callimorpha hera*, taken in South Devon, 1892. Mr. W. Hewett, *Colias edusa*, four specimens of the var. *helice*, taken at Erith, Kent, 1877; *Selenia lunaria* (bred), from Forres and Essex; *Himera pennaria*, York and Kent; *Selenia illustraria* (bred), summer brood, Worthing; dark forms of *Odontoptera bidentata*, from Forres; *Eupithecia helveticata*, Perthshire; *Halia brunneata*, *Larentia ruficinctata*, *Acronycta myricæ*, *Cymatophora duplaris*, *Aplecta tincta*, *Anarta cordigera*, and *Phibalapteryx lapidata*, from Rannoch; *Dianthœcia capsophila* (bred), Kirk Michael, Isle of Man; *Acronycta strigosa*, Cambridgeshire, and *Xanthia silago*, from Acomb churchyard, York (of Horsforth). Mr. W. Mansbridge, F.E.S., then gave a highly interesting and instructive lecture on the early development of Lepidoptera, and illustrated the lecture by numerous diagrams, most of which had been prepared from dissections made by himself. Mr. Mansbridge dealt with the structure of the egg, and traced the various stages in the development of lepidopterous larvæ, and exhibited several very striking varieties of *Abraxas grossulariata* bred from larvæ collected in the neighbourhood of Horsforth; also some fine examples of *Polia chi* and var. *olivacea*, selected from a great number of specimens taken by him during the last two seasons, in the neighbourhood of Horsforth, Yorkshire.—William Hewett, *Hon. Sec.*

Nottingham Amateur Entomological Society.—The first Annual Meeting was held on the first Monday in October, 1892. Weekly meetings will continue to be held every Monday night, at 8 o'clock, in the Society's Room, Morley House, Mansfield Road, Nottingham. The object of the Society is to work up the entomology of the county of Nottingham, and to place on record facts relating thereto.—W. Ferris, *Hon. Sec.*

RECENT LITERATURE.

Beetles, Butterflies, Moths and other Insects; a brief Introduction to their Collection and Preservation. By A. W. Kappel, F.Z.S., F.E.S., Assistant Librarian Linnean Society, and W. Egmont Kirby. With 12 coloured plates; and woodcuts. London: Cassell & Co., 1892. Sm. 4to, pp. 182.

The little book before us, by two authors whose names we have not previously noticed, makes no scientific pretensions, but is, as the authors tell us, intended as an introductory book for young people in the country who take an interest in the natural objects with which they are surrounded. A considerable number of the more interesting British species of all Orders (with now and then an occasional continental species of special interest) are recognisably and sometimes excellently represented on the plates, which appear to us to be rather better than the average of those commonly met with in cheap elementary works of this kind. The letterpress is not confined to the species figured, but is especially full as regards the British butterflies, most of which are described, except a few of the rarer and less conspicuous species. Of course more space is given to the Coleoptera and Lepidoptera than to the less conspicuous and therefore less attractive Orders; but this is always the case in works intended to have a circulation among those who are not making a special study of Entomology. The remaining Orders, however, have not been neglected, and the book probably contains nearly as much information about them as its readers are likely to require or expect as a commencement. We wish this first venture of the authors every success. It seems well adapted either for a first book of country Entomology, or as a cheap and attractive gift-book for young people with a taste for Natural History.

Catalogue of Eastern and Australian Lepidoptera-Heterocera in the Collection of the Oxford University Museum. By Col, C. Swinhoe, F.Z.S., &c. Part I. Sphinges and Bombyces. With eight coloured plates. Oxford, 1892. Pp. viii, 324.

The entomological collection of the Oxford Museum is probably the second public one in the kingdom, being only surpassed in extent and value by that of the British Museum; and Col. Swinhoe has done good service by publishing a work in which a large number of Walker's types are determined, and many figured. The author has also taken the opportunity to describe several new genera and species; the former are generally illustrated by woodcuts of neuration, and a considerable proportion of the latter are figured on the plates.

Owing to the vast number of existing species, and the difficulty of determining them by descriptions only, even if the descriptions are good and the species are assigned to their right genera, good figures are of immense service to the entomologist. We will not go so far as to say with M. Oberthür that all descriptions unaccompanied by figures ought to be rejected, for we think that the work of every author

ought to be respected; but we do say that a figure, unless so bad as to be quite misleading, is generally more useful than even the best description; though a good description is also necessary for pointing out the characteristics, and especially the affinities of a species. And even a bad coloured figure (provided always that it is not actually misleading) is often more useful to a lepidopterist than a good plain one.

In the work before us, which deals chiefly with large species, the moths are all represented of the natural size. Unless insects are so small that their markings cannot be reproduced, we think it is a pity to publish enlarged figures. This is sometimes done on the Continent with Pyralidæ and other moths, which would look far more natural, and whose markings would come out with equal clearness, if they were not enlarged.

The present volume includes only Sphinges and Bombyces; and we understand that two more will be needed to complete the work. Col. Swinhoe has followed a somewhat different arrangement from Mr. Kirby, and has included the Ægeriidæ and Cymatophoridæ in the Bombyces. The Uraniidæ, Cocytiidæ, Castniidæ and Agaristidæ, are placed in the middle of the volume, and the genus Epicopeia, included by Mr. Butler in the Liparidæ (or, as Col. Swinhoe prefers to call them, Lymantriidæ), and by most other authors in the Chalcosiidæ, is here formed into a distinct subfamily of Zygænidæ, following the Chalcosiidæ. The new family Eupterotidæ, just proposed by Mr. Hampson, has likewise been adopted.

We are glad to be able cordially to recommend this useful book to the notice of entomologists, though it is to be regretted that several serious misprints in the spelling of proper names occur, such as "Hearsay" for "Hearsey, and "*Moëlleri*" for "*Mölleri*."

OBITUARY.

Professor Veit Graber died at Rome on the 3rd March last. He had been for some years Professor of Zoology at Czernowitz, but in the autumn of 1891 he was found to be suffering from serious illness, and was advised to travel in the South for the benefit of his health: but his malady making rapid progress, he died and was buried away from home. Graber was best known to entomologists in this country by his book 'Die Insecten,' published in three volumes in 1878. It is in many respects the best introductory work on the subject that has yet been published. Graber's greatest work was accomplished in the departments of embryology, anatomy and physiology. His writings on the embryology of insects and on points connected therewith, have been both numerous and extensive, and have gained him a world-wide reputation; his labours on the organs of hearing in insects have been scarcely less important. He was only 47 years of age, and his prematrne decease is a serious loss to entomology.

D. S.

Erratum. — Page 14, for "Riesenwetter" read "Kiesenwetter" throughout.

the disc rather convex, smooth, with a few fine punctures, the anterior angles very slightly produced; scutellum flavous, impunctate; elytra closely and distinctly but not very strongly punctured, the anterior portion as far as the middle metallic blue, the rest fulvous or obscure flavous, their epipleuræ metallic dark blue; tibiæ entire, claw-joint strongly inflated.

At first sight this species seems almost identical with the only other known one from Old Calabar, *P. Dohrni*, Har., but the constant differences shown in the four specimens before me seem to prove them to represent another species; these differences are the following: the thorax, instead of being of uneven surface and rugosely punctate, is smooth and nearly impunctate in *P. Haroldi*; and instead of the fulvous apex of the elytra, as in the last-named species, this colour occupies the entire posterior half. I possess both sexes; in one of the specimens, however, the antennæ are entirely fulvous, and the similarly-coloured apex of the elytra extends only to a third upwards, and its upper edge being obliquely concave, not straight as in the other specimens; in the absence of other differences, I must look upon this specimen as a variety.

GABONIA, n. gen.

Oblong-ovate; eyes large; antennæ with subtriangular joints, the second and third short; thorax transverse, the posterior margin rounded; elytra irregularly punctured, their epipleuræ very broad; tibiæ sulcate, the anterior ones unarmed, the posterior ones with a long spine; metatarsus of the posterior legs as long as the following two joints together; claws appendiculate; prosternum very narrow, the anterior coxal cavities closed.

This genus, which will enter the group of *Arsipodinæ* of Chapuis' arrangement, resembles, in general shape and appearance, the South American genus *Oxygona*, but the thorax in the latter is still much more transverse, and the antennæ are of different construction; the long and slender spine at the posterior tibiæ in the present insect is another characteristic of the genus.

GABONIA UNICOSTATA, n. sp.

Fulvous; the base of the head black; the antennæ, thorax, and legs flavous; thorax impunctate; elytra very minutely punctured, fulvous, with a strongly raised transverse ridge near the apex. Length, $2\frac{1}{3}$ lines.

Head with a few very fine punctures at the vertex, the latter black, the lower portion flavous, frontal tubercles transversely subquadrate, carina acute; labrum piceous; eyes very large; antennæ extending to about half the length of the elytra, fulvous, the second and third joints short, equal, the intermediate joints slightly triangularly widened; thorax twice as broad as long, the sides slightly rounded, the anterior angles somewhat broadly produced, the posterior margin rounded, the surface with a few very minute punctures, flavous; scutellum fulvous; elytra rather convex, extremely closely and finely punctured, fulvous; a highly-raised transverse ridge is placed at a little distance from the apex, but does not extend to the sides, the apical portion behind the ridge is strongly deflexed; elytral epipleuræ very broad, concave, extending to the apex; posterior femora strongly incrassate, their tibiæ longitudinally sulcate, with a long apical spine.

The elytral subapical ridge in this species is the only instance known to me of such a structure amongst the *Halticidæ*. Two specimens, apparently of both sexes, are contained in my collection.

NOTES ON SOME SPECIES OF GALERUCIDÆ.

By Martin Jacoby, F.E.S.

Stenoplatys (Cœligethes) robustus, *Allard.*

This species, described by M. Allard in the Comptes-rendus of the Belgian Entom. Soc. for 1889, is, as I have already remarked, wrongly placed in *Stenoplatys*. The latter genus was founded by Baly on an African species, and is identical with *Galeruca picea*, Fabr., placed in Genninnger's Catalogue in *Diacantha*. In *Stenoplatys* the thorax has two deep foveæ at the middle of the disc; the elytral epipleuræ are broad, and continued and gradually narrowed posteriorly. Chapuis, in his diagnosis of *Stenoplatys*, under his group of *Platyxanthinæ*, gives the shape of the thorax as one-half broader than long; but in his detailed description of the genus he speaks of it as being twice as broad as long (the latter is in reality the case). *Stenoplatys robustus*, All., inhabits the Philippine Islands, and belongs to my genus *Cœligethes* (Notes, Leyden Mus., 1884). The thorax in this genus is short, transverse, the disc rather convex and without depressions; the elytra are convex, without basal depressions, and their epipleuræ are narrow and nearly disappear entirely below the middle. I possess another very closely allied species from Java, of more depressed shape and of entirely testaceous colour, which I have lately described as *C. unicolor*. In my diagnosis of *Cœligethes* I have described the metatarsus of the posterior legs as being as long as the following two joints together; it is, however (as rightly given by Allard), of the length of the three following joints.

Cryptocephalus ruficollis, *Fabr.*

The type of this species, described from the Banks' collection, is contained in the British Museum; an examination of the specimen proves it to belong to the *Galerucidæ*, and not to *Cryptocephalus* at all. Olivier has described the species also, referring it rightly (not wrongly, as Suffrian says) to that of Fabricius. The habitat of the insect is given as St. Helena; some time ago I received from the Museum at Cape Town another specimen, and obtained at the latter place, so that it remains somewhat doubtful whether St. Helena is another locality

for the insect: the Cape Town specimen agrees entirely with the type in the Banks' collection, which must find its place in a new genus allied to *Rupilia* and allied genera.

The original specific name of *ruficollis*, altered by von Harold to *erythrodera*, can therefore be restored, although the thorax in the type, and in my specimen, is more flavous than rufous. The following is the diagnosis of the genus, and the description of the species:—

PSEUDORUPILIA, n. gen.

Body ovate, dilated posteriorly; head very broad, not narrowed in front; eyes rather small; palpi slender, the apical two joints elongate; antennæ subfiliform; thorax transverse, the sides rounded, the middle of the anterior and posterior margin constricted; scutellum large; elytra shorter than the body, their epipleuræ very broad anteriorly, entirely disappearing below the middle; legs robust; tibiæ with their outer edge raised in shape of a ridge, unarmed, the first joint of the posterior tarsi as long as the following two joints together; claws appendiculate; prosternum invisible between the coxæ; metasternum short, the anterior coxal cavities open.

This genus bears a great resemblance to the Australian genus *Rupilia*, but is distinguished by the more slender antennæ, the want of the elytral epipleuræ below the middle, which in *Rupilia* extend to the apex, and by the appendiculate claws.

PS EUDORUPILIA RUFICOLLIS, *Fabr.*

Flavous; the head, antennæ, scutellum, the legs, sides of the breast, and the base of the abdominal segments, black; thorax and elytra finely punctured. Length, $2\frac{3}{4}$ lines.

Head broad and robust, black, impunctate, transversely grooved between the eyes, the frontal elevations trigonate, nearly contiguous; clypeus transversely raised; labrum flavous; mandibles robust and elongate; antennæ black, the first joint short and thick, the second very short, the third and fourth joints as long as the first, the following four joints shorter, the rest broken off; thorax twice as broad as long, constricted at the middle, the sides strongly rounded, the anterior angles distinct, the posterior ones obsolete, the surface very minutely punctured, flavous, the middle of the disc stained with fulvous; scutellum broader than long, black; elytra widened posteriorly, their apex broadly rounded, the surface finely punctured and wrinkled; under side flavous; the sides of the breast, the legs, and a transverse band at the base of each abdominal segment, black.

Hab. South Africa, Cape Town (St. Helena ?).

A NEW SPECIES OF *PAPILIO*, AND A NEW FORM OF *PARNASSIUS DELPHIUS*, FROM WESTERN CHINA.

By J. H. Leech, B.A., F.E.S., &c.

Papilio dialis, sp. nov.

Male. Closely resembles *P. bianor*, but there is no patch of silky hairs between the first median nervule and the submedian nervure, and the patches on the veins are composed of shorter hairs. The primaries are black, sprinkled with bronzy-green scales, except on the venation and broad rays between the nervules. Secondaries black, thickly powdered with greenish scales, those on the costal half and on the tails being bluish, and those on other portions of the wing bronzy; there is a broad annular mark at anal angle, a lunule in first median interspace, and another in discoidal interspace —all these marks are red dashed with lilacine on their upper edges. Under surface of primaries pale grey, merging into white on the outer two-thirds of inner marginal area; all the nervules and streaks between them are broadly black, and there are four nerve-like black streaks in the discoidal cell: secondaries velvety-black, sprinkled on the basal and abdominal areas and on the tails with metallic green scales; there is a series of seven red irregular-shaped lunules on the outer margin, the sixth is united with the seventh by a broad projection from the lower edge of the latter, and its upper extemity almost unites with the lower end of the fifth lunule. Expanse, 130 millim.

One example taken at Chia-ting-fu in July.

This species is most readily distinguished from *P. bianor*, *P. maackii*, &c., by the different arrangement of the silky patches on the primaries of the male.

Parnassius delphius var. elwesi, var. nov.

Male. Larger than any of the named forms of *P. delphius*, but in some particulars it resembles var. *transians*. It differs, however, from that insect, as it also does from any variety of *P. delphius* that I have seen, in having a red spot in the lower portion of the large black bar beyond the discoidal cell of primaries, and a patch of black scales between the usual discoidal spots; there are only the faintest possible traces of a black spot above the inner margin. On the secondaries the black basal area is deeply indented on its outer edge, and the marginal border is of uniform width throughout. Fringe white, chequered on the primaries with black at the ends of the nervules. Under surface glassy, with all the markings of upper surface faintly reproduced. Expanse, 80 millim.

One example from the high plateau to the north of Ta-chien-lu.

Although I have referred this insect to *P. delphius*, I recognise the possibility of its proving to be a distinct species when a larger number of specimens, including the female, are available for examination.

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THE

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THE ENTOMOLOGIST.

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A CATALOGUE OF THE LEPIDOPTERA OF IRELAND.

BY W. F. DE VISMES KANE, M.A.
Member of the Royal Irish Academy; Fellow of the Ent. Soc. of London.

PREFACE.

THE investigation and accurate record of the lepidopterous fauna of Ireland has become of late years a matter of increasing interest from a scientific point of view. It is almost unnecessary to point out that this country presents certain well-marked features possessed by none other in Europe. Firstly, in the even temperature which it enjoys, contrasting with that of Scandinavia and Northern Europe including England, in the moderate amount of summer sunshine, as well as the mildness of its winter, in which latter it differs widely also from Scotland. Secondly, in its insularity and western position, being separated from Great Britain and the Continent by a breadth of sea sufficient to prohibit the immigration of all but the most strong-winged and wandering species (and then only under the disadvantage of an easterly wind) from admixture with its indigenous races. A third characteristic is that of a heavy rainfall, exceeding on an average that of the rest of Great Britain, if we except the Scilly Islands, part of South-west of England, and the English Lake District; and perhaps a part of Scotland. These peculiarities, in view of the active enquiries now being pursued especially in relation to colour-variation in this subdivision of the animal kingdom, make it of primary importance to secure an accurate diagnosis of the indigenous species of Ireland, and of the particular characteristics, both individually and collectively, which they present. An accurate examination of the fauna and flora of Ireland, whenever we are in possession of a more precise knowledge of them, will probably also throw convergent light on its geological history, and offer independent testimony confirmatory of its former connection with Great Britain and the European continent. Alfred Russel

Wallace, in his 'Island Life,' puts the matter most pertinently and concisely when he points out how "such unimportant facts as the presence of certain types of plants and animals in one island rather than in another, are now shown to be dependent on the long series of past geological changes,—on those marvellous astronomical revolutions which cause a periodic variation of terrestrial climates, and on the endlessly varied actions and reactions of organized beings on each other. . . . . We are thus encouraged to study more completely every detail, and every anomaly in the distribution of living things; in firm conviction that by so doing we shall obtain a further and clearer insight into the course of nature." Unfortunately, the want of Irish investigators precludes the possibility of adequately dealing with the subject at the present date; and the difficulty of accumulating sufficient reliable information to warrant it, has deterred me for several years past from attempting to publish my scanty contribution to entomological science.

However, even if after the lapse of so many years since the publication of Mr. Birchall's Catalogue the additions may seem but scanty, yet the issue of a revised list is fully justified by the necessity of eliminating a number of erroneous records which I find had been incorporated into it, a service which lapse of time would eventually have rendered impossible. It is a difficult thing to prove a negative. These errors mainly arose from the incautious publication of unverified statements collected from various sources, without personal examination of the original specimens referred to, an omission which, in every case possible, I have done my utmost to supplement. I am, therefore, assured that my late friend Mr. Birchall, who some ten years ago confided to me the task of revising his Irish Catalogue, would heartily concur in weeding out all doubtful entries, leaving to future workers the task of building up a fuller and reliable record, though Ireland is not likely soon to produce a rival to the "Father of Irish Entomology," as he may well be called, in strenuous research. None but such an indefatigable worker as he could have accomplished so much in so short a time. The present list, therefore, will contain no item which does not rest on my own personal guarantee, or upon that of Mr. Birchall himself (so far as can be ascertained, as below indicated), or upon the identification of the specimens by Mr. C. G. Barrett, the Rev. J. G. Greene, or other competent entomologist of repute. The original list of Micro-Lepidoptera drawn up by Mr. Barrett, and incorporated with Mr. Birchall's Catalogue, has been kindly revised and augmented by him, with such additions as have been latterly added by further researches. I have found much difficulty in certain instances among the Macro-Lepidoptera in deciding whether certain species appearing in Mr. Birchall's Catalogue without particular locality affixed were inserted on his own know-

ledge, or on mere heresay. Those which I have still retained, with some hesitation, are, however, sufficiently indicated by the absence of any distinct locality. This difficulty would not have arisen if my acquaintance with Mr. Birchall had commenced before a period when his failing health precluded the possibility of taxing his memory with such details, and it was distressing to see his anxiety to communicate the intelligence with which his mind was stored, and to assist more fully in the revision which he was desirous to accomplish, but which, except in some instances, was beyond his strength to undertake. He frequently expressed a wish to modify his overstatements of the abundance of many of the species, which has led to frequent comments by later collectors. It is true that formerly the seasons were much more favourable to entomological success, and the summers warmer, so that insects which Mr. Birchall then took in numbers may have diminished in late years, or have not been captured owing to adverse climatic conditions. Even if this be so, a considerable discount must be made in a revised Catalogue if a just representation of the present relative numerical proportions of species is to be put forward, and a fair comparison drawn between the lepidopterous fauna of Ireland and that of other countries. Such statements have been therefore modified and corrected, so far as information personal or other is available, in the present list. To those who may object that the excision of species has been carried too far, I desire, without going into particulars, shortly to explain that I am in a position to justify myself in the great majority of instances by MS. evidence, which fortunately came into my hands; as well as in many other cases by personally assuring myself of the incorrect identification of specimens. In another class of records I have the concurrence of Mr. Barrett in deleting species, whether of probable or improbable occurrence, which have not, since the publication of Mr. Birchall's Catalogue in 1866, been taken in Ireland; as I prefer to secure, as far as possible under the circumstances, an accurate scientific basis upon which future observers may build. Mr. Birchall adopted a more liberal view, as stated in his preface, being "unwilling to reject any reputed indigenous species which could be retained with the least show of reason." This attitude he justified by pointing out that "though the observations of the late Dr. Ball and Mr. Tardy are in many cases still unconfirmed, it proves in my judgment not the absence of the insect, but the want of observers." In this I fully concur, and some of Dr. Ball's records have since been justified, though the want of localities rendered them, to all intents and purposes, unavailable as evidence; but in the case of Mr. Tardy's captures no information could be gained, his cabinet of British Lepidoptera not having been labelled, and no written memoranda extant, a deplorable loss of

skilled observation in Wicklow. The present Catalogue, therefore, is now offered to the public as a very incomplete instalment, and has been based upon that of Mr. Birchall; and the preface cannot be better concluded than by his own words, "the sooner it becomes obsolete, the better will its purpose be answered."

> "Enough if something from our hands have power
> To live and act, and serve the future hour."

My acknowledgments are due to the small band of entomologists, and others interested in Natural History pursuits in Ireland, for much valuable information and assistance. The researches of Mrs. Battersby and Miss Reynell in Westmeath; Mr. Russ at the interesting hill of Knocknarea, and the shores of L. Gill, Sligo; of the Rev. James Bristow and Mr. Watts about Belfast and the Co. Down, and Antrim; the Messrs. Campbell near Derry; and Mr. Donovan in the Co. Cork, have been invaluable. In addition I have to express my especial indebtedness to Colonel Cooper, of Markree Castle, Co. Sligo; and to the late Lord Farnham, Lords Howth, Powerscourt, Kenmare, and other noblemen and gentlemen, who have in various ways afforded facilities for research in their forests and demesnes. My thanks are also due to many of our leading English entomologists for advice and access to their valuable collections, notably the late F. Bond, Mr. Barrett, Mr. South, Mr. Jenner Weir, Mr. Tutt, Mr. Adkin, Mr. Tugwell, and many other correspondents.

Localities and Captors' Names.

Localities such as "Cappagh," "Favour Royal," "Killynon," are intended to include the neighbourhood within a circuit of about three miles radius; but in the case of towns and cities embrace a wider range. The following, however, may be more particularly defined:—"Sligo" includes the shores of L. Gill and the district about Knocknarea; "Markree" includes the deer park, woods, and district about Collooney and Ballysodare; "Farnham" includes likewise the shores of L. Oughter, from Killykeen to Killeshandra; "Derry" refers chiefly to the portion of Inishowen, Co. Donegal, including Ballinagard, Kilderry, and Culmore, lying for about five miles along the western shore of L. Foyle. The initials of the captor, as given below, are appended for the most part to the localities given for all interesting species. Such as are given without initials are records supplied by myself.

A..... J. E. R. Allen; Galway.
B. ..... Edwin Birchall (the late).
C. G. B. ..... Charles G. Barrett, F.E.S., &c.
Mrs. B. ..... Mrs. Battersby; Cromlyn, Rathowen, Westmeath.

Dr. B. ..... Dr. W. E. Battersby; Glendalough, Caragh Lake, Co. Kerry.
Ball ..... Dr. Ball (the late); Curator of the Nat. Hist. Museum, Trin. Coll., Dublin.
Br. ..... The Rev. S. L. Brakey; Trory Glebe, Co. Fermanagh.
Bw. ..... The Rev. Jas. Bristow; Belfast.
Miss G.-B. ... Miss Gore-Booth; of Lissadell, Co. Sligo.
Miss C. ..... Miss Cooper; of Markree Castle, Co. Sligo.
C. ..... The Messrs. Campbell; Ballinagard House, near Derry.
R.-C. ..... E. Roper-Curzon.
D. ..... Charles Donovan; Union Hall, Co. Cork.
Miss ff. ..... Miss ffolliott; Hollybrook, near Boyle, Co. Roscommon.
M. F. ..... Maurice Fitzgibbon; Kilrock House, Howth.
S. R. F. ..... Stephen R. Fetherston-H.; Dublin.
Greene ..... The Rev. Joseph Greene; Rostrevor, Clifton.
Gr. ..... P. Grierson; Cloudalkin, Co. Dublin.
B.-H. ..... G. E. H. Barrett-Hamilton; Kilmannock House, Co. Wexford.
Holt ..... T. R. Holt; Indian Civil Service; formerly Trin. Coll., Dublin.
G. V. H. ..... George V. Hart, LL.D., &c.; Howth.
W. E. H. ..... William E. Hart; Kilderry, near Derry.
J. ..... Rev. W. F. Johnson; Armagh.
K. ..... W. F. de V. Kane. (All localities for Macro-Lepidoptera standing without initials of the captor annexed, the writer is himself responsible for.)
Hon. E. L. ... The Hon. Emily Lawless; Maritimo, Blackrock.
L. ..... C. and G. Longfield; Desertserges Rectory, near Bandon, Co. Cork.
M. ..... C. B. Moffat; Ballyhyland, Enniscorthy.
M'C. ..... Rev. R. M'Clean; Sligo.
A. G. M. ..... A. G. More, F.L.S.; late Curator Museum Science and Art, Dublin.
Miss N. ..... Miss Nugent; formerly of Ardrahan, Co. Galway.
F. N. ..... Frank Neale; Limerick.
Russ ..... Percy G. Russ; Culleenamore, Sligo.
Miss R. ..... Miss Reynell; Killynon, Killucan, Westmeath.
E. S. ..... Eland Shaw; formerly of Dublin.
S. ..... F. W. Sinclair (the late); Trin. Coll., Dublin.
T. ..... W. Talbot. (Captures published in the 'Entomologist' from time to time, but not identified by the writer.)
C. T. ..... Charles Townsend.
U. ..... Richard J. Ussher, J.P.; Cappagh House, Co. Waterford.
Miss V. ..... Miss K. Vernon; Clontarf Castle, Co. Dublin.
Lt. W. ..... Lieut. Walker, R.N.; formerly H.M.S. 'Hawk.'
W. ..... Charles W. Watts; Belfast.

(To be continued.)

SOME REMINISCENCES OF THE LATE PROF. WESTWOOD.

By Rev. O. P. Cambridge.

Among the various obituary notices of the late Prof. Westwood, perhaps that by Mr. McLachlan, in the February number of the 'Entomologist's Monthly Magazine,' p. 49, gives one the best idea of his versatile genius; but I have not seen anywhere any allusion to one of his most noted accomplishments,—the mending of broken insects. I have seen him with his little pot of dirty gum, a bit of an old match, two or three needles and pins, and a paper of the veriest *fragments* of an insect, and in a brief space of time the insect would appear built up in a most marvellous way, almost defying the power of any ordinary pocket-lens to discover that it had ever been otherwise. I remember once, however, finding the Professor's assistant, many years ago, carefully collecting and lightly affixing fragments of numerous insects from an entomological drawer to a sheet of paper. On enquiring what this was for, he said that by-and-bye the Professor would restore each bit to its proper insect throughout the drawer. Presently the Professor walked in, confirmed this statement, and at once set to work with his gum-pot and other implements. I ventured to hint at the chances of some insects obtaining bits to which by nature they might not have been entitled, and so tending to confuse future entomologists. He repudiated the idea with scorn, and, full of confidence in himself, proceeded with his labours. I think this was the secret of his general success in life, as well as in mending insects,—abundance of self-confidence; and, after all, though it might result, as it did, in the instance mentioned by Mr. McLachlan, in mistaking a crushed cockroach of tender age for a gigantic new flea, yet it is a quality without which very little really good or original work is ever done. If future students of the Hope collection of insects should find anything queer in the structure of some of the specimens, it would hardly be inexplicable; but they must not think worse of the dear old Professor than his friends did in the matter of the flea; while if no such results of his mendings should ever reveal themselves, it will be the best possible evidence of his accurate knowledge of varied insect structure, as well as of his dexterous manipulation of insect fragments.

Mr. McLachlan remarks on the Professor's lack of any *sense of humour*. I could illustrate this by several amusing stories; but I will only mention one, in which, it seems to me, that his confidence in himself is also very notable. I was visiting the Museum one summer's afternoon, many years ago, when the Professor informed me that he had a lecture on the next morning, and asked whether I would care to attend it. The subject

(insects injurious to gardens) was a popular one, and he expected a good audience. Ten minutes before the hour of the lecture next day I duly appeared at the lecture-room, where I found the Professor completing his arrangements, and making a final disposition of his beautiful drawings and specimens. We remained there chatting for some little time, but no students or other audience appeared. Half an hour passed; still no arrivals. But the Professor was hopeful (was he not *Hope* Professor? but such a horrible joke could not occur to *him*): "They will come presently; they are often rather late." A gentle knock is heard at the door at last. "Come in;" but no one coming in, the Professor goes to the door. "Is this Professor Westwood's lecture-room?" asks a little timid voice. "Yes, ma'am; we are all waiting." And the Professor returns, followed by a little, rather elderly, frightened-looking lady, who is duly placed in a front seat; whereupon, without moving a muscle of his countenance, the Professor begins, and goes through an excellent and interesting lecture, with this little old lady as his whole audience; for it was only by being employed in assisting him with his drawings and specimens that I could restrain myself from exploding at the absurdity of the whole thing. First and last the Professor was as serious as if the whole University were before him. If he had had even the smallest sense of humour, he must have exploded. After the lecture he merely remarked: "Oh, I daresay there is some cricket match going on to-day; some of the undergraduates do take an interest in Entomology, but there is always boating or cricket going on." I was informed later, from other sources, that the Professor's lectures were not unfrequently attended (or rather *not* attended) as on the occasion mentioned.

It must not be imagined for a moment that in recording these little "items" I desire to speak lightly of the Professor. Some of the most enjoyable hours of frequent visits to Oxford, many years ago, were passed in entomological work in his rooms at the Museum, as well as in his own house; and I never experienced at his hands anything but the readiest and most abundant courtesy, hospitality, and help.

He was, I fancy, about the last survivor of the older generation of entomologists. There may be abler specialists among the present generation, but none, I suspect, who will command more universal regard, either as a man or a scientist, than my old and valued friend J. O. Westwood.

CLOSTERA ANACHORETA.

By Rev. Joseph Greene, M.A.

I feel sure that you will allow me to reply (as shortly as possible) to Dr. Knaggs' charges against me in the matter of *C. anachoreta*.

Firstly, I must express my regret at the half-hearted manner in which he accepts my strong disclaimer of imputing to him any share in what I thought then, and think still, was a dishonest transaction. As Dr. Knaggs modestly expresses his belief that few of the modern entomologists can have any knowledge of him, then surely the explicit and unreserved statement of one who *has* had that knowledge ought to be sufficient for this and any future generation. Dr. Knaggs opens the campaign by asserting, in somewhat queer language, that certain recorded facts omitted by me are in themselves sufficient to "completely knock the bottom out of his theory." I would ask him whether he clearly understands my theory, or, as I prefer to call it, my argument? He conveniently avoids all mention of my summary under this head, and I must therefore ask my readers to carefully peruse it, commencing with the words, "I said," &c., p. 42. He then proceeds to give the omissions on which he relies.

No. 1.—"This beautiful larva," &c. I ask, what on earth has it to say to my argument? Are the italicized words intended to convey the fact that, in confinement, the larva of *C. anachoreta* will eat sallow when it cannot get poplar? Possibly; but as it is, as I believe, universally admitted that its food, in a state of nature, is poplar, the statement of Mr. Norman that he found one pupa under *willow* bark (not sallow) either proves nothing, or, if it proves anything, it is only to lend a certain amount of probability to my supposition that he might possibly have mistaken the species. Further, what are we to gather from the words in small capitals? Is it that Mr. Cooper, who "believes" that his larva was feeding on sallow, was the first discoverer of the insect, and not Dr. Knaggs? Then has the whole entomological world laboured under a false conviction for thirty-four years, since, in 1859, Dr. Knaggs announced the discovery of it by himself ('Zoologist,' vol. xvii. p. 6733); also in the 'Transactions of the Ent. Soc. of London' (vol. v., new series, p. 77). But, whatever it may mean, how does it affect my argument? But I have not quite done with this omission. Having given the quotation from the 'Zoologist,' he goes on to say, "The remainder is omitted, because it is quite irrelevant to the question." Here we are at direct issue. The words ("omitted" by Dr. Knaggs) seem to me very relevant indeed, and are as follow: "The two localities given for the insects are certainly calculated

(if not designed) to lead our assiduous larva-hunters astray; in the 'neighbourhood of London' is literally untrue; 'home counties' is within the verge of truth, but conveys no idea whatever of the exact truth."

Omission 2.—The comments following on this omission are beyond me. No. 1 seems to amount to this: *C. anachoreta*, on good (to me) grounds, is suspected of being imported; but, if so, *C. curtula* and *C. reclusa*, feeding on the same tree, must have been imported too.—Q. E. D. The second comment I pass by, as having no bearing whatever on the matter, further than to (apparently) imply that Dr. Knaggs doubts the sincerity of my disclaimer as to his being, in any way, mixed up with what I considered to be a fraud.

Omission 3.—Again I am at fault. "According to Mr. Greene's reasoning, the reply would be that *C. anachoreta*, being a foreigner, died out from sheer inability to acclimatize itself (precisely), and that *C. curtula* and *C. reclusa* .... Mr. Greene has not suggested any separate theory as to their disappearance." Why should I? What has their disappearance to say to the matter? I do not, for a moment, deny the fact. But when Dr. Knaggs claims, and justly, that the same causes which produced the disappearance of *C. curtula* and *reclusa* and *N. dictæa* and *ziczac*, also caused "the vanishing of *C. anachoreta*," he suddenly stops short, and misses or ignores the whole force of my argument. Having shown that certain causes effected the disappearance of the five species mentioned above, he must, in order to be consistent and "logical," be prepared to prove that the *results* were the same in each case. Let us consider those results. *C. curtula* and the three other species are still to the fore in abundance all over the country, and I have no doubt have continued to appear annually, since 1863, within a few hundred yards of the scene of extirpation. But, *C. anachoreta?* I must now quote myself: "Is it credible that an *indigenous* insect so prolific as *anachoreta*, and whose larva could so easily be found by a practised hand, should so completely disappear after 1864 (when the home-breeding ceased) that no record of its capture, either as imago, pupa, or larva can be found up to the present time, a period of twenty-three years"? This statement may be said to have been never (practically) refuted. True, Dr. Knaggs says that "captures have been recorded from Deal and from Walmer"; but he gives no date and no authority. The more than inference to be drawn from the above comparison of the *results* upon the five species will, I trust, be obvious to my readers. I will now sum up, as succinctly as possible, the whole matter from my own point of view.

The history of *C. anachoreta* may be divided into three periods,—past, present, and future. Past.—The following is an extract from the passage already referred to ('Transactions,' &c.): "The only reputed British examples of this species (*anachoreta*)

hitherto known are contained in the British Museum collection, and were obtained by the late Dr. Leach from the collection of Mr. Spratt; so many years having elapsed without the occurrence of other specimens, its claim to rank as a British insect has been almost universally disputed, and the present capture may, therefore, be looked upon as a re-discovery." Thus it will be seen that, so far as the "past" is concerned, up to 1859, the only claim that *anachoreta* had to be considered a British species consisted in the fact that in the British Museum were two specimens captured, "many years" before, by no one knows whom, or when, or where. We come then to the "present," by which I mean the period of Dr. Knaggs' discovery. Suddenly, after the lapse of "so many years," he announces the discovery of the famous eleven larvæ. It is unnecessary to dwell further here upon the "present" history, as it will be found in full in my paper, by those who care to read it. Then as to its "future," *i. e.*, from 1864 up to date. In broad terms I assert that it has *disappeared*. As to the two cases mentioned by Messrs. Norman and Harbour, I attach no value to them; and with regard in particular to that of Mr. Norman (of whom I may say "that I have not the pleasure of knowing him either personally or by correspondence, or even by sight") I would observe only, that when so experienced a dealer as the late Mr. Weaver, and a still more experienced and well-known amateur naturalist actually mistook a specimen of *C. reclusa* for *C. anachoreta*, it was not an unfair suggestion that Mr. Norman might also have been in error as to the species he bred from his solitary pupa. But I cheerfully give Dr. Knaggs the benefit of these two, and a dozen more isolated cases, if he can produce them. My point is in no way appreciably affected thereby. I am aware that, during recent years, occasional records have been given of breeding the insect, but they have generally been accompanied by "from foreign ova."

Finally, Dr. Knaggs concludes his remarks with a somewhat peremptory statement that it must be "obvious," from the omissions cited, that my inferences have been drawn from "wrong premisses." I will be equally explicit, and say that the "omissions" on which he relies have no bearing whatever on the subject; and that now, after ten more years' experience, I am more than ever convinced that *C. anachoreta* is not an indigenous British species, nor is that conviction likely to be altered in these days of unblushing importation.

Rostrevor, Clifton, Bristol.

PS.—Under the "first omission," Dr. Knaggs writes, "There is no recorded evidence of his (Mr. Cooper's) having collected there in 1859; . . . but I am open to correction." Then, in an N.B., "Mr. Cooper has since given his locality as Saltwood, an

inland locality about six miles from Folkestone" (Entom. p. 112, 1888). Upon referring to the above, I find the statement as given by Dr. Knaggs to be correct, except that he "omits" the *very* important point that Mr. Cooper expressly states that he found these larvæ in 1859 !

CLOSTERA ANACHORETA.—Dr. Knaggs has been for so many years upon the entomological retired list, that it is no wonder he has not earlier replied to Mr. Greene. Will he further kindly say whether, in those bygone days, he ever attempted to diffuse *C. anachoreta* by the establishment of outlying colonies? He is reported to have done so at Deal; and specimens from there, even so late as ten years ago, may be the outcome of some such an effort. With regard to the original captures, the supposition was, of course, that the larvæ or ova were introduced with the young trees. But it is not policy to plant trees in full leaf, and I doubt whether any of the insects named would deposit sufficient eggs upon a *stem* to ensure a brood in the summer. Moreover, years ago I was at some trouble to ascertain whence the trees and shrubs were derived, and ultimately traced them to the late Mr. Masters, whose nursery plantations were almost world-renowned for varieties of forest and ornamental trees. We might then have expected to obtain *C. anachoreta* at Canterbury, which should have been its head-quarters; but I have never heard of its occurrence so far inland, from which I assume that, from whatever source the parents were derived, the balsam poplars had nothing to do with it. In 1888, a single example of *C. anachoreta* (and a variety too) was bred from a cocoon found upon a wall at the back of the Folkestone Road, Dover. Certainly no one had been breeding the insect in the town for many years, if ever, and there had been no young trees planted for five and twenty years within larval reach of the spot. I cordially unite with Dr. Knaggs in regretting that, at the present day, doubts are thrown broadcast upon almost every specimen captured in the past.—SYDNEY WEBB; Maidstone House, Dover.

I should like to add a few words to Dr. Knaggs' interesting note on this species (Entom. 40). On reading the Rev. J. Greene's second article (Entom. xxi. 31), I thought it would be desirable to ascertain some particulars of the planting of these plantations, and accordingly I asked the assistance of Folkestone entomologists for this purpose (Entom. xxi. 90). In reply, Mr. Austen wrote to me that, after considerable trouble, he had ascertained that the trees were supplied from a nursery garden at Ashford. This disposes of the idea of *anachoreta* being imported from abroad with the trees. I may add that I frequently searched the young poplars in Mr. Gibbon's nursery garden at the back of the old windmill, as well as those at the foot of the Dover Hill, and others in the neighbourhood, but without finding a trace of *anachoreta*.—C. A. BRIGGS; 55, Lincoln's Inn Fields, February 14, 1893.

THE WEST INDIAN SPECIES OF *CEROPLASTES*.

By T. D. A. Cockerell.

The Coccid genus *Ceroplastes*, Gray, consists of fourteen described species, of which one is European, one Egyptian, one South African, one from Réunion, one East Indian, one Australian, and the rest American. It is best developed in the neotropical region, although two species occur in Florida, and one of them in Louisiana; as well as a reputed new species in Alabama, and another new species (*C. artemisiæ*, Riley MS., *nec* Rossi) in New Mexico.*

The West Indian species, if we include some new ones, are eight in number, as at present known, and may be ranged in four groups.

Group 1.

Ceroplastes cassiæ, Chavannes, 1848.

Mr. C. A. Barber sent me specimens of a very fine species, which he had found on *Bursera gummifera* at Antigua. At first I thought the insect was undescribed, but on further examination it does not seem distinct from *C. cassiæ*, which was described from Brazil. The scales are large, about 5 mm. long, excluding the spine, somewhat shiny, red-brown in colour, but partly or entirely covered with yellowish white secretion. The wax is thick, and, at least in the adult, there are no distinct lateral plates. Several specimens are often more or less massed together. The caudal horn or spine is stout and very distinct.

C. fairmairei, Targ., 1868, from Montivideo, belongs to the same group, but is not known from the W. Indies.

Group 2.

Ceroplastes floridensis, Comstock, 1881.

There is a large *Ficus* in the back yard of the Museum in Kingston, Jamaica, on which this species abounds. It is not found in masses, or gregarious, but occurs most often singly on the upper side of a leaf, either at the distal end of the leaf-stalk or somewhere on the midrib.

It is noteworthy that in many examples of *C. floridensis* the white secretion of the central plate is not in the centre of it, as in other species, but placed to one side. This character, however, is not invariable, and it may be due to parasites. Although I have reared no parasites from the Jamaican *C. floridensis*, many specimens show holes where they have escaped. A single specimen on *Adiantum*, either *C. floridensis* or closely allied, also shows the middle nucleus of secretion placed quite to one side.

* See 'Amer. Nat.,' May, 1881; 'Insect Life,' vol. iii. p. 398; Howard, 'Descr. N. Amer. Chalcididæ,' 1885, p. 18.

The *Adiantum* scale is referred only with doubt to *floridensis*, because it seems probable that we have a second species of this group in Jamaica, living on ferns. On February 20th, 1892, Dr. H. Strachan gave me some scales found in Kingston on a tree fern. Of these I noted: length 4, breadth 3, height $2\frac{1}{2}$ mill.; colour pale grey, juveniles white. The shape suggests *cirripediformis*, but the apex white, not ringed with dark. This is surely the same insect as that doubtfully referred to *C. vinsoni* in 'Timehri,' Dec. 1889, p. 312, found in British Guiana on ferns. I do not think it is *C. vinsoni*, but will not venture to describe it as a new species.

Group 3.

Ceroplastes cirripediformis, Comstock, 1881.

I found many specimens of this on *Solanum* in Kingston, Jamaica; always on the stems, never on the leaves. The *Solanum* is a large species, with edible fruit, known as soushumber. Mr. Barber sent me a young specimen found on *Eranthemum* at Antigua, which seemed in all things identical with *cirripediformis*.

C. psidii, Chav., and *C. janeirensis*, Gray, are two supposed species from Brazil. Judging from the published figures and descriptions, they are hardly to be separated, as Signoret surmises. They are also evidently very close to *C. cirripediformis*.

Ceroplastes jamaicensis, A. White, 1846.

Found by Gosse at Basin-Spring, Jamaica, and quite insufficiently described by White. So far as the description goes, it indicates a species very similar to *C. cirripediformis* and *C. psidii*.

Ceroplastes depressus, n. sp.

♀ Scale: long. 5, lat. about 5, alt. 2 mm.

Near to *cirripediformis*, but flatter, larger, and circular, or nearly so; one end more or less truncate. Central area oval, dark purplish brown, with an apparent minute white point, due to a white light on a shiny surface. After this, proceeding outwards, a ring of whitish or dull white, and then an obscure purplish ring, from which radiate purplish lines (2 each side, and 2 at one end) on a greyish ground. Chalky white marks round the margin obscure. Under side dark red.

Found by Mrs. E. M. Swainson at Kingston, Jamaica, under the bark of a *lignum-vitæ* tree, June 2nd, 1892, in company with *Icerya rosæ*, R. & H. From it I bred a parasite, kindly identified for me, by Mr. L. O. Howard, as *Comys albicoxa*, Ashmead.

Further specimens, of various ages, are needed to complete the description; but the shape and external characters will sufficiently indicate the species. It is evidently a derivative of the *psidii*-group, adapted for living under bark.

Ceroplastes plumbaginis, n. sp.

Antigua; on *Plumbago capensis* (C. A. Barber).

Egg.—Elongate-oval, pale pink.

Newly-hatched larva.—Caudal filaments long, nearly as long as body, curved, with the convexity outwards, so that they cross one another. Claw with large curved digitules, and tarsus with the usual two clubbed hairs rather strong and thick. The legs bear a few very strong bristles, the largest being apparently on the trochanter. Segmentation distinct. Antennæ with last joint emitting some long hairs, the last of which is at least as long as the whole antenna.

The young larva of *cirripediformis* is said, by Comstock, to be "very slender, dark brown," whereas this larva is yellowish, and broad, with about the outline of *Lecanium hesperidum*. Internal to each caudal filament is a short hair or bristle; these are called by Comstock, in his description of *C. floridensis*, the bristles of the caudal lobes.

Larva.—Has thirteen lateral tufts in all; whereas *cirripediformis* is stated by Comstock to have fifteen.

Adult ♀.—Much resembles *cirripediformis* in appearance, but is unusually high. Length 4, lat. 3, alt. 3 mm. Colour much like *cirripediformis*, summit with a light dorsal patch (the dorsal patch of larva) very small, and surrounded by dark colour. This again broadly surrounded with whitish, and outside this a dark reddish ring (in some specimens obsolete). This dark ring is due to the thinness or absence of the wax at this point. The lateral plates are distinct, and near their lower edges are some conspicuous patches of chalky white secretion. There are two lateral plates on each side, each with its central tubercle, and one at each end, making six in all. However, the anal plate is evidently two joined together, as Comstock remarks of *cirripediformis*. The pink eggs are conspicuous underneath the female.

This species, like others of the same group, lives upon the twigs and branches, not upon the leaves.

When the specimens arrived from Antigua, I found among them a small Coccinellid beetle, which Mr. Schwarz has kindly identified for me as *Scymnus ochroderus* var. *cyanipennis*, Muls. No doubt it is predaceous upon the *Ceroplastes*.

Ceroplastes denudatus, n. sp.

Antigua; on Sour Sop (*Anona muricata*). Collected by Mr. C. A. Barber.

Abundant, clustered on the twigs like *Lecanium hemisphæricum*, which it resembles closely. Very few on leaves, and these on the under side, mostly at base. The size and shape of the scales are like *L. hemisphæricum*, and in age they become almost entirely bare of wax, and resemble in colour the paler specimens of *hemisphæricum*. The length of a scale is one-eighth of an inch.

The old *hemisphæricum*-like scales are, however, seen to have at the summit the elongate whitish patch of *Ceroplastes*, and some bright white patches remain round the margin. The scales which have not lost the wax are dull pinkish white, with the dorsal patch broadly margined with brown-pink; and the lateral plates, somewhat broader than long, with their central white patches or knobs similarly margined.

The species is allied to *cirripediformis*. It might be confounded with *janeirensis*, but it is smaller than that scale.

The specimens sent from Antigua were badly attacked by the larvæ of some moth, probably a *Phycid*, so that many of their characters could not easily be made out.

Group 4.

Ceroplastes utilis, n. sp.

Island of Grand Turk. Collected by Dr. H. Strachan.

On a tree or bush not identified, with brownish grey bark, and small entire or slightly crenate leaves with oblique bases. On a branch, 4 mm. diam., is a mass of white wax surrounding it, with a diam. of about 1 cm. The mass is about 28 cm. long. This is composed of Coccids, embedded in wax: one (with its wax), separated from the mass, is about 7 mill. long, 5 broad, and 4 high. Beneath, the insect itself appears dark brown, and is about 4 mill. long, oval in outline. Above, there is a depression in the wax, in the middle of which can be seen a small narrow-oval tubercle, corresponding to the central tubercle of other species of the genus. When the wax is removed the insect is dark brown, convex, about the shape of *C. cirripediformis*, except that the apex is raised and pointed, and the lateral knobs are inclined to be likewise, especially at one extremity. Seen by transmitted light the scale is blood-red, becoming yellow on the sides. Boiled in soda they turn it madder-pink, and the wax is deposited on the sides of the test-tube. The young, as seen deposited in this wax, are nearly colourless or pale brown, with dark brown legs and posterior cleft. They are oval in outline, and resemble the young of *Lecanium*. The posterior cleft is very distinct and wide. A very long hair arises from the last joint of the antennæ. The legs and antennæ extend considerably beyond the margin of the body. The edges of the posterior cleft emit two long filaments, which slightly diverge from one another. There is a rather short caudal stylus. Mouth parts distinct; rostral filaments not extending to end of body. Second pair of legs nearer to third pair than to first. Claws with knobbed digitules. Antennæ apparently of six joints; third longest, then sixth; second not longer than fourth.

Adult female shiny, sides strongly wrinkled; apparently no legs or antennæ.

If this species could be obtained in abundance, the wax might be of commercial value. *C. ceriferus*, Anders., which apparently produces much less wax, has been utilised, the product being known as "Indian White Wax."*

Institute of Jamaica, Kingston, Jamaica, Dec. 9, 1892.

THE CYANIDE-REACTION WITH YELLOW LEPIDOPTERA.

By F. H. Perry Coste, B.Sc. (Lond.), F.C.S., F.L.S.

(Continued from p. 5.)

IV.—Effect of other Potassium and of Sodium Salts.

Now, although I had from the first attributed the cyanide-reaction, produced by KCN, to the cyanogen radicle in that compound, yet it might have been legitimately objected that at least

* See Spon's Encycl., vol. ii. (1882), p. 2045.

I ought to try whether any reaction took place with other potassium salts. It so happened that last year, after the earlier portion of these experiments—but before the main bulk—had been made (my attention having been for some months diverted to other work), I saw in the 'Entomological Record' for 1891 (p. 201–2) a note by Mr. J. Warren, who stated that a friend of his had observed *potassium chloride* to redden *G. rhamni*. This timely reminder resolved me to lose no more time in systematically working out this subject.

I accordingly instituted a series of experiments with potassium salts. About one dozen and a half salts were taken, and each was tested with at least two yellow species. Here, again, the results were, without exception, negative. Potassium, except in combination with cyanogen, seems to produce no reddening of yellow wings.

Since the analogies of potassium and sodium are so clear, it seemed worth while to make a parallel series of experiments with sodium salts. Eleven different salts were taken and tested, with wholly negative results, except in one instance, that of *sodium arsenate*, the consideration of which I, for the moment, defer. Putting on one side this exception (which, as will appear directly, belongs to quite another category), we find that sodium salts, other than the cyanide, are quite inactive.*

V.—Effect of Lithium Salts.

Having investigated the reactions of compounds of these two common alkalis (to say nothing of their analogues, the ammonium salts), I thought it would be very interesting to ascertain what could be done with salts of a rarer alkali. The salt chosen to be tested was *lithium sulphate*, and here at last a reaction *was* found to occur; for when wings of *Terias nicippe* and of *Colias edusa* were placed on damp $Li_2\,SO_4$ a very marked colour-change was found to occur. The *wing* was not altered to red as in the cyanide experiments, nor was the reaction that did occur so rapid as with cyanide; but after a time the *surface* of the $Li_2\,SO_4$ either round the wing or, still more, underneath it, was found to be dyed a beautiful *purple-pink colour*. The action seemed to be this,—that the yellow pigment was slowly extracted from the wing, and at the same time, or immediately afterwards, reacted with the lithium sulphate to form the purple-pink colour. This clue was followed up, and a number of yellow and also of chestnut species subjected to the action of lithium sulphate. The result was that whilst most of the Pieridæ yielding the red cyanide reaction also gave this purple-pink lithium salts reaction, in *no case* was this obtained from species that do not react with the cyanide. Fur-

* I should add, however, that these sodium experiments were by no means as full as I should have wished them to be; but I hope next season to make further experiments with sodium salts.

thermore, out and away the best lithium results were obtained with the *orange* wing of *G. cleopatra*, which had also afforded so fine a cyanide-reaction; for, in this instance, in the course of some two or three weeks' exposure, the whole mass of the lithium sulphate was found to be dyed purple-pink. It is noticeable that this reaction is more marked with orange species, *e.g.*, *Terias nicippe*, *C. edusa*, *G. cleopatra* (fore wing, male), than with the merely yellow; clearly the natural orange is one stage nearer to this artificial purple-pink* than are the yellows. This entirely accords with the views already expressed as to the genealogy of these colours.

It was thought interesting to determine whether the same reaction could be obtained with other salts of lithium, and accordingly a few experiments were made with the chloride. This was found, however, to be, physically, so unsuitable a reagent, that it was quickly abandoned. It is proposed, however, to further investigate this subject by experimenting with other lithium compounds.

These lithium results gave a new aspect to this work, and, indeed, seemed at first only to confuse such notions as one had previously formed. Before hazarding any opinion on the phenomenon, it was clearly necessary to determine whether this reaction were confined to the lithium salts, or whether it would be obtained from others also. This led to several of the experiments with sodium salts, and while it was found, as previously stated, that the majority of them were without any action, in one case there was a positive result; for sodium arsenate, tested with *G. cleopatra*, showed a very faint pink tinge. The pink was very faint, it is true, and, although noticed within seven days from the commencement of the experiment, it was found no more marked after a further exposure of two weeks. With the exceptions, therefore, of sodic arsenate and lithium sulphate, no other alkaline salts have been found to give this purple-pink reaction.

(To be concluded.)

CAPTURES AND FIELD REPORTS.

Colias edusa in November.—Not having seen any record of *Colias edusa* in November, I thought it might be of interest to state that I captured my last specimen on Nov. 3rd, at Littlehampton. It was a small male, and in fine condition, I should think having emerged that day.—Percy J. Lathy; Bexley Heath, Jan. 26, 1893.

Cnethocampa pityocampa, *Schiff.*—I saw some nests of the larvæ of this destructive species yesterday, near a place called Saint-Pancrace, about

* The colour was exceedingly like that of an alkaline solution of phenolphthalein.

six miles or so north of Nice. On examining one of the silken pouches, which are spun up in the branches of the pine trees, I found the caterpillars rather less than a third full-fed. These larvæ hybernate. *Cnethocampa pityocampa* lives on different kinds of pines—*Pinus sylvestris, P. maritima,* and *P. pinea.* I have not noticed the caterpillars (which are exceedingly common) so abundant near the town as in the country.—F. Bromilow; Nice, S. France, Dec. 29, 1892.

Thera firmata and Anticlea derivata recorded in error. — I have to apologise to you and your readers for having, in my note of Sept. 3rd, 1892 (Entom. xxv. 310), stated that amongst the miscellaneous captures taken by me at Bognor were *Thera firmata* and *Anticlea derivata;* both of these I unfortunately wrongly identified, as kindly pointed out to me by Mr. Prout. The supposed *Thera firmata* is *Ellopia fasciaria,* and my *Anticlea derivata* is really *Anticlea rubidata.* — Herbert C. Gentry; Marian House, Goulton Road, Jan. 3, 1893.

Re-occurrence in Britain of Catocala electa, *Bkh.* — In the 'Entomologist,' vol. viii. pp. 282—3, is to be found an account, by Mr. A. C. Vine, of the capture of an example of this handsome moth, which he took at sugar in the neighbourhood of Brighton on September 24th, 1875. The species was then new to Britain, and as it was apparently not met with during the next sixteen years, this is the only record of its occurrence in the British Isles. I am greatly delighted, therefore, to be able to contribute a note on the capture of a second British specimen, as I had the good fortune to take one here, inside our walled garden, on September 12th last; it had found its way into one of the "traps," which we always use for trying to attract the numerous flies and wasps away from the ripe peaches. On first catching a glimpse of it, I had no idea what a prize was within my reach, for, until it was taken out of the trap and its peculiar markings became visible, my impression was that it must be *Catocala nupta,* of which the only two examples that I had ever met with were caught in a similar trap in our garden in September, 1875. As it was clear that it could not be that insect, I procured continental specimens of *C. electa* with which to compare it, and found that it was identical with them. Although the moth has "seen better days," its condition is by no means bad, except as regards the right hind wing, which is unfortunately far from perfect. It is most satisfactory to be able to chronicle the fact that all the five British representatives of the genus *Catocala* have now occurred in the county of Dorset. — Eustace R. Bankes; The Rectory, Corfe Castle, Dorset, February 6, 1893.

Nyssia hispidaria in North Staffordshire.—As *N. hispidaria* is new to our North Staffordshire list, you may perhaps think it worth while to record the breeding of four specimens, three males and one female, from larvæ beaten by me from oak in May last year, in this neighbourhood.—F. C. Woodforde; Market Drayton, Salop, February 12, 1893.

Amphidasys betularia var. doubledayaria in Staffordshire.—In July, 1890, I captured a moth at Abbot's Bromley which I was unable to name. The other day it was identified as being the black variety of *A. betularia.* It is a large specimen, measuring 2⅜ inches. — (Miss) M. Wilson; Guilden Morden Vicarage, Royston, Cambs., February 9, 1893.

Collecting at Bournemouth, 1892.—*Saturnia pavonia,* plentiful on heath in May. *Bombyx rubi,* abundant; bred about 40. On May 24th

I took eight *Colias edusa*, five males, several very large and in good condition. On same date *Vanessa cardui*, abundant in lucerne field and in good condition. On June 4th I had the good luck to take a perfect specimen of *Deiopeia pulchella* at Southbourne, on the edge of a field of young wheat. On June 14th my friend Mr. Hooker took 48 *Emydia cribrum* at Ringwood. In September we took about 130 *Colias edusa*, including 14 of the var. *helice*. The first week in October we took 14 *Sphinx convolvuli* hovering over *Nicotiana affinis*. October 16th we took a good specimen of *Dasycampa rubiginea* from ivy blossom. Being our third season, we have been fairly successful. — Wm. Boywood Davis; Bournemouth.

Notes on Lepidoptera in the Bloxworth District in 1892.— Although rather late in the day, the following list of Lepidoptera, taken for the most part in and near Bloxworth, Dorset, in the past season, may perhaps still be of interest. Among the Rhopalocera none were very abundant; of *Argynnis paphia* a fair sprinkling, and of *A. euphrosyne* fewer than usual. Even *Vanessa urticæ* was not abundant, while *E. janira* was decidedly scarce. *Colias edusa* appeared in some numbers early in June, but the later summer brood—though numerically more plentiful—was not in anything like the abundance recorded in numbers of other districts. *Lycæna ægon*, often almost swarming on the heath, was by no means common. *Nemeobius lucina* occurred in fair quantity in its usual localities. Among the Heterocera the following, among many others, occurred:—*Macroglossa fuciformis*, several. *Hepialus hectus*, in unusual abundance. *Saturnia pavonia*, more common than usual on the heath. *Notodonta dromedarius*, larva on alder; *N. trepida*, larva on oak. *Tapinostola fulva*, at dusk in a swamp. *Noctua ditrapezium*, six at sugar, on two nights in July, in fine condition. *Tryphæna orbona* (*subsequa*, Hb.), at sugar. *Scopelosoma satellitia*, abundant at sugar. *Tethea subtusa*, beat from sallow. *Agriopis aprilina*, abundant at sugar. *Miselia oxyacanthæ*, at sugar. *Xylina socia* (*petrificata*), a few at sugar. *Plusia gamma*, unusually scarce. *Schrankia turfosalis*, in bogs and swamps in abundance. *Nemoria viridata*, not scarce. *Abraxas grossulariata*, not at all common. *Lomaspilis marginata*, unusually abundant. *Emmelesia alchemillata*, scarce; *E. affinitata*, rather abundant, but local; *E. unifasciata*, one specimen. *Eupithecia dodoneata*, not scarce. *Phibalapteryx vitalbata*, one specimen. *Leioptilus microdactylus* and *L. tephradactylus*, rare. *Aciptilia paludum*, scarce, but the few specimens obtained were unusually fine. *Mimæsophilus zophodactylus*, frequent. *Crambus uliginosellus*, unusually abundant. *Rhodophæa advenella*, one specimen, just out, beat from whitethorn. *Tortrix cratægana*, several among oak. *Peronea rufana*, several among sallow; *P. umbrana*, at ivy bloom in September. *Dictyopteryx forskaleana*, abundant, especially on and near a large maple tree. *Diluta semifasciana*, scarce, among sallow. *Penthina fuligana*, not scarce. *Eriopsela fractifasciana*, abundant, but very local on heath. *Sciaphila sinuana*, occasional, but scarce. *Phoxopteryx siculana*, several, among sallows, &c., in a marshy spot. *Grapholitha geminana* (Stephens), very abundant among bilberry. *Olindia ulmana*, scarce. *Stigmonota perlepidana*, abundant in one locality. *Dicrorampha acuminatana*, occasional. *Catoptria albersana*, rare. *Eupœcilia geyeriana*, much scarcer than in the preceding year; from some cause or other the food-plant, *Pedicularia palustris*, almost disappeared: *E. rupicola*, not rare in swamps; *E. notulana*, scarce, in boggy places. *Lobesia*

reliquana, abundant in oak underwoods. *Argyrolepia subbaumanniana*, abundant in one chalky locality. *Tinea albipunctella*, occasional; *T. nigripunctella*, rare. *Phylloporia bistrigella*, not rare, among birch underwood. *Lampronia luzella*, rare in woods. *L. prælatella*, abundant in the same same spots as *L. luzella*. *Micropteryx mansuetella*, very abundant. *Nemotois minimellus*, occasional. *Plutella cruciferarum*, abundant, but not by any means the pest it appears to have been in many other districts. *Cerostoma sylvella*, usually in fair numbers—it has been very scarce in the past season; *C. alpella*, not scarce; *C. lucella*, scarce, but in precisely the same spot as in past seasons. *Pteroxia mucronella*, a single specimen only. *Psoricoptera gibbosella*, although looked for, was not found, where in a former year it was abundant. *Argyritis pictella*, abundant on the Chesil Beach, Portland. *Aphodia bifractella*, scarce. *Ergatis ericinella*, one only; in some seasons abundant on the heath. *Cleodora cytisella*, occasional. *Glyphipteryx schœnicolella;* from a similar number of rush heads, gathered in 1891 and 1892, numerous specimens were bred in the former, but only two in the latter, year. *Tinagma betulæ*, fairly abundant, but in nothing like the numbers of the preceding year. *Gracilaria elongella*, occasional both in birch and oak woods, and in an alder swamp; *G. imperialella*, one, in fine condition, swept among low herbage in a swampy place, on the 22nd of August; this is only its second record in the county of Dorset, one having been taken at Glanville's Wootton by the late Mr. J. C. Dale, May 25th, 1840. *Coleophora discordella*, abundant. *Bedellia somnulentella*, bred freely from larvæ mining the leaves of *Convolvulus major;* they leave the mine readily, and quickly eat their way in again between the two surfaces of the leaf: the moths come out at intervals from the end of September to the end of November; several were caught on the wing in a wood, and one was beat from a hedge on Lodmoor, Weymouth. *Cosmopteryx orichalcella;* two were swept among low herbage in a wood, on July 7th and 9th; one was in excellent condition, one worn: this is its first record in the county of Dorset. *Chauliodus illigerellus*, abundant. *Laverna lacteella*, frequent; *L. rhamniella*, scarce. *Chrysoclista schrankella*, abundant. *Asychna terminella*, occasional. *Antispila pfeifferella*, one beat from dogwood (abundant at Portland, but not before noted here); *A. treitschkiella*, two bred from dogwood. *Stephensia brunnichella*, eight, swept, mostly in fine condition, from June 1st to 11th. *Elachista magnificella*, several, swept, in good condition, July 30th to August 18th; *E. gleichenella*, abundant, near the end of June; *E. albifrontella*, very plentiful; *E. cinereopunctella*, very plentiful in one locality, at the end of May; *E. luticomella*, frequent, from the 10th to the end of June; *E. monticola*, abundant; *E. megerlella*, two, on August 4th; *E. paludum*, not scarce, from June 1st to end of August; *E. triatomea*, one only, but it was late in the season before its locality was found. *E. pollinariella*, one, new to this district, but not rare at Portland. *Lithocolletis anderidæ:* I did not succeed in breeding a single one this year out of 1226 mines in birch leaves—from these, however, there emerged 293 *L. ulmifoliella*, but very few ichneumons; in 1891, 630 mines produced 8 *L. anderidæ*, 150 *L. ulmifoliella*, and crowds of ichneumons. *L. cavella*, a few bred from birch mines; *L. nicellii*, ten bred from about thirty mines in hazel leaves, and several beat from underwood; *L. schriebereila*, one bred from elm, new to this district. *Cemiostoma lotella*, local, but the mines were observed in several fresh localities, and two moths were swept. *Bucculatrix nigricomella*, very abundant. *Nepticula intimella*, several bred from birch and

sallow bushes; *N. tityrella*, bred from beech; *N. prunetorum*, bred from sloe; *N. alnetella*, two, beat from alders. *Bohemannia quadrimaculella*, six beat from alder, in fine condition, July 26th to August 21st. —(Rev.) O. P. CAMBRIDGE; Bloxworth Rectory, Jan. 31, 1893.

COLEOPTERA IN THE OXFORD DISTRICT.—I have to record the capture of the following Coleoptera (Geodephaga) during 1892: — *Lebia chlorocephala*, amongst grass at Cowley, near Oxford. *Dyschirius æneus*, two examples at Cowley. *Clivina collaris*, in dung near Oxford. *Oodes helopoides*, half-a-dozen specimens from under the bark of willows, near the Cherwell. *Panagæus crux-major*, near Shotover, under stones. *Calosoma inquisitor*, two examples in Bagley Wood. *Cychrus rostratus*, several examples from under dead leaves, and in rotten stumps near Oxford. *Badister unipustulatus* and *B. bipustulatus*, at Cowley, in company with *Taphria vivialis*. *Bembidium lunatum*, one specimen was taken in flood refuse near the confluence of the Cherwell and Thames. The male and female of *Brachinus crepitans* were taken *in cop.* at Cowley. — JOHN W. SHIPP; Assistant to the late Prof. Westwood.

NOTES FROM ITALY. — After sending my report from Certosa di Pesio (Entom. xxv. 261) a new brood of *Pieris napi*, L., ab. *Napææ*, E., appeared in the meadows. *P. daplidice*, L., was also to be taken, the specimens being freshly emerged. *L. telicanus*, Hb., also became common in the Certosa neighbourhood. *Spilothyrus althææ*, Hb., was not uncommon towards the middle of September. *Colias edusa* and var. *helice* were common and fresh, as was *C. hyale*, L. I tried "sugar" in the grounds of the hotel—an ideal sugaring-ground of large extent, encircled by a high wall, containing a great variety of timber and bordering on the forests clothing the mountain sides: the first attempt was made on the 5th of September, and continued nightly for about three weeks. A good many insects were taken; among them several fine examples of *Catocala fraxini*, L., the largest measuring four inches and one-tenth in expanse. The only available beer to use in the manufacture of the "sugar" was bottled beer; the sweets were supplied by lump sugar, and rum at 7½d. the liqueur glass; then I had no poisoning bottle or chip boxes, so that each insect had to be taken in the net and pinched previous to pinning in a collecting-box. However, the results were satisfactory, and I must await my return to England to determine several of the captures. At San Dalmazzo di Tenda, which I should think would make a capital centre for collecting during the summer, I took, during the one day I remained there, several fine specimens of *Lycæna bætica*, L. *L. telicanus*, Hb., was very common on flowers of *Aster amellus;* and fairly fresh specimens of *Limenitis camilla*, F., *Satyrus hermione*, *S. circe*, *S. statilinus*, and *S. semele* were on the wing, and quantities of *Colias edusa* and var. *helice*, Hb., together with *C. hyale*, enlivened the rocky hill-sides. At Bordighera, where I arrived on the 1st of October, I found *L. bætica*, L., fairly common, especially in some fields near the mouth of the Nervia; the females depositing their eggs on the flowers, fruit, or, more rarely, the leaves, of *Medicago sativa*. *L. telicanus* was also common, and the two insects continued on the wing, in sheltered spots, where flowers of *Inula viscosa* abounded, throughout October. Some males of *L. bætica* were thickly powdered with bright blue hairs, and some females measured nearly an inch and a half in expanse. On the sea-sands flowers of *Pancratium maritimum*, L., so attractive to moths, still

lingered, as did blossoms of *Vitex agnus-castus*, and were haunted by the "tailed" blues. Other rare plants in flower were *Sternbergia lutea*, *Plumbago europæa*, *Muscari parviflorum*, *Crocus medius*; the only known localities being the grassy summits of a few of the higher mountains along this coast for this last, and near Final marina *Campanula isophylla*; so, as will be seen, those who arrive early in the autumn find many very interesting and lovely botanical rarities, as well as insects. I forgot to mention that *Syrichthus fritillum*, Hb., var. *alveus*, Hb., is still to be caught in sheltered nooks, and that *Deiopeia pulchella*, L., was rather common during the second week in October along the coast. I had noticed specimens of this insect in the same places last May. It becomes quickly ragged and torn, from its habit of plunging into the thistles that grow on the shores.—FRANK B. NORRIS; October 31, 1892.

NOTES AND OBSERVATIONS.

NOTES ON EUPŒCILIA GEYERIANA AND CEMIOSTOMA LOTELLA.—*Eupœcilia geyeriana* appears to be an instance of what has been thought, in many other cases, to be "double-broodedness." Previously I had only met with this insect in August, but during the season of 1892 I took eight fine specimens on the 25th of May; fifteen on the 30th of May, in company with Mr. Eustace Bankes, and a few others shortly after; also several on different days during June, and one on the 15th of July. In August it appeared again in larger numbers, but scarce compared with the previous year, when the food-plant (which had almost disappeared in 1892) was in profusion. Mr. Richardson, again, found the larvæ in a plant I sent to him on the 5th of July, 1892. From my own and Mr. Richardson's observations (see Proc. Dorset Nat. Hist. and Antiq. Field Club, xiii. p. 173) it appears that some of the larvæ, hatched probably in June and July from the May insects, remain throughout the winter in the decayed seeds or stems of their food-plant, and emerge to form the following scattered May, June and July brood, and from this brood proceed the more compact August brood of perfect insects, as well as the hybernating larvæ which produce the following May and June brood. This process can scarcely be properly called "double-brooded," though it is very probably the case also with many other so-called "double-brooded" moths. It can hardly be that the August brood should produce larvæ, as by that time the plant has died down and all signs of life have disappeared. In the volume above cited, Mr. Richardson has a coloured plate illustrating this moth, as well as its larva and food-plants, from Mrs. Richardson's beautiful drawings. The larva has not, I believe, been either figured or described before. The following somewhat similar facts relating to the pretty little moth, *Cemiostoma lotella*, may not perhaps be generally known:—In August, 1891, I bred it freely from a lot of mines found in *Lotus major*, in July; and from the same lot there emerged seven moths, on the 29th and 30th of May, 1892. From larvæ or pupæ thus hybernating, and emerging in spring, it seems then almost certain that the summer brood arises. Unless it had been bred as above noted, it would be most natural, on finding the perfect insects in the month of May, to conclude it to be distinctly double-brooded, much as in the case of *Eupœcilia geyeriana* mentioned above.—(Rev.) O. P. CAMBRIDGE; Bloxworth Rectory, Wareham, Dorset.

Vanessa atalanta, &c, in the South of France. — At this time of the year there are few species of Lepidoptera to be seen on the wing, even in this favoured district. *Pieris brassicæ* is no longer to be met with, though the pupæ of this pest of the kitchen-garden (in the larval state, that is to say) simply swarms on palings, outhouses, &c. Only the other day I saw clusters under the cornices of a gate-post. *Vanessa atalanta* may be noticed all the year round, freshly emerged from the chrysalis; though individuals are also to be seen, in poor condition, during the winter and spring months as well. On the 18th inst., in the country, a short distance out of Nice, I observed a solitary *V. atalanta* disporting itself among the trees on the hill-side. It seemed to be playing "hide-and-seek" with the sunlight glinting through the foliage. It may also be seen in warm spots, even on the outskirts of the town. I may add that I found a very small larva on *Parietaria officinalis* (pellitory) this morning. No doubt it would be interesting to hear the experiences of collectors in other parts, in this connection. Of course I cannot say whether the species occurs during the winter, throughout the *whole* Riviera region; but, at any rate, I do not expect it flies, at this season, north of the Alps.—F. Bromilow; "Avalon," St. Maurice, Nice, S. France, Dec. 21, 1892.

Aberration of Polyommatus alciphron *var.* gordius, *Stgr.* — Last summer I was fortunate enough to capture two remarkable varieties of *P. gordius* in the Alpes-Maritimes, and not far from the Italian frontier. The two specimens, which are now in my collection, are females. This form has fewer spots than the type, thus corresponding to the var. *neera*, F. de W., of *Melitæa didyma*, O. On the upper side the fore wings have the spots much smaller than in the typical *gordius;* hind wings with the central row of spots entirely wanting; but it is on the under surface that the most remarkable difference exists. The hind wings, especially, have only the double hind-marginal row of dots, all spots intervening—with the exception of the central group—being absent. M. Charles Blachier, of Geneva (member of the Soc. Ent. de France, &c.), to whom I wrote for information on the subject, says "it must certainly be considered as an accidental *aberration* of the typical *gordius*." He adds, that this absence of spots in the genera *Polyommatus* and *Lycæna* is not very rare. I myself possess a male example of *L. cyllarus*. Rott. (in which all the spots on the under side of the hind wings are completely wanting). Bellier de Chavigneric, who collected a good deal in the South of France, writing in the 'Annales de la Soc. Entom. de France' (1858, p. 306), says, "Aber. ♀ ocellated spots on the under side almost entirely absent." Three only were caught in the course of the season (of which two were taken by myself). All stages intermediate between the typical var. *gordius* and this extreme form may be met with.—Frank Bromilow; Nice, S. France, Nov. 4, 1892.

[Mr. Leech has a male specimen from Germany in his collection, which is exactly of the same form as that described above. There is also, in the same collection, a female example from Spain, with the fore wings normal on the under side, but the hind wings are aberrant as in the variety referred to by Mr. Bromilow. The variety is figured by Herrich-Schäffer under the name of *P. hipponæ* (pl. 73, fig. 356).—Ed.]

Stauropus fagi.—In my note, dated 8th January last (*ante*, 59), reference to my previous statement that *Stauropus fagi* adopted the smaller and even the smallest trees as their resting-place, should be Entom. xxiv. 173, and xxv. 145. This statement, somewhat ridiculed

when first advanced, has, I am glad to see, in a paper by Mr. A. F. Bayne ('Record,' iv. 34), been allowed to pass from the region of theory into that of acknowledged fact.—J. Clarke; Reading, Feb. 17, 1893.

Further Notes on the Economy of Retinia resinella, *Linn.*—In an earlier number of this magazine (Entom. xxiii. 76), I gave a brief sketch of the probable life-history of *Retinia resinella*. I have since, chiefly through the kindness of friends resident in the North, and others who have journeyed thither for the purpose, been able to verify the details then given. But one point in the economy of the species, of which I then had some knowledge, but which appeared to be so extraordinary that I refrained from publishing it until I had further opportunity of investigation, appears to be perfectly correct, namely, that the insect not only takes two years to complete its metamorphosis, but that the imagines appear only in alternate years; thus in 1888, 1890, and 1892 immature larvæ only were to be found; while in 1889 and 1891 the larvæ found in the spring months were invariably full-fed, and the imagines subsequently appeared. Many species occurring in North Britain are, I believe, to be found much more abundantly in alternate years, but I am not aware of any so completely biennial in their appearance as *resinella*, nor am I aware whether this species has a similar habit in other countries. Possibly some of our continental friends may be able to give us some information on this point; but providing that in such places the imago is annual in its appearance, the peculiarity above referred to would appear to point strongly to the species being a recent introduction to this country.—Robt. Adkin; Lewisham, Feb. 1893.

SOCIETIES.

Entomological Society of London.—*February 8th*, 1893.—Henry John Elwes, Esq., F.L.S., F.Z.S., President, in the chair. The President announced that he had nominated Mr. F. DuCane Godman, F.R.S., Mr. Frederic Merrifield, and Mr. G. H. Verrall, as Vice-Presidents during the Session 1893–1894. Mr. Charles R. C. Hibbert, of Holdfield Grange, Coggeshall, Essex; Mr. Oswald B. Lower, of Bleak House, Parkside, Adelaide, South Australia; and Mr. John Baxter Oliver, of 12, Avenue Road, St. John's Wood, N.W., were elected Fellows of the Society. Mr. S. Stevens exhibited a specimen of *Chærocampa celerio*, in very fine condition, captured at light, in Hastings, on the 26th September last, by Mr. Johnson. Mr. A. J. Chitty exhibited specimens of *Gibbium scotias* and *Pentarthrum huttoni*, taken by Mr. Rye in a cellar in Shoe Lane. He stated that the *Gibbium scotias* lived in a mixture of beer and sawdust in the cellar, and that when this was cleaned out the beetles disappeared. The *Pentarthrum huttoni* lived in wood in the cellar. He also exhibited *Mezium affine*, taken by himself in a granary in Holborn. Mr. McLachlan exhibited a large Noctuid moth, which had been placed in his hands by Mr. R. H. Scott, F.R.S., of the Meteorological Office. It was stated to have been taken at sea in the South Atlantic, in about lat. 28° S., long. 26° W. Colonel Swinhoe and the President made some remarks on the species, and on the migration of many species of Lepidoptera. Mr. W. F. H. Blandford exhibited larvæ and pupæ of *Rhynchophorus palmarum*, L., the Gru-gru Worm of the West Indian Islands, which is eaten as a delicacy by the Negroes and by the French Creoles of Martinique. He stated that

the existence of post-thoracic stigmata in the larva of *R. cruentatus* had been mentioned by Candèze, but denied by Leconte and Horn. They were certainly present in the larva of *R. palmarum*, but were very minute. He also exhibited a piece of a drawing-board, showing extensive injury by Longicorn larvæ during a period extending over seven years. Mr. G. T. Porritt exhibited two varieties of *Arctia lubricipeda* from York; an olive-banded specimen of *Bombyx quercus* from Huddersfield; and a small melanic specimen of *Melanippe hastata* from Wharncliffe Wood, Yorkshire. Mr. H. Goss exhibited a few species of Lepidoptera, Coleoptera, Hemiptera, and Neuroptera, sent to him by Major G. H. Leathem, of the 31st Regiment, who had collected them, last June and July, whilst on a shooting expedition in Kashmere territory. Some of the specimens were taken by Major Leathem at an elevation of from 10,000 to 11,000 feet, but the majority were stated to have been collected in the Krishnye Valley, which drains the glaciers on the western slopes of the Nun Kun range. Mr. Elwes remarked that some of the butterflies were of great interest. Mr. G. F. Hampson exhibited a curious form of *Parnassius*, taken by Sir Henry Jenkyns, K.C.B., on the 29th of June last, in the Gasternthal, Kandersteg. Mr. J. M. Adye exhibited a long series of remarkable varieties of *Boarmia repandata*, taken last July in the New Forest. Mr. C. O. Waterhouse exhibited a photograph of the middle of the eye of a male *Tabanus*, showing square and other forms of facets, multiplied 25 times. Mr. Roland Trimen communicated a paper entitled "On some new, or imperfectly known, species of South African Butterflies," and the species described in this paper were exhibited. Mr. T. D. A. Cockerell communicated a paper entitled "Two new species of *Pulvinaria* from Jamaica." Mr. Martin Jacoby communicated a paper entitled "Descriptions of some new genera and new species of Halticidæ."—H. Goss, *Hon. Secretary*.

South London Entomological and Natural History Society.—*February 9th*, 1893.—Mr. J. Jenner Weir, F.L.S., President, in the chair. Mr. Frohawk exhibited hybernating larvæ of *Epinephele ianira*, and stated that they fed intermittently throughout the winter, seldom remaining more than ten or twelve days without food. Mr. Adkin, a series of *Aplecta prasina* (*herbida*), bred from ova obtained from a moth captured at Polegate, Sussex, during the past summer; he stated that the larvæ showed a disposition to hybernate, and were with difficulty induced to feed up. Mr. Waller, a bred series of *Smerinthus tiliæ* from the London district; one of the specimens exhibited a tendency towards melanism. Mr. McArthur, *Tæniocampa gothica* var. *gothicina*, *Coccyx cosmophorana*, and *Retinia duplana*, and a discussion ensued, Mr. Barrett stating that, in his opinion, the earlier specimens of so-called *R. duplana* brought from Scotland were only small specimens of *R. turionana*. Mr. Adye, a fine and variable series of *Boarmia repandata*, taken at sugar in the New Forest in July, 1892. Mr. Weir exhibited a photograph, taken from 'Insect Life' for January, 1893, of a twig bearing some two dozen specimens of *Anosia plexippus* resting at night during migration, and read a paper which illustrated the migratory instinct of this and, indirectly, of other species. A discussion, in which Messrs. Barrett, Weir, and Hawes took part, then followed, it being noted that whereas some dozen or more captures of *A. plexippus* were recorded for this country, only three were known to have been taken on the continent of Europe. Mr. Mansbridge read a

paper entitled "Notes on melanism in Yorkshire Lepidoptera," and exhibited a large number of specimens in illustration; he remarked on the tendency to melanism shown by many species within the boundaries of the towns, whilst in damp spots, barely five or six miles away, the same species would appear in quite its normal, *i. e.*, lighter, coloration. Many instances were cited, chiefly among the Noctuæ and Geometræ. An interesting discussion was commenced, Messrs. Weir, Tutt, Barrett, and others taking part; and, on the suggestion of the President, was adjourned until the next meeting.—F. W. Hawes & H. Williams, *Hon. Secs.*

Cambridge Entomological and Natural History Society.—*Friday, January 20th*, 1893.—Mr. H. J. Burkill was elected a member; and Mr. H. W. Vivian, F.E.S., a corresponding member of the Society. Mr. Rickard exhibited some interesting Orthoptera and other insects from South Africa, among which were specimens of *Harpax ocellata* and *Cystocœlia immaculata*. Mr. Farren, specimens of *Dasycampa rubiginea*, bred from the egg by Dr. Riding, and, for comparison, four specimens from the collection of the late Mr. J. Ross; Dr. Riding had described the specimens he bred as varieties, the variation consisting of the presence of some white dots in the anterior wings, the chief of which being a row of six near the subterminal line, and two near the base of the wing; and Mr. Farren pointed out that these white dots were also present in the specimens from Mr. Ross' collection. Mr. Theobald exhibited some small larvæ on a microscope-slide, which he described as "*Compontia cruciformis*, a supposed annelid, really the larva of a *Chrironomus*, probably *Thalassomyia frauenfeldi* of Schinar. These larvæ live in the sea-weed, and have been taken from twenty fathoms." Mr. S. W. Key, a cocoon of *Cossus ligniperda*, spun on a piece of fire-wood.

Friday, February 3rd.—The following new members were elected:—Messrs. H. C. Hewitt, P. Heseltine, J. D. P. Wilks, A. H. Waters, B.A., J. S. Parker, H. W. Young, and E. A. Wilson. Mr. Rickard exhibited a number of un-named specimens of South African Coleoptera, Orthoptera, Neuroptera, and Hymenoptera. Among the Coleoptera were seven species of "weevils," some of which were very beautiful, as also were some species of *Cassida* ("tortoise-beetles"); among the Orthoptera were some interesting specimens of the genera *Mantis* and *Empusa;* the Neuroptera comprised some very fine specimens of three species of "ant-lions," Myrmeleonidæ. A paper was read by Mr. Farren "On the variation of *Papilio machaon*," which was illustrated by diagrams and over eighty specimens, among which were some showing the development of red in the posterior wings, ranging through intermediate forms, from some with the submarginal yellow lunules quite clear, to others with all six lunules suffused with red; also several with a suffusion of red inside the submarginal band; others had the submarginal band so wide as to reach and almost enclose the black patch at the end of the discoidal cell. Messrs. Jones, Rickard, Shrubbs, and Farren continued the discussion which ensued.—Wm. Farren, *Hon. Sec.*

Lancashire and Cheshire Entomological Society.—*February 9th.*—Mr. S. J. Capper, F.L.S., F.E.S., President, who was in the chair, referred to the death of the Rev. F. O. Morris, which occurred on the 4th February, in his eighty-third year. Mr. C. H. Hesketh Walker read a paper entitled "Pond-life." Referring to hobbies generally, he considered natural history was one of the most interesting. He then stated that a stagnant pond was a paradise prolific in animal life, and poetically described

it with all its attendant insects, &c., showing by a table that examples of most of the animal kingdom, from Protozoa to Mammalia, were to be found therein. Proceeding, he gave brief descriptions of these animals, illustrating his remarks by rapidly drawn figures on the black-board. The President exhibited some fine varieties of *Arctia caia;* also a number of port-wine corks completely riddled by some coleopterous or lepidopterous larvæ. Mr. Locke, *Carabus glabratus* from Langdale Pikes. Mr. Deville, *Goliathus giganteus* from Cameroons. Mr. Gregson, *Noctua triangulum* from Lancashire and London.—F. N. Pierce, *Hon. Sec.*

Birmingham Entomological Society.—*February 6th*, 1893. *Annual Meeting.*—Mr. W. G. Blatch, President, in the chair. The Annual Report of the Council was presented by the Secretary; it showed a falling off in membership, but an active year. The Treasurer's annual statement showed a balance of only £1 2s. 1d. in hand. The following were elected as Officers and Council for the ensuing year:—President, Mr. W. G. Blatch, F.E.S.; Vice-President, Mr. G. H. Kenrick, F.E.S.; Hon. Treasurer, Mr. R. C. Bradley; Librarian, Mr. A. H. Martineau; Hon. Secretary, Mr. Colbran J. Wainwright, 147, Hall Road, Handsworth, Birmingham; and remaining members of Council, Messrs. G. T. Bethune-Baker, F.L.S., F.E.S., and G. W. Wynn.—C. J. Wainwright, *Hon. Sec.*

The Entomological Club.—A meeting was held at the Holborn Restaurant on January 18th, 1893. Mr. G. H. Verrall in the chair. The matter of the Club's collection of British insects was brought forward, but discussion thereon was postponed until the next meeting, when, it was proposed, the question should be fully considered, and arrangements made for perfecting the said collection, and rendering it again accessible to all who might desire to refer to it, either for the purpose of study or of identifying specimens. After supper, at which about forty guests assembled, Mr. Jacoby took up his violin, and, accompanied by Mr. Meyrick on the pianoforte, discoursed most excellent music, which contributed greatly to the enjoyment of an exceedingly pleasant evening.—R. South, *Hon. Sec.*

RECENT LITERATURE.

British New Guinea. By J. P. Thompson, F.R.S., G.S., &c. With map, numerous illustrations, and appendix. 8vo, pp. 336. London: George Philip & Son. 1892.

This volume, which is written in a somewhat different style to that of ordinary books of travel, is most interesting in all its details. That portion of the copious appendix which deals with insects, embracing some fifty-one closely printed pages, will be found of great value to entomologists.

Abstract of Proceedings of the South London Entomological and Natural History Society. 1890 & 1891. 8vo, pp. 193. Published by the Society.

The business transacted at each meeting throughout the years 1890 and 1891 appears from the reports, which are more complete in

detail than it is possible to give them in the entomological magazines, to have been both interesting and instructive. Several papers were read, and most of these are printed in full. Among those dealing with Entomology we note the following:—"On the Occasional Abundance of Certain Species of Lepidoptera in the British Islands," by Mr. R. Adkin; this paper is accompanied by a map "to illustrate the passage of the migratory swarms of *Vanessa cardui*, observed in 1879"; "Remarks on the Life-history and Habits of *Psyche villosella*," by Mr. J. Jenner Weir; "Remarks on Fungi Parasitic on Insects," by Mr. Tugwell; "Hymenopterous and Dipterous Parasites bred from Lepidopterous Hosts by Members of the Society," by Mr. T. R. Billups; "On the Genus *Triphæna*," by Mr. Adkin.

It is to be hoped that in course of time this Society may be able to publish the Proceedings of each year separately, and not later than March of the year following that to which such Proceedings properly belong. Although the present volume is late, it is nevertheless welcome, and we congratulate the Society on its production.

Transactions of the City of London Entomological and Natural History Society. 1892. 8vo, pp. 49. Published by the Society.

Comprises reports of meetings and abstracts of papers read before the Society by members and others. Some of the papers, as, for example, "The Genus *Hepialus*," by Mr. Robson, and "The British Coccinellidæ," by Mr. Lewcock, are of an exceedingly interesting and most useful character, and well worth reprinting. The only thing at all original in Mr. Tutt's paper on "British Pterophorina" is the advertisement referring to a previous article on the subject by the same author, and his opinion of the educational and commercial value of that article.

Another year it would perhaps be well for those who may be responsible for the publication of these 'Transactions' to insert one or two papers and other items which have not appeared elsewhere, as a little new matter would freshen up the 'Annual,' and enhance its value.

The Annual Report of the Lancashire and Cheshire Entomological Society for the year 1892 contains the 16th Presidential Address by Mr. S. J. Capper, and a portrait of that eminent naturalist. There are also two papers:—"The Hydradephaga of Lancashire and Cheshire," by Mr. W. E. Sharp, V.-P., and "The Genital Armature of the Genus *Miana*," by Mr. F. N. Pierce, Hon. Sec. The latter appears to have rather an unfortunate title, as only two species are dealt with, *i. e.*, *M. strigilis* and *M. fasciuncula*, which had been considered by a few entomologists to be merely forms of one species. Although the fact of these two insects being perfectly distinct was well established, on characters more convenient for observation than are the genitalia, the author of this paper has done good service in bringing forward the results of his investigations. The progress of Entomology (with some special reference to the economic branch) during the past fifty years is the main feature of the President's excellent address.

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THE

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EDITED BY RICHARD SOUTH, F.E.S.

WITH THE ASSISTANCE OF

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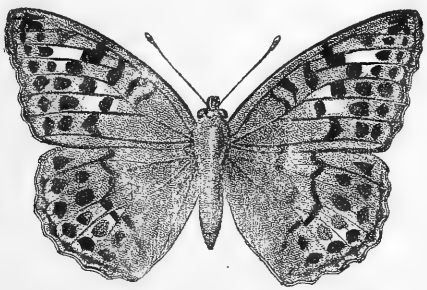
ARGYNNIS PAPHIA, ♀ Ab.

By F. W. Frohawk, F.E.S.



During the last thirteen or fourteen years there have been captured, in the New Forest, white-spotted forms of *A. paphia*.

The first recorded examples I am aware of, relating to this singular aberration, are those mentioned by my friend Mr. Jenner Weir (Entom. xiii. 216). In his interesting notes on *A. paphia*, he states:—"The appearance yearly of this insect with white spots on the wings is worthy of remark; last year (*viz.*, 1879) I was equally fortunate in taking specimens so coloured." A coloured figure of a male of this variety appears in Entom. xv. (Pl. I. fig. 3).

I believe this phase of variation is generally confined to the male sex; certainly by far the greater number of those I have seen have been males. The size and number of pale spots vary a good deal; most frequently there is a white spot on each wing; other specimens have a single spot on one wing only, whilst in others the primaries only are spotted.

I think the most interesting and remarkable example I know of is that of a female which fell to the net of Mr. J. H. Carpenter, on July 23rd last, which I described in Entom. xxv. 242, and which is represented in the above figure.

The specimen is not only an extreme example of the white-spotted form, but it has, in addition, large pearly-green blotches on the secondaries, of much the same colouring as that of the var. *valesina*; thus exhibiting a curious combination of the white spotting of the male aberration referred to, the ground colouring of the normal female, and part coloration of *valesina*.

I am not aware of the occurrence of the white-spotted form of *paphia* in any British locality, other than the New Forest.

It is reasonable to suppose, from what we know of the earliest existing Lepidoptera, that they lacked then the brilliancy of colour with which so many are now adorned, and that, in the world's earlier ages, only brown, black, and white forms existed; therefore, in all probability, var. *valesina* still represents the ancestral colouring of the species we know as *A. paphia*, and possibly the white spots appearing in certain of the males may be instances of reversion to a later transitional stage in the development of that species.

LEPIDOPTERA OF THE SHETLAND ISLANDS.

By Richard South.

Mr. McArthur, who spent the summer of 1892 in the Shetlands, was good enough, on his return in September last, to allow me to examine the small but interesting collection of Lepidoptera which he had made, under the most adverse meteorological conditions, in this far-away portion of Great Britain.

On his way to Shetland, Rannock in Perthshire was visited, and *Asteroscopus nubeculosa* searched for. This species appears to be getting scarcer in its old Scottish locality. The bulk of the specimens taken last year were captured at the end of March, when the days were really warm. Larvæ of *Sesia scoliiformis* were also obtained, and from these a few imagines were subsequently bred. On the 15th of April, when Mr. McArthur left Rannock for Forres in Morayshire, the weather was very severe, and everything deeply buried in snow. At Forres the weather was fine on the 17th and 18th of April, and a good number of *Retinia duplana* were taken, but on the 19th there was a change, and wintry weather again prevailed, putting a stop to entomological work until May 18th, on which day a start was made for Shetland. After his arrival the weather seems to have been fine for about a week, but later on was of a most uncongenial character. From the 8th of July until the end of August the sun was only visible at rare intervals for about five minutes at a time, and altogether there were not twenty-four hours of sunshine throughout the whole period referred to. Seeing how unfavourable the weather was for collecting, it is not surprising

that several species of Lepidoptera, obtained in previous years in the Islands, were not observed at all last year, and that of those met with the majority were scarce.

Having heard that Rowness Hill was a likely place to get insects, as it was said to be well covered with sallow and birch, Mr. McArthur explored that district thoroughly last year, but only to find that it was a bleak and bare mass of red granite, almost devoid of vegetation, and without any entomological promise whatever. He therefore returned to Lerwick, where he settled at Cunningsburgh until it was time to go on to Unst, the most northern isle of the Shetland group.

The following list of the species taken last year has been kindly communicated by the captor :—

Vanessa cardui, common in 1891; I saw many pinned to the walls in some cottages in Unst; last season there was not one to be seen, and I could not find any larvæ. *Sphinx convolvuli*, two only, in poor condition. *Macroglossa stellatarum*, only one seen last season. *Hepialus humuli*, not abundant, and the forms were not so striking as those taken in other seasons. *H. velleda*, very rare; other years in thousands. *Xylophasia monoglypha*, never very plentiful in the Shetlands. *Charæas graminis*, two only; abundant in other seasons. *Mamestra furva*, fairly common at flowers. *M. brassicæ*, one worn specimen. *Apamea basilinea*, one; this species and *M. brassicæ* are very rare in the Islands; I have only met with one or two each season. *Celæna haworthii*, rare last season, but in previous years it was in abundance. *Agrotis suffusa*, always rare, two or three each season. *A. cursoria*, one only; this fine form (*vide* Entom. xvii.) I found very abundant ten years ago; the following year Mr. Curzon found it common; since then it had not been taken until last season. *Noctua glareosa*, fairly common. *N. festiva* var. *thules*, abundant. *N. xanthographa*, rare. *N. c-nigrum*, one only. *Triphæna pronuba*, fairly common, but never so abundant as it is in the south. *Pachnobia hyperborea*, one female only; a few larvæ in their first year, but it would have been useless to take these. *Dianthæcia nana*, saw one specimen; larvæ fairly common later in the season. *Dasypolia templi*, larvæ common. *Aplecta occulta*, three; always rare; as a rule only two or three specimens have been obtained each season. *Crymodes exulis*, this prize I took more commonly than before, but the forms are not nearly so good. *Hadena adusta*, fairly common. *H. dentina*, rare last season; odd specimens were met with from May to the end of August. *H. oleracea*, one very much worn. *Plusia gamma*, common last season. *Anarta melanopa*, common; fortunately there happened to be three or four fine days just at the time this species was out. *Larentia didymata*, rather rare; some seasons in swarms. *L. cæsiata*, generally very abundant, but rare last year; the few examples taken were darker than usual. *Emmelesia albulata*, rare in all stages last season. *E. blandiata*, a few each season. *Eupithecia venosata*, common in all stages. *E. nanata*, not common. *Melanippe montanata*, not common last season. *M. fluctuata*, always very rare; two in 1879; three last season. *Coremia munitata*, fairly common. *Camptogramma bilineata*, very rare; formerly abundant. *Cidaria immanata*, fairly

common in one place. *C. testata*, rare last year. *Scoparia ambigualis*, *S. atomalis*, very rare last year; other seasons abundant. *S. alpina*, a nice lot, but the forms not so good as those I obtained in 1879. *Herbula cespitalis*, a few. *Crambus pratellus*, common. *C. pascuellus*, *C. perlellus*, *C. hortuellus*, rare last season. *Sericoris littoralis*, always rare. *S. lacunana*, not common; a few each season. *Mixodia schulziana*, two only; some seasons in thousands. *Cnephasia musculana*, common. *Sciaphila colquhounana*, fairly common. *Bactra lanceolana*, common. *Phoxopteryx unguicana*, a few; common some seasons. *Dicrorampha tanaceti*, common in the larva state. *Catoptria ulicetana*, common; very small form. *Symæthis oxyacanthella*, larva state only. *Eupœcilia thuliana*, rare last season. *Argyrolepia cnicana*, common. *Blabophanes rusticella*, a few. *Plutella cruciferarum*, two. *Gelechia plantaginella*, fairly common. *G. ericetella*, rare last season. *Endrosis fenestrella*, too common. *Glyphipteryx cladiella*, a few.—(McArthur).

Of the majority of the species enumerated above there is little now to say, as they have been fully dealt with in former papers on the Lepidoptera of Shetland by Mr. J. Jenner Weir and the late Mr. Howard Vaughan (Entom. xiii. pp. 249–251, 289—293, plates 3 and 4; xvii. pp. 1—4, pl. 1). With regard to one or two of them, however, I venture to make a few remarks.

Hepialus humuli.—With one exception, all the males of this species taken by Mr. McArthur on the cliffs in Unst, which face the south-east and are drier than other parts of the island, were more or less typical, and he informs me that he never remembers to have taken a smoky or richly-marked specimen on the cliffs. On the other hand, the majority of the specimens captured in the boggy meadows and water-sodden "corn rigs" were of the form known as var. *hethlandica*, Staudinger. By the way, Newman's name *thulensis* (Entom. ii. 176) is earlier, and ought perhaps to be adopted for this form.

Crymodes exulis.—This was the best insect obtained in the Shetlands last year. The specimens, between fifty and sixty in number, exhibit considerable variation, and among them are examples agreeing with typical *exulis*, whilst others are of the *grœnlandica* form. None of the specimens, however, were like the Perthshire form *assimilis*; neither do any of them agree with any Iceland examples of the species that I have seen.

The type of *exulis*, as described and figured by Lefebvre (Ann. Soc. Ent. Fr. 1836, p. 392, pl. x. fig. 2), has the fore wings variegated with grey and brown; the central third of the wing is reddish brown, limited by dentated black lines, which are edged with yellowish grey; the stigmata are outlined in grey, the orbicular placed obliquely, and the reniform is bordered outwardly with yellowish white; submarginal line dentated, tawny, and preceded by several cuneiform brownish marks. Fringes reddish brown chequered with tawny. Hind wings tawny grey, with yellowish white fringes. Under side of all the wings yellowish sprinkled with grey, and with a brown arcuated line

and discoidal spot; the line on hind wings more dentated and better defined than that on primaries. Antennæ brown, filiform.

The female was described by Lefebvre under the name of *gelata* (*l. c.*, 393, fig. 3):—Fore wings grey-brown, with a paler space in the middle, and transverse blackish brown dentated lines, one near the base and the other two towards outer margin, the outermost (submarginal) slightly bordered internally with yellowish; the stigmata are outlined with white and filled up with grey; between them is a blackish brown spot, which extends beyond the orbicular. Fringes grey chequered with yellowish, and preceded by a series of small black lunules. Hind wings reddish grey, with brownish marginal band and yellowish fringe. Under side of all the wings uniform reddish grey or yellowish, with a brown curved line and discoidal spot; the line of hind wing more sinuate. Antennæ yellowish grey.

Grœnlandica, Duponchel, iii. pl. 21, figs. 3 *a*, *b*. — The figure of the male represents an insect with greenish grey fore wings; the median space between the first and second pale black-edged dentated lines, and the outer margin is darker; the stigmata are filled up with the pale ground colour, and seem to extend to the costa. Hind wings grey-brown, paler towards base. Fringes of fore wing of the pale ground colour chequered with darker; of the hind wing pale grey-brown, preceded by a blackish line. The figure of the female has the fore wings warm reddish brown; 1st and 2nd transverse line curved, broad, and yellowish; submarginal line wavy.

Noctua festiva *var.* thules.—In some examples the reniform and orbicular stigmata are filled up with pale ochreous. In others the claviform stigma is represented by a pale dash, outlined in blackish, extending from inner line to central transverse shade.

Noctua glareosa. — I understand from Mr. McArthur that two forms of this species occur in Unst. One of these, which is grey and but little darker than the type, is found on the heath-covered banks at Burrafrith; whilst the other, a dark chocolate-coloured form, frequents the low-lying wet moors near Baltasound.

Dasypolia templi. — From larvæ obtained a long and interesting series was bred, among which are some unusually pale specimens.

Anarta melanopa.—There is a good deal of variation within certain limits, but none of the specimens approach the dark alpine form known as v. *rupestralis*, Hübn., examples of which I am informed have been captured in Scotland.

Emmelesia albulata.—Scarce and less variable than usual. No example of var. *thules*, Weir (Entom. xiii. 290), was obtained.

Eupithecia venosata.—Among the usual leaden grey suffused specimens are some examples with a reddish grey tinge which I

do not remember to have seen represented in former collections from the Shetlands.

Sciaphila colquhounana. — This species had not been previously detected in Shetland. Mr. McArthur found larvæ not uncommonly in the root-crowns of *Plantago maritima* and *Armeria vulgaris*. Two larvæ which he was good enough to send me were received on the 20th June, but one of these had left its mine and got crushed; the other, of which I append a description taken down on the day it came to hand, died in the act of pupating.

Larva of S. colquhounana.—Length three-quarters of an inch. Fuliginous grey-brown. Head dark red-brown; mandibles and plate on second segment black. The skin is puckered on the sides and transversely folded on the back; there are subdorsal and spiracular series of black warts, each wart emitting a short bristle; the thirteenth segment has a black wrinkled plate.

A PRELIMINARY LIST OF THE INSECT-FAUNA OF MIDDLESEX.

Compiled by T. D. A. Cockerell, F.Z.S., F.E.S.

(Continued from vol. xxv., p. 207).

Lepidoptera.

PYRALIDIDÆ.

Aglossa pinguinalis, L., Harefield, common (*Wall*); Whitton (*Rendall*); Dalston (*Prout*); [Mill Hill, common (*South*)].

Pyralis glaucinalis, L., Millfield Lane (*Vaughan*); Harefield, frequent (*Wall*); Bedford Park (*J. W. Horsley*); Whitton (*Rendall*); [Mill Hill, sometimes abundant at sugar (*South*)]. *P. costalis*, Fb. (=*fimbrialis*), Kentish Town, Highgate (*Vaughan*); Whitton (*Rendall*); Dalston (*Prout*); [Kingsbury, Mill Hill, Northwood (*South*)]. *P. farinalis*, L., Kentish Town (*Vaughan*); Harefield, occasional (*Wall*); Whitton (*Rendall*); Highgate (*Shepherd*); Dalston (*Prout*); [Hampstead, Kingsbury, Kilburn (*South*)]. *P. pictalis*, Curt., Limehouse, London (see *C. G. Barrett*, Ent. Mo. Mag., 1890, p. 138).

Scoparia mercurella, L., Hampstead (*Knaggs* fide *Vaughan*); Dalston (*Prout*); [Kingsbury (*South*)]. *S. dubitalis*, Hb., Hampstead (*Knaggs* fide *Vaughan*). *S. ambigualis*, Tr., Hampstead (*Knaggs* fide *Vaughan*).

Nomophila noctuella, Schiff., Harefield, common (*Wall*); Whitton (*Rendall*); [Northwood, 1892 (*South*)].

Pyrausta purpuralis, L., Harefield, frequent (*Wall*). *P. aurata*, Scop. (= *punicealis*), field at Finchley end of Bishop's Wood (*Vaughan*).

Endotricha flammealis, Schiff., Harefield, taken twice (*Wall*); Whitton (*Rendall*); [Northwood (*South*)].

BOTYDÆ.

Eurrhypara urticata, L., everywhere in suitable localities (*Vaughan*); Harefield, fairly common (*Wall*); Bedford Park, on *Urtica dioica* (*Ckll.*); Isleworth (*Fenn*); Highgate (*Shepherd*); Dalston (*Prout*).

Scopula olivalis, Schiff., everywhere in suitable localities (*Vaughan*); Harefield, very common (*Wall*); Bedford Park (*J. W. Horsley*); Whitton (*Rendall*); Tottenham (*Prout*). *S. prunalis*, Schiff.,* everywhere in suitable localities (*Vaughan*); Whitton (*Rendall*); Tufnell Park (*Shepherd*); Tottenham (*Prout*). *S. lutealis*, Hb., Whitton (*Rendall*).

Botys ruralis, Scop. (= *verticalis*), everywhere in suitable localities (*Vaughan*); Harefield, very common (*Wall*); Isleworth (*Fenn*); Bedford Park, on *Urtica dioica* (*Ckll.*); Whitton (*Rendall*); Highgate (*Shepherd*). *B. fuscalis*, Schiff.,† Harefield, common (*Wall*).

Ebulea sambucalis, Schiff., everywhere in suitable localities (*Vaughan*); Harefield, taken occasionally (*Wall*); Bedford Park (*Fenn*); Whitton (*Rendall*); Tufnell Park (*Shepherd*); Dalston (*Prout*); [St. John's Wood, common (*South*)].

Spilodes ‡ *sticticalis*, L., Gray's Inn Gardens, 1880 (*Meldola*, Entom. 1887, 235).

Pionea forficalis, L., everywhere in suitable localities (*Vaughan*); Harefield, common (*Wall*); Whitton (*Rendall*); Finchley (*Shepherd*); Dalston (*Prout*).

HYDROCAMPIDÆ.

Catoclysta lemnata, L. (= *lemnalis*), Hampstead and Highgate ponds (*Vaughan*); Harefield, abundant (*Wall*); Finchley (*Shepherd*); [Kingsbury (*South*)].

Paraponyx stratiotata, L. (= *stratiotalis*), Hampstead and Highgate ponds (*Vaughan*); Finchley (*Shepherd*).

Hydrocampa nymphæata, L. (= *nymphæalis*), Hampstead and Highgate ponds (*Vaughan*); Harefield, common (*Wall*); Isleworth (*Fenn*). *H. stagnata*, Don. (= *stagnalis*), Hampstead and Highgate ponds (*Vaughan*); Harefield, abundant (*Wall*).

ACENTROPODIDÆ.

Acentropus niveus, Oliv., Hampstead Ponds (*Knaggs*, fide *Vaughan*; see also *Barrett*, Ent. Mo. Mag. 1888, p. 199); [St. John's Wood, once taken in a shop in the Abbey Road, probably introduced, with watercress or some other aquatic plant, as a larva or pupa (*South*)].

* This has been referred to the genus *Phlyctænia*, Hb.

† This belongs to Mr. Warren's genus *Opsibotys*.

‡ It would appear that according to priority this genus should be called *Loxostege*, Hb.

CRAMBIDÆ, subf. CHILONINÆ.*

Chilo phragmitellus, Hb., Hammersmith marshes (*Knaggs* fide *Vaughan*).

Schœnobius forficellus, Thnb., Hampstead, Highgate, Haverstock Hill (*Knaggs* fide *Vaughan*); Camden Road (*Vaughan*); Harefield, common (*Wall*).

Subf. CRAMBINÆ.

Crambus pascuellus, L., Isleworth (*Fenn*); [Mill Hill (*South*)]. *C. hortuellus*, Hb., common (*Vaughan*); Harefield, common (*Wall*); Isleworth (*Fenn*); Bedford Park (*Ckll.*); Whitton (*Rendall*); Finchley (*Shepherd*); Dalston (*Prout*). *C. culmellus*, L., common (*Vaughan*); Harefield, abundant (*Wall*); Bedford Park (*J. W. Horsley*); Finchley (*Shepherd*); Dalston (*Prout*). *C. tristellus*, Fb., common (*Vaughan*); Harefield, abundant (*Wall*); Whitton (*Rendall*); Finchley (*Shepherd*); Clapton (*Prout*). *C. pratellus*, L., common (*Vaughan*); Harefield, very common (*Wall*); Whitton (*Rendall*); Dalston (*Prout*). *C. pinellus*, L., Harefield, once taken (*Wall*); Whitton (*Rendall*). *C. perlellus*, Scop., Harefield, twice taken (*Wall*); Dalston (*Prout*); [Mill Hill (*South*)]. *C. margaritellus*, Hb., Whitton (*Rendall*).

PHYCITIDÆ.†

Myelois ceratoniæ var. *pryerella*, Vaughan, London Docks (see *A. F. Griffith*, Ent. Mo. Mag. 1890, p. 120).

Ephestia elutella, Hb.,‡ Somers Town (*Knaggs*, fide *Vaughan*); Kentish Town (*Shepherd*); Dalston (*Prout*). *E. kühniella*, Zell., London (*S. T. Klein* and others).

Euzophera pinguis, Haw., Regent's Park (*Vaughan*).

Cryptoblabes bistriga, Haw., Highgate Woods (*Bartlett* fide *Vaughan*).

Phycis betulæ, Göze, Highgate Woods (*Bartlett*, fide *Vaughan*, as *betulella*); [Northwood, not uncommon in the larval stage (*South*).

Rhodophæa consociella, Bishop's Wood (*Vaughan*); [Mill Hill (*South*)]. *R. tumidella*, Zinck., Bishop's Wood (*Vaughan*). *R. advenella*, Zinck., Highgate Road, at light (*Vaughan*); [Mill Hill, Northwood (*South*)].

* The Chilidæ and Crambidæ of our lists seem at best only subfamilies, to be classed under the family Crambidæ. Dr. Fernald, in Prof. J. B. Smith's recent American list, does not even recognise them as distinct subfamilies.

† Phycidæ of the Synonymic List. As in Prof. J. B. Smith's list, this and the next family are given as distinct from Crambidæ, and from each other. Mr. Hulst divides the American Phycitidæ into two subfamilies.

‡ For a record of this species in London, see Ent. Mo. Mag. 1884, p. 164; where also is mentioned *E. parasitella*, a species apparently unknown to our lists.

GALLERIIDÆ.

Galleria mellonella, L., Harefield, very frequent, sometimes injurious, causing destruction of weak hives (*Wall*).

Aphomia sociella, L., Harefield, once taken (*Wall*); Whitton (*Rendall*); [Northwood (*South*)].

Achræa grisella, Fb., Harefield, common (*Wall*).

(To be continued.)

Institute of Jamaica, Kingston, Jamaica, Aug. 21, 1892.

THE CYANIDE-REACTION WITH YELLOW LEPIDOPTERA.

By F. H. Perry Coste, B.Sc. (Lond.), F.C.S., F.L.S.

(Concluded from p. 85.)

V.—Effect of Lithium Salts.

Having so disposed of the alkalis, it seemed highly desirable to ascertain what effect salts of the alkaline earths would have. A number of salts of calcium, barium, and strontium were therefore tested; and, in addition to these, salts of zinc and magnesium, of several heavy metals, and also several organic acids, were tested; the test being in each instance made by exposing to their action wings of species that were known to be susceptible. The vast majority of these results were negative, no reaction, such as was sought for, being obtained.

In a few cases, however, positive results were obtained. Barium chloride, zincic sulphate, and also—strangely enough—salicylic and succinic acids, were found to give the purple-pink reaction more or less faintly. The reaction with zinc sulphate is interesting, in that the under side of the wing itself was observed to have become almost a "cyanide-red." This seems to offer some hope of connecting together the cyanide and the lithium reactions. Again, in the experiments with salicylic acid and with barium chloride it was observed that there was a faint pink tinge on the wing itself, as well as on the surface of the acid; whereas, in the majority of the experiments, this pink was found only on the surface of the chemical used.

The most promising of these last experiments had been that made with barium chloride, and it was, therefore, thought worth while to make a set of experiments with this reagent. Barium chloride was, therefore, tested by exposing to it a large number of species, just as in the case of lithium sulphate; and the results are confirmatory of the lithium results. Here, again, the reaction was obtained from several of the Pieridæ, e. g., *C. edusa* and *C. hyale*,

but from no other Rhopalocera, and from no Heterocera at all, although, in all, some score species were tried.

These varied experiments show that the purple-pink reaction is not confined to lithium salts, but may be produced by several others; and also, strangely enough, by at least two organic acids. On the other hand, they equally serve to show that the true cyanide-red reaction, in its characteristic form, is confined to the cyanides. Thus, although in all nearly 100 different reagents have been examined in this way, in no case has the characteristic cyanide reaction been obtained otherwise than with potassium cyanide.

The question now arises, what is the relation of this purple-pink reaction to the cyanide-red reaction? At first, I admit, the question perplexed me a good deal. Coming upon the lithium reaction for the first time, and in an experiment too that had been designed to determine whether any other compounds would give the same results as potassium cyanide, it was natural perhaps to suppose that this was really the same reaction. Yet such a supposition is confronted with the difficulty that neither element is common to the two compounds, lithium sulphate and potassium cyanide, so that if the reaction be considered the same, it would be difficult any longer to hypothecate any combination between the cyanogen or hydrocyanic acid and the natural pigment. However, further experiment and reflection have led me to look upon the two reactions as distinct, though similar. In the first place the two colours respectively produced are quite distinct, the one being a brilliant blood-red, and the other a purple-pink; secondly, the cyanide-reaction under favourable conditions is comparatively rapid, being completed in a single night, whereas the lithium reaction may *continue* for days or even several weeks *under similar conditions.* This difference is readily intelligible, since in the former case the red colour is produced in or on the wing, whereas in the latter the pigment is probably slowly dissolved, and then the pink compound formed.*

It is true that the action of zincic sulphate with *C. edusa* seems to afford a somewhat intermediate case, since there was a reddish colour on the wing here; but this colour was found only on looking at the under surface of the wing, and was, therefore, distinguished from the bold brilliant cyanide-red which rapidly spreads throughout the wing.

I conclude, therefore, that we have here two distinct reactions; but, on the other hand, although distinct, they are clearly parallel. It is *very significant* that the purple-pink, *however produced,* is confined to that same group of the Pieridæ to which the cyanide-reaction is confined; and that no other Rhopalocera, and no Heterocera at all, have, so far, been found to yield either

* In a more recent experiment, however, with Li SO and *cleopatra*, I have succeeded in obtaining a fine *purple* streak on the wing.

reaction. So marked a parallelism points clearly to a common cause; and it is, I think, a very legitimate assumption that the same yellow pigment combines in the one case with potassium cyanide or hydrocyanic acid to form the brilliant cyanide-red; and, in the other, reacts with lithium sulphate, barium chloride, or one of several other compounds, to produce the purple-pink colour. As to the nature of this latter reaction, it seemed doubtful whether to attribute the colour to the formation of a definite compound between the pigment and the reagent, seeing that any one of some seven or eight reagents may produce it; while the fact that among them must be reckoned at least two organic acids bars the suggestion that had previously occurred to me, *viz.*, that the lithium, barium, and other salts, were efficacious *as salts*, and not as containing any given element or radicle. However, the nature of this purple-pink reaction is a subject for future investigation.

Here, then, the matter stands for the present. In addition to the foregoing results sundry other experiments have been made, which were discussed in my paper presented to the Linnean Society, but which I pass over here; and I also omit a discussion which closed my paper (for I do not wish to trespass unduly on the space which the Editor has kindly invited me to occupy by this account); but it would be ungrateful to conclude without acknowledging my great indebtedness to Mr. Warburg for his kindness in supplying me with specimens for experiment. The greater part of the work recorded in this paper has been carried on with materials sent me by Mr. Warburg. To sum up:—

I. Various yellow and orange species of the Pieridæ rapidly become of a brilliant red when exposed to the action of "sloppy-solid" potassium cyanide.

II. Faint indications of a similar nature are obtained by the use of sodium cyanide.

III. No such reaction can be obtained with ferrocyanides, sulphocyanides, ammonium salts, nitrates, or with any other of many reagents examined.

IV. When exposed under similar conditions to the action of lithium sulphate, a fine purple-pink colour is produced, staining the salt. Similar, more or less faint, results are obtainable with several other reagents.

V. All of these reactions are confined to the Pieridæ, and are obtainable from no other yellow or chestnut Rhopalocera or Heterocera yet examined.

VI. The cyanide-red is probably produced by the union of the yellow pigment with potassium cyanide or hydrocyanic acid. The nature of the reaction by which the purple-pink colour is produced is at present uncertain.

OBSERVATIONS ON BRITISH *ODONATA*.

By W. Harcourt Bath.

I was exceedingly interested with Mr. Arkle's paper (Entom. 35—58) on the Dragonflies of the Dee Valley. One very common species, I notice, is not mentioned in his list, namely, *Platetrum depressum*, which most likely occurs within the district, although it is no doubt very local. Last season I saw several specimens of this insect at Arthog, in North Wales, and also possess examples in my collection from Welshpool, which localities are, however, both just outside the area in question. This well-known species is universally distributed, and very plentiful throughout the south of England, but appears to become scarcer the more one travels northwards.

Another common species, not included in Mr. Arkle's list, is *Æschna cyanea*, which is the most familiar member of its family in south Britain, a closely allied species, *Æschna juncea*, appearing to monopolise this position in Scotland and Ireland. These two species are never known (at least as far as my experience goes) to occur together in the same locality, and the same also holds good as regards *Calopteryx virgo* and *C. splendens*.

Undoubtedly the best species mentioned in Mr. Arkle's paper is *Leucorrhinia dubia*, which, however, is generally found in abundance wherever it occurs, frequenting many mosses and moors in the North of England. I may here remark that the locality given for the species in my 'Illustrated Handbook of British Dragonflies' as "Thorne Moor, near Dorchester," is, I find, after considerable investigation, Thorne Waste, near Doncaster. There is no such place in Dorsetshire, although it is recorded as such in the works of several authors, in copying from whom I fell into the same error, which I take this opportunity of correcting.

Mr. Arkle rather amuses me by the way in which he makes use of the "mother-tongue" names of dragonflies; one would think they had been in use for half a century at the least. They were in fact only invented by myself about four years ago, and were not intended for the use of scientific students, but simply to popularise the study of these grand insects among young beginners who, as a rule, object to the use of long Latin cognomens. Some entomologists may perhaps be inclined to ridicule them, but I do not consider they are more absurd than the familiar names by which most butterflies and moths are known.

It seems to me incomprehensible that more entomologists do not study and collect these grand insects, considering how much in evidence they always are during every summer ramble. In size they are, as a group, not eclipsed by any other in this country. Some of the species of *Æschnidæ*, on account of their

gigantic proportions, look by far more like the denizens of the tropics than of these Northern Isles. A good collection of these handsome insects is indeed a grand sight to behold, and well worth possessing.

Although my little handbook has been the means of inducing some hundreds of persons to take up the study of our native dragonflies, a great many more could no doubt be drawn to them, provided that an illustrated monograph of these beautiful and interesting insects were published, giving a life-like figure of every species and its varieties which are known to occur in the British Isles, and I think the time is now quite ripe for such a publication. Some five or six years ago I first seriously contemplated preparing a work of the kind, and have fostered the idea ever since. I have even gone so far as to pay a preliminary visit to the Continent, in order to procure some necessary material for such a work, much of which is difficult to obtain on this side of the English Channel. I have, however, decided for various reasons to abandon the project for an indefinite period. But cannot someone else be found who could be induced to undertake a monograph of our British *Odonata?* I, for one, should be very pleased to render every assistance in my power in the promotion of such a project.

Will you permit me, in conclusion, to ask those of your readers who study these fine insects, to oblige me with local lists of species, as I am endeavouring to elucidate their geographical distribution in the British Isles, the result of which I hope to publish in some future number of the 'Entomologist.'

195, Ladywood Road, Birmingham.

REMOVAL OF GREASE FROM MOTHS.

Mr. Christy is right in suspecting (Entom., p. 33) that benzine would be effective in removing grease from large insects and without opening the body. For many years I have followed the plan recommended me by the late Mr. Edward R. Pearson, late of Wallington, Northumberland. He, in his turn, had it from an experienced entomologist, and I have no doubt it is very generally known and adopted. Mr. Pearson used benzoline, which has this advantage over benzine collas,—it is far cheaper while being equally efficient. Now for the plan:—

1. Put the set and dried insect, without removing the body, into a wide-mouthed bottle three parts filled with benzoline. The benzoline does not at all relax the wings, &c., but thoroughly cleans them if greasy. Stop the bottle with a well-sealed cork. The benzoline searches through and through the body and dissolves the grease, which is taken up or held in solution, or deposited.

2. After a few days—say a week in the case of *Cossus ligniperda*, *Sesia bembeciformis*, or *Dicranura vinula*—*remove the insect into a second bottle of benzoline.*

3. *At the end of another week place the insect in a third bottle; and if the benzoline refuses to discolour, the moth is clean. Should the benzoline still discolour, which is unlikely, continue the process.*

4. Place a layer, half an inch thick, of powdered plaster of paris, on a piece of board. Make, in the powder, a furrow wide enough to hold the body, and let the powder slope on either side to accommodate the wings.

5. Take out the insect, and place the body in the furrow. Then cover the moth—wings and all—with an an inch or more of plaster of paris. Leave it for an hour. The powder assists the drying.

6. Get hold of the pin in the insect, and gently shake and blow off the powder. The insect is clean and dry; all its colours are restored: no damage has been done to it—not even to the antennæ. Complete the cleaning process, if necessary, by using a soft camel-hair brush.

As benzoline is highly inflammable, keep it locked away. Operate by daylight. A friend told me he was using benzoline one night near a lit gas-jet. He turned his back for a minute, and there was—not an explosion, but "a flare-up," which would certainly have blinded him. Mr. Christy deserves the thanks of many an entomologist for reviving this useful subject; while the name of Mr. Greene, of course, is among entomologists as a household word. My own remarks upon the matter are not intended to be critical but supplemental, and in this spirit I trust they will find their apology. In conclusion, I may add that the passages in italics are tried and valuable additions to the method by a practical chemist.—J. Arkle; Chester, February 6, 1893.

There is no doubt that grease gives a great deal of trouble to the lepidopterist, and Mr. Christy's article on "the removal of grease from the bodies of moths" (Entom., p. 32), conveys many useful hints to the collector. A greasy butterfly or moth, whilst in that state, is no longer "a thing of beauty," but a positive eyesore, especially to those who, like myself, are particular as to the condition of their specimens, preferring a fine, short series to any number of indifferent examples. Mr. Christy has confined his remarks to grease in the bodies—abdomens—of moths, and bad as this is, so far as my own experience goes, this is not the worst evil. In fact, except for the trouble it gives, there is very little difficulty in removing grease in bodies. Break them off, number them, and soak in benzine or benzole once, twice, or thrice, as the case may require, stick them on, and the thing is done. I always use benzole myself, and find it equally effective as benzine and much cheaper. For fixing bodies I prefer gum for slight bodies, such as the Geometers, and Le Page's liquid glue for bulky bodies like those of the Sphingidæ. Rarely, except in the case of the latter and Bombyces, is it necessary to remove the contents. Now it seems to me that grease does not always emanate from the abdomen, but at times exudes from the thorax, and spreads through the silky hairs clothing the thorax—oftentimes a part of exceeding beauty—and covers the wings, and then it is that grease is indeed a nuisance. I may be displaying my anatomical ignorance here, and it may be that it is not possible for grease to exude from the thorax. All I can say is then that many insects, inter alia *Demas coryli*, appear to grease in the thorax before any trace of it is to be seen in the bodies. And there is no way of preventing it that I know of; you cannot cut out the thorax, and you cannot prevent the exudation of grease spreading to the wings. If the bodies grease, the grease in them ought to do no further mischief if the body has been put

into proper position, and *the under wings set so that they do not come in contact with it.* I have said that I know of no preventive for grease in the thorax. Is there a cure? Well, its ill effects may be much mitigated, and this by sinking the whole insect in benzole. To do this a stage of pith, or fungus, which must be weighted with lead on the under side, must be used. Cork is useless, and for this reason:—the insects to be soaked must be squeezed down into the stage *till the wings rest upon the surface,* otherwise it will be found that the cilia are inextricably matted; and cork is too hard to allow of this being done. Sometimes it will be found necessary to repeat the process over and over again; they must then be dried and covered with powdered French chalk. When removed, perhaps they may be presentable; but the glory of a thorax such as that of *Smerinthus ocellatus* or *Eugonia alniaria* (*tiliaria*), alas! it has departed, and it will take a very clever person to restore it again. It has often struck me that the freaks of grease are rather unintelligible. Why is it that the typical female of *Colias edusa* seldom greases, and the var. *helice* nearly always does; and my experience is based on many dozens of the variety, and scores of the type? Why, in some species, is it always the male, in others the female, that gets greasy? Some years ago a physician, who was also an entomologist, thus wrote to me:—"I do not regard it (grease) as a putrefactive change, but in its nature rather the opposite, though it spoils the look of specimens, and more analogous to a peculiar fatty production which takes place in dead human and other bodies, after they have been interred some time. The whole body often becomes changed into this peculiar solid, greasy matter, which is very imperishable." — Joseph Anderson, Jun., Chichester.

CLOSTERA ANACHORETA.

By H. G. Knaggs, M.D., F.L.S.

I must again apologise for trespassing on your valuable space. It will now be my endeavour to prove, far more conclusively than I have yet done, that *C. anachoreta* was taken by Mr. Sidney Cooper some time before my Folkestone captures were made.

In my former communication I quoted Mr. Newman's statement, Zool. 7681, as follows:—

"This beautiful larva was first found by my friend Mr. Sidney Cooper, feeding, as he believes, on *Salix capræa* (sallow), afterwards by Dr. Knaggs, &c."

Mr. Greene now asks what that has to do with his argument? My answer is——Everything.

He next asks, "Further, what are we to gather from the words in small capitals? Is it that Mr. Cooper, who 'believes' that his larva was feeding on sallow, was the first discoverer of the insect, and not Dr. Knaggs?" Certainly, what other possible meaning can the words convey?

Mr. Greene only partially quotes my sentence, in which I gave reasons for omitting a certain passage which I considered irrelevant

to the question. It should run thus:—"The remainder is omitted because it is quite irrelevant to the question, and moreover would require the publication of explanatory notes from the 'Zoologist' and 'Intelligencer' of the period, thereby occupying space quite unnecessarily."

Would not the vast majority of people have taken the above as a warning to be cautious,—to find out what those explanatory notes meant, which were to be found within the pages of the 'Zoologist' of the period, before rushing into print with an imperfectly quoted extract from that omission?

Mr. Greene apparently took no heed of my warning; had he done so, he would certainly have modified his last paper very considerably, or possibly have left it unwritten, thereby saving himself humiliation, and me an unpleasant task. But what did he do? He evidently jumped to the conclusion that I withheld the matter in question because it told against me, and accordingly he blindly reproduced it regardless of consequences.

I will tell him what his rash act has done for him:—1. It has revealed the spirit in which he is carrying on this controversy, by showing the eagerness with which he seized upon a statement which he thought was likely to injure my reputation. 2. It has dragged before the public the apology of a gentleman who has passed away from us, and which was therefore sealed to me. 3. It has provided me with the important evidence of the late Mr. Henry Doubleday, which I could not otherwise have used. And all for what? for the passing gratification of raking up against his "friend and correspondent" an old, long-forgiven, long-forgotten, charge, which was contradicted, apologised for, and withdrawn more than thirty years ago.

This is the item which he considers "very relevant indeed": "The two localities given for the insect are certainly calculated (if not designed) to lead our assiduous larva-hunters astray; in the 'neighbourhood of London' is literally untrue; 'home counties' is within the verge of truth, but conveys no idea whatever of the exact truth. As I have been favoured with a knowledge of the spot under the seal of secrecy, I can say no more on the subject" (Zool. 7682). What then! The first locality was given by a writer in the 'Annual,' the second was mine, the third was Mr. Cooper's.

In the early part of the year preceding the appearance of the above extract, Mr. Greene, if he had taken the trouble to look, would have found the following note from me: Zool. 6904 (1860). "'Home counties' is the only locality I have ever publicly given for *C. anachoreta*, and the only one for which I will be responsible. The statement in the 'Annual,' that I took it in the neighbourhood of London, was published without my knowledge or sanction." And if he had made a further search, he would have found, Zool. 7717 (1861), the apology for having made the

statement, and the retraction of the same. Included within that apology, he might also have seen the recorded testimony of the late Mr. Doubleday, which, by Mr. Greene's precipitate action, has been released from its grave, and is now available for my purpose. It is as follows:—

"Mr. Sidney Cooper was not aware that the insect he bred was *C. anachoreta*, until, some time afterwards, he saw my specimens of *C. curtula*, which he said were different from the insect he had bred, which was therefore no doubt *anachoreta*."—(Zool. 7717). N.B.—The small capitals are mine.

I, myself, have recorded ('Annual' for 1864, page 130) the fact that the larva of *C. anachoreta* was first found by Mr. Sidney Cooper; and the same statement occurs in our most recent standard work on the British Lepidoptera, *viz.*, Newman's 'British Moths,' p. 223, published 1869.

Although, as already stated, Mr. Cooper is a stranger to me, I took the liberty of writing to him at the time I was preparing my last communication, but, owing to that gentleman being abroad, there was a delay in receiving his two replies. The first was much to the effect of the note at page 112, Entom. 1888; the second was as follows:—

"Unless the memory of our mutual friend Mr. Lynch prove better than my own, I fear that the two paragraphs from the 'Zoologist,' which you kindly send me, contain all the reliable information which is now attainable in respect to my capture of *Clostera anachoreta;* their very existence had faded from my memory, and, now that I have read them, I cannot feel the same confidence in some of my impressions that I did when I last wrote. Of *their* accuracy, however, I have no manner of doubt, for they together furnish a record of the circumstance which was made at the time, and are not emanations from a precarious memory, which I fear, on many points, cannot be relied upon, after a lapse of over thirty years. I DO now remember having the insect for some time in my cabinet before I knew what it was, and that I supposed it was *curtula*, of which I had no specimen, although I had fine specimens of *reclusa*. It must have been my examination of Mr. Henry Doubleday's collection which first made me aware of my error."

The small capitals are mine, but the emphases on the words "their" and "do" are Mr. Cooper's.

As it seems to me hardly possible that any unprejudiced person can consider that the evidence produced is outweighed by Mr. Greene's unsupported ipse-dixit, I presume that no one will dispute the fact that Mr. Cooper was the original captor of *C. anachoreta.*

I now invite Mr. Greene to explain how he reconciles the theory of importation with Mr. Cooper's captures.

Camden Road, March 7, 1893.

Clostera anachoreta.—Thirty years' experience in the work of Entomology has led me to think the *Clostera anachoreta* should retain its place in the list of British Lepidoptera, notwithstanding since the year 1863 it has, either on account of its seclusive habits escaped the observation of collectors, or something has occurred to remove it from the locality in which its capture was first recorded. If every species which comes and goes is to be expunged from the list, surely *Polyommatus dispar*, *Ocneria dispar*, and *Aporia cratægi* can no longer rank with our indigenous species. *Nola albulalis* presents a case almost parallel to that of *C. anachoreta*. Here we have an insect the habitat of which barely exceeds three acres in extent. Thirty years ago it could have been taken in abundance; now it is so scarce that it would be difficult for a hard-working collector to secure a series for his collection. If, then, *N. albulalis* soon disappears from this country (which is more than probable), shall we have to regard it also as an "imported" species. Dr. Knaggs's friend, to whom he so liberally presented the larvæ of *C. anachoreta* at the time of making the discovery at Folkestone, does not seem to be over grateful to him; when having bred a sufficient number of specimens to find it a "drug," he mildly suggests that the species had been "imported." Since the year 1863 *C. anachoreta* has apparently disappeared from Folkestone, and with it, Mr. T. H. Briggs informs us, went *curtula*, *reclusa*, and other species. Now on the 19th of December, 1863, an awful gale blew the plantations to "smithereens." It is recorded in the 'Folkestone Chronicle' of that date, when two colliers went down with all hands. The poplar plantations were on the beach. Mr. Greene pays a high tribute to the entomologists of his early days. No doubt at that time they were becoming more enlightened; but who will grant him that they knew as much as the ardent young students of the present day? They had not the facilities we now possess. About the year 1841 the lepidopterist is recommended to take a well-warmed empty sugar hogshead into a wood or meadow, as an unfailing lure for Noctuæ (Newman's 'Grammar of Entomology,' p. 99). Things are managed rather differently now. If *C. anachoreta* has gone from Folkestone, it rests with the lepidopterists working in the neighbourhood of Deal and Walmer,—its other recorded localities,—to decide whether it no longer exists with us in its wild state. Let us hope that further search will prove that it is not yet extinct.—H. A. Auld.

AN EASILY CONSTRUCTED MOTH-TRAP.

By E. F. Studd.

First, make a flat bottom of wood, 24 by 12 inches. To this bottom fasten two sides of wood, shaped as in fig. 3; from A to B and C to D being 20 in., rising to 24 in. at E, the point E being exactly in the centre. From B to C is of course 24 in. In each side make a square hole large enough to insert the arm (with coat-sleeve); the side nearest the front being about 8 in. from the front.

The hole must be covered by a small trap-door, T, running in a frame, so that it can be pulled out at the top by a small knob in its centre. On the inside of each side nail two strips of wood from D to J, two from K to M, the higher one being slightly longer than the lower, and two, one from the point of the highest strip at K, and one from the point of the lowest strip at K, to L. These strips are for the glasses to slide between. The two from D to J should have a small cross-piece or plug at J, to prevent the glass falling any lower; the same at L, but this cannot be plugged till after the glass is in. The point J is $12\frac{1}{2}$ in. from the back, and $7\frac{1}{2}$ in. from the bottom; the point K is 2 in. in front of J, or $14\frac{1}{2}$ in. from the back and $7\frac{1}{2}$ in. from the bottom; the point L is 2 in. under the lowest strip at K; the point M is clear 2 in. from the bottom.

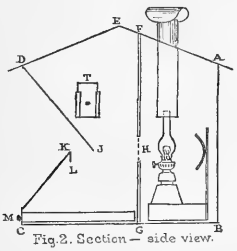


Fig. 2. Section — side view.

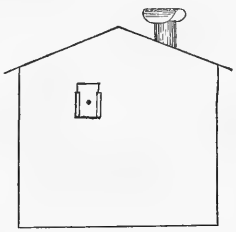


Fig. 1. General side view.

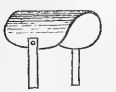


Fig. 5.


Fig. 4.

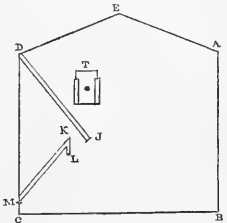


Fig. 3. View of side — inside

Having fastened the sides on to the bottom, next put on the back. This is of wood, and is made of two equal halves, the lower half being firmly nailed to the sides and bottom, and the upper half being fastened to the top of the lower by a pair of hinges, so that it will fall down over the lower half, or can be fastened up to the back of the trap by a couple of wooden buttons, which should be fixed on a strong wooden bar, nailed across the top from A on the one side to A on the other. The top half of the back, when open, will enable the lamp (an ordinary duplex, burning crystal oil) to be inserted or removed.

Next, nail in a wooden partition the whole breadth of the trap from F to G, having a piece of glass 6 in. square inserted in the centre of its breadth, so that the centre of the glass comes opposite the point J,—*i. e.*, about $7\frac{1}{2}$ in. from the bottom. This partition should be 9 in. from the back, which allows ample room

for the lamp. It should be slightly higher than the back, so as to meet the roof which slopes from E to A. Nail a strong bar from E on one side to E on the other. Then slip a piece of glass, which must be as wide as the trap inside, and deep enough to reach from D to J, in between the slips of wood at D. Then slip a piece of glass of the same width, and deep enough to reach from M to K, in at the point M, and a piece of the same width, about 2 in. deep, in at the point L; plug the slips at L, and across the front from D on one side to D on the other, and M on one side to M on the other, nail strong wooden bars. These bars will firmly fix the glasses from D to J and M to K.

A drawer should then be made having a zinc bottom, and sides, front and back of wood. The front should be just deep enough to allow the drawer to shut in between M and C; the sides and back should not be quite as deep as the front. In the centre of the front screw a handle.

The trap is now ready for the roof. This is simply a sheet of zinc large enough to project over the front, back, and sides, to keep off rain, and should be firmly nailed to the cross bars at A, E, and D, and to the partition at F. If not nailed tight to this partition throughout its entire breadth, there will be chinks through which insects will get into the back of the trap and be injured by the lamp. Before fixing, a hole should be cut in the zinc to admit the chimney; the hole should be round, and as nearly as possible the exact size of the chimney, to prevent rain from getting in, and should be puttied round when the chimney has been inserted. This is merely a piece of zinc rolled and fastened together by rivets; it should be just long enough to allow the lamp chimney to be placed up under it, as in fig. 2. It should be put down through the roof, and fastened to it. The diameter of the chimney is 3 in.

A piece of zinc, as in fig. 4, should then be taken, and a piece of hoop-iron rivetted to each side of it in the centre. It should then be drawn down double (see fig. 5), and the pieces of hoop-iron fixed to the chimney, so that the piece of zinc stands clear of the chimney, forming a sort of shade or cap to it, and the trap is complete.

As I said before (Entom. 15), and as will be seen from the above sketch (fig. 2), which I have taken the liberty of copying from Entom xxiii., the trap is Mr Christy's trap with very slight additions, the principal being—

(1.) The drawer. I find this no trouble at all beyond the bruising of the laurel leaves with which it is filled. A piece of muslin is stretched over the leaves to prevent moths falling among them. The reason the sides and back should not be so deep as the front is, that if they were, and the muslin stretched tight over them (which I find is better than letting it rest on the

damp leaves), when the drawer is pulled out the moths would be caught by the cross bar above the drawer at M.

(2.) The piece of glass from K to L. This joins the piece from K to M, and, from my own observation, prevents many moths, which otherwise would crawl up the glass and escape, from doing so.

(3.) Placing the upper point of the lower glass, or K, behind instead of under the lower point of the upper one, or J. This does not in any way check the moths from going in, but tends much to prevent their getting out, as if they fly about there is really no opening, as they fly against one or other of the glasses.

Of course I do not for a moment pretend that the trap is perfect, or that many improvements may not be introduced, and I fancy a great deal more use might advantageously be made of zinc in its construction. Again, I do not suggest that the measurements are the best; all I can say is, that they are those I have used, and they have answered.

A CATALOGUE OF THE LEPIDOPTERA OF IRELAND.

By W. F. de Vismes Kane, M.A., M.R.I.A., F.E.S.

(Continued from p. 73.)

RHOPALOCERA.

PIERIDÆ.

Pieris brassicæ, *L.*—Abundant, and generally distributed. Irish specimens are not divergent to any extent from those of Great Britain. The black apex of fore wing is often dusted with white scales. Markree Castle, Sligo, and elsewhere. Mr. Russ has a female from that neighbourhood, in which the black apex extends in streaks interiorly towards the upper spot. Mr. Barrett records ('Lep. of Brit. Is.') "a very small form from the North of Ireland." Usually the Irish insect is both large and strongly marked.

Pieris rapæ, *L.*—Generally distributed, but the least common of the three species of *Pieris* found in Ireland. Variable in the size and strength of the black markings in both sexes, and in both broods. The apical shading is sometimes almost obsolete, and the spots reduced. Of the varieties described by Mr. Dale, in his 'History of British Butterflies,' I have taken var. *b*, with pale cream-coloured wings; and one forced in winter has this peculiarity, and inconspicuous black spots and apex (var. *c*).

Var. *metra*, Stph.—A very fine example of this variety, devoid of all markings on the upper side of fore wings, was taken by Mr. Fetherston H. (*cf.* Newman, 'Brit. Butterflies,' p. 161).

A remarkable male specimen of this butterfly, with the under side of hind wing and apex of fore wing of a bright canary-yellow, was sent me by Mr. R. F. Barrington, taken on 19th January last, in the cabin of N. Arklow Light-ship. The apex, costa, and spot on the upper side of fore wings are faintly black. I presume it is a hybernated specimen that was attracted on board in the autumn.

Pieris napi, *L.*—Widely distributed, and very common. It varies widely in the markings of both broods, but the horeomorphism does not seem to me to be so marked in Ireland as in Great Britain. The first brood is generally characterised in the male by a somewhat darker apex and spot on fore wing, and in both sexes by a wide suffusion of the nervures on the under side. Females also not unfrequently occur with a dusky suffusion on the bases and all the nervures of the upper side of all wings, the spots being also blurred and fused with the shading of the nervures; thus in some degree approaching the alpine var. *bryoniæ*, which is usually ochreous in colour. I have specimens from Monaghan and Tyrone in Ulster; Markree, Sligo, in the West; Killarney in the South; and elsewhere, some of which have the white ground faintly tinted with primrose. I have also a male from Killarney, taken in May, with a very black apex, but no spot. The second brood, however, in Ireland, frequently preserves, to a certain extent, the type of the first emergence, containing individuals with strongly suffused nervures on the under side. This may, perhaps, be the result of a cold sunless summer. There is a form which I have taken freely in August at Minehead, Co. Waterford; Favour Royal, Co. Tyrone, and elsewhere, described by Mr. Barrett as follows:—"In the North of Ireland, especially in the second brood, females occur with the apex strongly black, spots large, and nervures above very much blackened; and very large males with the apex deep black, and a large round spot on the upper side of fore wing. In all these dark forms the green veins below are very dilated and blackened in proportion." The specimens I have agree with the above description, except that the nervures of the under side are less blackened than in the first brood, and those of the upper side of hind wing not shaded, which throws the strongly-marked fore wing into great relief. In most specimens the apical blotch is quadrangular, but in two the apex is merely broadly streaked with the dark nervures. According to Mr. Dale ('Hist. of Brit. Butterflies') this form is the var. *napææ* of Esper. Others hold that the only character attached to this varietal name is the slight shading of the nervures of the under side of hind wing. An aberration exists in both sexes and broods, in which the under side of hind wing is bright primrose; and this occurs more frequently in the second brood. Two specimens of a very beautiful yellow aberration have been taken, similar to the one described

by Mr. Barrett, from the Norfolk fens. One of these was taken by me in August at Redhills, Co. Cavan, and presented to Mr. Jenner Weir. The other was given me by Miss Reynell, of Killynon, Westmeath. Both were female. Ground colour a saffron-yellow, with bases and all the nervures to the fringes broadly suffused with grey. Apical blotch and spots large, dark, but shaded off at the edges. Under side of the hind wing and apex of fore wing a deep yellow-ochre, approaching orange; nervures shaded with greenish grey. A male of this aberration has been taken in Scandinavia, on the authority of M. Schöyen ('Entomologisk Tidskrift,' 1885, "Resumés," p. 214):—"L'auteur norvégien mentionne, de la generation d'automne de *Pieris napi*, un mâle entièrement jaune soufre, offrant une intéressante analogie avec la variété *novangliæ* de *P. rapæ*." Mr. Mosely records a similar male form of *P. brassicæ*. These parallel forms are worthy of a distinct designation, and I would propose the name of ab. *flava* of their respective species.

Euchloë cardamines, *L.*—Generally distributed, and often very abundant. "In May, 1860, I observed this species in myriads at Sligo, reminding me of the migrating clouds of tropical *Callidryas*" (*B.*). Dwarf individuals of both sexes occur not infrequently, flying at the same period as the rest; as is also the case with its southern congener, *E. eupheno*, in Algeria, and *euphenoides* along the Mediterranean littoral. I have seen no hermaphrodites from Ireland, but they may be expected to be found when there are more observers, as gynandromorphous forms have been frequently noted in this and other species of *Euchloë*. Mr. Barrett notes a specimen from Co. Sligo with a yellowish ground colour, thus reproducing a character of *E. eupheno*. I have not seen any variations worth notice. The female has the upper side of hind wings tinged more or less with dirty yellow. The discoidal spots vary much in size in both sexes, occasionally being very large and lunular in shape. This does not seem to be a topomorphic aberration. The emergence of this butterfly is often considerably retarded in the colder districts of Ireland, where it sometimes lingers on late into summer.

Leucophasia sinapis, *L.*—Very local. Mr. Birchall notes that "only a June brood has been observed." Mr. Sinclair mentions the capture of two specimens near Enniskillen at the end of May, 1875. My series from Galway are characterised by the apical blotch being dark and large in the male, and the ground colour of the wings white, and not cream-coloured. They are of full size, and not divergent from the normal type. The Rev. R. M'Clean, of Sligo, took one specimen on the wooded shores of L. Gill. It is remarkable for the dull ochreous yellow tint of the upper side, somewhat dingier than the second

emergence of *P. rapæ*. The shadings at bases and the apical blotch of fore wing normal. Under side:—Ground colour as upper, but those portions which in the type are tinged with primrose are in this specimen a pale but well-marked buff. Grey shadings normal. Localities:—Co. Galway, at Claring Bridge, abundant (*B.*); and at Castle Taylor, abundant (*Miss N.*). Near Enniskillen (*S.*). Queen's Co., near Borris in Ossory, one specimen (*F. N.*). Co. Sligo, L. Gill, one specimen (*M'C.*). Killarny, abundant (*B.*).

Colias hyale, *L.*—No capture of this species in Ireland has been recorded since 1868, when it occurred sparingly in the South and at Howth, migrating thither with much larger numbers of *C. edusa*.

Colias edusa, *Fb.*—"Common in some seasons on the south and east coast; occurs more rarely north of Dublin. In profusion at Killarney in August, 1865" (*B.*) In June, 1876, Mr. Sinclair states that he met with worn females, and in the autumn the insect came out in large numbers. Mr. Campbell made a similar observation at Derry. In 1877 it was again very common in Ireland, as well as England; and among the places it was observed were Glengarriff, Cork, Bray Head, Howth, Westmeath, Fermanagh, Sligo; and I observed one near Monaghan in Ulster; Armagh, one (*J.*); but it was most numerous in the South, and was also very abundant near Ennis, Co. Clare. In 1885 it was sparingly distributed in the Co. Cork, as at Desertserges, Bandon (*L.*); in Co. Wexford, "near New Ross" (*B.-H.*); abundant at Tallow and Lismore (*L.*), Co. Waterford; Kenmare, &c. In 1888 it was again seen in various places in the South. In 1892, when England was visited by a large migration of this insect, only a small contingent seems to have crossed the Irish Sea, probably deterred by the inclement weather which prevailed here. Mr. M. Fitzgibbon took one at Howth; two were taken at Clontarf, Co. Dublin, by Mr. Vernon; and a few noticed in southern counties.

The female var. *helice* occurred sparingly with the type in the chief migrations; and I have one taken by Mr. Sinclair at Kingstown in 1877.

Gonopteryx rhamni, *L.*—Very local in Ireland. At Killarney, Mr. Birchall took a few specimens on the road from Mucross to Mangerton; and I have met with it sparingly at Dinas. Co. Galway, Ardrahan (*Miss N.*), and N.E. to L. Ree; and in Connemara, at Glendalough, Kylemore, Clydach on the east shore of L. Corrib (*Hon. E. L.*), and Moycullen (*Miss R.*); an island in L. Ree, Co. Longford (*U.*)

NYMPHALIDÆ.

Argynnis selene, *Schiff.*—One at Edenderry, King's Co., by Mr. Henn; identified by Mr. Sinclair in 1877.

Argynnis latonia, *L.*—One specimen "seen on the wing" by Mr. Birchall at Killarney, "in the lane leading from Mucross to Mangerton, near a limestone quarry on the left of the road, August 10th, 1864" (E. M. Mag. i. 109).

Argynnis aglaia, *L.*—Widely distributed round the coast. I only know of its capture inland at a few localities in the Cos. Cork and Galway. In the North, on the coast near Derry (*W. E. H.*); abundant (*C.*). In Antrim and Down, at Portballintrae, Portrush, and Dundrum (*Bw.*). Co. Wicklow, Bray Head, and Greystones. In the South, Westwood Rosscarbery (*D.*); Cork, abundant (*Holt*); Bandon, very abundant (*L.*); Desertserges, twelve miles inland (*L.*); near Kenmare (*Miss V.*). Co. Galway, at Ardrahan, &c. (*Miss N.*).

Argynnis adippe, *L.*—A few taken in Co. Galway in 1887 (*R. E. D.*).

Argynnis paphia, *L.*—"Very abundant at Killarney and the County of Wicklow" (*B.*). Is found in almost all the wooded districts of Ireland that I have visited, and frequently in considerable numbers. Irish specimens are large and brilliant in colour, and I have noticed no remarkable varieties. In the fulvous subcostal space near the apex of fore wing, usually devoid of any marking, there is occasionally a suggestion of the dark blotch presented by the female. Abundant in the wooded peninsula of Ards, in the extreme North of Donegal (*C.*), and Cloghan near Stranorlar. At Derry (*W. E. H.*). Favour Royal, Co. Tyrone; Farnham, Co. Cavan; Westmeath, at Cromlyn (*Mrs. B.*); and generally in the Co. Cork (*Holt*); Bandon, very abundant (*L.*). New Ross, Wexford (*B.-H.*), Sligo, Russ, and Markree. In the Cos. Fermanagh and Dublin, &c.

(To be continued.)

NOTES ON THE SYNONYMY OF NOCTUID MOTHS.

By Arthur G. Butler, F.L.S., F.Z.S., &c.

(Continued from p. 48.)

Dugaria hypophæa.

Alamis hypophæa, Guenée, Noct. iii. p. 4, n. 1323 (1852).
Homoptera plumipes, Walker, Lep. Suppl. 3, p. 888 (1865).
North India. In Coll. B. M.

Xylis, *Guen.*

Xylis ustipennis.

Homoptera ustipennis, Walker, Lep. Het. xiii. p. 1071, n. 41 (1857).
Letis incipiens, Walker, *l. c.*, p. 1266, n. 9 (1857).
St. Domingo. Types in Coll. B. M.

HOMOPTERA, *Boisd.*

The type of this genus is *H. putrescens*, generally admitted to be identical with *H. lunata* of Drury, although the description would do equally well for two or three other species. The *H. lunata* of Cramer is a distinct species = *H. viridans*, Guen. (Cramer's locality alone, apart from differences in the pattern between his figure and Drury's insect, would indicate this).

Walker's *H. edusa* is not the well-known variety of *H. lunata*, figured by Drury, but is = *H. calycanthata*.

Homoptera lunata.

Phalæna lunata, Drury, Ill. Exot. Ent. i. p. 40, pl. 20, fig. 3.
Omoptera putrescens, Boisduval, in Cuvier's Régne Anim. p. 522, larva, pl. 89 (1829).
Var. *Phalæna edusa*, Drury, *l. c.*, ii. p. 42, pl. 24, fig. 4.
Homoptera marginalis, Walker, Lep. Het. Suppl. 3, p. 878 (1865).

United States. In Coll. B. M.

The specimen referred by Walker to *H. viridans*, Guen., is *H. lunata*. I do not understand why Grote has given the variety *edusa* priority over Drury's earlier name.

Homoptera minerea.

Homoptera minerea, Guenée, Noct. iii. p. 15, n. 1339 (1852).
H. involuta, Walker, Lep. Het. xiii. p. 1055, n. 7 (1857).
H. lineosa, Walker, *l. c.*, p. 1056, n. 9 (1857).
Var. *H. sexplagiata*, Walker, Lep. Het. xiii. p. 1064, n. 27 (1857).

North and South America. In Coll. B. M.

This is like a smaller form of *H. lunata;* the costal margin of the primaries is comparatively shorter, but the coloration, pattern, and variation are almost identical.

Walker's variety *sexplagiata* was also identified by him as *H. minerea* and *H. obliqua*, Guen., though the white patches on the primaries are not mentioned in either of that author's descriptions.

H. exhausta of Walker (not Guenée) is *H. viridans*, Guen. The two species are nearly allied; but, I think, distinct.

Homoptera viridans.

Homoptera viridans, Guenée, Noct. iii. p. 13, n. 1336 (1852).
H. exhausta, Walker (not Guenée), Lep. Het. xiii. p. 1053, n. 2 (1857).
H. viridisquama, Walker, *l. c.*, xv. p. 1797 (1858).

St. Domingo and São Paulo, Brazil. In Coll. B. M.

Homoptera fictilis.

♀ *Homoptera fictilis*, Guenée, Noct. iii. p. 10, n. 1330 (1852).
♂ *H. guadulpensis*, Guenée, *l. c.*, n. 1331.
♀ *H. terrosa*, Guenée, *l. c.*, p. 11, n. 1332.
H. gradata, Walker, Lep. Het. xiii. p. 1060, n. 17 (1857).
H. posterior, Walker, *l. c.*, n. 18.

St. Domingo, St. Vincent, and Jamaica. In Coll. B. M.

H. calycanthata, Sm. Abb., and *H. horrida*, Hübn., have been confounded by Walker and others; but, although they are quite distinct, the latter appears to me to be nearly allied to *H. duplicata*, Beth. (a species which must stand next to *H. obliqua*, Guen.), and I fail to see any reason why I should adopt Grote's generic separation of it from the other species of *Homoptera*.

Homoptera cingulifera.

Homoptera cingulifera, Walker, Lep. Het. xiii. p. 1056, n. 10 (1857).
H. intenta, Walker, *l. c.*, p. 1070, n. 39 (1857).
H. woodii, Grote (see Check-List, p. 42, n. 1306).

United States. Types in Coll. B. M.

Homoptera declarans.

Homoptera declarans, Walker, Lep. Het. xiii. p. 1057, n. 11 (1857).
H. unilineata, Grote (see Check-List, p. 42, n. 1313).

United States. Types in Coll. B. M.

CAMPOMETRA, *Guen.**

Rhubuna, Walk.

This genus, in addition to the type, will include *R. irresoluta*, *Homoptera decessa*, *H. simplicior*, *H. integerrima*, and *H. aperta*.

Campometra decessa.

Homoptera decessa, Walker, Lep. Het. xiii. p. 1072, n. 42 (1857).
H. trailii, Butler, Trans. Ent. Soc. 1879, p. 40, n. 54.

Amazons. Types in Coll. B. M.

Campometra simplicior.

Homoptera simplicior, Walker, Lep. Het. xiii. p. 1065, n. 28 (1857).
H. subrosea, Walker, *l. c.*, p. 1070, n. 38 (1857).

Honduras. Types in Coll. B. M.

* *Phalæna euristea*, Cram., appears to be allied to *C. irresoluta*, and may even be a form of that very variable species.

Campometra integerrima = amella?

Homoptera integerrima, Walker, Lep. Het. xiii. p. 1057, n. 12 (1857).

Eubolina stylobata, Harvey (see Check-List, p. 42, n. 1318).

United States. Types in Coll. B. M.

The genus *Eubolina* was described in 1875, according to Scudder. It may stand, perhaps, for *E. mima* and *impartialis*; *E. meskei* is unknown to me. It seems highly probable that *R. integerrima* is the species intended by Guenée's wretched figure of *Campometra amella*, only the secondaries are represented with the fringe wholly white, whereas the description shows that such is not the case.

As *C. amella*, in any case, must be congeneric with *Homoptera integerrima*, Walker's genus *Rhubuna* must fall.

YPSIA, *Guen.*

Ypsia æruginosa.

Ypsia æruginosa, Guenée, Noct. iii. p. 17, n. 1342 (1852).

United States. In Coll. B. M.

Walker placed an example of this species under *Phæocyma lunifera*. Grote regards *Y. æruginosa* and *umbripennis* as mere varieties of *Y. undularis*. Perhaps he is right; but they are more easy to distinguish than many N. American species, the distinctness of which is stoutly and indignantly maintained.

Guenée having adopted Hübner's genus *Anthracia* for two species not included in the group by the author of the genus, Grote very rightly renamed Guenée's group. He apparently intended to call it *Pseudanthracia*, but in the Check-List it is spelt *Pseudanthræcia*, and I do not find it corrected in the errata, though in the list of genera it stands *Pseudanthracia*. I prefer to adopt the latter, as being obviously more correct.

PSEUDANTHRACIA, *Grote.*

I fail to see any justification for separating *P. cornix* as a species from *P. squammularis*. The only character of apparent value given by Guenée is the length of the third article of the palpi; but this does not hold, and I am inclined to think that his specimen was imperfect.

PRAXIS, *Guen.*

Praxis porphyretica.

Praxis porphyretica, Guenée, Noct. iii. p. 29, n. 1355, pl. 18, fig. 10 (1852).

P. inordinata, Walker, Lep. Het. xiii. p. 1088, n. 4 (1857).

Tasmania. In Coll. B. M.

Walker's type is simply a faded example. The species varies

from the normal red-brown colouring to a bluish slate colour, most marked on the primaries.

Mamestra aterrima, Walk., belongs to this genus.

HYPOGRAMMIDÆ.

I think it doubtful whether this is really a distinct family from the preceding.

Calliscotus bowreyi, Butl., from Jamaica, is clearly a Geometrid, and belongs to the genus *Pterocypha*, H.-Sch.

Hypogramma damonia.

Phalæna damonia, Cram., Pap. Exot. iv. pl. 324, figs. B, C (1872).

P. capensis?, Cramer, *l. c.*, ii. pl. 167, fig. C (1779).

P. sulima, Stoll, Suppl. Cram., pl. 40, figs. 5, 5C (1791).

South America. In Coll. B. M.

There can be little doubt that Cramer's figure of his *Phalæna capensis* was taken from a bad specimen of this species; but it would be preposterous to call an American species *capensis*.

CÆNIPETA, *Hübn.*

Cænipeta serapis.

Phalæna serapis, Cram., Pap. Exot. iv. pl. 396, fig. F (1782).

Cænipeta lobuligera, Guenée, Noct. iii. p. 32, n. 1360 (1852).

C. aniloba, Guenée, *l. c.*, p. 33, n. 1361 (1852).

C. columbina, Walker, Lep. Het. Suppl. 3, p. 892 (1865).

C. lilacina, Butler, Trans. Ent. Soc. 1879, p. 44, n. 62.

South America. In Coll. B. M.

When I described the Amazon examples, I had little idea of the variability of the *Noctuites*. My notes on this species show how little the named forms must have differed, since their authors confounded them together.

(To be continued.)

CAPTURES AND FIELD REPORTS.

THE SEASON OF 1892 AT RINGWOOD. — Insects have not been so abundant for at least ten years, here in the south, as they were last year. Captures at sugar and ivy were much above the average; and some good things have fallen to my lot in consequence. I may add that from March to the middle of November insects were plentiful. Amongst Rhopalocera we have certainly had an immigration of at least three species; of *Colias edusa* and *Vanessa cardui* there seems little doubt, and I think the same holds good of *V. atalanta*, although there is not much said of this species in respect to migration. Every season I collect all the larvæ of *V. atalanta* that I can find for varieties. During 1890 and '91 they were local and not above the average, but in 1892 I found them in immense numbers every-

where, and in company with *V. cardui*. I usually see a few imagines in June each year, but in June and July, 1892, they were abundant. I think these facts favour the supposition that *V. atalanta* is a migratory species. All the three above-named species appeared here simultaneously the first week in June, and within a fortnight they had greatly diminished, although still abundant; doubtless many went further inland. I was much amused and surprised at netting specimens of *V. cardui* (in the spring) between eight and nine o'clock p.m., several times mistaking them for moths, but did not notice this habit in the autumn, doubtless through the days being so short. *V. io* was fairly common in the larva stage, but scarce during the spring and autumn. *V. urticæ* was unusually scarce. The Forest butterflies were in their usual numbers, with the exception of *Gonepteryx rhamni*. *Argynnis paphia* var. *valesina* was plentiful as usual. The following species, among others of lesser note, I took at sugar during June, &c.:—*Caligenia miniata*, a few. *Gonophora derasa*. *Cymatophora or*, one. *Acronycta ligustri*, and a good series of *Leucania turca*. *Caradrina alsines* and *blanda*, common. *Cosmia affinis*, local. *Triphæna fimbria*, few. *T. interjecta* and *T. subsequa*, one. *Aplecta herbida;* I obtained a good supply of ova of this species, from which a lot of larvæ emerged; some pupated, and the perfect insects are coming out. I kept the larvæ indoors and fed them with dock leaves; about forty I had to put out of doors to hybernate, as they refused to eat, but they are now nearly full-fed. *Cerigo cytherea*, scarce. *Mamestra albicolon*, one. *M. abjecta*, one. *Miana literosa*, scarce. *M. strigilis* and vars. *M. furuncula*, in great variety. At ivy every beat brought down numbers; when the lamp was brought forward it was astonishing to see such a living mass, some species were in thousands. I have succeeded in taking some good varieties. *Anchocelis pistacina*, scarce. *A. litura*, common. *Xanthia ferruginea*, *Orthosia lota*, and *O. macilenta*, very abundant. *Xanthia fulvago*, few. *Scopelosoma satellitia*, about the commonest. *Dasycampa rubiginea*, one. *Cerastis vaccinii* and *C. ligula*, very common; parallel varieties with light submarginal lines, &c. *Agrotis segetum* and *A. suffusa*, uncommon. *Epunda nigra*, three. *Miselia oxyacanthæ*, *Agriopis aprilina*, common. *Dryobota protea*, two. *Phlogophora meticulosa*. *Xylina socia*, scarce. *X. ornithopus*, common. *Plusia gamma*. *Larentia siterata* (*psittacata*), about a dozen. Several species which usually occur I did not find. By other means, netting, &c., the following is a partial list:—*Sphinx convolvuli*, one only. *Macroglossa stellatarum*, a few. *Hemaris bombyliformis*, common. *H. fuciformis*, scarce. *Lithosia stramineola*, in the lanes. *L. complana*, local; heaths. *L. sororcula*, few. *L. mesomella*, common. *Emydia cribrum*, scarce. *Gnophria rubricollis*, occasionally. *Nemeophila russula*. *Saturnia carpini*, plentiful. *Bryophila perla*, from brick walls; a form bluish black all over. *Cœnobia rufa*, local, amongst rushes and flying at dusk. *Dyschorista* (*Orthosia*) *ypsilon*, pupa from dried stems of various reeds in meadows. *Hydræcia nictitans*, scarce. *H. micacea*, at light. *Agrotis agathina*, local on heaths. *Xylocampa areola*, common on palings; I found one frozen and quite dead. *Habrostola triplasia* and *H. urticæ*. *Erastria fasciana*, very local amongst dried sticks, &c. *Nola cucullatella*, *N. confusalis*, and one *N. centonalis*. The Geometridæ were also abundant; it required very little exertion to beat them from the trees and hedges. *Ellopia prosapiaria*, several; one male of the var. *prasinaria*, which I netted in Bratley Wood. *Pericallia syringaria*, *Eurymene dolabraria*, common. *Epione advenaria*, *E. apiciaria*, local. *Macaria litu-*

rata, very common; two broods; one var. unicolorous violet-grey, with central yellow bars upon all wings. *Scodiona belgaria*, several, *Bapta trimaculata*, scarce. *Rhyparia plumaria* and *Gnophos obscurata*, local. *Cleora lichenaria, Boarmia cinctaria, B. consortaria, B. roboraria, Tephrosia consonaria, T. extersaria;* nearly all the Boarmiæ have been common; *B. roboraria* is new to me here. *Pachycnemia hippocastanaria*, two broods. *Nyssia hispidaria*, scarce. *Pseudoterpna pruinata*, abundant. *Phorodesma pustulata*, scarce. *Nemoria viridata*, local. *Acidalia emarginata, A. imitaria, Timandra amataria, Zonosiona punctaria* and *Z. trilinearia*, all common. *Scotosia undulata*, a few. The beautiful *Melanthia albicillata*, very common upon fir trees, but difficult to net, as they have a habit of resting well up amongst the branches. *Emmelesia affinitata*, local. *Eupithecia fraxinata*, in lanes. *E. minutata, E. castigata, E. rectangulata*, and many other pugs. Larva-beating has been quite as successful as any other mode of collecting. From oak (*Quercus robur* chiefly), I obtained *Sesia cynipiformis* commonly in stumps. *Psilura monacha*, from which I bred a good series; one male nearly black, several richly banded forms. *Trichiura crataegi* and *Pœcilocampa populi*. *Drymonia chaonia*, several; *Asphalia ridens, Demas coryli, Tæniocampa munda, Cosmia trapezina*, one imago bred was bright red. *Sarrothripa revayana*, several broods. *Hylophila prasinana*, abundant. *H. bicolorana*, during May. Larva of various "thorns" and "pugs" were plentiful: *Eugonia erosaria, Eurymene dolobraria, Selenia tetralunaria, Himeria pennaria*, &c. From birch (*Betula alba*), *Platypteryx falcataria, Lophopteryx camelina, Notodonta dromedarius*, &c., *Geometra papilionaria*, &c. Sallows (*Salix caprea*), *Smerinthus populi* and *S. ocellatus; Porthesia auriflua*, before hybernating. *Pygæra curtula*, very low down. *Cerura furcula*, common. *Notodonta ziczac, Scoliopteryx libatrix, Earias chlorana, Pygæra reclusa*, common upon dwarf sallows. Beech (*Fagus sylvatica*), *Dasychira pudibunda, Deprana unguicula, Demas coryli*, abundant during September and October; all sizes. *H. prasinana*, common. Blackthorn (*Prunus spinosa*), *Bombyx quercus* and *Lasiocampa quercifolia*, both common. From various other food-plants I have taken the following:—*Sphinx ligustri*, holly. *Smerinthus tiliæ, Hemaris bombyliformis, Gnophria rubricollis*, from all forest trees: of the latter I have several pupæ; the larvæ were fed upon yellow and grey lichen found upon walls, &c. *Callimorpha dominula*, local, but plentiful. *Arctia villica*, common. *Phagmatobia fuliginosa, Dasychira fascelina, Cossus ligniperda*, cases of *Psyche villosella* and *Fumea nitidella*. *Acronycta alni*, two. *Xanthia fulvago*, from sallow blooms. *Cosmia affinis, Gortyna flavago*, from stems of various plants. *Triphana interjecta*, common. *Calocampa exoleta*, docks. *Anarta myrtilli*, common. *Plusia chrysitis*, two broods. *Cilix glaucata, Pseudoterpna pruinata*, common. *Pericallia syringaria, Urapteryx sambucaria*, still feeding, Jan. 20th. Insects were fairly common upon sallow bloom; I took a few each of *Panolis piniperda, Tæniocampa gracilis*, and *Pachnobia rubricosa*, and of course many of the commoner kinds. I should imagine, from the great numbers of larvæ there were in the autumn, that the prospects for this year are favourable, and I trust it may be so, for the sake of all collectors.—J. Hy. Fowler; Ringwood, January 20, 1893.

Zygæna meliloti?—In the Entom., vol. xxii., No. 318, I gave an account of "Lepidoptera of two Dorset chalk-hills," and noted *Zygæna trifolii*. Mr. Charles Gulliver, who has seen the series of this species,

says undoubtedly two of them are *meliloti*. Here is a chance for the Dorset collectors. As I have a good series of true *meliloti*, I should be happy to send them to an expert for identification.—J. Hy. Fowler.

Spring Lepidoptera at Chester.—*Phigalia pedaria* (= *pilosaria*) is unusually common on our gas-lamps, and a male *Nyssia hispidaria* emerged from the pupa this morning. *Hybernia defoliaria* still continues to appear on the lamps and in my breeding-pots.—J. Arkle; 2, George Street, Chester, February 18, 1893.

Captures at Light.—Since my last list of Lepidoptera taken in the moth trap (Entom. 15), I have, by the same means, secured the following:—*Pœcilocampa populi*, three females and a number of males; *Cerastis vaccinii*, numerous examples; *Asteroscopus sphinx*, twenty males; *Himeria pennaria*, several males; *Hybernia defoliaria*, a large and varied series of males; *H. rupricapraria*, two males; *H. leucophæaria*, two males; *Cheimatobia brumata*, numerous males.—E. F. Studd; Oxton, Exeter, February 7, 1893.

"A Shower of Caterpillars."—The following extract is from the 'Liverpool Echo' of March 6th:—"A letter from Salins, in the Department of the Jura, relates that on the 22nd of February the inhabitants were astonished to find that snow, which was falling fast, was mixed with innumerable living caterpillars. After the storm had blown over, the ground was, it is said, literally covered with them. It is supposed that the storm, having come from the south-west, had brought the caterpillars with it from Madeira, the Canary Islands, the Azores, or Cape Verde. If that were really the case, the caterpillars, which are described as of all sizes, had been held in suspension in the air for some thousands of kilometres."—J. Arkle; Chester.

Rhopalocera from the Alpes-Maritimes.—I am reliably informed that the undermentioned species of Rhopalocera have been either seen or taken on the wing near Nice, viz.:—*Pieris brassicæ*, L., several seen. *Anthocharis belia*, Cr., one seen and one taken, on February 25th, by my cousin, E. C. Casey, at Cap St. Jean, near Villefranche; time, about 3, p.m. I was present on the occasion. The larval food-plant for this species (*Biscutella didyma*) I noticed in flower as early as January 22nd, this year, on the rocks at Villefranche, and facing full south. *Colias edusa*, F., one observed by the same collector on February 12th, and several since seen by me. *Rhodocera cleopatra*, L., a male example apparently just emerged from the pupa, on Mont Vinaigrier, January 28th. *Lycæna argiolus*, L., one seen on February 16th. Going back to former seasons, I find from my diary that *Papilio podalirius*, L., has been seen as early as March 29th (1891); and I have met with *Anthocharis cardamines*, L., and *A. euphenoides*, Stgr., both on March 28th (1890). *Polyommatus phlæas*, L. (if I remember rightly), I saw at the end of February, about five or six years ago, in a sheltered locality to the north of Nice. *Lycæna baton*, Bgstr., has been found as early as March 26th (1890),—a solitary male individual. The females usually appear about a fortnight later than the males. As regards this latter, I have always taken it commonly on Mont Vinaigrier and at St. Jean (near Villefranche), where wild thyme (*Thymus vulgaris*) abounds. It does not seem to frequent the plain much,—that is to say, I have not generally found it in hilly localities.—F. Bromilow; Nice, S. France, March 4, 1892.

Rhopalocera near Nottingham in September, 1892.—Butterflies seemed fairly plentiful here about the middle of last September, the *Vanessas* being in particularly strong force. At the edge of an oak wood near Widmerpool, where thistles abounded, *V. atalanta* simply swarmed. It was a grand sight to see these beautiful insects circling round the oaks, reminding one of *Apatura iris*, and, after a short flight, return to the thistle-heads. *V. cardui* was not quite so plentiful, and fearfully battered. *V. io* and *V. urticæ* were nearly over, only odd ones turning up now and then. Unfortunately I missed a fine specimen of *V. polychloros*, which is a rare insect in this district. There appeared to be a late brood of *Lycæna alexis* and *Cœnonympha pamphilus*, as both species were quite fresh and in large numbers. Near a clover-field I took half-a-dozen fine *Colias edusa*, the females being in superb condition. A few days previously I netted a very small male on a sunflower in the garden, which is within a mile of the centre of the town on the north side.—A. R. Lewers; Clinton House, Sherwood Rise, Nottingham.

Calymnia pyralina in Essex.—I took one rather damaged example of *C. pyralina*, and one *C. affinis*, at rest on elm trees, in August, 1892.—Jas. Garrow; 3, Wolseley Terrace, Leytonstone.

Biston hirtaria in February.—On Friday, Feb. 17th, I took a male *Biston hirtaria* off a pear-tree trunk in my garden. I think it likely to be some time before this "record" is broken.—C. A. Bird; Rosedale, 162, Dalling Road, Hammersmith, W., Feb. 22, 1893.

Early Spring Lepidoptera.—On the 20th of this month a friend of mine saw *Gonepteryx rhamni* on the wing near Gipsy Lane, Eastham. It was chased by him and two others, but managed to get away. Are there any other records of its appearance on the wing so early? On the previous day I took a male *Anisopteryx æscularia* at rest on a wood fence, in the vicinity of Wanstead. The day was very warm and bright, but rather windy.—Jas. Garrow; 3, Wolseley Terrace, Birkbeck Road, Leytonstone, Feb. 20, 1893.

Colias edusa in Norfolk, 1892.—On Sept. 13th, 1892, I captured three small specimens of *Colias edusa* in the Beach Gardens, at Great Yarmouth, and saw another on the 27th. Through leaving Yarmouth in October last, and not getting copies of the 'Entomologist' regularly, I am sorry to say I was unable to report my captures so that they could have been published in their proper place in the list. I notice that there is only one record from Norfolk, and that of only one specimen, which makes the county appear to have been almost exempted from their visits.—J. E. Knight; 3, Mount Joy Street, Newport, Mon., Feb. 3, 1893.

Brephos parthenias.—I had my first entomological field-day on Saturday last (March 11th), when I went to Delamere Forest. *Brephos parthenias* was flying about commonly in the bright sunshine, but, although we compared notes with some Manchester entomologists whom we met, not a single capture of this species was made on that day.—J. Arkle; Chester.

Vanessa polychloros on the Thames Embankment.—As I was walking down the Embankment, about two o'clock to-day (the sun being just at the time rather powerful), a specimen of *Vanessa polychloros* alighted on the pavement, about a couple of yards from me. The insect was, I

think, perfect, and appeared very fresh. I tried to catch it, but it flew into the gardens on my left. I saw no more of it. There was, however, no mistaking the specimen, which expanded its wings right in front of me. This occurred just above Waterloo Bridge.—Lawrence J. Tremayne; 4, Lanark Villas, Maida Vale, W., March 8, 1893.

Amongst the Coleoptera on Bank Holiday.—On December 26th, 1892, the thermometer below freezing-point, the sun shining brightly overhead, the merry laughs of the skaters as they speeded past us upon the frozen Thames, all tended to make us buoyant with the hope that we should have the good fortune to find a "good thing," as we wended our way toward Iffley on this eventful morning. Soon we came in sight of some aspens; out came diggers and bottles; the rough bark was prized off, and amongst the fissures we noticed, lying in a dormant condition, *Dorytomus intermedius* and *D. vorax* in some numbers, with *Agonum gracile* and *Pterostictus minor*. Just, however, as we were in the midst of ascertaining whether certain suspicious-looking cocoons — of which there were some dozens of empty ones in the bark—were the cocoons of the hornet clearwing, we were rudely awakened to the fact that we were trespassing. As we could not persuade the keeper (*sic*) that we were doing no damage to the property whatever, we had to make tracks. A short distance further on brought us to an old decayed willow-stump, upon which we immediately set to work. *Pterostictus minor* and *niger*, *Argutor strenuus* and *diligens*, *Agonum gracile*, *Leja lampros*, and *Lopha assimile* were found in great numbers; *Carabus nemoralis* we turned out in some numbers. A number of small Brachelytra were found basking in the sun on the stump. *Anchomenus livens* was turned out; several specimens of this have been taken by myself in various localities near Oxford. Within five yards of us the ice was populated with skaters, and a small crowd of the genus Homo (young) formed around us, inquiring "what we wanted 'em for." Meanwhile we were turning out *Anchomenus* (*Clibanarius*) *dorsalis* and *albipes*, *Dromius quadrimaculatus* and *foveolatus*, *Dyschirius globosus*, *Clivina fossor*, *Errhinus acridulus*, *Harpalus æneus* and *rufipes*, *Chrysomela polita*, *Gastrophysa marginella* (in abundance), and *Haltica nemoralis*. Amongst some refuse I noticed a peculiar-looking insect, and found, on extricating it, *Oodes helopoides*, and soon afterwards *Amara familiaris* was found. A few moments later we left this profitable stump, and adjourned to some aspens close to the river, where, on scraping off the moss at the foot of the tree, we found *Dromius quadrimaculatus*, *quadrinotatus*, and *meridionalis*, *Demetrias atricapilla*, *Prasocuris phellandrii*, *Onthophilus striatus*, *Silpha* (*Phosphuga*) *atrata*, *Lathridus lardarius*, and one specimen of *Bembidium saxatile*. One specimen of a small *Trichopteryx* (sp. incert.) was noticed under moss with *Apion assimile*, and numbers of small specimens of *Brachelytra*. By this time our bottles were in a very full condition, and, as the sun was dipping below the tops of the Chilswell Hills and the wind began to feel colder, we decided to give up collecting for the day, and, having taken enough to fill up the uncompleted series, we wended our way back towards Oxford.—John W. Shipp (Assistant to the late Prof. Westwood), Oxford University Museum.

Lepidoptera taken and bred in neighbourhood of Swansea, 1892.—*Pieris brassicæ*, *P. rapæ*, *P. napi*, *Euchloë cardamines*, all common. *Colias edusa*, fairly common, and one var. *helice*. *C. hyale*, one seen. *Gonopteryx rhamni*, not rare. *Argynnis selene*, *A. euphrosyne* and *Melitæa aurinia*, all

abundant. *Argynnis paphia*, scarce. *Vanessa urticæ*, *V. io*. *V. atalanta*, *Pararge megæra*, *Satyrus semele*, *Epinephele ianira*, *E. tithonus*, *Cœnonympha pamphilus*, *Thecla rubi*, *T. quercus*, *Polyommatus phlœas*, *Lycæna icarus*, *Nisoniades tages*, *Hesperia thaumas*, *H. sylvanus*, all more or less common. *Vanessa cardui*, common in larval state but not common as imagines. *Pararge egeria*, scarce. *Thecla w-album*, rare. (29 species.) *Sphinx convolvuli*, not rare at *Nicotiana affinis*; *S. ligustri*, in larval state only, scarce. *Deilephila livornica*, one taken at flowers of rhododendrons on June 5th. *Chœrocampa porcellus* and *C. elpenor*, fairly common at same flowers and pinks. *Smerinthus populi*, at light, and larvæ not scarce. *Macroglossa stellatarum* and *M. bombyliformis*, occasionally at flowers in sunshine. *Zygæna trifolii* and *Z. filipendulæ*, common, some nice barred forms of the former being taken, and one of the latter approaching var. *chrysanthemi* was secured by Mr. Holland. *Hylophila prasinana*, not scarce when beating for larvæ. *Nola cuculatella*, common at light. *N. confusalis*, not rare at rest. *Nudaria senex*, scarce at light. *Euchelia jacobææ*, *Arctia caja*, *Spilosoma lubricipeda*, *S. menthastri*, common. *S. mendica*, scarce. *Hepialus humuli*, *H. lupulinus*, and *H. hectus*, flying at dusk. *Cossus ligniperda*, common in larval state. *Psilura monacha*, scarce. *Dasychira pudibunda*, fairly common; also *Orgyia antiqua*. *Pœcilocampa populi*, at light. *Bombyx rubi*, very common as larvæ and imagines. *Odonestis potatoria*, in ova. *Saturnia pavonia*, scarce. *Drepana falcula*, at light, and beaten from birch trees. *Cilix glaucata*, common at light, both broods. *Dicranura vinula*, in larval state. *Stauropus fagi*, two at rest. *Pterostoma palpina*, *Lophopteryx camelina*, *Notodonta dictæoides*, *N. ziczac*, *N. chaonia*, *N. trimacula*, and *Phalera bucephala*, all at light. *N. dromedarius*, only as larvæ and pupæ. *Pygæra pigra*, fairly common in larval state. *Thyatira derasa*, *T. batis*, *Asphalia diluta*, common at sugar. *Bryophila muralis* and *B. perla*, former scarce, latter common on old walls round Swansea. *Acronycta tridens*, larvæ; *A. psi*, at rest; *A. alni*, rare; (*A. ligustri*, empty pupa cases found under moss on ash trees); *A. rumicis*, common at rest and as larvæ, latter feeding on strawberry. *Leucania conigera*, scarce. *L. turca*, at sugar, as also *L. lithargyia*, *L. littoralis*, *L. comma*, *L. impura*, and *L. pallens*. *Tapinostola fulva*, at light (some very dark specimens). *Gortyna ochracea*, at light, and as pupæ in *Eupatorium cannabinum*. *Hydræcia nictitans* and *H. micacea*, at light, the former also at flowers and very abundant at both. *Xylophasia rurea* and var. *combusta*, *X. lithoxylea*, *X. monoglypha*, *X. hepatica*, *X. scolopacina*, at flowers and sugar. *Neuronia popularis*, *Charæas graminis*, *Luperina testacea*, *L. cespitis*, all more or less common at light. *Mamestra albicolon*, *M. brassicæ*, *M. persicariæ*, *Apamea basilinea*, *A. gemina* and var. *remissa*, *A. didyma*, *Miana strigilis*, *M. fasciuncula*, *M. bicoloria*, at sugar. *M. arcuosa*, at light. *Grammesia trigrammica*, at sugar. *Caradrina morpheus*, *C. alsines*, *C. taraxaci*, *C. quadripunctata*, *Rusina tenebrosa* (very dark), at light. *Agrotis vestigialis*, by searching sandhills, and sugar. *A. suffusa*, *A. saucia*, *A. segetum*, *A. exclamationis*, *A. corticea*, *A. ripæ*, *A. nigricans*, *A. tritici*, *A. præcox*, *Noctua glareosa*, *N. augur*, *N. plecta*, *N. c-nigrum*, *N. brunnea*, *N. festiva*, *N. rubi*, *N. umbrosa*, *N. baja*, *N. castanea*, *N. xanthographa*. *Triphæna ianthina*, *T. interjecta*, *T. comes*, *T. pronuba*, *Amphipyra pyramidea*, *A. tragopogonis*, *Mania typica*, *M. maura*, all more or less common at sugar. *Noctua diatrapezium*, at light. *Panolis piniperda*, rare at sallows. *Pachnobia rubricosa*, *Tæniocampa gothica*, *T. incerta*, *T. stabilis*, *T. gracilis*, *T. munda*, *T. pulverulenta*, all common at sallow. *Orthosia suspecta*, sugar. *O. lota*, *O.*

macilenta, Anchocelis rufina, A. pistacina, A. litura, Cerastis vaccinii, C. spadicea, Scopelosoma satellitia, at sugar and ivy. *Anchocelis lunosa*, very common at light. *Xanthia fulvago* and *X. flavago*, abundant, especially the latter, both bred from catkins, but no variety *flavescens* of the former, though in 1889 I bred a fair percentage of that var. from catkins in Hampshire. Oddly enough, I did not take a single specimen of either species at sugar, light, or at rest. *X. circellaris*, common at sugar and ivy. *Cirrhœdia xerampelina*, full-fed larvæ found under moss on bark of ash trees at Gower. *Tethea subtusa* and *T. retusa*, rarely, at light and rest. *Calymnia trapezina, C. pyralina*, and *C. affinis* (only one), at light and sugar. *Dianthœcia capsincola* and *D. cucubali*, common as larvæ, especially the former. *Miselia oxyacanthæ, Agriopis aprilina, Euplexia lucipara, Phlogophora meticulosa, Aplecta prasina, A. nebulosa, Hadena protea, H. dentina, H. oleracea, H. pisi, H. thalassina*, more or less common at sugar, though *H. dentina* was abundant at flowers of rhododendron. *Xylocampa areola*, common, flying over sallows, though much too shy to be taken like the other sallow frequenters. I am breeding some from ova deposited last year, and they have begun to emerge abnormally early, nine having appeared up to present date, Feb. 3rd, the first emergence being on Jan. 10th, pupæ being kept in cold room without fire. *Calocampa vetusta* and *C. exoleta*, at ivy and sugar respectively. *Xylina ornithopus*, at sugar and at rest. *Cucullia verbasci*, common in larval state. *C. umbratica*, scarce, only two being taken at flowers. *Gonoptera libatrix*, not common at sugar or as larvæ. *Habrostola tripartita* and *H. triplasia*, occasionally taken flying over flowers of snowberry, and as larvæ on nettle. *Plusia chryson*, not rare as larvæ on *Eupatorium cannabinum*, and two at light. *P. chrysitis, P. iota, P. pulchrina*, and *P. gamma*, at flowers and rest, the last named being a regular nuisance. *Heliaca tenebrata*, rather scarce in fields where buttercups were common. *Hydrelia uncula*, common in boggy places, but very difficult to obtain in perfect condition, as they are so erratic in their flight, one impaling itself on a furze-bush in its mad career. *Phytometra viridaria, Euclidia mi, E. glyphica*, common in rough meadows and in park. *Toxocampa pastinum*, occasionally kicked up out of herbage in daytime. *Rivula sericealis*, scarce in same boggy meadows as *H. uncula, Zanclognatha grisealis, Z. tarsipenalis*, beaten from hedges and bushes at dusk. *Hypena proboscidalis*, abundant among nettles. *Hypenodes costæstrigalis*, not uncommon at light and sugar, preferring the former. Among the Geometræ *Uropteryx sambucaria* was common, flying at dusk. *Epione apiciaria* and *E. advenaria*, rather rare. *Rumia luteolata* and *Metrocampa margaritaria*, both common. *Ellopia prosapiaria, Eurymene dolobraria*, and *Pericallia syringaria*, all scarce at light. *Selenia bilunaria, S. lunaria, S. tetralunaria, Odontopera bidentata, Crocallis elinguaria*, much commoner than last named. Also *Eugonia alniaria, E. erosaria, E. quercinaria, Himera pennaria*, and *Phigalia pilosaria. Amphidasys strataria* and *A. betularia*, occasionally at light and rest. *Boarmia repandata* and var. *conversaria*, and *B. gemmaria*, both flying at dusk and at rest. *Tephrosia consonaria*, common in beech woods, at rest. *T. crepuscularia* and *T. biundularia*, and black varieties of each at rest on various trees and at light. *T. punctulata*, abundant in birch woods. *Pseudoterpna pruinata*, some specimens quite blue on the cliffs at Langland Bay. *Geometra papilionaria, Iodis lactearia, Zonosoma porata*, at light. *Asthena luteata, A. candidata, A. sylvata, Eupisteria heparata*, netted during day and at dusk. *A. dimidiata, A. bisetata, A. dilutaria, A. immutata, A. remutaria*,

A. aversata and var. *spoliata*, *Cabera pusaria*, *C. exanthemaria*, taken by same means and bred. *Halia vauaria*, bred from larvæ found on red currant. *Strenia clathrata*, *Panagra petraria*, *Numeria pulveraria*, *Ematurga atomaria*, *Bupalus piniaria*, either kicked up or beaten from various trees and bushes. *Abraxas grossulariata*, common but local. *Lomaspilis marginata*, abundant near willows. *Hybernia rupicapraria*, *H. leucophæaria*, *H. aurantiaria*, *H. marginaria*, *H. defoliaria*, *Anisopteryx æscularia*, *Cheimatobia brumata*, *Oporabia dilutaria*, all more or less common at light and rest. *Larentia didymata*, a perfect nuisance, flitting along hedgerows. *E. salicata*, only one taken. *L. viridaria*, rather scarce in beech woods. *Emmelesia alchemillata*, scarce at Penllergare. *E. albulata*, abundant where yellow-rattle occurs. *E. decolorata*, *E. unifasciata*, occasionally at light. *Eupithecia pulchellata*, bred from foxglove and at light. *E. oblongata*, at light. *E. subfulvata*, at light and bred from *Achillea millefolium*. *E. castigata*, *E. vulgata*, and *E. absynthiata*, taken at light. *E. abbreviata*, abundant at rest on various trees, and occasionally at sallow. *E. pumilata*, at light. *E. rectangulata*, one only, at rest on apple tree. *Lobophora viretata*, scarce, at rest on hollies. *L. carpinata*, on various trees. *Thera variata*, at rest on fir trees and palings near. *Hypsipetes trifasciata*, scarce, beaten from alder. *H. sordidata* and var. *infuscata*, beaten from hedges, some beautiful specimens of latter being taken. *Melanthia bicolorata*, not uncommon, beaten from alder. *M. ocellata*, abundant at rest and at light. *M. albicillata*, rare at light. *Melanippe hastata*, one taken; few seen in Clyne woods. *M. sociata*, common. Also *M. montanata*, *M. galiata*, occasionally to be met with on sandhills, among *Galium verum*. *M. fluctuata*, common everywhere. *Anticlea nigrofasciaria*, scarce. *Coremia designata*, *C. ferrugata*, *C. unidentata*, and *Camptogramma bilineata*, equally common at light, flying at dusk and at rest. *C. fluviata*, one male taken at light. *Eucosmia undulata*, one beaten from trees. *Cidaria truncata*, *C. immanata*, *C. suffumata*, *C. silaceata*, *C. prunata*, *C. dotata*, and *Pelurga comitata*, at flowers, light and rest. *Eubolia limitata* and *E. plumbaria*, kicked up in rough meadows. *E. bipunctaria*, on the cliffs round Langland Bay. *Mesotype virgata*, common on sandhills. *Anaitis plagiata*, kicked up, and occasionally at light. When the word "light" is used, it means that the moths were taken in moth-traps, as there are no lamps near enough to work except on road to Swansea, which is very frequented at night and more than a mile from this house, which makes them hardly worth while working.—R. B. Robertson; Sketty Park, Swansea.

NOTES AND OBSERVATIONS.

Messrs. L. Reeve and Co. have in preparation a new work on the British Aculeate Hymenoptera, from the pen of Mr. Edward Saunders, F.L.S., uniform with the same author's work on the Hemiptera-Heteroptera just completed.

The success of a Moth-trap.—I have now used my moth-trap fairly constantly for two years, and on the whole have found it very successful; but I cannot help thinking that its position has a great deal to do with its success, for other entomologists who have had traps made from my pattern

and have used them in as good, if not better, localities, have found them almost a failure. My trap is about two miles distant from any gas-lamps. so that there are no other lights to prove counter-attractions through the night. It is placed at a bedroom window on the first floor, overlooking the garden and meadows. The window is in a sheltered corner, where the wing of the house runs out at right angles to the "trap-window," and the house being white, I fancy the walls help to attract the insects; in fact, they take the place of the white sheet hung behind the fen collector's lamp. I believe the distance from gas-lamps, the sheltered position, and the white background, are the real secrets of success with my trap. In 1891 the lamp was lighted 83 nights, and only three times was the trap empty in the morning. In 1892 I was not able to keep such a careful record of results, as I was a great deal away from home; but I know there were five nights of utter failure. On an average I take 30 moths every night in the trap, and sometimes as many as 135, 142, and 150 in one night. Dull, warm nights, in dry weather seem the most productive, and clear, quiet nights are often good. Bright moonlight and high wind seem the two conditions that render the trap really unproductive. It is curious how some nights Geometers are chiefly attracted, other nights Noctuæ; and I have noticed that when sugar proves very attractive, very few Noctuæ come to the trap. Several insects new to this locality have been taken only in the trap, and some interesting varieties have occurred. Among the better moths I have taken during the last two years are the following:—*Lithosia mesomella, L. griseola, Nemeophila russula, Trichiura cratægi, Xylophasia sublustris, Luperina cespitis, Noctua depuncta, N. ditrapezium, Hadena genistæ, Aventia flexula, Geometra papilionaria, G. vernaria, Phorodesma bajularia, Zonosoma porata, Acidalia emarginata, Lobophora sexalisata, Melanippe unangulata, Cidaria silaceata, Orobena extimalis*, and *Platyptilia bertrami*. —Mary Kimber; Cope Hall, Newbury.

Migration of Butterflies.—Can anyone tell me the reason of the periodical flights of butterflies which take place here? They usually occur shortly before the S.W. monsoon (about April). Occasionally, owing to cyclones in the Bay of Bengal, we get a few fine days, but very cold during our wettest months, December and Janaury, and then a small flight takes place. During the big flight, which lasts about a week, the butterflies pass in millions, and for one or two days you can almost imagine that it is snowing, so thickly do they come. The direction of the flight is from north to south. The species represented in the flight are mostly *Catopsilia catilla* and *C. crocale*, with a few *C. pyranthe*, and *Catophaga neombo* and *C. galene*. The female of *C. catilla* varies much on the under side; I have five different ones, and they all appear to be equally abundant. Another butterfly that often goes in big flights is *Isamia asela*, usually accompanied by *Parantica ceylonica*. This flight usually takes place about February; but this year, owing probably to the cold, it has not yet taken place. The native tradition is, that they go to Adam's Peak. My tea-maker, who has been a sailor, tells me that he has often seen a flight of yellow butterflies out at sea, when out of sight of land, especially off the coasts of Ceylon and India. I myself have noticed, when out dredging, *Isamia asela* flying out to sea, and when going to the Maldive Islands, last year, we saw two of the same species; we were then about 100 miles from the Maldives, and, as I saw none there, they must have come from Ceylon, and against the wind. For any information as to the reason of these flights I shall be

most grateful.—P. E. Radley; Marguerita, Maturatta, Ceylon, Feb. 12, 1893.

Destructive Insects in Africa.—About a fortnight since, the locusts paid Johannesburg a visit; they came in millions, and settled in the town and on the holdt surrounding it for miles on every side. After a brief stay the majority re-started in a north-easterly direction, although countless numbers of dead ones are everywhere seen. Fires were lighted in public and private gardens, and everything done to destroy them, but the burnt-up appearance of everything tells its tale. Since their disappearance I have visited a favourite spot, where last year I found several orders of insects very plentiful, but there were none of any kind to be found, This was a marshy spot, and some of the long grass and flowers escaped the general devastation. I quite expected to get something, but it would appear that insects of all orders, save house-flies, have gone; it is universally regretted that these industrious little fellows did not also go. I passed through Natal last month, and stayed one night at Newcastle, where they have had a plague of caterpillars. Many of the trees (weeping willow) were quite defoliated. The caterpillar was a large handsome *Bombyx*, which I have not yet been able to identify, but which seems to be widely distributed in S. Africa. Zulus were employed in beating the trees with long bamboo canes, when the caterpillars were collected in buckets and buried. *Chærocampa celerio* was very plentiful in the gardens in the evening; in fact, it seemed the commonest moth there, although many of the smaller species swarmed around the lamp at the hotel.—J. P. Cregoe; Johannesburg, Jan. 1, 1893.

First appearance of Sexes of Lepidoptera.—Writing under this head (Entom. xxii. 213), Mr. A. E. Hall stated that, in his experience of breeding Lepidoptera, the females were nearly always the first to appear by a day or two. At the time I was under the impression that this did not agree with my own experience; but I had no notes, and determined to wait and make some investigations before expressing an opinion. This I have done, and have not noted a single species in which the females are regularly the first to appear; generally both seem to appear together, but when there is a difference it is in favour of the male, thus agreeing with what Mr. Hall states to be the general opinion. I have especially noticed this in the winter-emerging Geometræ, as the following statistics will show. *Hybernia aurantiaria.*—1890: males, Nov. 11 to 21; females, Nov. 12 to Dec. 4 (only three before Nov. 19). 1891: males, Nov. 7 to 21; females, Nov. 17 to Dec. 2 (only one before Nov. 24). 1892: males, Oct. 31 to Nov. 17; females, Nov. 12 to 27. *H. rupicapraria*—1891: males, Jan. 31 to Feb. 14; females, Feb. 16 to March 6. 1892: males, Jan. 23 to Feb. 22; females, Jan. 26 to Feb. 28 (only five females against fourteen males up to Feb. 1). 1893: males, Jan. 23 to Feb. 13; females, Jan. 28 to Feb. 13 (twenty-five males and seven females to Feb. 2, twenty-six females and four males from Feb. 3 to 13). *Cheimatobia boreata.*—1890: males, Nov. 7 to 11; females, Nov. 15 to 21 (only a few bred). 1891: males, Oct. 26 to Nov. 10; females, Nov. 11 to 16 (only a few bred). 1892: males, Nov. 5 to 14; females, Nov. 5 to 18. With regard to Mr. Hall's conjecture as to the "reason for the females emerging first," *viz.*, "that they require a certain period to elapse before coition," this is not borne out by the breeder's experiences of the immediate copulations which take place, nor by those of entomologists who work at "assembling," and who generally find the first

night the best. If any argument can be drawn from this, it would surely be in favour of the first emergence of the males, that they may be ready to fly and to seek out the newly-emerged females.—Louis B. Prout; 12, Greenwood Road, Dalston, N.E., Feb. 18, 1893.

Hybernia marginaria travelling by Train.—On getting into a train at Earl's Court Station, on the 6th inst., I saw what I took to be a patch of mud on the window of the carriage. I examined this more closely before quitting the train at Turnham Green, and found the object to be a fine male *Hybernia marginaria*. The probability is that the moth had entered the carriage at Hounslow on the previous night, and had been travelling between Acton Green and Earl's Court all day. I can easily understand that, in this way, insects may be carried long distances into districts in which they are not indigenous.—Alfred Sich; Villa Amalinda, Burlington Lane, Chiswick, March 10, 1893.

Sugaring.—I have always found that sugar failed to attract Lepidoptera on moonlight nights. Some collectors say that moths have freely visited their sugar on such nights, but perhaps the bait on these occasions was spread in woods where the moon's rays did not penetrate.—Jas. Garrow; 3, Wolseley Terrace, Birkbeck Road, Leytonstone, March 13, 1893.

Clostera anachoreta.—In reply to Mr. Sydney Webb's question, I can assure him that I feel as confident as one can be when relying on memory after a lapse of thirty years, that I never tried to establish colonies of *C. anachoreta* either at Deal or elsewhere.—H. G. Knaggs; March, 1893.

The Cyanide Reaction with Yellow Lepidoptera.—I was much interested in Mr. Coste's paper in the January number of the 'Entomologist,' particularly as he had experimented on some species which are very common here, viz., *Catopsilia crocale*, *C. catilla*, and several *Terias*. Owing, I presume, to the climate, my killing bottles (cyanide of potassium) are usually in a sloppy condition. I invariably kill *Terias* with the bottle, and my collector does the same with everything, no matter what the size, but I have never found that any of the yellow Pieridæ ever turn red. Since reading Mr. Coste's article, I have experimented with the plain cyanide of potassium, unmixed with plaster of Paris, on all the common Pieridæ found here, but in no one case have they changed colour. Is this owing to the climate? which is damp; temperature averages about 65° Fahr., elevation 5500 ft. I find that old specimens of *Catopsilia* (two to three years) go green in the nervures of the wings. The District Medical Officer, who often collects for me, usually kills with hydrocyanic acid, but, with the exception of some of the green Noctuæ and Geometræ, I have never found any change of colour. Can any of your readers tell me why most of the green Noctuæ and Geometræ lose their colour, while Bombyces and Pyralides keep theirs well? and is there any way to prevent them changing colour?—P. E. Radley; Marguerita, Maturatta, Ceylon, February 13, 1893.

Danais (Anosia) plexippus in New Zealand.—I have again the pleasure of recording the appearance of this beautiful butterfly in New Zealand. In the early part of this month I was staying at Mr. E. F. Wright's fine property, the Winwood Orchard, Mt. Somers, and on the 10th,

which was a very hot, sultry day, we saw a specimen of *D. plexippus*, flying along the sunny side of a belt of *Pinus insignis*. It seemed to be freshly emerged, but it flew too high and strong for us to be able to pursue or capture it. It is, therefore. very gratifying to be able to record the occurrence of two specimens in two years, and in localities thirty miles apart. The food-plant of the larva is now established in several districts in New Zealand; and we hope that this fine insect may also become an established species.—W. W. Smith; Ashburton, N. Z., January 17th, 1893.

Varieties of Danais chrysippus and plexippus.—On looking through some specimens of *Danais chrysippus* and *plexippus* which I have just received from Gooindpore, India, I find I have a specimen of each species exhibiting a peculiar form of colouring which I have not hitherto seen. The sex is in both cases the same (male); the *chrysippus* is rather larger, and *plexippus* slightly below the average; the former is on the upper surface slightly paler, and on the under surface decidedly paler, and of a clearer tone of colour than is usually the case; in fact, between the cell and the hind margin of secondaries it is of a clear straw-colour; the *plexippus* is darker than usual, the dark colour along the rays being more suffused and spread over more surface, the second row of marginal spots on upper surface of secondaries is (as is often seen) obsolete for a portion of the distance from the costal edge. But the great peculiarity is that the whole of the dark portions of the primaries in both species, and in *plexippus* the costal margin and (in a less degree) the outer margin of secondaries also, are mottled, as though the colour had run into small isolated spots and left the space between these spots of a paler colour. This is noticeable in *chrysippus* at the black apical patch, which appears a rusty black; it is not so pronounced in the *plexippus*. The chestnut area in the cell of primaries of *chrysippus* is also mottled, the spots being larger and fainter; the light tawny colour between the median ray and the inner margin is not mottled, nor is the dark tawny or chestnut area on primaries of *plexippus*, except the costal half of the cell, where, as in *chrysippus*, it is fainter than the other parts. In *chrysippus* no portion of secondaries is mottled, and, as before mentioned, only the costal edge and outer margin of secondaries in the *plexippus;* this mottling is visible on upper and under surfaces. I have also, out of the same lot, a male of *plexippus* where the white lines along the rays of secondaries—sometimes seen in certain specimens on the under surface—are much wider than usual, occupying one-third the space on either side of the ray, and calling to mind the West African variety of *D. chrysippus* (var. *alcippus*).—John Watson.

Variation in Pupæ of Anthocharis euphenoides, *Stgr.*—Referring to my journal, which I have kept regularly for some years past, I note that fifty-two larvæ of *A. euphenoides* were collected by me last summer in the northern parts of the Alpes-Maritimes. It is a curious fact that, while the caterpillars of this species are common in the inland parts of the range, imagines are far oftener seen at the coast. My larvæ were all found on a tall, coarse crucifer, of the genus *Sisymbrium*, which is very abundant, generally in stubble fields or waste ground in elevated districts. This plant often grows to an extraordinary height under favourable conditions, sometimes standing over six feet high. I never met with *A. euphenoides* on the usually mentioned food-plants (i. e., *Biscutella lævigata* and *B. burseri*), though, I believe, it is stated to live on other kinds of Cruciferæ besides. The pupæ, which are thin and arched, vary from all shades of

light drab or greyish buff to bright green, all hues intermediate being met with. But curiously enough the larvæ, as far as I have observed, are always uniform, both in respect of markings and coloration. The year before last I commenced operations rather later than usual, and only found sixteen larvæ. These, however, were all met with within the space of one week (July 5th onwards). As they were all full-fed, I had not long to wait for the pupæ. Of the chrysalids resulting, only one out of eight obtained was of the green variety. The caterpillars of *A. euphenoides* feed quite exposed, sometimes as many as five on one plant, on the flowers and seed-vessels; the leaves they never appear to touch. This season, though I collected a far larger number of larvæ than usual, not one pupa was of this green variety, though some of the chrysalids were of a decidedly *greenish* hue. Possibly this may result from one of two things; either the deviation from the common form is due to an unusually mild summer-like winter, or, perhaps, the pupæ vary to suit the exigencies of circumstances in certain localities. I think, on the whole, however, the latter supposition is the more probable. Unlike the green chrysalids of *Papilio machaon*, which some entomologists assert occur only in the summer brood, both varieties of the pupæ of *A. euphenoides* pass the winter. Nor is the difference of colour apparently confined to any one sex. For instance, two years ago, I obtained several males and females from grey pupæ, and a male example besides from a green pupa. I have never noticed any departure from the typical form in the chrysalids of *A. belia*, Cr., which are met with at the same time as *A. euphenoides*, in the proportion of about ten to fifty (or one-fifth) of the latter, in the locality of which I write. It is interesting to note, from previous seasons, that imagines from these green pupæ (as far as I have noticed) differ in no way from those obtained from normal chrysalids. Possibly these facts may have some bearing on the old *P. machaon* pupa discussion (see Entom. xxv. 44, 93, 120). Perhaps other collectors would give the results of their observations on the pupæ of other (variable) species?—FRANK BROMILOW; St. Maurice, Nice, S. France, Nov. 5, 1892.

SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON.—*February 22nd*, 1893.—Henry John Elwes, Esq., F.L.S., F.Z.S., President, in the chair. Mr. Kenneth J. Morton, of Glenview Cottage, Carluke, N.B.; Herr A. F. Nonfried, of Rakovnik, Bohemia; and Mr. Charles C. Taylor, of Rae Town, Kingston, Jamaica, were elected Fellows of the Society. Mr. F. J. Hanbury exhibited, on behalf of Mr. Percy H. Russ, of Sligo, several long and very variable series of *Agrotis tritici*, *A. valligera* and *A. cursoria*, together with Irish forms of many other species, some of which were believed to be new to Ireland. Mr. W. H. B. Fletcher and Mr. J. W. Tutt made some remarks on the species. Mr. R. W. Lloyd exhibited specimens of a species of *Acarus* found in New Zealand wheat. He stated that Mr. A. D. Michael had examined the specimens, and pronounced them to belong to *Tyroglyphus farinæ*, a species which had been known for over a hundred years as a destroyer of corn, and was only too abundant all over Europe, and probably over the temperate regions of the world. Dr. T. A. Chapman exhibited, by means of the oxy-hydrogen lantern, photographs of the larva

of *Nemeobius lucina* in its first stage, showing the conjoined dorsal turbercles, each carrying two hairs, which are remarkable in being divided into two branches. For comparison he also showed, by means of the lantern, drawings of the young larva of *Papilio ajax*, after Scudder, and of a portion of a segment of *Smerinthus populi*, as the only instances known to him of similar dichotomous hairs in lepidopterous larvæ. Mr. E. B. Poulton pointed out that he had described the forked hairs of *Smerinthus* in the Entomological Society's 'Transactions' for 1885, and that such hairs were even better developed in the genus *Hemaris* originally described, as he believed, by Curtis. Mr. Poulton also said that he had noticed similar forked hairs covering the newly-hatched larvæ of *Geometra papilionaria*. Mr. Poulton exhibited, and made remarks on, a number of cocoons of *Halias prasinana*, in order to show the changes of colour produced in them by their surroundings; he also exhibited the coloured backgrounds employed by him in his recent experiments on the colours of larvæ and pupæ, and illustrated his remarks by numerous drawings on the blackboard. Dr. Chapman read a paper—which was illustrated by the oxy-hydrogen lantern—entitled "On some neglected Points in the Structure of the Pupa of Heterocerous Lepidoptera and their Probable Value in Classification." A discussion ensued, in which Mr. Elwes, Mr. Poulton, Mr. Champion, and Mr. Merrifield took part. Dr. F. A. Dixey communicated a paper entitled "On the Phylogenetic Significance of the Variations produced by Differences of Temperature on *Vanessa atalanta*." The President, Mr. Merrifield, Mr. Poulton, Dr. Chapman, and Mr. Tutt, took part in the discussion which ensued.—H. Goss, *Hon. Sec.*

March 8th.—Henry John Elwes, Esq., F.L.S., F.Z.S., President, in the chair. Mr. Frank. E. Beddard, M.A., F.R.S., of the Zoological Gardens, Regent's Park, N.W.; Monsieur Edouard Brabant, of Château de Morenchies, Cambrai, France; Mr. Frank Bromilow, of Avalon, St. Maurice, Nice, France; Mr. Henry Powys Greenwood, F.L.S., of Harnham Cliff, near Salisbury; Mr. Frederick Michael Halford, of 6, Pembridge Place, W.; Lieutenant-Colonel Leonard Howard L. Irby, F.L.S., of 41, Cornwall Terrace, Regent's Park, N.W.; Mr. Bertram S. Ogle, of Steeple Acton, Oxfordshire; Herr Wilhelm Paulcke, of 33, Langstrasse, Baden-Baden, Germany; Mr. Louis B. Prout, of 12, Greenwood Road, Dalston, N.E.; and Captain Savile G. Reid, late R.E., of Foyle House, Alton, Hants, were elected Fellows of the Society; and Herr Pastor Wallengren, of Farhult bei Höganäs, Sweden, and Herr Hofrath Dr. Carl Brunner von Wattenwyl, of Vienna, were elected Honorary Fellows of the Society to fill the vacancies in the list of Honorary Fellows caused by the deaths of Prof. Hermann Carl Conrad Burmeister and Dr. Carl August Dohrn. Dr. D. Sharp exhibited a species of *Enoplotrupes* from Siam, which was believed to be new, and which he thought Mr. Lewis intended to describe under the name of *E. principalis*. This insect had great power of making a noise, and the female seemed in this respect to surpass the male. Mr. W. F. H. Blandford said he wished to supplement the remarks which he made at the meeting of the Society on the 8th of February last on the larva of *Rhynchophorus*. He stated that he had since found that only the first seven pairs of abdominal stigmata were rudimentary. The posterior pair were well developed and displaced on to the dorsum of their segment, which was thickly chitinised, and bore a deep depression, on the margins of which the spiracles were situated. He suggested that the absence of lateral spiracles

was perhaps correlated with the wetness of the larval burrows, and that it was a displacement of the posterior stigmata, usually supposed to be restricted to aquatic coleopterous larvæ. He added that dissection showed that the posterior pair were the principal agents of respiration. Dr. Sharp and Mr. Champion made some remarks on the subject. Mr. W. H. B. Fletcher exhibited a long series of bred *Zygæna loniceræ* and *Z. trifolii*, hybrids of the first generation with the following parentage:—*Z. loniceræ*, male—*Z. trifolii*, female; *Z. trifolii*, male—*Z. loniceræ*, female; also hybrids of the second generation between *Z. trifolii*—hybrid, and *Z. loniceræ*—hybrid. The President enquired whether the hybrids were robust and healthy or the reverse. Mr. Fletcher stated that many of the hybrids were larger than the parent species, and that some hybrids between *Z. loniceræ* and *Z. filipendulæ* were the largest he had ever seen. He added that *Zygæna meliloti* would not hybridise with *Z. loniceræ*, *Z. trifolii*, or *Z. filipendulæ*. Mr. Barrett and Mr. Tutt continued the discussion. Mr. F. W. Frohawk exhibited a bred series of *Vanessa atalanta*, showing the amount of variation in the red band on the fore wings of the female. In seven specimens there was a white spot on this band, and in ten specimens it was absent. Mr. Elwes exhibited a large number of specimens of *Chrysophanus phlæas* from various places in Europe, Asia, and North America, with the object of showing that the species is scarcely affected by variations of temperature, which was contrary to the opinion expressed by Mr. Merrifield in his recent paper "On the effects of temperature in the pupal stage on colouring." Mr. McLachlan, Mr. A. J. Chitty, Mr. Bethune-Baker, Mr. Tutt, Mr. Barrett, and Mr. Frohawk took part in the discussion which ensued. Dr. Sharp read a paper entitled "On Stridulating Ants." He said that examination revealed the existence in ants of the most perfect stridulating or sound-producing organs yet discovered in insects, which are situated on the 2nd and 3rd segments of the abdomen of certain species. He was of opinion that the structures which Sir John Lubbock thought might be stridulating organs in *Lasius flavus* were not really such, but merely a portion of the general sculpture of the surface. Dr. Sharp said that the sounds produced were of the greatest delicacy, and Mr. Goss had been in communication with Mr. W. H. Preece, F.R.S., with the view of ascertaining whether the microphone would assist the human ear in the detection of sounds produced by ants. Mr. Preece had stated that the microphone did not magnify, but merely reproduced sounds; and that the only sounds made by ants which he had been able to detect by means of the instrument were due to the mechanical disturbance produced by the motion of the insects over the microphone. A long discussion ensued, in which the President, Canon Fowler, and Messrs. Champion, McLachlan, Goss, Hampson, Barrett, Jacoby, and Burns took part. Mr. C. J. Gahan read a paper entitled "Notes on the Longicornia of Australia and Tasmania, Part I.; including a list of the species collected by Mr. J. J. Walker, R.N., and descriptions of new forms."—H. Goss and W. W. Fowler, *Hon. Secretaries.*

South London Entomological and Natural History Society.—*February 23rd*, 1893.—J. Jenner Weir, Esq., F.L.S., President, in the chair. Mr. S. Edwards exhibited a box of Exotic Rhopalocera, illustrative of mimicry, from widely different localities. Mr. South, series of *Cerostoma radiatella*, Don., and *C. costella*, Fab., and remarked on the number of varieties of *radiatella*, and the great difficulty of satisfactorily separating

forms of the latter from forms of *C. costella*. Mr. Auld, a box of Coleoptera collected near the Cape of Good Hope. Mr. Barrett drew attention to a method of transferring the scales of the wings of Lepidoptera to paper, as exemplified by a sample from Herr Aug. Hoffmann, and Mr. Tugwell noticed that the scales were necessarily reversed, and the body, eyes, antennæ, &c., painted in. Mr. McArthur showed a method of staging and securing an insect by means of a slip of thin card doubled over, when for any reason the pin through the thorax had been rendered useless. Mr. R. Adkin exhibited a short series of *Spilosoma mendica*, Clerck, bred from larvæ found in Aberdeenshire, the males being of a brownish colour. Mr. Tugwell referred to the fact that specimens of the male *S. mendica* from Barnsley were light, whereas those from Huddersfield were dark forms, as exhibited recently by Mr. G. T. Porritt. Mr. Billups, some curious forms of Hemiptera-Homoptera, Hymenoptera, Neuroptera, Orthoptera, &c., from a mission-station on the Demerara River, British Guiana, and called attention to a fungoid growth attached to a specimen shown belonging to the Homoptera. Mr. Billups said it closely resembled, if it was not the actual species known as *Terrubia robertsii*, which attacks certain larvæ in New Zealand. Mr. J. Weir exhibited specimens of Euplœine butterflies from three distinct groups, viz., *Crastia core*, *Narmada coreoides*, and *Pademma kollari*, and read an interesting paper on "Isochromatous Lepidoptera." Mr. R. Adkin also exhibited a series of *Diurnea fagella*, Fb., from Lewisham, and mentioned several species, notably *Eupithecia rectangulata*, L., and *Miana strigilis*, Clerck, which had assumed a marked tendency towards melanism in the London district of late years; and resuming the discussion on Mr. Mansbridge's paper, adjourned from the previous meeting, agreed with the view therein expressed, that the vicinity of a large city, rather than the dampness of the atmosphere, appeared to account for the change. The discussion was continued by Messrs. Barrett, McArthur, Tutt, Robson (of Hartlepool), and others. Mr. Robson exhibited a short series of *S. mendica*, Clerck, of which one specimen, a female, bred at Hartlepool, was of a distinct cream-colour. He stated that this species was common in Northumberland and Durham along the coast, and that the male insect occasionally varied to a colour intermediate between the English and Irish forms. Mr. Robson also exhibited dark specimens of *S. populi*, L., from Aberdeen, and light forms (female) bred at Hartlepool. A discussion followed, Mr. R. Adkin stating that *S. mendica* was not a common species in Scotland, and he was not aware that it had previously been found so far north as Aberdeenshire. Mr. Tutt and Mr. J. A. Clark each referred to varieties of the species.

March 9th.—J. Jenner Weir, Esq., F.L.S., President, in the chair. The President exhibited specimens of *Diurnea fagella*, Fb., taken fifty years ago, near London, and Mr. R. Adkin remarked that they were as light as any taken now in the metropolitan district. Mr. Jenner Weir also noted the capture of *Vanessa io*, L., by his brother, on 19th February, near Sevenoaks, and that he had seen *Gonepteryx rhamni*, L., on the wing on 9th March. Mr. Fenn reported *G. rhamni* as having been common near Leatherhead at the end of February. A discussion arose as to the occurrence of *Polyommatus dispar*, Haw., at Camberwell, fifty years ago, and Mr. Fenn and Mr. Tugwell both recorded Kentish specimens previous to 1848. Mr. Tutt confirmed the capture of *Melanippe galiata*, Hb., near Huddersfield, as recorded by Mr. Mansbridge in his paper read before the Society

on February 9th. Mr. R. Adkin exhibited, for Mr. C. H. Watson, a specimen of *Pieris brassicæ*, L., which approaches very nearly *Pieris cheiranthi*, Hb., from the Canary Islands. The specimen, a female, was bred from larvæ found in a garden at Streatham; also two female specimens of *Apatura iris*, L., bred from larvæ taken in the New Forest in the autumn of 1891. Mr. G. B. Routledge exhibited a small collection of butterflies from Algiers, Hyères and Switzerland, including *Pararge ægeria*, Esp. (typical form), *Limenitis camilla*, Schif., and *Polyommatus virgaureæ*, L. (females). Mr. R. Adkin exhibited a series of *Vanessa urticæ*, L., bred during 1892 in Sutherlandshire, N. B., which were generally dark in colour and with well-defined markings; also a specimen bred from the Essex coast, unusually light in colour. Mr. Sauzé, a small collection of Ichneumonidæ, captured in the perfect state. Mr. Jenner Weir exhibited specimens of a group of the Nymphalinæ from the African region, mimicking others from the subfamilies Danainæ and Acræinæ. An interesting discussion ensued, and Mr. Weir referred to the fact that non-scented species of butterflies had been found eaten by birds, but scented species had not been so found; and Mr. South said that he understood that Danaine butterflies generally escaped the attacks of mites in collections. The question as to the excursions of the Society during the ensuing summer was put to the meeting, and it was decided to discuss the matter at the meeting of April 13th, before coming to a final decision. It is hoped that a large attendance may result on April 13th, and more especially of the younger members, for whose benefit the excursions have in past seasons been arranged.

The Society's Annual Dinner was held at the Bridge House Hotel on Thursday, March 2nd. Among other interesting matters touched upon in the speeches that followed, it was mentioned that the Society had this year attained its majority, it having been established just twenty-one years ago. A pleasing event of the evening was the presentation to Mr. H. W. Barker, the retiring Hon. Secretary, of a cheque for £19, that had been subscribed by some sixty members, as a mark of their appreciation of the valuable services he had rendered to the Society during the seven years he had filled that office.—F. W. Hawes & H. Williams, *Hon. Secs.*

York and District Field Naturalists' Society. — The Annual Meeting of this Society was held on Wednesday evening, January 9th, in the Council Chamber of the Museum, York, Mr. T. C. Dennis, F.E.S., President, in the chair. The following gentlemen were elected as officers for the ensuing year:—President, Mr. G. C. Dennis; Vice-Presidents, Messrs. W. R. Robinson, R. Dutton, S. Walker, H. J. Wilkinson; Honorary Secretary, Mr. W. Hewett.

February 8th.—Mr. G. Jackson exhibited several rare or local species, including *Deilephila galii*, Cred.; *Sesia musciformis*, Isle of Man; *S. ichneumoniformis*, Isle of Wight; *Zygæna pilosella* (*minos*), Ireland; *Lithosia caniola*, *L. pygmeola*, *Emydia cribrum*, Ringwood; *Lælia cœnosa*, from the collection of the late Mr. Owen. Mr. R. Dutton, *Boarmia roboraria*, *Hyria auroraria*, *Agrotis ravida*, *Sesia sphegiformis*, and *Stauropus fagi*, &c. Mr. W. Hewett, *Zygæna minos*, Galway; *Spilosoma mendica*, Ireland; *Lophopteryx carmelita*, Marlow; *Emydia cribrum*, New Forest, &c.; also five very fine varieties of *Spilosoma lubricipeda*, from Barnsley, Driffield, and York, one from Driffield having the hind wings of the *radiata* colour, *i. e.*, smoky black, the basal area wing-rays and fringe being cream-coloured, the head and thorax cream-coloured, the body yellow with

six black spots down the middle and on each side: antennæ simple; fore wings typical; an exceedingly fine variety of *Arctia caia*, from Hull, with the fore wings of an almost uniform brown colour, the hind wings (with the exception of the base) and fringe being black.—W. HEWETT, *Hon. Sec.*

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY.—*March 13th.*—Mr. S. J. Capper, F.L.S., F.E.S., President, in the chair. Mr. W. E. Sharp read a paper entiled "Notes on some Irish and other Coleoptera." After describing the division of England and Ireland from the Continent, he proved by the insect fauna that it was probable Ireland was the first to be separated, and enumerated many species taken by himself, including *Philonthus lucens*, new to the Irish fauna. He then read a list of additions to the local fauna. Mr. Willoughby Gardner, F.R.G.S., read a paper entitled "Notes on some of the rarer Aculeate Hymenoptera of our District." After presenting a copy of his 'Hymenoptera Aculeata of Lancashire and Cheshire' to the Society's library, he described several species new to the district, which he asked lepidopterists and others to keep a look-out for during their entomological rambles. Both papers were well illustrated by specimens. The President exhibited specimens of *Bombyx quercus*, including some fine varieties. Mr. Green, a collection of local Hymenoptera. Mr. Watson, *Papilio machaon* from England, Northern India, Japan, &c., and its huge variety *hippocrates*, from North-east China. Mr. Jones, on behalf of Mr. Bowler, a specimen of *Sphinx convolvuli* captured at Broadgreen.—F. N. PIERCE, *Hon. Sec.*

BIRMINGHAM ENTOMOLOGICAL SOCIETY.—*February 20th*, 1893.—Mr. S. T. Bethune-Baker in the chair. The following were exhibited:—Mr. R. C. Bradley, a long series of the genus *Conops* taken at Wrye Forest last year, including the following four species, —*C. flavipes*, *C. quadrifasciatus*, *C. ceriæformis*, and *C. strigatus* (two only). Mr. Barker, a box containing a number of rare and local insects, mainly continental examples of British species, including *Plusia moneta*, *Arctia lubricipeda* var. *zatima*, &c.; also pale male of *Arctica mendica*, from Ireland, &c. Mr. G. W. Wynn, a number of Noctuæ bred from hybernating larvæ found last spring at Marston Green and Wyre Forest, but which contained nothing better than *Triphæna fimbria*. Mr. W. Harrison, living larvæ of *Sesia tipuliformis*. Mr. P. W. Abbott read two short papers, illustrated by specimens; one upon his work at Wyre during 1882,—he had been working new ground and turned up a lot of new things, including *Cymatophora fluctuosa*, *C. duplaris*, *Asthena blomeri*, &c.; the other paper described a journey to Freshwater last August, for *Colias edusa*. — COLBRAN J. WAINWRIGHT, *Hon. Sec.*

NOTTINGHAM AMATEUR ENTOMOLOGICAL SOCIETY. — This Society continues steadily to increase. Among the latest who have joined are the Rev. W. Becker, of Wellow Hall, Newark-on-Trent (who has kindly consented to take the chair), and Mr. Douglas H. Pearson, of Chilwell, Notts. Weekly meetings continue to be held in the Society's rooms (Morley House). On 27th February Mr. Pearson read a most interesting paper entitled "Collecting in the Fens," illustrated by insects taken there by him last summer. The following week, J. G. Clarke read a very interesting paper on ants. Various other papers are promised for future dates. Cards of membership are now printed, and all interested in Entomology are invited to join.—W. FERRIS.

OBITUARY.

F. O. Morris.—One of the best known of the popular writers on Natural History of the time, the Rev. Francis Orper Morris, the Vicar of Newburnholme, Yorkshire, died at that place on Feb. 10th last, in his eighty-third year. He was born at Cove, near Cork, in Ireland, on March 25th, 1810, but belonged to a well-known Yorkshire family, many of whose members served with distinction in the great wars with France and America, both by land and sea. F. O. Morris was educated at Bromsgrove School, and afterwards proceeded to Worcester College, Oxford, where he graduated with honours in 1833, taking a second class in Classics. When at Oxford, he was in the habit of reading three or four authors alternately, by which means he was able to get through a much greater amount of work with far less fatigue than if he had confined himself to one thing at a time; the most mischievous course that any active-minded man of ordinary capacities can follow. The same habit clung to him through life; and at one time, in addition to his parochial duties, which he never neglected, he had to find copy every month regularly for five separate works—the 'British Birds,' 'British Butterflies,' 'Aphorismata Entomologica,' 'Bible Natural History,' and the 'History of the Nests and Eggs of British Birds.' He used to quote with approval Southey's aphorism, "I have not time to do only one thing at once." Mr. Morris selected Pliny's 'Natural History' as the subject of his voluntary thesis at his final examination in Oxford; and in 1837 he published some notes on British insects (chiefly Lepidoptera) in a periodical called the 'Naturalist.' In 1834 he was admitted to Holy Orders; and in 1854 settled down at Newburnholme Rectory for the rest of his life. His works had a large circulation, but as they were always of a popular character, and were necessarily to a large extent compilations, they were frequently underrated by writers of more pretensions. His opposition to Darwinism was perhaps unwise, but intelligible enough in a man of his age and surroundings. His writings include books on British ornithology, entomology, and general Natural History, besides sermons, polemics against Darwinism and vivisection, and a work on the 'County Seats of the Noblemen and Gentlemen of Great Britain and Ireland.' His entomological writings include his 'British Butterflies,' first published in 1852, and perhaps his most successful work, as the seventh edition was passing through the press at the time of his death; his 'British Moths' likewise, with coloured plates of all the species; his 'Catalogue of British Insects' (the only general catalogue since those of Curtis and Stephens), and his 'Aphorismata Entomologica.' His 'British Butterflies' formed the basis of a still more popular work—Adam's 'Beautiful Butterflies.' Although it would be absurd to call Mr. Morris the "Gilbert White of the North," as some of his local admirers have done, yet he will long be remembered as one of the most prominent popular writers of the middle of this century, after the Rev. J. G. Wood. He married a Miss Saunders, of Bromsgrove, by whom he had three sons and five daughters. (Some of the particulars in the present notice are compiled from a long obituary in the 'Yorkshire Post' of Feb. 13th, 1893).

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A MONSTROUS *ABRAXAS GROSSULARIATA*.

ABRAXAS GROSSULARIATA.

THE above figure represents the left fore wing of a specimen of *Abraxas grossulariata*, bred by the Rev. J. Seymour St. John, in June, 1892, from a larva found in his garden at Stamford Hill.

All the other wings of the specimen are quite normal, but the one figured has an extraordinary lobe on the costa. This lobe is really a small, reversed, reproduction of the wing upon which it is placed, but the neuration appears to be incomplete; the fringes, however, are well formed.

This most curious and exceedingly interesting monstrosity deserves a more critical examination than I am permitted to make. It is not possible to ascertain the true character of the neuration with certainty, unless the wing be denuded.

RICHARD SOUTH.

FURTHER REMARKS ON THE EARLIER STAGES OF *COLIAS HYALE*.

BY F. W. FROHAWK, F.E.S.

(Continued from p. 7.)

ON January 10th, 1893, one larva slightly shifted its position to the outside of the leaflet forming its hybernaculum during the thaw which set in after a fortnight of very severe weather. As the larvæ were kept indoors and carefully protected as much

as possible, they did not become subjected to more than 3° or 4° of frost, as undoubtedly any very severe degree of cold would have proved fatal.

On the 19th January, just three months after entering into hybernation, this larva quitted its hybernaculum altogether, crawled to another stem and along it to the withered leaves, and thereon remained motionless until the 23rd, which proved a warm day, the shade temperature rising to 50°, the larva being subjected to a slightly higher temperature, averaging during the day from 50° to 54°, moved on to a living stem of clover bearing three young leaflets, and after a fast of ninety-seven days partook of its first meal, which consisted of a considerable portion of one-half of a leaflet. It measures to-day (24th Jan.) the same as when last measured, *viz.*, $\frac{3}{16}$ of an inch. Another larva has also shifted its position to-day, but has not left the cluster of withered leaves forming its hybernaculum. On 28th Jan. it left its retreat and crawled to a young leaf-stem with the leaves still unfolded and fed upon them the following day (29th), having fasted for one hundred and three days. Another larva also crawled on to a young half-expanded leaflet and likewise fed the same day (29th); the shade temperature rising to 51° midday. So far three larvæ have now fed since hybernation.

The above notes are from my note-book.

From some unaccountable cause these three larvæ never fed again. One died on the third day after feeding and expired in a feeding attitude. Another gradually grew weak and appeared to lose all power of using its feet, lying helpless across the leaf, and died in about a fortnight after feeding. The remaining one appeared strong and healthy for a fortnight after feeding and then lost power of holding on to the leaf, and died early on the 17th February, having lived for four months (121 days) since it entered into hybernation.

The five other larvæ mentioned (Entom. 6) died during hybernation.

From the above notes I think it is quite evident that *C. hyale* passes the winter as a larva, as no larva could exist for so long a period as *four months* in a hybernating condition unless it were natural for it to do so; and, further, the hybernation of *C. hyale* is complete, as it does not, as many species do, which pass the winter in the larval state, feed at frequent intervals during the hybernating period.

Balham, S.W., March, 1893.

PREVENTION AND CURE OF GREASE.

By Rev. Joseph Greene, M.A., F.E.S.

Two communications on this subject (Entom. 33 and 109) are of much interest to me. Let me thank Messrs. Christy and Arkle for the kind manner in which they have referred to my method for the above. The few following remarks on the subject may perhaps be of some use. Both gentlemen advocate the use of French chalk or plaster of Paris. Mr. Arkle in particular employs a very elaborate apparatus. Let me assure them that the use of chalk is not only unnecessary, but is more or less injurious, as I hope to show. As Mr. Christy's recommendations apply only to the bodies, and not the whole insect, I will consider them first. The main points are—1st. "The bodies, whether excavated or not, must be soaked in benzine collas; the most convenient bottle that I have tried is one holding 4 ozs., not more than three inches in height, and having a mouth fully one and a half inches wide." 2nd. "The bodies should remain several days at least in the benzine." 3rd. "Drying. Lay the body on blotting-paper, but only for a few seconds, and then bury it immediately in powdered French chalk," &c. No. 1. The using a bottle such as Mr. Christy describes is unnecessary, and, I should think, expensive. This I will endeavour to prove. Take, say, a shilling bottle of benzine. Then put into a wine-glass one and a half or even two dozen more or less cleaned bodies of ordinary-sized Bombyces or Noctuæ labelled as usual. Pour a tablespoonful or so of the benzine into the glass, till the bodies are well covered; then place the glass in some safe place, and cover it over to keep out the air. This being done, we come to No. 2. I have *never* (in the above case) found it necessary to soak them for a longer period than twelve to eighteen hours. At the expiration of that time take them out and place them (as directed No. 3) on clean blotting-paper, but do NOT remove them in a few seconds; on the contrary, *leave* them there, and in a couple of hours or less the benzine will have evaporated, leaving the bodies without a vestige of grease and in faultless condition. No need of chalk, &c. It may be that too many bodies have been placed in the glass, or two little benzine, and consequently some of them may have to be re-soaked; but a little experience will soon rectify this. Throw away the saturated benzine and proceed as before with a new batch. As to the number of bodies that can be cleaned in this way by a shilling bottle of benzine, it depends of course upon their size; but take *D. coryli* among the Bombyces and *A. tragopoginis* among the Noctuæ, and I should say that such a bottle would suffice for at least six dozen. I have employed this simple plan for many years, and with unfailing success. Will Mr. Christy try it? As bearing on the

subject I may add this:—Take a corked zinc box (to be had of any dealer) and pour into it sufficient water to saturate the cork and then pour it off. When I receive, from a correspondent or any other source, a really good and well-set insect (but not cleaned) other than Geometræ or delicate species, I place it in this box, and shutting down the lid, leave it for twenty-four hours or more, according to size. It will then be sufficiently relaxed to enable you to at least make an *incision* in the abdomen, and in most cases to pick out some of the interior. Do *not* break off the body then, but reset the insect, and when dry the body will readily come off and be ready for the "wine-glass." It may be objected that this resetting spoils the insect (certainly not if it has been well set in the first instance) and is troublesome and takes time. No doubt; but I would rather have one spotless specimen than fifty greasy ones. I agree, to a considerable extent, with Mr. Christy's concluding remarks about the non-necessity of removing the insects from the setting-boards before they are thoroughly dry (though I should certainly do so in the case of valuable insects), and that the "greasers" may be left to some more convenient time; *but* let me warn him against leaving them till the grease reaches the thorax, of which more anon.

Mr. Arkle's system applies to the whole insect, and not the body only. As regards his method in this case, I would suggest that "prevention is better than cure," and that if he will kindly try my plan, as I have endeavoured to explain it above, he will save himself much expense and more trouble. But having adopted his method of soaking, I am directed to place the insect on a layer of plaster of Paris, and then cover the moth, wings and all, with powder of the same an inch thick, the result being, "the insect is clean and dry; all its colours are restored; no damage has been done to it—not even to the antennæ." And here I bring forward my preliminary remark, that chalk is not only unnecessary, but often *injurious*. My experience as to its use is unfortunately in direct opposition to that of Mr. Arkle in every particular. In early days I tried this method, not of course exactly as here recommended, but according to the comparatively feeble lights of the "fifties," when the cleaned bodies were filled with cotton wool! I have some antique specimens with the cotton wool still in their bodies. Still the system was, in the main, the same as Mr. Arkle's; the "results" being, in *my* case, the cilia were matted together, ditto the antennæ, ditto the feathered abdomen; and the colours more or less blurred. The third of these results was especially noticeable in the genus *Dicranura*. The species in this genus are even now "puzzlers." With all the modern improvements, I can never get the excavated body of a *furcula* and *bifida* to look as well after as before the operation. When therefore a common insect such as *Cossus ligniperda* or *D*

vinula is, or to speak more correctly, *was*, saturated with grease, I had the satisfaction of throwing it into the fire. With insects bred or captured by myself, no such "saturation" does or can occur, owing to the method which, for so many years, I have adopted, and which, I think I may say, discovered. If, however, I have a rare insect, or still worse, a good variety in this condition?—well, my first impulse is to shed a tear over it; but as this does not tend to remove the grease, I empty the body of (say *caja*), and cast the insect into the benzine, from which in due time it emerges—sometimes better, sometimes worse—generally worse. This, of course, is only my experience, and is not for a moment meant to impugn Mr. Arkle's statement. But he must be a more skilful manipulator than I am. But to go a little further. No one, I think, will maintain that the thin-bodied Geometræ (say the genus *Hybernia*), if allowed to saturate, can be submitted with impunity to the benzine. Only clean the bodies and they are safe for ever. Nay, it will be sufficient to simply break off the bodies and soak them in the benzine. If with a slight incision so much the better.

Before I conclude I must claim the indulgence of my readers for two or three remarks upon Mr. Anderson's communication on this subject. He says:—"Rarely, except in the case of the Sphingidæ and Bombyces, is it necessary to remove the contents," &c. I must dissent. Let him try the genera *Leucania* and *Nonagria*, and I think he will, at any rate, admit that it is *advisable* to do so. It may be that immersion for a fortnight or so may obviate this necessity, but when it can be done as effectually in a few hours by the former method, why not adopt it? How does Mr. Anderson prevent the evaporation of the benzine for a fortnight or even two or three days? He then suggests that grease may emanate from the *thorax*, and not the abdomen. I have never heard or read of this theory before, and I cannot think that there is the slightest foundation for it. Of the thousands of insects I have eviscerated, I have never found *one* with a greasy thorax after the operation. I agree most thoroughly with him as to the results of entire soaking, and I think he has described those results very happily. I shall be happy to answer by letter, as far as I am able, any questions which these gentlemen or others may address to me on the subject. I sum up with my favourite quotation, "Prevention is better than cure."

Rostrevor, Clifton, Bristol, April 4th, 1893.

A LIST OF COLEOPTERA NEW TO THE FAUNA OF JAPAN, WITH NOTICES OF UNRECORDED SYNONYMS.

By G. Lewis, F.L.S.

As it will still be some years before a considerable part of the collection I gathered in Japan can be worked out, I am induced to publish in advance a list of species occurring there, but which are, up to this time, only known from other places. Some on the list are well-known European species; others are known from Siberia only. The synonyms are also new.

Nebria leechii, Bates, 1889 = *Nebria sadona*, Bates, 1883.

Broscosoma elegans, Bates = *Miscodera donitzi*, Harold.—Harold described his species from an imperfect and immature specimen, and assigned it to a wrong genus. I propose therefore to retain Bates's name for it.

Siagonium haroldi, Weiss, 1879 = *S. vittatum*, Fauvel, 1875.—This synonym is given on the authority of M. R. Fauvel.

Saprinus rufipes, Paykull.—I obtained this insect at Enoshima, near Yokohama. It is not rare in Europe.

Shoguna, Lewis, 1889 = *Pachycephala* (*Holocephala*), Fairmaire, 1886.

Ostoma gigantea, Reitter, 1882.—This species is distinct from *O. grossa*, Linn., which I erroneously recorded (Ent. Mo. Mag. 1888, p. 221) as occurring in Japan. Herr Reitter has kindly sent me an example of his species from Siberia, which is much smaller than most of my specimens. My largest example measures 20 mill. I found this species on fungi growing on large oaks at the foot of Komagatake, on the 13th of July, 1880, and in August I obtained it near the lake of Junsai.

Helota fulviventris, Kolbe, 1886 = *Helota gemmata*, Gorh., 1874.

Monotoma brevicollis of authors.—This common European species occurs rarely in Japan.

Byrrhus kamtschatikus, Motsch.—I obtained several specimens of this species on Niohosan, at a very high elevation.

Eurytrachelus, Thomson, 1862 = *Serrognathus*, Motschulsky, 1861.—The type of *Serrognathus castanicolor*, Motsch., is an immature specimen of *Dorcus platymelus*, Saund., although Schönfeldt throws a doubt on this by separating the names in his Catalogue. I placed Saunders' species in *Eurytrachelus*, but Motschulsky's genus has the priority.

Catharsius ochus, Motsch. = *Copris ochus*.—This is a true *Copris*. Motschulsky placed it in the wrong genus.

Geotrupes purpurascens, Waterh., 1875 = *Geotrupes auratus*, Motsch., 1857.—The first name refers to a colour variety not infrequent in the female. This beautiful species varies in colour. The colours are blue-black, blue-green, blue, golden-green, golden-red, and cupreous, with intermediate tints of each.

Aphodius diversus, Waterh., 1875 = *A. solskyi*. Har., 1871; *A. rectus*, Motsch., 1866.

Euchlora mongolica, Falderm, 1835.—This species occurs at Niigata, and in some of the north-west provinces.

Podabrus reinii, Heyden=*P. heydeni*, Kiesw. 1879.

Anomala holosericea, F.—I found a single example near Chiuzengi, and three others in S. Yezo.

Cryptodactylus gracilis, Schön., 1888 = *C. auriceps*, Saund., 1873.—Herr Schönfeldt gives the locality for this species as Arima, near Kobe. My original specimen was taken on Maiyasan, and in 1881 I swept two more from a shady bank between Kobe and Kioto; so up to the present time it seems to be a very local species.

Laius flavicornis, Kiesenw. = *L. kiesenwetteri*.—Kiesenwetter's name is occupied by Fabricius for a Javan species.

Opatrum villigerum, Blanch. Voy. Pole Sud. iv. p. 154, t. 10, f. 15.—I have three examples from Kobe. This species was originally described from specimens from Australia.

Phaleria riederi, Faldermann. *Phaleria hilgendorfi*, Harold, 1878 *Emypsara adamsi*, Pasc., and *E. flexuosa*, Pasc. 1866=*Diaperis riederi*, Fald. 1833.—This is an apterous species. I took a dozen examples on the sand-hills between Hakodate and Nanai in August, 1880. Pascoe described two varieties as species. The elytra are sometimes wholly black, sometimes entirely pale; but the intermediate or variegated form figured by Faldermann, is the most frequent kind. The species is certainly congeneric with *Phaleria ornata*, Woll., and *P. cadaverina*, F.; all have a similarly large head with small eyes, and a narrow transverse metasternum. The 2nd and 3rd tarsal joints are dilated in the male, and are not generic characters as indicated for *Emypsara*.

Platydema dejeanii, Cast. — Occurs at Nikko, Sendai, and Sapporo, and is not uncommon. This European species is also known from Siberia.

Platydema musiva, Harold, 1878 = *P. nigroæneum*, Motsch., 1860. — Harold described the female; Motschulsky knew the male and perhaps the female also.

Alphitophagus japanus, Mars.—I have taken this species abundantly in Ceylon. There are Ceylonese specimens in the British Museum named by F. Walker, but priority cannot be claimed for his name.

Uloma latimanus, Kolbe, 1886.—This species seems to take the place of *U. bonzica*, Mars., in the northern parts of Japan. I have taken it abundantly at Nikko, and also at Sapporo. It occurs under fir-bark, and there is a pale variety of it which is small in stature, and corresponds to one noticed in *U. bonzica* by Marseul.

Toxicum umbratum, Harold, 1881 = *T. 3-cornutum*, Water., 1874.—Harold knew the female only.

Upis violaceipennis, Mars., is a species closely resembling *Eucyalesthes subviolaceus*, Motsch. Both species will go very well into the genus *Upis*.

Dietysus confusus, Pascoe, Journ. Ent. ii. 1866, p. 486.—I introduced this species to the Japanese Catalogue on the authority of an example given to me by Dr. A. Adams, but I have no doubt that it is Javan, not Japanese.

Eustrophus dermestoides, F.—I took three examples of this species in the forest lands of Sapporo.

Bolitophagus reticulatus, Linn.—I have taken this insect abundantly in Yezo on several occasions. It occurs in Scotland, and is also common in Siberia.

Melandrya mongolica, Solsky., Hor. Ent. Ross. vii. p. 378, 1871.—Mannerheim knew this species, but did not describe it; it occurs commonly in all the Japanese forests, and, like its congeners, varies much in size. My specimens measure 8 to 15 mill.

Lagria decora, Mars.—This species belongs to the genus *Eutropela*, of which there are four species known to me from Japan.

Neocerambyx batesi, Har. 1875, ♂ = *N. chrysothrix*, Bates, 1873, ♀.—Harold described the male, which has long slender antennæ. The female described by Bates has the terminal joints of the antennæ clavate. It is a nocturnal species, and flies into houses when attracted by light. It occurs in all the island apparently, but it is seldom seen. July is the month of its appearance.

Stromatium asperulum, White, 1855.—I am indebted to the late Mr. H. J. Pryer for three examples taken on Oshima, in the northern group of the Rui Kiu Islands. White described it from Hong Kong. One example measures 14 mill., another 26 mill.

Moechotypa fuliginosa, Kolbe, 1886 = *Scotinauges diphysis*, Pascoe, 1871.

Leptura aterrima, Motsch., Schrenk Reisen, Col. p. 147.—I have an example of this species taken near the Ishikari River in Yezo. Schönfeldt, in his Catalogue, unites this species with *L. dimorpha*, Bates, but they are distinct species. In *L. dimorpha* the elytra are "crebre-punctulatis"; in *L. aterrima*, "implicato-punctatis"; and the outline of the two insects is dissimilar. Bates states (Ann. & Mag. Nat. Hist. 1873, p. 195) that *L. atra*, Laich., and *L. aterrima*, Motsch., are conspecific; and Von Heyden, in his Siberian Catalogue, unites both with the European *L. æthiops*, Poda., 1761. On this I have no material to form an opinion, but I doubt Von Heyden's determination, because *L. æthiops* must have been a familiar species to Bates.

Pachyta borealis, Gyl. Ins. Suec. iv. p. 36.—I obtained a small series of this species at Chiuzenji; the determination was made by Mr. Bates after the publication of his last memoir.

Grammoptera gibbicollis, Bles. — I have this species from Tsusima (Vinegar Island).

Donacia æraria, Baly, 1869 = *D. lenzi*, Schönfeldt, 1888.—Baly was in error in assigning this species to the Chinese *D. æraria*, Baly. Schönfeldt does not refer to Baly's species in his description, but there is hardly any difference between the two, except that the antennæ are longer and more slender in *D. lenzi* than the other. It is abundant in the Kobé ponds and in lakes about Kioto and Osaka. It feeds on a water-lily.

Donacia impressa, Paykull.—I obtain this from a small collection made on the Ishikari River. I have a specimen also which I brought from Sapporo, which is not separable from examples of this species.

Pachybrachys donitzi, Harold = *P. eruditus*, Baly. — This species is so exceedingly variable in colour that no specific character can be based upon coloration alone. Harold was probably misled by having some specimens which did not quite coincide with Baly's description.

Lema melanopa, Linn.—This Eurasian species is scarce in Japan. I found it at Niigata, and I swept five examples on the Shiwojiri-toge in July, 1881.

Luperodes præustus, Motsch., Sol. Reis. ii. 1860, p. 232, t. 11, f. 19.—This species, by an oversight of mine, was not recorded by Mr. Jacoby in his memoir on the Japanese Phytophaga.

Hispa japonica, Baly, 1874 = *H. angulosa*, Solsky, 1872.—I have an undescribed species which resembles the above very closely.

Coptocycla crucifera, Kraatz, 1879 = *C. thais*, Bohem., 1862. —The first name represents a variety in which the dark markings have disappeared. Dr. Kraatz has kindly sent me his type for examination, and I have a corresponding specimen which was taken in association with typical examples.

Languria geniculata, Har., 1879 = *L. lewisii*, Crotch., 1873.

Cyrtotriplax niponensis, Lew., 1874 = *Triplax maackii*, Sols., 1871.—This is the commonest species of the genus in Japan.

Coniopoda, Gorham = *Danae*, Reiche.

Cyanauges, Gorham = *Cœnomychus*, Gorham. — The latter name is suggested by Mr. Gorham, *Cyanauges* being preoccupied in Diptera. The food-plant of *Cœnomychus* is an *Agaricus*, allied to, if not the same as, the European *A. atro-cæruleus* of authors.

Ithone mirabilis, Motsch.—I saw this species in immense profusion between Sendai and Awomori. I saw it for several days together, in clusters on the newly-erected telegraph-posts, when journeying from Awomori to Sendai. Out of these countless numbers I obtained two examples with the elytra entirely black. The species was originally recorded from Siberia.

Hippodamia tredecimpunctata Linn.—I introduce this species on specimens I found at Nikko and Kashiwagi.

SUGGESTIONS FOR DECOYING BUTTERFLIES.

By H. G. Knaggs, M.D., F.L.S.

Some fifteen years ago, whilst strolling over the hills at Folkestone, a lovely *Argynnis aglaia*, female, at rest on ground herbage and evidently freshly emerged, arrested my attention. As she made no attempt to fly away, she was duly pinched and skewered with an ordinary pin which I happened to have about me, and stuck upon my hat, in the hope that some one might take a fancy to her. It was not long before a number of admirers, fritillaries like herself, came to pay their attentions to my captive; an occurrence which was set down at the time as a case of assembling, though so far as the Rhopalocera were concerned the experience was new to me, and I made a mental note that if I ever again wrote on the subject of the female attractiveness of the Lepidoptera, the *Argynnidæ* would have to be included. Be that as it may, the remembrance of certain observations (alluded to in the 'Annual' for 1871) on the attraction of butterflies by coloured objects puzzled me as to whether the allurement might not be rather through the visual than the olfactory organs. As some of these notes date back twenty years or more, I should like, with your permission, to reproduce them, as for one thing they will probably prove interesting to your younger readers, and for another it would seem advisable that scattered facts of the kind should be brought together in a collected form.

First, Mr. Albert Müller writes, "I have this day seen *L. alexis* (*medon*) fly towards a very small bit of pale blue paper lying in the grass, and stop within an inch or two from it as if to settle; whether it mistook the paper for an insect of its own kind, or for a flower, cannot of course be demonstrated, but insignificant as it may appear, taken in connection with the recorded fact of *Macroglossa stellatarum* visiting painted flowers on papered walls (Entom. iii. 6), it may help to show that colour has, as Mr. Darwin teaches, a great deal to do in attracting insects to certain spots" (E. M. M., June, 1870).

In like manner it has been recorded that Diptera and Hymenoptera have been deceived, nor would it surprise me to learn that even night-flying moths may be similarly deluded.

Then, Mr. Hudd says that the above reminded him of a circumstance which came under his notice some years previously at Leigh; he writes:—" . . . . Whilst resting under the shade of a tree, I noticed several specimens of *Argynnis euphrosyne* fly towards the handle of my umbrella, which was lying on the ground near me, and which much resembled them in colour" (E. M. M., August, 1870).

Again, Mr. Müller writes:—" . . . . While plodding along a dusty high road in this neighbourhood (S. Norwood), a

male *G. rhamni* rapidly passed me on the wing. A few yards further on it suddenly arrested its straight flight and began to wheel round an object lying in the dust, which, on my coming up, I found to be a crumpled-up ball of rose-coloured paper: my arrival frightened the butterfly, and it continued its headlong career, but scarcely had I left the spot, when, doubling on its track, it rushed back and repeated the circling round the paper, descending repeatedly to within about an inch of it, but without actually settling. This time I watched its proceedings from a convenient distance without disturbing it. After a few minutes' bird's-eye view, the insect seemed to have made up its mind that there are such things in the world as rose-coloured balls, without the perfume and nectar of the rose; so away it went, and so did I. But imagine my astonishment to see it fly steadily a few hundred yards ahead, and then suddenly return to the ball, over which it performed similar aërial evolutions, till a band of noisy excursionists made the place too hot for it to stay . . . ." (E. M. M., June, 1873).

The next note was extracted, by my dear friend the late E. C. Rye, from the second part of the first volume, page 223, of 'Timehri,' the journal of the Royal Agricultural and Commercial Society of British Guiana, in which occurs an account of a visit to Mount Russell by the editor, Mr. E. F. Thurn, who thus describes the native method of decoying butterflies:—"The Indians of the place, seeing our interest in catching butterflies, exhibited various clever ways of entrapping these insects. To catch those of a yellow hue they picked and laid on the ground the flowers of a yellow Bignonia (*B. chika*), and this proved a most successful plan. Equally successful were they when they laid decaying Banana skins on the ground to attract the large blue *Morphos;* but an attempt to attract certain red species by displaying the ripe red fruit of the 'faroah' plant (*Bixa orellana*) was not successful. These methods of enticing insects were completed by inverting a round 'quake' (a wide mouthed basket of open wicker work) over the bait, taking care to raise the quake so that the lower edge was some inches from the ground. The butterflies attracted by the flowers made their way under the raised edge of the quake, and when the Indians approached flew, not out under the edge of the quake, but upwards into the top, and were thus captured" (E. M. M., June, 1883).

In the twentieth Report of the Entomological Society of Ontario, 1889, Mr. Denton, of Wellesley, Massachusetts, gives an account of his method of decoying butterflies; he says that, having caught a specimen of *Papilio turnus* (a butterfly far from common in his locality), he was surprised to see, while he held his capture between his forefinger and thumb, another of the species dart down and hover over it for a moment, as if to entice it away. He then placed the almost lifeless butterfly on a bush, partially

concealing himself, and awaited the return of the insect; nor was he disappointed, in a short time it was in his net. Mr. Denton says that he has, in this way, taken as many as thirty-seven *turnus* in a day. Once he attracted *P. rutulus* by a yellow leaf placed in a conspicuous position, and he has found bright yellow paper, cut out to resemble this species in size, almost as attractive as the insect itself. He finds the best place to expose a decoy is in some sunny nook, where an occasional specimen of the species of which he is in search is seen, allowing the full rays of the sun (provided the decoy is a real butterfly) to strike on the expanded wings. It is usually his custom to cut down the green bushes, except perhaps one in the centre of the opening, and stripping the leaves from the tallest twig or branch, to place the decoy on the point. If he cannot get a decoy to start with he shoots one, for he says that any dilapidated specimen will answer the purpose. Mr. Denton adds that decoying is practised in Australia and New Guinea.

Mr. South (Entom. xxiv. 173), referring to this subject, says, "I understand that some collectors of tropical butterflies find it a good plan to use a decoy to facilitate the capture of the shy species of *Nymphalidæ*. When a specimen of a desired species is secured, it is killed and placed with its wings expanded either on the ground, or on a twig, within easy striking distance of the operator, who takes up a convenient position where he must be, as far as possible, concealed, and then await the arrival of specimens. Perhaps the would-be captor of *Apatura iris* may think it worth while to try a decoy in some haunt of H. I. M. Probably a dry set specimen would answer the purpose."

And lastly (Entom. xxiv. 244), Mr. T. E. Sansom, writing from Yokohama, says, " . . . . In various parts of the East I have found a dead *Ornithoptera*, or *Papilio*, an almost certain decoy, provided of course others of the species are about. In Java and Selangor (Malay Peninsula) when I caught a specimen too bad to keep, I always placed it in a convenient position for catching others it might attract. Of course a good specimen could not be so treated, as in two minutes it would be carried off by ants. Here in Japan, where ants are not so dangerous, I leave good specimens also, for a few minutes, in conspicuous positions as decoys. With *Papilio maackii* it is certain to attract others. After half an hour or so the attractiveness seems to cease, so I doubt if a cabinet specimen of *A. iris* would be of much use as a decoy."

So that, putting aside the question whether butterflies do or do not assemble by scent, it seems at any rate clearly established that they, or some of them, are endowed with a propensity to critically examine everything bearing the remotest resemblance to themselves, or to flowers or objects of a colour similar to their own: whether the allurement be attributable to a desire to assist

a fellow flutterer in distress, or to go snacks with the decoy in a fancied feast, or to the hope of discovering a new nectar,—whether the motive be love, or combativeness, or playfulness, or simply inquisitiveness, does not concern us much just now; it is sufficient for our purpose to know that butterflies are decoyable.

With respect to the practical procedure of decoying, two notions have struck me as possible improvements on the existing methods;—the first is a mechanical decoy with life-like movements, the second the more perfect concealment of the operator. With regard to the former, no doubt a lively insect, harnessed by a loop of fine silk drawn round the thorax between the anterior and posterior pairs of wings, with a foot or two of tether,* would be most "fetching," but I hesitate to suggest anything which savours of cruelty, though it would certainly be less objectionable on that score than the pinning of the living insect: nor do the requirements of the case seem to demand such a display of real vitality. I shall next proceed to show how the natural movements of the insect can be closely imitated by a person operating from a distance of ten or even twenty yards.

(To be continued.)

A CATALOGUE OF THE LEPIDOPTERA OF IRELAND.

By W. F. de Vismes Kane, M.A., M.R.I.A., F.E.S.

(Continued from p. 121.)

Melitæa aurinia, *Rott.*, artemis, *Fab.*—Widely distributed in Ireland, but very local. Often abundant in suitable localities, but apparently unstable and fluctuating in numbers, so that it disappears for years, or lingers in reduced numbers, as at Cromlyn, where the race, from which the var. *hibernica* was described, formerly abounded. The larva is very subject to parasites, which may in part account for the phenomenon. On the other hand, this butterfly has been known to increase so prodigiously that whole fields and roads become blackened by the moving myriads of larvæ. An instance of this was observed, by the Rev. S. L. Brakey, near Ennis, Co. Clare, where he drove out to see a reported "shower of worms," and found as above described, the larvæ being so multitudinous in some fields that the black layer of insects seemed to roll in corrugations as the migrating hosts swarmed over each other in search of food. The imagines that resulted from the starved survivors were extremely small and faded in colour, one male of which is in my cabinet, 1 in. 3 lines in expanse. Larvæ found by me near New-

* Since writing the above, I have been informed that this method has already been successfully employed in the case of *Colias edusa*, but I can find no record of the circumstance.—H. G. K.

castle station, Co. Wicklow, were infested with *Apanteles bignelli*, which up to that time was considered a local species by Mr. Bignell, having been named from a specimen from the same host, taken in the North of Devon. In describing the forms of this insect found in Ireland, I have found it necessary to traverse considerable ground and consult a number of authorities; and, as the local variations presented in the United Kingdom are numerous, consider that perhaps a short digest of the British varieties that have come under my notice may be acceptable, as they, together, form a catena of modifications in colour and design, whose links seem to require classification, and their relative positions determined. There are, it appears to me, three leading forms. The first is represented by Hübner's figure 653, which is, I understand, generally accepted as the typical form, Rottemburg's reference to the insect he named *aurinia* being vague. 1. With the fulvous patches of all the wings very uniform in hue, those of the central transverse bands of the fore and hind wings only slightly brighter in tone than the rest. The bases and reticulated ground pattern of a brownish black. The female somewhat brighter in tone, and more approaching the var. *præclara* in some instances. This—which is very rare in Ireland, occurring only, as far as my experience goes, as an aberration—is a common form in England, and the ordinary one of the Swiss Jura (Prof. Christ), and elswehere on the Continent. I have met with it at Vichy, as well as at the extreme South of France at Hyères, where it is also accompanied by the var. *provincialis*, H.-S., in which the uniformity of coloration is still more pronounced, so that it may be described as of a pale washed-out fulvous ground colour, with slightly marked brownish reticulation. I am inclined to consider this type of *aurinia* to be probably a near approximation to the ancestral *Melitæan* type, since it combines the chief characters presented by the females of this genus, modified or developed diversely in the various species. The female of *M. cynthia* is especially close, while its male, on the other hand, has developed very striking central white bands, a divergence shown in a minor degree by the following varieties of *aurinia*. I have a specimen of very washed-out coloration, much approaching var. *provincialis*, taken at Newbridge with the var. *præclara*.

Var. *signifera*, var. nov.—This is a transitional form from Penarth, Wales. It is characterised as follows:—1. By the stronger black reticulation. 2. By the outer series of the central band of fore wing having acquired an ochreous tint, repeated occasionally in the last two spots of that of the hind wing, the rest of that series being almost obsolete and fulvous. 3. The cellule of fore wing is isolated by a broad black edging from the root of the wing, a trait also observable in a less degree in the basal blotches below the median nervule, the two areas so isolated reminding

one of the fore and hind wings of a *Tinea*. 4. On the hind wing the costal half of the fulvous submarginal band is *prolonged inward toward the base*, invading half of the central series of spots, and obliterating the costal half of the black base. This remarkably striking topomorphic variety I have described from a series kindly lent me by Mr. R. Adkin. I have seen Penarth specimens also in Mr. Tutt's cabinet. The fulvous costal base reminds one of that character in *M. didyma*. I have not noticed this form in Ireland. Expanse: ♂, 1 in. 5 lines; ♀, 1 in. 9 lines.

Var. *præclara*, var. nov. *Cf.* Hübner, figs. 4, 5 ♂, 6 ♀.—The second leading form is the one most commonly met with in Ireland, having the red and central pale series very vivid in colour, and the black reticulation darker than the type, and may be thus described:—Ground colour black, strongly and broadly marked, defining the coloured blotches sharply, but not reducing them in number or size. These are of brilliant terra-cotta tint, but the central transverse series (double on the fore wings) are of bright straw-colour. The female with the basal two-thirds of the wings black; the fore wing with the cell red, with a straw-coloured spot at basal end and a quadrate one toward the other; outside of the discoidal cellule follows a double series of straw-coloured elongated blotches, similar to the central one of the hind wing. On the inner margin two quadrate blotches of same colour. Submarginal red band often suffused a little with yellow. Hind wing with a straw-coloured discoidal spot, a short series of red following to mid-wing, a complete central straw-coloured series, and a submarginal pupilled quadrate series of terra-cotta red, outside of which are the marginal yellow lunules, larger on the hind wing than on the fore wing. The late Mr. Bond used to take this form at Kingsbury, Middlesex. Those taken at Swansea are similar, but somewhat less vivid in colour. The English *aurinia* run generally somewhat smaller than the Irish. The var. *præclara*, in its richest form, approaches the character of the continental *M. maturna*. Irish localities: near Golden Ball, Co. Dublin; the Wicklow Marshes, and Kilavany Wood near Tinahely (*Bw.*); Newbridge, Co. Kildare; Cappagh (*U.*) near Lismore; and Tramore, Co. Waterford; on a hill 200 feet above the sea-level near Cork, ? var. (Sandford, Ent. xviii. 123); Tralong Bog near Glandore (*D.*); Desertserges Station, south side of Bandon R. (*L.*); Blackstairs Mount, Co. Carlow (*M.*); Skibbereen, Co. Cork; Ardtully near Kenmare (*Miss V.*), and Killarney (*B.*), Co. Kerry; Kilpeaton Bog, Limerick, and at Cratloe, Co. Clare (*N.*); Woodlawn near Galway (*A.*). This variety is found in Scotland. Specimens from Alford, Lincolnshire, also are in Mr. Adkin's cabinet, but the colours are not quite so vivid as in the generality of Irish specimens, and the pale discoidal spot of hind wing is obsolete. Expanse: Lincoln, 1 in. 7 lines ♂, 1 in. 10 lines ♀; Irish, 1 in. 3 lines—1 in. 8 lines ♂, 1 in. 7 lines—1 in. 11 lines ♀.

(To be continued.)

CAPTURES AND FIELD REPORTS.

Spring Lepidoptera:—

Hampshire.—The following notes on recent captures and observations in mid-Hants may help to show what a remarkably early season it is:—*Anticlea badiata* was taken on April 1st, and *Hemerophila abruptaria* on the 2nd; *Cidaria suffumata* and *Triphosa dubitata* on the 4th; *Cidaria siderata* a few days earlier, when *Ematurga atomaria* and *Pachycnemia hippocastanaria* were also out, the former very fine and dark specimens; on the 5th, *Eupithecia nanata* was taken, and *E. pumilata;* on the 6th, a single *Syrichthus malvæ*, two *Lycæna argiolus* (one rather worn), and *Pararge egeria; Pieris brassicæ*, male, was also netted, while *Gonopteryx rhamni* was in great force; another specimen of *Eupithecia pumilata* was taken, and two more *E. nanata;* several *Vanessa polychloros* were seen on the 7th, and a few more *Pararge egeria;* also *Pieris napi* and *Saturnia pavonia.*—Savile G. Reid, Capt. R.E.; Froyle House, Alton, Hants.

Hunts.—I found a perfect *Saturnia pavonia* female on a hawthorn hedge, on April 5th, at Molesworth, Huntingdonshire. She had laid fifty-two eggs on the twig where she was resting.—(Rev.) F. H. Wood; 4, St. Paul's Terrace, Northampton, April 12, 1893.

Kent.—Rhopalocera:—*Pieris rapæ*, one in our garden, March 24th; and another in a field the following day. *Gonopteryx rhamni*, a fine male, flying along a bank near Bexley, March 8th. *Vanessa urticæ*, several, in fair condition. Heterocera:—*Saturnia pavonia*, saw a fine female in a friend's breeding-cage, March 13th; the pupæ had been kept in a cold room, and were not in any way forced. *Asphalia flavicornis*, a male in my breeding-cage, March 3rd; I afterwards took a female from birch, and a few males on the lamps. *Tæniocampa gothica*, at present I have only taken one, a male, at sallow, March 13th. *T. incerta*, only one male of this insect, also at sallow, March 13th. *T. populeti*, a friend took a male flying around a lamp, March 13th. *T. stabilis*, common at sallow. *T. munda*, I have not taken it myself, but have heard of a few at sallow. *T. pulverulenta*, abundant at sallow. *Cerastis vaccinii*, common around the lamps in February, swarming at sallow in March. *Scopelosoma satellitia*, a few at sallow, only one in good condition. *Brephos parthenias*, saw three in West Wickham Wood, March 11th; and am now taking them commonly in Jayden's Wood. *Phigalia pedaria*, two males on lamps, February 2nd; common from that date till March 13th; only one female. *Nyssia hispidaria*, I did not work for it this year, but took a nice male, with whitish hind margin and hind wings, in West Wickham Wood, March 11th. *Biston hirtaria*, a friend bred a male, March 13th, and took a female the next day; I also bred a male, March 23rd. *Amphidasys strataria*, female in the breeding-cage, March 7th; I have bred three females this year, in which the usual chocolate markings are replaced by black and very dark brown; none of the specimens bred emerged before dark, the wings rarely being dry before 7.30. *Hybernia rupicapraria* does not appear to be very common here; I have only seen a few males on the lamps. *H. leucophæaria*, the first on a lamp, February 2nd; it has been very common this year; I often took about thirty males from Dartford Heath fence after a south-westerly gale. I have taken all the varieties described by Mr. Arkle (Entom. xxv. 123, 145), with the exception of *marmorinaria;* another variety, of which I have seen three specimens, has, within the grey band, a dark central shade of the same colour as the boundary lines, the remainder

of the wings agreeing with the type; a common variety has all the wings pale brown, faintly marked with darker brown, the central band merely indicated by the boundary lines. Two females taken this year differ from the one described by Mr. Arkle (Entom. xxv. 146) in the following particulars:—thorax with three longitudinal dark lines; legs dark brown, dusted with grey; trochanters and knees grey. *H. marginaria*, males common on lamps, fences, &c., from February 4th; two varieties of the female have the lines across both fore and hind wings black, rather wide, the entire space between the second line and the base filled up with black-brown, the space between the second line and the hind margin rather darker than the type; there are also two wavy dark lines near the hind margin. *H. defoliaria*, three males at lamps, January 23rd, and another on the following day; one was the unicolorous variety. *Anisopteryx æscularia*, males common on lamps, fences, &c., from February 14th. *Cheimatobia brumata*, males common on lamps during January and early part of February; last specimen, a male, February 17th.—P. J. Lathy; Bexley Heath, March 26, 1893.

The following is a list, with dates, of butterflies I have myself seen or caught in this neighbourhood during March:—*Vanessa urticæ*, several on the 8th; common during the last ten days of the month, but very much worn. *Gonopteryx rhamni*, one male, in good condition, caught on the 8th. *Vanessa io*, single specimens on the 23rd and 28th. *Pieris rapæ*, one male on the 26th; it had become quite common by the 28th. *P. brassicæ*, one on the 31st.—D. P. Turner; Havelock Road, Tonbridge, April 4, 1893.

Middlesex.—The effect which the wonderful weather of the past seven weeks or so has had upon the times of emergence of Lepidoptera has been most marked. Taking, for example, *Euchloë cardamines*, the following are the dates upon which I have first observed this species during the last three years:—1891, May 31st; 1892, May 7th; 1893, April 19th. Everything seems nearly three weeks earlier than in 1892; and fully five weeks earlier than in the wet and backward spring of 1891. I may remark that I observed *Nisoniades tages* flying in some abundance yesterday; in other years it is seldom on the wing till the middle of May.—Henry D. Sykes; The Cedars, Enfield, April 23, 1893.

Surrey.—On April 4th, my brother's eldest son and myself saw three specimens of *Pieris brassicæ* in our garden.—T. H. Briggs; Surrey House, Leatherhead.

On March 31st, *Brephos parthenias* was exceedingly common, flying round the birches in West Wickham Woods; indeed, over a hundred were seen during my short stay of about two hours. *Asphalia flavicornis* was also seen on the wing twice, but as we had no nets with us were unable to make any captures. I again visited West Wickham on Easter Monday, and was greatly surprised to find that *B. parthenias* had very considerably diminished in numbers, for at the close of a whole day's work I was only able to get four fairly good examples of this insect. Amongst other things worth mentioning were two nice *Panolis piniperda* and two (a male and female) *Amphidasys prodromaria*. These latter were freshly emerged specimens, and were taken on oaks at about a height of two inches from the ground.—F. J. Robinson, Jun.; Surrey Cottage, Water Lane, Brixton, S.W., April 6, 1893.

Tephrosia crepuscularia has turned up in considerable numbers at West Wickham this season. It is to be taken on trunks of both the firs and oaks,

which abound in the woods; and it only requires about half an hour's diligent search for one to become possessed of a score or more fine specimens. Just now *T. biundularia* is also to be taken, though sparingly; and *Lobophora lobulata* is decidedly common.—F. J. Robinson, Jun.; April 17, 1893.

Co. Cork, Ireland.—On the 27th of March I took *Thecla rubi* and *Lycæna argiolus*. *Vanessa io* is plentiful; but *V. urticæ* seems rather scarce. So far no *Gonopteryx rhamni*.—H. McArthur.

Spring Larvæ.—I only went larvæ-searching one night, Feb. 11th. I then worked in the lanes; larvæ were very plentiful; the genera *Leucania*, *Xylophasia*, *Noctua*, and *Triphæna* were well represented. I have also taken a few larvæ of *Uropteryx sambucaria* from ivy. Out of several larvæ of *Geometra papilionaria* sleeved on birch, only two have survived the winter. I have young larvæ of *Amphipyra pyramidea* feeding on lilac and hawthorn; and *Hadena proteus* on hawthorn.—P. J. Lathy; Bexley Heath, March 26, 1893.

Early appearance of Lycæna argiolus.—*L. argiolus* began to appear here on April 2nd. This is very early for it, as I do not, as a rule, take them till the middle or end of the month. To-day I took out my net and captured six—five males and a female—and saw three others. All the specimens captured are in fine condition. On March 23rd I saw a small "white," which was probably *Pieris napi*, but was unable to capture it, so that I cannot say for certain. *Pararge egeria* began to appear on the 24th. —Arthur Rashleigh; Menabilly, Par Station, Cornwall.

Colias edusa in April.—On April 5th I saw a specimen of *Colias edusa* flying along a bank here in the sunshine, but not having a net with me was unable to take it; and another on the 8th of the month. They evidently had hybernated, as that species was very plentiful here last year, especially near the sea, where they were constantly flying about over the rocks; there were also a few of the variety *helice* taken.—A. Rashleigh.

Leucania l-album in Jersey.—*Leucania l-album* was very common at ivy in Jersey last year. The following notes are copied from my diary of 1892:—September 25th, caught three *l-album* at ivy, near Bagot; 28th, took one more at same place. October 11th, caught two at St. Clements; 15th, caught five at same place; 19th, caught two at same place. These last three entries refer to the same plant of ivy, which was growing on a rock in a field near the sea-shore.—Stanley Guiton; Bath Street, Jersey, March 29, 1893.

Nyssia hispidaria, &c., in Leicestershire.—On March 6th I found six *Nyssia hispidaria* in Charnwood Forest in this county. Last year I obtained, in the same locality, a melanic specimen of *Phigalia pedaria* (*pilosaria*); and also two melanic specimens of *Amphidasys betularia*. On March 22nd I took here (four miles south of Leicester) two *Hybernia progemmaria*, var. *fuscata*, dark unicolorous forms; and Rev. C. T. Cruttwell, rector of Kilworth, tells me that he took the same variety last year at Kilworth; and this year, two suffused brownish dusky specimens, intermediate between the ochreous dusky type-form and the dark form.—W. G. Whittingham; South Wigston Vicarage, Leicester, April 11, 1893.

Biston hirtaria in February.—With reference to Mr. Bird's note on the above (Entom. 129), I had a female emerge on February 12th, 1891, in a breeding-cage kept in an outhouse. Is was, however, a cripple.—Harry Moore; 12, Lower Road, Rotherhithe.

NOTES AND OBSERVATIONS.

Clostera anachoreta.—When a discussion, to which I am a party, degenerates into personalities, I at once withdraw. Not a single paragraph in either or both of Dr. Knaggs' communications has the slightest bearing on my original contention, that *C. anachoreta* could not be justly considered an *indigenous* British species. If Dr. Knaggs, having carefully examined and understood my alleged facts as to its history in this country, can disprove them,—or if, failing to do that, he can disprove or materially modify the inference which I draw from those facts,—well and good. In default of this, I decline to continue the discussion.—(Rev.) J. Greene.

Homoptera and Terrubia robertsii?—Has not Mr. Billups made a great mistake here? (p. 141). Has he not taken for a fungoid growth the waxy filaments which emerge from the abdomen, &c., of *Liptra pulverulenta* or *Phenax auricoma?* At any rate, the specimen should be examined by a competent authority.—Harry Moore; 12, Lower Road, Rotherhithe.

Destructive Insects in Africa (p. 135).—The South African locust, or Voet-ganger, though it destroys the herbage, does not deprive stock of food. A colonist who collected for me in the Amatola Mountains, Cape Colony, informed me that sheep, oxen, and horses feed on them, and always improve in condition after a flight. When a swarm settles on the line, railway traffic is greatly impeded. Upon one occasion a train was delayed 2½ hours between Maltera and King William's Town, their carcases not allowing the wheels to bite.—Harry Moore; 12, Lower Road, Rotherhithe.

Ancestral Colouring of Lepidoptera.—Mr. Frohawk calls attention (Entom. 97) to the frequency of the occurrence of white spots in *Argynnis paphia*, and suggests that in primeval times only brown, black, and white forms existed, and that white spots "may be instances of reversion to a later transitional stage." I suppose this is still a debatable point; but it certainly is remarkable that, in the figure given of Mr. Carpenter's capture of July 23, 1892, the white spots, as far as they go, are identical with those in the female of *Argynnis sagana*, Dbld., from Eastern Siberia and Japan, one of the finest known examples of a supposed archaic type. In the specimen I possess the ground colour approaches very nearly that of *A. valesina*, only the white blotches (including a beautiful series of angular spots within the margins) occupy about a fourth of the entire area. In this connexion, may not the male of *Melitæa cynthia* be considered another partial survival of, or reversion to, the ancient form? Mr. Jenner Weir, in September, 1886, exhibited, before the South London Natural History Society, specimens of *A. paphia* and *A. euphrosyne* with white spots on the wings, and both he and Mr. South advanced ingenious theories to account for them. The former gentleman also again, in October of the same year, produced specimens of *Vanessa cardui* and *Colias electra* from Grahamstown, with similar albinic characteristics. In October, 1887, Mr. South, after an exhaustive series of experiments with concentration of the sun's rays on portions of the pupæ of *Vanessa io*, withdrew his former theory. Again, in April, 1887, Mr. T. D. A. Cockerell read a paper before the same Society, in which he accounts chemically for colour variations, especially in cases of albinism and melanism. Other theories have also been put forth, and yet we hardly seem to have advanced beyond the fact that there is, in constant operation, a mysterious law of Nature which

impels individuals, with more or less frequency, to assume partial characteristics of what are generally believed to be very ancient forms; and, as Nature is said to work in cycles, it is probable that our descendants in some future æon will be once more surrounded by an animated nature as sombre as it is now brilliant.—R. S. Standen; 67, Earl's Court Square, S.W., April 6, 1893.

The Hairs of Acronycta alni Larva.—An article on the hairs of *A. alni* (Entom. xxv. 39), which just falls under my hand, revives my desire to ask those who devote themselves to the preservation of larvæ for their experience with those of this insect. Those conversant with the process know that in drying an empty skin a considerable amount of heat is necessary; but to whatever reasonable degree this is carried, the hairs of a larva are never affected, and if inadvertently it is carried beyond this, then skin and hairs shrivel up simultaneously. In the preparation, however, of the fairly numerous number of larvæ of *A. alni* I have tried, I find a quite exceptional occurrence. On arriving at a very moderate point of heat, less than normally required to stiffen a skin, the two large flat-tipped brushes on the second segment invariably shrivel up suddenly, much in the way it may be imagined the antennæ of a Rhopalocera might do, while all the other hairs remain unaffected like the bristles of any ordinary larva. This appears to point to these two brushes not being true hairs at all, but hollow tubes of a quite different construction. In the live state the appearance of these brushes is already exceptional, and gives some such idea. I have no means of applying a really powerful microscopical examination to find the explanation; but I invite the experience of other entomologists who have preserved any number of this larva, and also ask those who have a powerful lens to examine these brushes minutely. The phenomenon is certainly such as has not come under my notice with any other larvæ; and I claim a pretty extensive experience with both British and foreign.—N. F. Dobree; Beverley, E. York, March, 1893.

Gynandrous example of Saturnia pavonia.—A fine specimen of *S. pavonia* (*carpini*) emerged, on March 29th last, with male wings and antennæ on one side, and wings and antennæ of the female on the other side. It is an extraordinary specimen, and I was not aware that this species was subject to gynandromorphism.—Chas. E. Morris; Vernon Lodge, Preston, Brighton, March 31, 1893.

Migratory Locusts.—Can any readers of the 'Entomologist' inform me if they know of the occurrence of any species of migratory locust in the British Isles within the last ten years or so?—W. Harcourt Bath; 195, Ladywood Road, Birmingham.

Decticus verrucivorus.—Will any reader who is interested in Orthoptera kindly let me know if this fine grasshopper still occurs in the Rochester locality, where it was found in such abundance many years ago by Professor Henslow?—W. Harcourt Bath.

Colias edusa absent from the Broad District.—While the entomological papers have been so full, during last summer, of the abundance of *C. edusa* in the majority of the English counties, it may be interesting to note the absence of it (as far as my experience goes) in the Broad district of Norfolk, where I was collecting from Aug. 11th to Sept. 17th. I may mention that *Vanessa atalanta* and *V. io* were both very plentiful, and other

Rhopalocera were by no means unusually scarce I should be glad to hear of any theory to account for the rarity of this species in a district apparently so well fitted for insect life, while in the surrounding districts it appears to have been plentiful, *viz.*, in Cambridgeshire (Entom. xxv. 275), and I have seen a number of specimens from the coast of Suffolk round Aldeburgh.—F. P. Bedford; 326, Camden Road, N., March 29, 1893.

Sugaring.—In reference to Mr. Garrow's remark (Entom. 136) as to the failure of sugar on moonlight nights, several times last year I took insects freely at sugar, even when the moon was shining brightly. In July I captured several *Leucania turca* when the moon (which was nearly full) was shining *on the insects* as they sat at the sugar. During the last week the Tæniocampidæ have visited sallow blossoms in large numbers, with the full moon shining in an absolutely cloudless sky. If they are attracted to sallows, why not to sugar also?—J. H. D. Bedles; Kiddington Rectory, Woodstock, April 3, 1893.

Entomology of Grimsey.—The Entomology of the island of Grimsey, situated 12 or 20 miles N. of the north coast of Iceland, and almost opposite the Eyjafjorde, has never, so far as I am aware, been investigated. The place is difficult of access, and unvisited by the steamers from Copenhagen that periodically call round the coast of Iceland, and its inhabitants are reported to be rude and barbarous. Unlike the numerous islets and skerries that form an archipelago in the immediate neighbourhood of the west coast, Grimsey is sufficiently far from the mainland to possibly repay an enterprising naturalist by some characteristic features of its own. The following is an extract from a letter of Th. Thoroddsen, the geologist of Iceland, relative to Grimsey:—"Keyhjairh, 21st April, 1890. It would be of great interest for the distribution of insects in arctic regions to get some information on the Entomology of Grimsey; but it is very difficult to get to that island, as the mail steamers do not call there. In the year 1884 I was so fortunate that I could visit that island with a Danish man-of-war, but stayed there only a few hours. A letter about my call there is published in 'Nature' (vol. xxx. 770). I collected only few plants, which I have given to the Botanic Museum of the University of Copenhagen." The most available means of visiting Grimsey would doubtless be to charter a sailing-boat from Akeneyli, at the southern extremity of the Eyjafjorde, about 30 miles from the Arctic Ocean; or else to prevail on the captain of the Danish steamer, by offering him a sufficient consideration, to make a short *détour*, to allow of a few hours' visit to the island, as I imagine it is within his discretion to call at other ports besides those mentioned in the sailing bill.—F. A. Walker.

A fine Summer predicted.—The following extract is from a letter which appeared in the 'Chester Chronicle' of March 25th:—"Our esteemed friend, Admiral Massie, of Chester (he was a midshipman at the battle of Navarino, 1827), frequently calls on me for the 'Weather Record.' On the 21st he paid us a visit, and asked how is the wind and barometer. I told him the wind at 6.15 a.m. was steady at North-West by North. With a twinkling eye and smiling face he at once corrected me:—'Nor-rard-West by Nor-rard, nautical phrase, you know.' 'Now then,' said he, 'we are likely to have six months grand weather. Through a cycle of years, if the wind blows steady before, on, and after the 21st, it has indicated good

weather for months. Search your record.' I have done so, and find that for the last forty years the Admiral's remarks are correct." — J. Arkle; Chester.

SOCIETIES.

Entomological Society of London.—*March 29th*, 1893. — Henry John Elwes, Esq., F.L.S., F.Z.S., President, in the chair. Mr. Ernest Swinhoe, of Avenue House, Oxford, was elected a Fellow of the Society. Mr. G. C. Champion exhibited, for Mr. A. E. Stearns, a living specimen of a luminous species of *Pyrophorus*, which had been found in an orchid-house at Dorking. It was supposed to have emerged from the roots of a species of *Cattleya* from Colombia. Mr. A. H. Jones exhibited living full-grown larvæ of *Charaxes jasius*, found by Mr. Frederic Raine, at Hyères, feeeding on *Arbutus unedo*. Surgeon-Captain Manders exhibited a series of *Lycæna theophrastus* from Rawal Pindi, showing climatal variations, the rainy-season form being of darker coloration, and larger than that occurring in the dry season. The ground colour of the former on the under surface was markedly white with deep black striæ; in the latter form the ground colour was distinctly reddish, and the marking reduced to reddish lines. He said that the latter form had been described as *L. alteratus*. Mr. F. Merrifield mentioned that Dr. Weismann had now established that the colouring of *Chrysophanus phlæas* in different climates or seasons, though in part attributable to the actual temperature, was in part constitutional. Mr. S. G. C. Russell exhibited a beautiful variety of *Argynnis selene*, taken near Fleet, Hants; two varieties of *A. selene* from Abbot's Wood, Sussex; typical specimens of *A. selene* and *A. euphrosyne* for comparison; and a remarkable variety of *Pieris napi* from Woking. Mr. C. J. Gahan exhibited a microscopic preparation of the antenna of a beetle (*Pterostichus*), for the purpose of demonstrating the sensory nature of the so-called "appendix" of the antenna. Since he wrote a note describing this structure, a short time ago, he found that Professor Beauregard had already suggested its sensory character, and was inclined to believe that it was an auditory organ. Mr. H. Goss exhibited a specimen of *Trogus lapidator*, Grav., believed to have been bred from a larva of *Papilio machaon* taken in Norfolk by Major-General Carden. Mr. Goss stated that he sent the specimen to the Rev. T. A. Marshall, who said it was a well-known parasite of *P. machaon* on the Continent, but not proved to exist in the United Kingdom. Mr. Merrifield said he knew this parasite, and had bred several specimens of it from *P. machaon* received from Spain. Colonel Swinhoe read a paper entitled "The Lepidoptera of the Khasia Hills. Part I." A long and interesting discussion ensued, in which Mr. Elwes, Mr. Hampson, Colonel Swinhoe and others took part. Mr. W. Bartlett Calvert communicated a paper entitled "New Chilian Lepidoptera." Mr. J. W. Shipp communicated a paper entitled "On a New Species of the Genus *Phalacrognathus*."

April 12th.—Frederic Merrifield, Esq., Vice-President, in the chair. Sir John Talbot Dillwyn Llewelyn, Bart., exhibited a number of specimens of Lepidoptera, Coleoptera, and Hymenoptera, all caught or bred in Glamorganshire. The Lepidoptera included two remarkable varieties of *Vanessa io*, both obtained from the same brood of larvæ, from which the usual eye-like spots in the hind wings were absent; varieties of *Arctia menthastri*; a long series of melanic and other forms of *Boarmia repandata*

and *Tephrosia crepuscularia;* and bleached forms of *Geometra papilionaria.* The Coleoptera included specimens of *Prionus coriarius, Pyrochroa coccinea, Otiorhynchus sulcatus,* and *Astynomus ædilis,* which latter species Sir John Llewelyn stated had been handed to him by colliers, who obtained them from the wooden props used in the coal mines, made out of timber imported from the Baltic. Mr. Merrifield, Dr. Sharp, Mr. Bower, and Mr. Stevens made some remarks on the specimens. Sir John T. D. Llewelyn enquired whether the name of the moth, which had a sufficiently long proboscis to fertilize the large Madagascan species of Orchis, *Angræcum sesquipedale,* was known. Mr. C. O. Waterhouse stated that the collections received at the British Museum from Madagascar had been examined with the view to the discovery of the species, but up to the present it had not been identified. Mr. H. Goss exhibited, for Mr. Frank W. P. Dennis, of Bahia, Brazil, several nests of trap-door spiders containing living specimens of the spider, and read a communication from Mr. Dennis on the subject. Several photographs of the nests and the spiders were also exhibited. It was stated that Mr. Dennis had found these nests at Bahia in one spot only in a cocoa-nut grove close by the sea. Mr. McLachlan read a paper entitled "On species of *Chrysopa* observed in the Eastern Pyrenees; together with descriptions of, and notes on, new or little-known Palæarctic forms of the genus." The author stated that the species referred to in this paper had been observed by him in the Eastern Pyrenees, in July, 1886, when staying with Mons. René Oberthür. After alluding to the nature of the district, and its capabilities from an entomological point of view, the paper concluded with descriptions of certain new palæarctic species of the genus. Dr. Sharp, who said that he was acquainted with the district, and Mr. Merrifield made some remarks on the paper.—H. Goss, *Hon. Secretary.*

South London Entomological and Natural History Society.—*March 23rd,* 1893.—J. Jenner Weir, Esq., F.L.S., President, in the chair. Mr. R. Adkin exhibited the following species of Diurni from Sutherlandshire, N.B., viz., *Pieris brassicæ,* L., *P. rapæ,* L., and *P. napi,* L.; *Argynnis selene,* Schiff., *A. euphrosyne,* L., and *A. aglaia,* L.; *Epinephele janira,* L.; *Cœnonympha typhon,* Rott.; and *Thecla rubi,* L.; and commented on the similarity of the forms shown to those occurring in the South of England. He noticed, however, in the *C. typhon,* that although there was considerable variation in the colour, in none were the dots on the hind wings prominent as in many of the Rannoch specimens. The specimens of *A. selene* and *A. euphrosyne* shown were so remarkably alike as to render it extremely difficult to distinguish with certainty the one species from the other. Mr. H. Moore exhibited a striking example of fasciation in the young wood of *Salix capræa;* also an example of the tranference of the scales to paper of an Indian butterfly of the Nymphaline group. Mr. W. Mansbridge stated that the specimen he previously exhibited as *Hybernia defoliaria,* Clerck., was a melanic form of *H. aurantiaria,* Esp., Mr. A. W. Dennis having drawn his attention to the fact. Mr. Mansbridge exhibited a drawing of the antenna of these two species, showing the difference existing; also dark *Odontopera bidentata,* Clerck., from Forres, N.B.; a strikingly light specimen of *Hybernia leucophæaria,* Schiff.; and a series of *Polia chi,* L., var. *suffusa,* from Horsforth, near Leeds, darker than those from either Bradford or Huddersfield, and therein differing from Mr. Tutt's experience as previously expressed. Mr. H. A. Auld exhibited a species of *Cassida* from Fort White, Upper Burmah. Mr. T. W. Hall

remarked on Mr. Moore's exhibit of *Salix capræa*, and Mr. Mansbridge said he had seen the same peculiarity in liliaceous plants. Mr. J. M. Adye exhibited two living examples of *Moma orion*, Esp. (forced), bred from New Forest larvæ of 1892. The exhibit was made in metal boxes, and a discussion ensued, Mr. Tugwell considering they would store heat, and so make the enclosed insects restless; but Mr. Winkley said he had used this form of box for *Argynnis paphia*, L., &c., without harmful results. In further illustration of the phenomena of mimicry, Mr. Jenner Weir exhibited *Nebroda echaia* var. *jacksoni*, which was closely mimicked by both a Nymphaline and Papilionine species, viz., *Hypolimnas mima* and *Papilio cenea*, ♀, the latter species being the southern form of *P. merope*, which was remarkable for the polymorphic and polychromatic varieties of the female. Mr. Weir also exhibited two other similar instances, species from Western Africa and Northern India, being also mimicked by both Nymphaline and Papilionine species, and made some interesting comments thereon.

April 13*th*.—J. Jenner Weir, Esq., F.L.S., President, in the chair. Mr. Edwards exhibited, through the President, a specimen of *Papilio govindra* from the Himalayan region, Mr. Weir remarking that the species was a mimic. Mr. R. Adkin read an extract from an interesting letter, addressed to Mr. Billups, by Mr. T. D. A. Cockerell from Jamaica, and exhibited the leaves containing the species of Coccidæ referred to. Mr. Manger exhibited *Dorippe japonica*, a crustacean from Japan. Mr. Adkin exhibited a small collection of Sphinges and Bombyces from Sutherlandshire, N.B., consisting of *Sesia scoliiformis*, Bork, *Arctia caia*, L., *Dicranura vinula*, L., *Orgyia antiqua*, L., *Nemeophila plantaginis*, L., and *N. russula*, L., the male specimen of which had smoky hind wings; and *Odonestis potatoria*, L., the coloration of the female being intermediate between the sexes. Mr. Perks showed a bramble leaf from Chessington, Surrey, corroded by a microscopic fungus. The Secretary, Mr. H. Williams, read a letter from Mr. Robson, of Hartlepool, requesting aid from members of the Society in filling up forms he had prepared, asking for certain information as to meteorological conditions, &c., when sugaring for Noctuæ; and thus, by comparing results from different parts of the country, Mr. Robson hoped to come to some conclusion regarding some of the anomalies of this subject. Mr. Robson said he would be happy to send forms to any applicant for same. Mr. Turner reported the capture of *Eupithecia nanata*, Hb., *Ematurga atomaria*, L., and larvæ of *Thera firmata*, Hb., *T. variata*, Schiff., and *Ellopia fasciaria*, Schiff.; and Mr. Carpenter said that *Thecla rubi*, L., had been taken at Eynsford, Kent, on April 3rd, and *Syrichthus malvæ*, L., on April 9th. The remainder of the evening was devoted to a long discussion with regard to the proposed excursions of the Society during the ensuing summer.—F. W. Hawes and H. Williams, *Hon. Secs.*

Lancashire and Cheshire Entomological Society.—*April* 10*th*.—Mr. S. J. Capper, F.L.S., F.E.S., President, in the chair. Mr. H. W. Bowler, Lisbon Road, Broadgreen, was elected a member of the Society. Mr. John Watson read a paper entitled "Notes on three Hybrid Silk Moths."* The author, in speaking of these hybrids, stated that he had microscopically examined the female hybrids, and found them infertile, there being no trace of an ovary. He also stated that the hybrid larvæ spun double the weight of silk in forming the cocoon than either of the

* This paper will be published in the June 'Entomologist.'—Ed.

parents. Dr. H. H. Corbett read a paper entitled "Notes on the Lepidoptera of Doncaster." He enumerated the Lepidoptera taken by him around Doncaster, and drew attention to the local variation of several of the species; he also exhibited and described *Lithocolletis cerasicolella*, a species which he had recently added to the British list. Mr. Watson exhibited *Papilio elwesi*, female, from Central China, which, as far as he knew, was at present unique. The President exhibited *Papilio machaon;* and Mr. Newstead, a collection of Coccidæ formed by Miss Tomlin in Madras.—F. N. Pierce, *Hon. Sec.*

Birmingham Entomological Society.—*March 29th*, 1893. Mr. G. H. Kenrick, V.P., in the chair. The following were exhibited:—By Mr. R. C. Bradley, insects from Sutton, including *Eubolia cervinaria*, &c. By Mr. G. W. Wynn' insects from Wyre Forest, including *Dicranura bifida*, *Lobophora hexapterata*, &c.; also *Smerinthus tiliæ* from Hanbury Park. By W. W. Harrison, *Amphidasys prodromaria*, from Arley, &c. Mr. G. Kenrick read a paper "On the occurrence of the black variety of *Amphidasys betularia*." He said that it was first described by Millière in 1859, from a specimen from Yorkshire; at that time it seems to have been a new and exceptional form. In 1869, Newman says of the species, "*some* are black." Since then it seems to have been getting more and more common, until now we find it contributing a large proportion of the whole. Mr. Kenrick mentioned the various theories of the causes of black forms of insects, but dismissed them all as inadequate to explain the origin and increase of this. He thought this might have come about in the following manner:—In all cases offspring more or less resemble their parents, sometimes one only, sometimes both; at times the tendency is very strong for them all to resemble one parent only. When breeding *A. betularia*, using one type and one var. *doubledayaria*, it has been noticed that most of the offspring are black; therefore, it may be, a chance black example has bred and been perpetuated in this manner. It is a hardy species; the blackness of the variety seems neither to assist nor injure it, and therefore there would be no selection of either form; and it can easily be seen that if the offspring of any pair, where there is only one black form, tend mostly to become black, then the form would rapidly increase, as this appears to have done. The paper was discussed at length by the Rev. D. J. Nurse, Messrs. G. T. Bethune, Baker, R. C. Bradley, and C. J. Wainwright.—Colbran J. Wainwright, *Hon. Sec.*

Cambridge Entomological and Natural History Society.—*February 17th*, 1893, *Annual Meeting.*—Mr. Gibson, of Queen's College, was elected a member. An abstract of the report of the Secretary and Treasurer showed the Society to be in a very satisfactory condition; thirty-one members were elected during the year. The meeting held fortnightly during the University Terms had been well attended, and the exhibits numerous and interesting. The following were elected officers for the year:—President, Mr. F. V. Theobald, B.A., F.E.S.; Vice-President, Mr. A. M. Moss; Librarian, Mr. A. Jones; Secretary and Treasurer, Mr. W. Farren, F.E S.; Council, Mr. T. H. Bryan, M.A., Mr. J. C. Rickard, Mr. M. White. Mr. Rickard exhibited British specimens of *Saperda carcharias*, an unnamed species of the genus *Necrophorus*, *Trichiosoma betuleti*, *Sirex gigas*, a dark variety of *Vespa vulgaris*, *Reduvius personatus* and its pupa, *Bombylus major*, and an unnamed *Tachina;* and from South Africa,

two species of scorpions, "trap-door" spiders and their nests or galleries. Mr. Theobald, larva, pupa and imago, in spirits, of *Tipulu maculosa;* and a number of specimens of a species of *Agromyza,* the larvæ of which had been found doing considerable damage, mining the leaves and shoots of chrysanthemums in greenhouses.

March 3rd.—Mr. F. V. Theobald, President, in the chair. Mr. W. H. Seyfang, of St. Peter's College, was elected a member. Mr. Moss exhibited a Sialid (species?) from Rome, and a box of Lepidoptera, most of which he had "forced" during January; among others were specimens of *Papilio machaon, Smerinthus tiliæ, Notodonta ziczac,* and, most noteworthy, a series of *Bombyx rubi,* on which he contributed notes to the following effect:—The larvæ were found in the autumn, and placed in a cold frame. In January, the grass and moss placed in the frame for the larvæ to hide in was found to be frozen, so much so that before the larvæ, which were curled up among it, could be extricated, it had to be placed in a warm room to thaw; at first sight the larvæ appeared to be dead, but subjected to a temperature of about 80 degrees, or more, several assumed the pupal stage within five days, and in ten days from this—fifteen days from the time the apparently frozen larvæ were moved into the warm—they commenced to emerge, a very fair proportion of the larvæ producing moths. The discussion was continued by Messrs. Theobald, Farren, Fitzroy, and Jones. Mr. Theobald exhibited some larvæ of an unknown species of *Tipula* in rotten wood, from Gloucestershire—microscopic slides and photos. of them; also a larva of *Simulium,* a larva of a new *Tanypus,* and an undescribed dipteron and its pupa. Mr. Jones, a series of *Agrotis exclamationis* and its varieties. Mr. Farren, *Orphiedes demoleus,* taken in South Africa by Mr. J. C. Rickard, and varieties of *Papilio machaon* from Wicken Fen, and remarked on the philogenetic value of certain corresponding markings; a bred series of *Orobena extimalis,* Scop. = *margaritalis,* Schiff.; and representative species of Pterophori, Crambi, Tortrices and Tineæ. Mr. Bryan read a paper on "Relaxing and Setting Insects," and exhibited appliances and drawings in illustration. A long discussion ensued, Messrs. Theobald, Jones, Farren, Bull, White, and others taking part.—Wm. Farren, *Hon. Sec.*

Penarth Entomological and Natural History Society.—The fifth Annual Meeting was held in the Penarth Public Hall on Wednesday, March 22nd. An Evening Conversazione, which was well attended, was presided over by F. H. Thomas, Esq., R.C.A., President of the Biological Society of Cardiff, who in a brief address referred to the advantages of entomological research, and to the fact that many interesting objects of Natural History were rapidly becoming extinct, and no traces would be preserved but by the work of such Societies as this; he also advised the formation of botanical and geological sections. Mr. F. Mason gave some amusing details of a visit to Fiji. The Annual Report was presented by the Secretary, and showed the Society to be in a flourishing condition. It stated that the season of 1892, as a result of the prevailing fine weather, had proved the most successful which the Society had yet experienced. A valuable addition to the Library had lately been made, by the purchase of Owen Wilson's 'British Larvæ and their Food-plants.' A selection of vocal and instrumental music was given during the evening; and at intervals, in an adjoining room, some beautiful objects were exhibited with a lime-light microscope, by Mr. J. Storrie, late Curator of the Cardiff

Museum. The room was suitably decorated with plants, flowers, pictures, &c., and on lines of tabling in the centre and around the Hall were arranged cases of insects, birds, shells, corals, sea-weeds, ferns, fossils, &c., and a variety of interesting curios. Sir J. T. D. Llewelyn, the President of the Society, sent valuable contributions from his splendid collections, considered to be the largest in the West of England. The members of the Society exhibited upwards of 150 cases, most of the insects in which were captured in the neighbourhood, proving the richness of the district from a naturalist's point of view. A special feature in the arrangements was the opening the Exhibition in the afternoon, from 3 until 6 o'clock, to afford—especially for the younger portion of the community—the advantage of an inspection by daylight of the vast number of interesting objects which had been gathered together; the schools of the neighbourhood were well represented, and a considerable number of other visitors availed themselves of the opportunity. All the arrangements were eminently successful, and the desire was fully expressed that similar exhibitions might be held on future occasions.—J. Wallis, *Hon. Sec.*

RECENT LITERATURE.

A Monograph of Oriental Cicadidæ. By W. L. Distant, Fellow of the Entomological Societies of London, Belgium, France, and Stockholm. Author of 'Rhopalocera Malayana,' 'A Naturalist in the Transvaal,' &c. With 15 plates (partly coloured) and woodcuts. Published by order of the Trustees of the Indian Museum, Calcutta. 4to, London, 1889—1892, pp. xiv, 158.

The completion of this important work (delayed by Mr. Distant's visit to the Transvaal during its progress) has been awaited with much interest by all Homopterists, and we heartily congratulate the author on the successful completion of his undertaking. He states that his unpublished catalogue of Cicadidæ contains about 82 genera and 720 species, of which 34 genera and 268 species (nearly all of which are figured) are included in the present work, which deals with Eastern Continental Asia, and the greater part of the Malayan Archipelago, as far as New Guinea. We could have wished that Australia, Tasmania, and New Zealand, had also been included; but we presume it was necessary to limit the extent of the work, not, perhaps, so much on account of the actual number of Australian species as because the large size and remarkable character of many of them would have required additional plates to illustrate.

Mr. Distant's preface deals chiefly with general matters relating to the geographical distribution, habits, &c., of the insects; and we are pleased to find that he closes by gratefully acknowledging the good work done by his artist, Mr. Horace Knight. He concludes his book with a good general index, and another of geographical distribution.

The bulk of the work consists of descriptions of genera and species; and in the case of species which the author has not been able to examine at home, the original description is reproduced. This is well, and a far more satisfactory course than that adopted by some authors, of giving an independent description of a species which they have con-

jecturally identified with that of a previous writer, often without comparison of types on the one hand, or any reference to the original description on the other. We cannot, however, agree so cordially with Mr. Distant in the extremely unsatisfactory manner in which he frequently ranks the species of other authors as synonyms without sufficient comment or explanation. It is true he says candidly (p. 20, note) "in treating other entomologists' species as 'varieties,' I am of course, in the absence of breeding experiments, expressing my own views alone"; but this is a very different matter from including a species described by Walker from the Cape (*Platypleura gemina*) among the synonyms of the common East Indian *P. nobilis*, Germ., without further remark than that Walker's locality is "clearly erroneous." If the specimen differs, it is probably a distinct species; while even if it does not, there is no *à priori* reason why the same species should not be found in Africa and Asia, which would be simply an interesting fact in geographical distribution.

Every excuse must be made for difficulties in the verification of the species of the old authors; but too little care has certainly been taken in this direction also, and we cannot think that if either Mr. Atkinson or Mr. Distant had compared Linné's description of *Cicada repanda* in the 'Museum Ulricæ,' p. 159, they would ever have applied the name to Walker's *Platypleura interna*, which differs in almost every particular stated by Linné. Nor is this the only instance in which Mr. Distant appears to have accepted the *ipse dixit* of another entomologist, without verification, when the correct identification of a species is open to grave doubt, as in the case of Stål's identification of *Platypleura ciliaris*, Linn.

The synoptic tables of genera are extremely useful, but would be more so if they had been drawn up in such a manner as to apply to the females as well as the males throughout. We are aware that synoptic tables are very difficult to prepare, and the least error renders them misleading; but still we think that too little attention is paid by many writers to female insects when describing genera and species in which the secondary male characters (*e. g.*, the drums of Cicadidæ) are of unusual importance.

Little is known of the metamorphoses of the Cicadidæ, and it would not be fair to blame Mr. Distant for not giving us more information on the subject. We have no doubt that much useful information might be derived even from an examination of the empty pupa-cases, which are common in our collections, if they were always ticketed with the name of the species to which they belong, but unfortunately this is rarely the case; and otherwise such specimens are almost useless for scientific purposes. We must not omit to add that when a species is found in more than one locality, it would always be well to state the locality from which the specimens which are regarded as typical, as well as of any species figured, were obtained.

We are sure that the study of Cicadidæ will be largely promoted by the publication of this valuable work; and if we have ventured to point out a few of what appear to us short-comings, it is only to indicate the lines on which we think still more useful work may be done in future. We must remember that it is much easier to criticise than to avoid error or incompleteness.

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ON THREE HYBRID SILK-MOTHS, HYBRIDISED AND BRED IN NORTH AMERICA.*

By John Watson.

Just at present, when there is so much discussion going on with regard to hybrids and hybridisation of insects both here and in North America, I thought it not out of place to make a few remarks on, and to exhibit, three hybrid moths which I have received from my most esteemed correspondent, Miss Morton. It seems to me, on calling to mind the list of hybrids which have been produced by crossing representatives of the genera *Saturnia*, *Platysamia*, *Antheræa*, and *Actias*, that the New World entomologists are far ahead of those of the Old World in this interesting and valuable branch of scientific research; I say valuable, because I think there is no more certain method of discovering whether an insect is merely a variety of a species or a true allied species, than by, where possible, crossing specimens of the doubtful species; this method would be to pair the supposed variety and species together; if they are two distinct species, and a pairing was obtained and imagos resulted from the hybrid ova; then, even supposing there was not in their progeny a male and female out together to pair again, an examination, either microscopical or otherwise, of the contents of the abdomen of a female would, I fancy, conclusively prove, by the absence or presence of eggs, the bona fides of the doubtful parents to rank as species or varieties. I have examined the bodies of three female hybrids in my collection (by relaxing and emptying the body-contents into 50 per cent. alcohol, macerating and staining in borax-carmine, and mounting for microscopical examination), and in none of these was there anything in the body I could by any stretch of the imagination liken to the egg-tubes or oviducts which are so plentiful in the bodies of female moths, even after they have deposited all their ova. This is to my mind a very important

* Read before the Lancashire & Cheshire Entomological Society, April 10th.

point. If a species and its variety, or two varieties of one species, were paired, fertile progeny would be produced; and if a pair of specimens of this progeny would not pair, or even if two did not emerge at the same time; then again, the examination of the body of a female would disclose ova in the oviducts, proving that this female was one of the progeny of one species, as it was fertile. Of course it is far more difficult to examine and report on a male specimen, the spermatozoa being so very difficult to determine under even advantageous conditions; at least I have found it so, and I can also speak for other fellow-members of the Manchester Microscopical Society. I think, except amongst that grandest order of all the Flora, the Orchidaceæ, in which I have produced seeds even amongst such widely separated plants as *allied genera*, it is quite the rule for hybrids to be unfertile; I only know of one instance of a hybrid moth laying ova; but whether even these *could* produce larvæ, if fertilized, I do not know and very much doubt. Miss Morton wrote to me last autumn to say, in answer to a query of mine as to whether she ever heard or knew of a hybrid moth depositing ova, that she never had a hybrid to lay eggs, but a friend of hers did have one which laid a few. This is, I think, an exception. There is in France, and at one time rather extensively cultivated under the name of the "Ailantine" moth, an insect which was reputed to be a *fertile* hybrid between *Attacus cynthia* and *A. ricini*, and which I have always viewed with a doubtful eye as to its being a true hybrid. Apart from another source, I think it is now conclusively proved that *ricini* is merely the Burmese local polyvoltine or many-brooded variety of the common *cynthia*. My friend Mark L. Sykes, Esq., and myself have had a considerable discussion over a number of specimens he bred from pupæ sent to him as *ricini*. They are certainly more like the figure of *ricini* given in Mr. Wardle's 'Handbook of the Wild Silks of India" than the ordinary *cynthia*, but slightly different from the specimens of *ricini* in my collection; however, I had collected for me in Bengal a large number of *ricini*, which I understand are bred there on *Ricinus* as the Eria or Arrindi moth, and sent here in papers; these differ considerably from either my other Burmese specimens or Wardle's illustration, inasmuch as the pink bar on the primaries is merged into the crescentic moon-spot, whereas in *cynthia* they are separated, the pink bar being nearer the edge of the wings. For the last three years Mr. Sykes has been breeding the progeny of the original specimens on privet, and now at the third generation it is very difficult to tell which is *cynthia* or *ricini*, the pink bar has receded from the edge of the wing and the position of the lunar spot has altered to that of my imported *ricini*, and yet Mr. Sykes's original parents were from the North American naturalised stock of the common *cynthia*, the broods yearly showing the merging into *ricini*; this I think

proves that the *fertile* hybrid is a cross between a species and its *variety*.

That the Saturniidæ offers, on account of the sembling habit of their males, unusual facilities for hybridisation, there is, I think, no doubt; and this, I suppose, is the reason there are more cases of hybridisation in this group, Miss Morton having produced no less than four, and three of these four are accountable for my writing on the subject. Miss Morton's method is as natural as it is ingenious and simple, and briefly speaking is as follows:—A fresh female of the rarer species is tied on the *outside* of a muslin cage, and *inside* the cage are one or two fresh females of the commoner species. This cage is taken to the spot where the common species occurs and hung upon a tree. The males are attracted by those of their species in the cage, and being unable to pair with them, pair with the tied female of the other species. This seems to me to be a very simple method, and far more natural than the forcible pairing of two insects by apposition, which I know is done, especially to produce ova from rare insects.

Two remarkable points I wish here to mention: Miss Morton wrote to me in April or May last, "Is it not strange I have just had imagos" of hybrids "out of 22-months-old cocoons." I had a few of these cocoons sent to me last March, along with some other cocoons, but, owing to that pernicious Washington post office, these did not arrive till May, when all the pupæ had emerged except one hybrid and one *P. ceanothi;* these I have now living and apparently healthy, their lives having been saved to me by their laying over for another year. The hybrid has thus been in pupa 33 months, surely a long time without nourishment.

Another remarkable result of hybridisation in the *Platysamias* is the excessive amount of silk spun by the hybrid larvæ; cocoons in my collection and from which the moths have emerged, average as follows:—

Platysamia-cecropia . . .	12·5 grains.
„ *gloveri* . . .	8 „
„ *ceanothi* . . .	6·5 „
Ceanothi-cecropia, hybrid . .	19·5 „
Gloveri-cecropia „ . .	19 „

Whether this great increase of silk production is common to all hybrid Saturniidæ I do not know, and it would be interesting if others who have series of cocoons of hybrids and their parents, would weigh them and record their weights. The three hybrids I have on exhibition now are—

A. The result of *Actias selene* (female), India, paired with *Actias luna* (male), N. America.

B. *Platysamia gloveri* female, paired *P. cecropia* male.

C. *Platysamia ceanothi* female, paired *P. cecropia* male. Besides these, other hybrids I know of in the Saturniidæ are as follows:—*Platysamia columbia* crossed *P. cecropia; Saturnia carpini* crossed *S. spini* or vice versâ, shown at the Entomological Society of London by the Hon. Walter Rothschild, June, 1892; *Antheræa mylitta* crossed *A. yama-mai* and *A. pernyi* and *A. mylitta*. I was offered ova of this hybridisation about four years ago, I think; but if this was the exact cross I am not quite certain.

Of the life-habits, or descriptions of the larvæ of these hybrids, I can give no particulars beyond an abstract from Miss Morton's letter dated November 3rd, 1892. Referring to *selene-luna* she says:—"The larvæ were very like *luna*, only more richly coloured, and most of them were considerably larger than any *luna* I ever saw; the cocoons were very different from either *luna* or *selene*, pale-coloured and silky, *thinner* even than *luna*, and the hybrids are very beautiful, the males a great deal handsomer than male *luna*, with very pointed primaries (like *selene*), but the eye-spots a bright pink; a few have the pink streaks on the anal angles like *selene*, but most of them are only whitish with the faintest blush only. The females are more like female *luna*, only considerably larger, with the eye-spots all pink instead of yellow." In regard to this *thinner* cocoon, it may be thinner than *luna*, but not having any on hand I cannot say whether they are *heavier* than either parents. Another point and in which the hybrid differs from those of the *Platysamia* group is shown in the same letter as follows:—"I was considerably disappointed in the coming out of the moths in August and September, instead of wintering over as *luna* does with us." I have not yet examined the silk of these hybrids microscopically, so cannot yet say if this will be intermediate between that of their two parents.

The moths are intermediate between their respective parents in colour, shape, and markings, though there is a variation in the specimens I have seen, towards either of their parents. The *selene-luna* do not show in either of my specimens any trace of the small oblique dash of red which runs from the costal nervure on primaries to the ocellus as is seen in *luna* though not in *selene;* nor is there anything like an intermediate amount of the beautiful white down on the bases of the wings found so plentifully on *selene*. The male hybrid leans towards *selene*, and the female towards *luna*. In hybrid B, *gloveri-cecropia*, I unfortunately have not a specimen of *gloveri* to hand to give a minute description of any intermediate variation; the hybrids, however, are slightly paler than *cecropia*, and the white bar between the ocelli and the margin is with only the faintest trace of the red outer edge so noticeable in *cecropia*. These bars in *cecropia* are indented and curved, but in the hybrids are much less indented,

and those on primaries are not nearly so bent as *cecropia*, and on both wings are broader than *cecropia;* outer margin of secondaries of same shade as primaries, not darker as in *cecropia*, the whole insect being slightly below the size of *cecropia*.

Hybrid C. *ceanothi-cecropia*.—This is nearer, to my mind, to *cecropia* than *ceanothi* in size and shape of wings though intermediate in markings, but a lighter colour than either parents. The costa of primaries of *ceanothi* is straight for three-fourths its distance from the base, in the hybrids it is arched all the way as in *cecropia;* the outer magin of the secondaries of *ceanothi* are not rounded as we find in *cecropia*, and in this again the hybrids distinctly take after *cecropia*. The costa of secondaries of *ceanothi* have a dip in them; in *cecropia*, arched; the costa of hybrids, as in their primaries, is arched also. The white bar on the wings of the hybrids, however, conforms much more nearly to *ceanothi*, and the ocellus of both primaries and secondaries is intermediate in shape between their two parents, having the width of *cecropia* and the length of *ceanothi*, in which species, as in the hybrids, the outer point merges into the white bar on the secondaries. The under side of secondaries of *cecropia* has a whitish band commencing at the base, where it is slightly wider, running round the costa and meeting the white band of the outer margin. In *ceanothi* this band is nearly obsolete, but on the costa and a little from the base is a pinkish spot. In the hybrids this spot is dilated into an elliptic or spindle-shaped spot, running to the base of the wing on the one side, and on the other side narrowed out into a mere streak along the costa till it meets marginal band of white, into which it merges.

In conclusion, whilst writing these descriptions, I have thought to make up a list of hybrids occurring in the Bombycidæ, and would like information of any which are known, giving particulars as to which species was used, as male and female parents, sexes of hybrids, and which parent each sex takes after.

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THE WEST INDIAN SPECIES OF *DACTYLOPIUS*.

By T. D. A. Cockerell, F.Z.S., F.E.S.

The genus *Dactylopius*, Signoret, includes the Coccidæ commonly known as mealy-bugs, and consists at present of forty-one known species. Of these, sixteen have been described by Maskell, eleven by Signoret, three each by Bouché and Coquillett, and one each by Linné, Gennadius, Boisduval, Comstock, Douglas, Niedielski, Newstead, and Lucas. A few

other names have been proposed by different authors, which are now put aside as synonyms.

The West Indian species have never yet been studied, although, in Jamaica, at least, they are fairly numerous. I have up to the present time recognised seven, and doubtless others remain to be discovered.

(1.) *Dactylopius virgatus*, n. sp.

♀.—4½ mm. long. Very white mealy brown above, except dark purplish grey subdorsal stripes, which are broadly interrupted centrally. Caudal filaments about 2 mm. long; *i. e.*, about half length of body. No obvious lateral appendages. Segmentation distinct. Beneath whitish, legs pale brown. The caudal filaments are rather slender, but not filiform like those of *D. longifilis*. The lateral appendages seem to be represented by long and very fine hairs, which are obvious in the young, but are lost in the adult. Very young individuals are pale yellow. Femur (of adult) about as long as tibia; tibia about three times as long as tarsus. Antennæ with eight joints, —3 and 8 subequal, or 8 a *little* longer; 2 sensibly shorter than 3; 4 rather longer than 5; 5, 6, and 7 about equal.

♂.—Brown. Antennæ brown; all the joints with long hairs,—3 longest, longer than 1 and 2, decidedly longer than last; 4 same length as 6; 5 a very little shorter than 4; 7 decidedly shorter than 6, and slightly shorter than 5; 8 same length as 7; 9 still shorter, but not quite so short as 1; 10 same length as 5. The second joint, which is about as long as 7 or 8, is conspicuously enlarged, much thicker than the joints following.

On a tree in East Street, Kingston, Jamaica, in enormous numbers. The females, with their cast-off skins, covered the whole under surface of the leaves, which turned yellow and dropped off. The leaves are ovate-acuminate, fleshy, entire; stalks reddish, with some long spines, very glutinous.

In June, other specimens were found on a fruit tree. These, boiled in caustic soda, turned madder colour, and stained the liquid claret colour; but apparently this red staining, or most of it, came not from the Coccids, but from a small fruit they were on. Still, the insects themselves were afterwards seen to be bright red. The eggs are minute, elongate, stained pale pinkish after the soda treatment. In one of the individuals of this lot I noticed a knobbed hair on the tibia.

In addition to the form described above, I have found several kinds of *Dactylopius*, which I was at first disposed to regard as distinct species or subspecies; but, after comparing them with *D. virgatus*, I do not think they can be separated, except as mutations or varieties.

(*a.*) Var. *farinosus*. ♀.—Adult, resembles *virgatus*, but the dorsal bands nearly obsolete; in one example at least they are quite so, the whole dorsal surface being covered by the white powder. Segmentation distinct. The dorsum and sides emit fine hairs, some of them very long, but, as they have no secretion on them, they are inconspicuous. The caudal filaments, about half length of body, or slightly less, are thickly covered with secretion. There are no lateral processes. Length of body, about ⅛th inch. The legs and antennæ are pale brown. The female is active. Antennæ with 3rd and 8th joints longest; then 2. Joints 6 and 7 stouter than 5, and 5 stouter than

4; 4 and 3 of equal stoutness. Joints emitting sparse whorls of hairs. Tibia about as long as femur; tarsus not half length of tibia. Tibia emitting several short stiff hairs. Claw with curved clubbed digitules, longer than claw; no tarsal clubbed hairs seen.

On *Prosopis juliflora*. East Street, Kingston, Jamaica. September, 1892. Common on the ends of the twigs, &c.

(*b*.) Variety. ♀.—Adult, much as in var. *farinosus;* the place of the bands of *virgatus* is indicated by pits or depressions in the secretion, producing two pairs of thoracic and three pairs of abdominal spots or patches on the back, the abdominal patches each emitting a hair. This form is, therefore, intermediate between *farinosus*, in which the dorsal surface is covered with white powder, and *virgatus* proper, in which the secretion is locally absent, so as to give the appearance of bands.

On *Acalypha*, on the leaves. Parade Garden, Kingston, Jamaica.

A specimen measured was $3\frac{1}{2}$ mm. long; with the caudal filaments, 2 mm. long.

(*c*.) Variety. ♀.—Adult, about 4 mm. long, thickly covered with white mealy substance. Caudal filaments thick, nearly as long as body. Lateral filaments obscure, or none. Legs and antennæ brown. Eye very large, its inferior margin notched.

On sweet sop (*Anona*). Kingston, Jamaica.

This is very like var. *farinosus*, but the caudal filaments are longer. It may be worth while to state that in giving the length of the caudal filaments in this species, the length of the longest filament is quoted. I have noticed that the left filament is sometimes shorter than the right.

(*d*.) Var. *humilis*. ♀ (not adult).—About 2 mm. long. Caudal filaments white, rather thick with secretion; less than 1 mm. long. Body pale lavender-grey, with the segmentation distinct; a moderate amount of mealy powder, and no dark dorsal line, but some indication of a light one, due to secretion. Legs and antennæ pale brown. No lateral projections, but a few hairs free from secretion, especially close to the caudal filaments, where they are as long, or nearly as long, as the filaments, and about seven in number on each side. Caudal stylus between the filaments distinct, about quarter length of filament. Eyes black and distinct. Antennæ of 8 joints,—3 longer and more slender than 2, but hardly as long as 8; 4 to 7 subequal, and shorter than 2. First joint with a few long hairs; no very long hairs on eighth. Claws with knobbed digitules, the knobs larger. Tarsus with the usual knobbed hairs, but the knobs almost obsolete. Tibia with a row of stout hairs or bristles on inner side, and a row of finer ones externally. Tibia about twice as long as tarsus; and as long as, or even a little longer than, femur. Later on, more fully grown individuals were observed, nearly 4 mm. long. Very young ones are yellowish.

On *Tribulus cistoides*. East Street, Kingston, Jamaica. July, 1892.

At first I thought this was a distinct species, but now I feel sure it is only a form of *virgatus*. On September 29th, I found undoubted *D. virgatus* in great abundance, young and adults, on *Tribulus cistoides*, in East Street. The adults swarmed on the fruits.

(To be continued.)

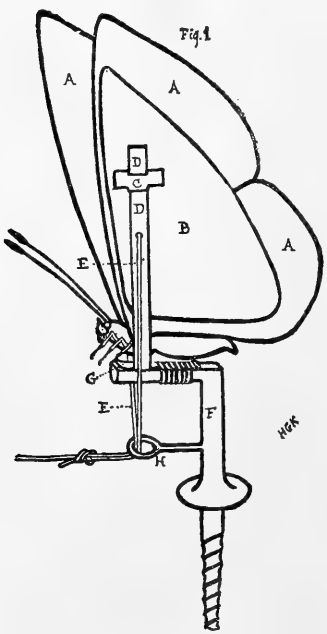
SUGGESTIONS FOR DECOYING BUTTERFLIES.

By H. G. Knaggs, M.D., F.L.S.

(Continued from p. 157).

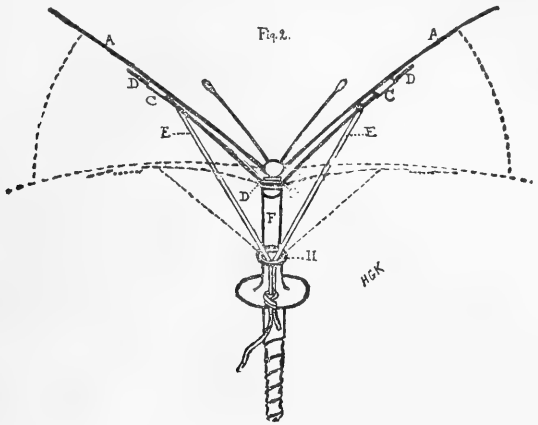
In the contrivances, suggested for snaring butterflies, which follow, doubtless many shortcomings will be found, upon which it is to be hoped your readers will look indulgently. Still if the principle of mechanical decoying should be adopted by collectors, the work here commenced will assuredly be perfected by others. The plan proposed may, at first sight, appear to be a little complicated, but there is really nothing which cannot be overcome, at trifling expense, by a moderate amount of ingenuity—a commodity with which the entomological fraternity are supposed to be well stocked. And now for business. Fig. 1 shows a side view of the apparatus for working the decoy, and gives the position of the insect; but in the completed mechanism the wings would be covered beneath by the card B, Fig. 1, while the thorax and abdomen, being encased in D*a*, Fig. 3, would not be visible from below. Fig. 2 shows the action, *viz.*, the alternate depression and elevation of the wings. Fig. 3 explains how the decoy is made.

Firstly.—File flat the top of the horizontal part of a medium sized "dresser-hook," F, and whip on with "waxed end" three-quarters of an inch of watch-spring, G. Next solder (or whip) on a metal loop, H, about half-way down the brass perpendicular part, and then screw the iron portion into the top of a peg of hard wood, about an inch square at the upper part and tapering downwards, some six inches, to a point, but screw it into one of the corners in such a manner that the rest of the top surface may be available for driving the peg into the ground.



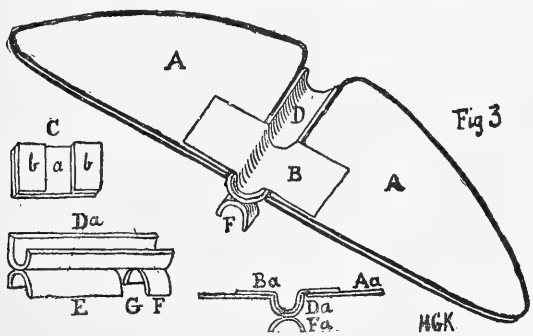
Secondly.—Bend another piece of watch-spring, D, two or three inches long according to the size of the decoy to which it has to be fitted, into the shape indicated in Fig. 2. In doing this no heat must be used, or the temper of the steel will be lost; on the other hand, no sudden or excessive pressure must be applied, or the spring will snap. The best way is to cautiously and patiently work it with the fingers in the direction of the original curve, until the requisite angle is obtained, and then to straighten out the

two arms, giving just a slight curve in the opposite direction towards the extreme tips; the spring may then be perforated for the thread E, as shown in the figure. But as this perforating, though certainly the best and most workman-like job, is difficult



to do even by the aid of heat, another and easier plan will be suggested further on. The spring may now be slipped, at its middle, under the shorter spring, G.

Thirdly.—Cut two pieces of card, A A, Fig. 3, larger than the expanded wings (to be afterwards trimmed off when the latter have been attached), thus affording more protection from damage to the decoy than if the cards had been cut smaller. Next cut out, and bend to the shape indicated, three pieces of card, D*a*, E, and F, and glue them firmly together, as shown in Fig. 3, leaving a space at G, through which the bent spring (D, Figs. 1



and 2) has to pass; then hinge the pieces A A to D by means of a strip of linen or tape B, as shown at A*a*, B*a*, D*a*, in Fig. 3; but this must be so managed that the wing pieces have free movement upwards and downwards.

The slot, C, Fig. 1, through which the spring D should pass loosely, is made in the way shown at C, Fig. 3, *i. e.*, two bits of thick card about an eighth of an inch wide, *b b*, are glued on to a larger piece of card, *a*, about half an inch wide, and when dry the surfaces *b b* are brushed over with glue, and stuck on the card B, Fig. 1 (= the underside of A, Fig. 3), at the point indicated, that is, if the spring be perforated; but if the spring is entire, as mentioned in the alternative and easier plan, then the slot should be so placed that its upper edge is about level with the spot marked as perforated in Fig. 1, in which case it will merely be necessary to slip loops of silk, thread, or fishing hair over the free end of the spring D beyond C. When both sides of the decoy have been thus treated, bring the ends of the threads down through the loop H, taking care that both are exactly of the same length, and connect them with a length (10 or 20 yards) of the finest "water cord," such as used for running fishing tackle, the pulling at which will produce a close imitation of the movements of the living insect. Now comes the delicate operation of separating the wings from the thorax of a specimen of the species required, and glueing the thorax with head and abdomen attached into the groove, D, Fig. 3, and the wings on to A A, Fig. 3, in as nearly the normal position as possible.

It is a question in my mind whether the male or the female should be used to decoy; my inclination is towards the brightest coloured insect, the male, and it is just possible that the flashing in the sun of a decoy, made of steel blue tinsel cut to the shape, might prove effective in the case of *Apatura*. In the event, however, of a living, or recently killed, insect being employed (non-mechanical), the female might probably prove the more enticing, for I cannot even yet quite give up the idea that there are two kinds of attraction, one by scent, the other by sight.

Supposing that anyone should wish to keep a set of decoys, the following would suffice. One prepared dresser-hook and peg, two or three different sized bent springs, and as many species of butterflies ready mounted as decoys as might be considered necessary, and these might be kept in a suitable receptacle. If this reminds one somewhat of those curious collections of impossible flies so inseparable from the noble art of fly fishing, our next consideration is forcibly suggestive of the machinations of the Whitechapel bird-catcher, and consists in a spring net which may be worked from the same distance as the decoy.

(To be continued.)

NOTE ON *HELOTA GEMMATA*, Gorh., AND *HELOTA FULVIVENTRIS*, Kolbe.

By C. Ritsema, Cz.

In a "List of Coleoptera new to the fauna of Japan, with notices of unrecorded Synonyms" (see *ante*, p. 150), Mr. G. Lewis declares *Helota fulviventris*, Kolbe, 1886,* = *Helota gemmata*, Gorh., 1874.† This assertion is, however, incorrect. Both are undoubtedly distinct species.

The female sex of *Helota fulviventris* differs from that of *gemmata*, as is correctly indicated by Mr. Kolbe (*l. c.*), by its apical ventral segment, this being somewhat longer, and having no apical depression. Moreover, the apices of the elytra are rounded in the female of *fulviventris* (see the figure which accompanies Kolbe's description); in that of *gemmata*, however, they are acuminate. Finally, the sides of the prothorax in *fulviventris* are more distinctly crenulate, and the striæ on the inner half of the elytra are more irregularly continued, the 2nd and 3rd, as well as the 4th and 5th striæ, being here and there coalescent, dividing their interstices into detached polished portions, thus forming a sort of chain; the space between these two chains is irregularly covered with strong punctures.

In the male sex the two species are easily distinguished by the shape of the apical portion of the anterior tibiæ; in *gemmata* the inner margin of the under surface is thrown up so as to form a compressed keel, which is not the case in the male of *fulviventris*.

Synopsis of the three Japanese species of *Helota*:—

A. Pronotum rugose, with raised, nearly impunctate, patches. Upper surface dark bronze. Larger species.
   a. 3rd and 5th elytral interstices continuous, here and there with a large puncture. ♂. Anterior tibiæ with a compressed keel at the end of the inner margin of the under surface. ♀. Apices of elytra acuminate; last ventral segment with a depression at the apex. - - - - - - - - - - *gemmata*.
   b. 3rd and 5th elytral interstices divided by the often coalescing bordering striæ into detached ovate portions. ♂. Anterior tibiæ without a compressed keel at the end of the inner margin of the under surface. ♀. Apices of elytra rounded; last ventral segment without depression at the apex. - - - - *fulviventris*.
B. Pronotum more finely and evenly punctured, without raised patches. Upper surface bronze-green. Smaller species. - *cereopunctata*.

Helota gemmata, Gorh., and *cereopunctata*, Lewis, are known from Japan only; *fulviventris*, Kolbe, moreover, from Korea and Amur (Berlin Museum).

Leyden (Holland), Rapenburg 94. May, 1893.

* Arch. f. Naturgesch. 1886, p. 182; pl. xi., fig. 25.
† Trans. Ent. Soc. London, 1874, p. 448.

LIFE-HISTORY OF *COLIAS EDUSA*.

By F. W. Frohawk, F.E.S.

(Concluded from Entom. xxv. p. 202.)

Having previously published the descriptions of the egg and young larva immediately after emergence from the ovum, I will now proceed to describe *C. edusa* through all the remaining stages.

When eight days old, June 19th, 1892, the larva measured $\frac{1}{9}$ of an inch in length and was of a very pale creamy yellow-green colour. On that day it crawled to another leaflet of clover and spun a little layer of silk on the under surface and thereto fixed itself for moulting for the first time, which took place on the 21st.

The colour after first moult is of a dull smoky or grey-green, the head dusky brown, both head and body being clothed with very short fine hair or pubescence, only visible by the aid of a lens, which also brings into view indications of a lateral whitish stripe and a smoky leaden hue prevailing over the under surface. Its first meal after moulting consists of the cast skin. In feeding on the leaves it now perforates them, whereas, previous to moulting, it fed only on the cuticle, leaving the internal fibres.

On June 29th several larvæ were in their second stage, having only moulted once, but the majority were in the third stage and were almost ready for the third moult.

Before second moult the larva measures $\frac{1}{6}$ of an inch; colour pale yellowish grey-green; head and body minutely sprinkled with black dots, each emitting a tiny white hair; the segmental divisions are clearly discernible, and each segment is wrinkled transversely; the ground colour of the head is brown; the anal segment is slightly darker than the rest of the body. It rests in a perfectly straight position along the midrib of the leaflet with the head towards the base. After second moult and shortly before the third it is $\frac{3}{8}$ of an inch long; the body is nearly cylindical; the colour is of a dull green approaching a smoky or grey-green, produced by the numerous black warts and whitish hairs, which also gives the surface a velvety texture, increased in roughness by the deep transverse wrinkles; a whitish lateral line runs the entire length of the body; the head is pale ochreous-green, sprinkled with black warts and white hairs similar to the body; the under surface is dull green. Just before moulting the colouring becomes paler and assumes a light bluish-green tint.

One larva which hatched on 11th June, moulted the third time on the morning of July 1st, and its fourth moult occurred on the 4th of that month, feeding for only two days, as it fixed for the fourth moult on the morning of the 3rd and changed its skin the following day.

After third moult, when twenty days old, it measures $\frac{5}{8}$ of an inch in length while resting; the colour is now light green

tinged with bluish, resembling very closely the colour of the upper surface of the clover leaf; the white spiracular line is conspicuous and encloses the spiracles and a yellow spot on each segment. The previous description answers precisely to this stage, excepting the above remarks. It rests with its anterior segments slightly raised in a gentle curve. It has the power of ejecting its excrement to some distance as if by means of a spring. It feeds during the day in sunshine or shade, but prefers the former, and grows rapidly.

After fourth and last moult.—When full grown, on July 10th, twenty-nine days old, it measures $1\frac{5}{16}$ of an inch long, and is almost cylindrical but slightly attenuated at either end; it is moderately stout, but well proportioned; the segments are clearly defined and transversely wrinkled; the entire surface, including the head, legs and claspers, is profusely sprinkled with extremely minute black warts, each emitting a very fine and short white hair, giving the whole surface a rough and somewhat velvety appearance; it is entirely of a clover-green colour, but varying in depth, being darkest on the dorsal surface and palest on the ventral area, where it approaches a bluish-whitish-green; a very beautiful and conspicuous spiracular stripe adorns the side, which is composed of yellow and bright orange-vermilion streaks alternating, the yellow occupying the anterior half, the red the posterior half of each segment; the spiracles are white and situated immediately in front of the red, the upper edge of the stripe is outlined with white, and directly below the red mark is an intensely rich black spot on each segment, from the third to tenth inclusive; the first two and last two segments are without the black spot.

This larva commenced crawling restlessly about on the following day, the 11th, and early on the morning of the 12th it fixed itself for pupating upon the gauze covering which I had recently placed over the plants to prevent the full-grown larvæ from escaping; at noon the next day it had pupated.

The pupa measures $\frac{7}{8}$ of an inch in length and $\frac{1}{4}$ of an inch across its greatest width. Lateral view:—The head terminates in a point slightly upturned, with the dorsal surface compressed; the thorax is swollen and somewhat rounded and very slightly keeled; the body is nearly cylindrical and tapering to the anal segment, which is rather elongated and furnished with hooks; the wing is dilated along the inner margin and considerably swollen about the middle of the costal area.

Dorsal view:—It is broadest across the thorax at the base of the wings; the head is sharply angular and the body gradually attenuated. The colour of the head is dark olive-green above, sharply defined laterally by light greenish yellow and clear green underneath; the whole of the dorsal surface is a clear light green, with a medio-dorsal darker green longitudinal line, and

shading into darker green down the side to the inner margin of the wing; the wing is also a clear green, darkening at the base and of the same colour as the antennæ and legs; the inner margin is dark green and sharply defined by an inner sub-marginal, pale greenish yellow stripe, which blends into the darker colouring of the wing; this light stripe extends down the side of the abdomen, in which are placed the whitish spiracles. There are from three to four small black dots, forming a sub-spiracular series, one on each segment, and below a dark purplish-brown band extending from the wing along the abdomen, which is broken up into four blotches by the segmental divisions; the last one is generally very pale and the smallest; at the end of the discoidal cell is a small black dot, a sub-marginal series of six smaller black dots situated between the nervules, and a few very minute black specks on the thorax. Such is the description when eleven days old. It is attached by the anal hooks to a pad of silk spun upon any suitable object the larva selects for the purpose, and also by a silken belt round the middle. The pupal state occupies about eighteen days.

I had the opportunity of observing a number in the act of pupating, the process generally occupying about twenty minutes, from the splitting of the larval skin down the thorax until the last writhings of the pupa to firmly anchor the hooks into the silk; the actual casting of the skin is accomplished in a few minutes. The entire transformation of *edusa* from larva to pupa is precisely similar to that of *Carterocephalus palæmon*, which I recorded Entom. xxv. p. 255.

The same individual served throughout for the above history. The egg stage occupies about six days; the larval stage about thirty days; and the pupal about eighteen days; such being the average periods for the metamorphoses of the summer emergence.

From the following notes, relating to autumnal-reared specimens, it will be seen that the duration of time embraced by the different stages varies considerably, and is wholly influenced by the conditions of temperature to which they are subjected.

A female captured August 20th, 1892, deposited a few ova the next day; many more deposited on the 24th; several more on the 26th; and she died on the 27th. The first larva hatched out on the 27th; many hatched September 1st. The individual hatched on the 27th began spinning a layer of silk along the midrib of a clover leaflet late on the afternoon of September 1st, and thereon fixed itself that night, preparatory for its first moult, which took place the following day, the slough comprising its first meal.

Second moult on 13th September, again feeding on its cast skin.

Third moult, early morning, 20th September.

Fourth and last moult, 26th September.

Spun up for pupating, 13th October.

A male emerged 16th November, followed by two other males the same day; others emerging on the 21st and 26th, and the last, a female, on the 8th December.

Five females captured 5th September, near Guildford; large specimens. Confined all five on growing plants of clover the next day. The first few ova were deposited on the 13th and the last on the 19th; about 200 in all were deposited by the five. The first lot of ova from each female commenced hatching on the 23rd September, and by the middle of October 170 larvæ were doing well, when a cold, sunless week with frost set in and proved fatal to all. None of them exhibited any intention of hybernating, but all the *C. hyale* larvæ I had feeding at the same time did enter into hybernation. So far as my experience goes with *C. edusa* I am led to believe that it does not hybernate as a larva.

Balham, S.W., February, 1893.

A CATALOGUE OF THE LEPIDOPTERA OF IRELAND.

By W. F. de Vismes Kane, M.A., M.R.I.A., F.E.S.

(Continued from p. 159.)

Var. *scotica*.—I have adopted this name because I find it has crept into use in catalogues for a Scottish variety, hitherto undescribed. Mr. Robson, it seems, was the first to use it, under the impression that Mr. Birchall had employed it for some Scottish form attempted to be represented in the unsatisfactory figure accompanying that of his var. *hibernica*. It may, therefore, be convenient to attach it definitely to the very distinct variety taken in Aberdeenshire, in which the black ground is intense and extremely predominant, filling the basal area of all the wings up to the fulvous discoidal patch in the fore wing, and the pale central series of the hind wing; the pale discoidal spot of which, however, is usually retained, and sometimes traces of fulvous near the costa. In the outer area of the wings the black invades the coloured patches, obliterating some and reducing the size of the rest. The straw-coloured patches are of a duller tone than those of the preceding variety. The fulvous submarginal band of the fore wing is suffused centrally with yellowish, but that of the hind wing usually retains its normal colour and size. In Mr. Adkin's series, from Aberdeen, there is a male with the straw-coloured patches very large and bright. Expanse: 1 in. 5 lines —1 in. 6 lines ♂; 1 in. 8 lines—1 in. 9 lines ♀. Localities: Cromlyn, and Killynon (*Miss R.*), Co. Westmeath; also at Moycullen, Co. Galway, and Toberdaly, King's Co. Irish examples

usually pass muster as the var. *hibernica*. Mr. Adkin has a characteristic example from Lancashire, along with others of var. *præclara* approximating this form in the dull coloration of the straw-coloured series.

Ab. *hibernica*, Birchall.—"♂. Wings above black. Fore wings ornamented with fulvous patches arranged in a series near the hind margin, and with a number of others in the middle white or whitish straw-coloured, joined at the inner margin, forming a blotch. The hind wings with a broad fulvous fascia along the hind margin (the fulvous marks on the narrow black outer margin of examples of the type being indistinct or obsolete in the variety); beneath pale fulvous, with similar but indistinct pattern. ♀. Fore wings fulvous, marked with a double row of white or pale straw-coloured patches, sometimes confluent and forming fasciæ, with the outer band carried on across the hind wings. Hind wings as in typical forms, but ornamented neither with pale straw-coloured nor fulvous patches. Expanse of wings: ♂, 1 in. 4 lines—1 in. 8 lines; ♀, 2 in.—2 in. 3 lines. Larva not distinguishable from that of the English form of *Artemis*. Habitat: the central bogs of Ireland."* The selected specimens from which the above description was taken were sent to Mr. Birchall by Mrs. Battersby, Cromlyn, Rathowen, Westmeath. It has been commonly supposed, owing to a misconception of his prefatory remarks, that Mr. Birchall's var. *hibernica* is the ordinary Irish form, but this is far from being the case. Only a small proportion of the Cromlyn insects (var. *scotica*) present the extreme characters above given. I have, by the kindness of the captress, eight specimens, of which only one nearly accords with the definition, falling short however in size. I have also seen Mrs. Battersby's collection, and though all are more or less distinguished by the predominance of the black ground and the pallor of the straw-coloured markings, yet they vary very considerably *inter se*, many being simply dark examples of the var. *scotica*, and none approach the size mentioned above, the largest female measuring 1 in. 10½ lines. I have not seen the true ab. *hibernica* from any other locality. It seems necessary here to refer to Mr. Birchall's prefatory remarks, in which he lays great stress on the distinction between the Irish and Scotch forms of *M. aurinia*, the latter corresponding, he considers, to the var. *merope* of Duponchel. I am reluctantly compelled to differ wholly from my late friend's conclusion, and can only suppose that he was not well acquainted with the alpine variety in question. I much regret that the publication of these carelessly written comments on this remarkably aberrant form has led to so much confusion and misapprehension, Mr. Dale and other writers having been led astray in their references to the Scottish

* Translated from the original Latin description given in Ent. M. M. vol. x.

and Irish forms of *M. aurinia* in regard to size and characteristics. I am under the impression that Mr. Birchall's experience of the Irish insect was but limited, as the Wicklow locality given in his list was supplied by Mr. Bristow, and the Westmeath specimens were taken by Mrs. Battersby.

Other aberrations:—*α*. The double series of straw-coloured blotches on the costal half of the central band of fore wing occasionally become confluent (which is one of the characters given of the ab. *hibernica*), forming a series of parallel streaks, and sometimes also the two quadrate ones on the central portion of the inner margin are fused. This occurs in specimens of most of the varieties. Mr. Tutt has many from Carlisle, and some from Scotland; also Lancashire examples; and I have many from Irish localities. *β*. On the hind wing a similar character occasionally, but rarely, appears; the straw-coloured patches becoming linear. Tramore and Toberdaly.

Melitæa athalia, *Rott.*—"Killarney, abundant" (*B.*).

Vanessa urticæ, *L.*—Everywhere common.

Vanessa io, *L.*—Common in many parts of the South. I have seen it plentiful at Glengarriff, Killarney, near Cork, on the Saltee Island off the Wexford coast, New Ross (*B.-H.*), and elsewhere in Munster. In Connaught also, in the Co. Galway, Moycullen, &c. Occasionally in the Co. Wicklow (Ashford); rarely in Co. Dublin, as at Killiney and Howth; but of late years it has not been seen. Occasional specimens have been noticed in Ulster, as at Knockbreda, one (*Bw.*); Lisburn, one (*J. Stears*); one also at Derry and at Greencastle (*W. E. H.*). Rare at Drumreaske, Co. Monaghan, at Cromlyn (*Mrs. B.*) and Killynon (*Miss R.*), Co. Westmeath; and Enniskillen. I observed this species flying on the barren shore of Bere Island, at the mouth of Bantry Bay.

Vanessa antiopa, *L.*—I have a specimen much worn, taken July 21st, 1865, by the late W. G. Battersby, M.D., near Caragh L., Co. Kerry. One is in the Rev. James Bristow's cabinet, taken near Belfast (Ent. viii. 220). One was seen, many years ago, near Trillick, Co. Tyrone, by my friend the Rev. S. L. Brakey, whose entomological training renders the record reliable, settled on the roadside, but not captured, it being Sunday. I have no recent records.

Vanessa atalanta, *L.*—In Leinster and Munster usually very common, as well as in many parts of Connaught. In Ulster, however, its appearance is capricious, depending apparently on climatic variations. At Drumreaske, Co. Monaghan, I have in warm seasons seen it flying in great numbers at the end of summer; also near Derry (*W. E. H.*); but usually it cannot be said to be plentiful in the North. Mr. Watts has seen

it abundant on Collin Mt., Antrim. A very fine variety was taken by Mrs. Battersby, of Cromlyn, Westmeath, of abnormal pattern so closely resembling the one from Jersey, lately figured (Entom. xxvi. 27) by Mr. South, that it raises most interesting conjectures in relation to the origin of such similar variations arising sporadically in localities so widely separated in a species noted for the stability of its characters. Similar causes produce similar effects. And if we refer to a former volume (Pl. II. of vol. xi.), we find that the Westmeath aberration partakes also, in addition, of some of the characters of that figured from the neighbourhood of Birmingham, namely, in the trace on the costa of the obsolete band of the fore wing, and more especially on the under side of fore wing in possessing the identical bluish patch near the apex, and in the width of the suffusion of the red band (yellowish in the Birmingham example). It thus combines all the remarkable features of both (except the reversion to a yellowish tint in the red band of the latter), and differs from them chiefly by the suppression of the ocelli, and in having a suffused submarginal grey band running along all margins.

Vanessa cardui, *L.*—The same remarks apply to this species, but perhaps it is even more fickle in occurrence, especially in Ulster. Mr. Campbell, however, has seen specimens of it every season near Derry. In the southern half of Ireland and in Galway it is occasionally very plentiful, at Killarney, Cork, Wexford, and Dublin. Mr. Birchall notes that it is often to be found on the summits of mountains. Its wandering propensities are well known, and I have seen it frequently above the snow-line of the Swiss Alps. It seems pretty certain that our indigenous race of both *atalanta* and *cardui* are occasionally reinforced by migrations. In Spain, whose arid plateaux are often covered with dense growths of thistle, this species swarms locally; and it is probable that from time to time, through defoliation, migrations to new pastures become a necessity. Hence, probably, vast flights of the insect occur wherever similar circumstances arise, and the habit has been derived.

[*Apatura iris* has not been, as yet, certainly taken in Ireland; but a few specimens are said to have been taken at Rathmullen, Co. Donegal, an unlikely occurrence so far north, by Mr. John Cowie. Also I heard a rumour of its existence at Charleville Forest, Tullamore. If the climate is sufficiently favourable for its survival, the vast oak forests, which anciently covered great tracts of Ireland, may well have harboured this fine species.]

(To be continued.)

A FORTNIGHT'S COLLECTING AT BUDAPEST.

By W. E. Nicholson.

In the early part of last summer, in company with my friend Mr. F. C. Lemann, I spent a fortnight at Budapest, during which time we did a little collecting among the butterflies of the neighbourhood; and although our results were not remarkable from a collecting point of view, yet I have thought that a few notes on the district might possibly be of some interest.

After a very pleasant journey down the Danube from Passau on the Austrian frontier, steaming under many a ruined castle, as on the Rhine, still crowning some precipitous rock, we arrived in Vienna on the 5th June, where we spent a couple of days in seeing the city. Among other places we visited the New Natural History Museum on the Ringstrasse, where we met with great courtesy from Herr Rogenhofer, the curator of the entomological section, who showed us over the collections. Especially noteworthy were the number of well-preserved life-histories of lepidopterous insects, the larvæ in various stages and the pupæ being mounted on dried specimens of the food-plant.

We left Vienna on the afternoon of the 7th June, arriving at Budapest the same evening, where I remained until the 21st, Mr. Lemann staying for a few days longer. The day after our arrival we spent in seeing the sights of the city, which was in full gala on account of the festivities in connection with the Emperor's Jubilee. We also called on Herr Pavel, an entomologist attached to the Museum, to whom Herr Rogenhofer had given us an introduction, and who afterwards proved very useful in guiding us to the good localities.

The neighbourhood of Budapest, at first sight, does not look a very promising field for a collector. The country on the left bank of the Danube, where the more modern town of Pest is built, is exceedingly flat, the great central plain of Hungary, so productive of corn, stretching away as far as the eye can reach to the north and east, the Carpathians being only visible on the horizon on a very clear day, half hidden in a blue haze of distance. On the right bank of the river, however, the country is more varied. The old town of Buda, or Ofen as it is called by the Germans, is principally built against a ridge of hill which is crowned by the king's palace; while still further to the west is a series of low mountains, beautifully wooded in most places. It was consequently to this side of the river that our collecting expeditions were principally directed.

The climate of Budapest, as the papers have recently testified, is of the extreme Continental type, and the temperature, even in the summer, is liable to considerable variation. When we first arrived we found it too cold to be pleasant, when waiting in the

streets to see the Emperor; while a few days later it was so intensely hot that vigorous collecting was impracticable, not to say dangerous. This of course is not without its effect upon the vegetation, and the principal thing that strikes a stranger is the absence of the various evergreens, that do so well in our country, from the public gardens and squares.

Herr von Harmuzaki, writing on the Lepidoptera of Czernowitz in Bucovina, in an interesting paper contributed to the 'Entomologische Nachrichten' for October and November, 1892, and which Mr. Lemann has brought to my notice, draws attention to the fact that the difference between the fauna of that district and that of Western Europe is apparent not so much in the occurrence of species which are unknown in the west, as in the very different degrees of abundance in which species inhabiting both districts occur in each; those which are abundant there occurring but rarely in the west, and *vice versâ*. The same remark applies somewhat to the fauna near Budapest. For instance, we found *Thecla pruni*, *T. acaciæ*, *Lycæna iolas*, and *Argynnis hecate*, all of which are more or less local in Western Europe, in considerable abundance and not confined to isolated spots. On the other hand, *Colias edusa*, so abundant last year in England, and *C. hyale*, were decidedly scarce, although perhaps we were too early for the later broods.

Our best localities for collecting were the Blocksberg; a hill to the south of Buda, surmounted by a fortress; a wood near the village of Promontor; and a mountain known as the Schwabenberg,—all on the right bank of the Danube.

The Blocksberg is a roundish mass of rock, covered with a scrubby vegetation on its southern and western slopes, where the bladder senna, *Colutea arborescens*, and the straggling *Lycium barbarum* grow freely. On the sides of the hills rising immediately behind the Blocksberg, one of which is known as the Adlersberg, were several vineyards, which had been devastated by the *Phylloxera* and left uncultivated for years, but which were very good for collecting. These deserted vineyards, a sight only too common in Hungary, were often very picturesque in their decay, the dead vine-stocks being in many cases covered with luxuriant wreaths of the brilliant *Orobus tuberosus*, while the handsome *Linosyris vulgaris* and the more delicate *Delphinium ajacis* were not behind in hiding the ruin. The food-plant of *Thaïs polyxena*, *Aristolochia clematitis*, also grew in considerable abundance in these vineyards.

The village of Promontor—or, in the Magyar, Budafok—is situate about five or six miles below Budapest, and is best reached by steamer, a very good boat leaving the quay at Pest at nine a.m. We found a wood on some rising ground at the back of the village the best locality in the neighbourhood for the various species of *Thecla*, no less than six species occurring

there. An amusing episode occurred on the occasion of our first visit there with Herr Pavel. A specimen of *Sirex gigas* having caused considerable consternation to the passengers on the steamer, who were under the impression that it was some exaggerated species of hornet, aroused the attention of Herr Pavel, who quieted the alarm by seizing the harmless sawfly and transferring it to his chloroform-bottle, greatly to the satisfaction of the other passengers.

The Schwabenberg locality is about 1500 feet above Budapest, and can be reached by a cog-wheeled railway from Buda. This was the most picturesque spot that we visited for collecting, the view from the higher ground being magnificent. The broad meadows, fringed with wood, which sloped away gradually from the summit towards the Wolfsthal on the east, were a favourite resort of *Argynnis hecate*, together with some of the larger species of *Argynnis*, among which the handsome *A. pandora* was said to occur later on.

(To be continued.)

NOTES ON THE SYNONYMY OF NOCTUID MOTHS.

By Arthur G. Butler, F.L.S., F.Z.S., &c.

(Continued from p. 125.)

EREBIDÆ.

Letis, *Hübn.*

Letis alauda.

Letis alauda, Guenée, Noct. iii. p. 154, n. 1543 (1852).
L. scops, Guenée, *l. c.*, p. 155, n. 1544 (1852).
L. trailii, Butler, Trans. Ent. Soc. p. 49, n. 82 (1879).

Brazil, Amazons. In Coll. B. M.

Letis hercyna.

Phalæna hercyna, Drury, Ill. Eur. Ent. ii. p. 41, pl. 24, figs. 1, 2 (1773).
Letis buteo, Guenée, Noct. iii. p. 152, n. 1540 (1852).
L. xylia, Guenée, *l. c.*, p. 153, n. 1541 (1852).
Syrnia letiformis, Guenée, *l. c.*, p. 158, n. 1549 (1852).
Letis vittifera, Walker, Lep. Het. xiv. p. 1273, n. 23 (1857).
L. integra, Walker, *l. c.*, n. 24 (1857).

Jamaica, Venezuela, Trinidad, Demerara. In Coll. B. M.

This species is extremely variable on the upper surface, but the under surface of the wings varies very little.

Letis occidua.

Phalæna occidua, Linneus, Syst. Nat. p. 812, n. 14.
P. marmorides, Cramer, Pap. Exot. i. p. 25, pl. xvi. figs. E, F (1779).
P. corisandra, Cramer, *l. c.*, iv. p. 189, pl. cccIxxxiv. figs. A, B (1782).
♂, ♀. Amazons. In Coll. B. M.

Letis magna.

Phalæna magna, Gmelin, Syst. Nat. p. 2544, n. 1448 (1789).
Letis fusa, Guenée, Noct. iii. p. 151, n. 1537 (1852).
L. aptissima, Walker, Lep. Het. xiv. p. 1272, n. 21 (1857).
L. abrupta, Walker, *l. c.*, n. 22 (1857).
Trinidad, Venezuela, Amazons. In Coll. B. M.

This species is nearly allied to the following, which, however, is less grey in colouring, and differs somewhat in the pattern of the under surface.

Letis mycerina.

♀ *Phalæna mycerina*, Cramer, Pap. Exot. ii. p. 115, pl. clxxii. fig. B.
Letis nycteis, Guenée, Noct. iii. p. 150, n. 1536 (1852).
L. atricolor, Guenée, *l. c.*, p. 151, n. 1538 (1852).
Pará and St. Domingo. In Coll. B. M.

Walker wrongly identified Guenée's species, the true *L. atricolor* being evidently Walker's *L. nycteis*, plus one or two specimens inseparable from his *L. mycerina*. The female figured by Cramer has the upper surface of the var. *atricolor*, and the under surface of Walker's *L. nycteis*, ♀. The *L. atricolor* of Guenée represents the darkest and most uniform type of the species; and *L. nycteis* the form with the costal half and external border of the primaries paler, or (as Guenée expresses it) "ailes d'un brun-fauve," "ligne coudée . . . suivie d'une large bande d'un brun foncé que borde la subterminale"; or possibly his specimens were intermediate between Walker's *L. atricolor* and his own.

Erebus, *Latr.*

Erebus odoratus.

Phalæna odorata, Linneus, Syst. Nat. 10th ed. p. 505, n. 43 (1757).
P. odora (part), Linneus, Mus. Lud. Ulr. p. 374, n. 9 (1764).
Jamaica. In Coll. B. M.

In his original diagnosis, Linneus named the insect *P. odorata*, and quoted Sloan's Jamaica only for a figure of his species. The Jamaica form, therefore, characterized by the bright purple shot of its upper surface and the red legs below, becomes typical *Erebus odoratus;* and the form described in full in the Museum

Ludovicæ Ulricæ, and characterized by the words "Alæ *supra* omnes simul griseæ, fusco-nebulosæ," represents the common American type, figured by Cramer (Pap. Exot. ii. pl. clxix. A, B), as *Phalæna odora* and (pl. clxx. A, B) as *P. agarista;* the latter name will stand.

RAMPHIA, *Guen.*

Ramphia albizona.

♀ *Noctua* (*Erebus*) *albizona*, Latreille in Humb. et Bonpl. Rev. ii. p. 136, n. 160, pl. 43, figs. 5, 6.
♂ Var. *Ramphia evinga*, Guenée, Noct. iii. p. 143, n. 1527.
Brujas basicincta, Walker, Lep. Het. xiv. p. 1251, n. 3.
♀ *Ramphia amarygma*, Guenée, Noct. iii. p. 144, n. 1529.
Theresopolis, Pará, Venezuela, Yucatan. In Coll. B. M.

TAVIA, *Walk.*

Tavia nycterina.

Polydesma nycterina, Boisduval, Faune Ent. de Madag. p. 109, n. 2, pl. 13, fig. 6.
Tavia instruens, Walker, Lep. Het. xiv. p. 1275, n. 1 (1857).
Madagascar and Congo. In Coll. B. M.

M. Guenée must have wrongly identified Boisduval's species, or he could never have allowed this species to remain in *Polydesma;* the enormous development of the third joint of the palpi and the form of the primaries at once distinguish it from all the Polydesmidæ.

SYPNA, *Guen.*

This genus is closely allied to the preceding.

Sypna rubrifascia.

Sypna rubrifascia, Moore, Proc. Zool. Soc. 1883, p. 24.
S. fraterna, Moore, *l. c.*, p. 25.
Sikkim. Type in Coll. B. M.

(To be continued.)

CAPTURES AND FIELD REPORTS.

SPRING LEPIDOPTERA:—

Cambridgeshire.—I captured a nice specimen of *Euchelia jacobææ* on the wing, near Cambridge, on the 16th April; and my brother took another on the 23rd. I took *Demas coryli* from a beech trunk on the 25th; and also *Lithosia aureola*. *Arctia menthastri* was out still earlier; I found a freshly-emerged specimen on the 14th.—MAURICE WHITE; Jesus College, Cambridge, April 26, 1893.

Carmarthenshire.—The following notes, taken during March and April in this district, may be of value for comparison with others. The weather throughout has been so exceptionally fine, and also warm at times, that of course the season must be considered an early one for insects. During

March circumstances prevented my working the sallows, so that I could not properly observe the Tæniocampæ. Sugaring for them proved a complete failure in a garden surrounded by open fields, and often found productive in the summer months. The following are the species seen, and dates of their appearance:—March 8th, *Tæniocampa gothica*, *Anticlea badiata* (at blossoms of sallow branches placed in garden), *Vanessa urticæ*; 10th, *Xylocampa areola*; 13th, *Cerastis spadicea* (at sallow); 15th, *Anisopteryx æscularia*; 21st, *Selenia illunaria*; 23rd, *Hybernia marginaria*; 24th, *Tæniocampa stabilis* (one specimen at sugar); 30th, *Cidaria suffumata*. From the 13th to the end of the month the nights were generally bright, clear and frosty. April 1st, *T. stabilis*; 2nd, *Pieris rapæ*; 4th, *Hybernia marginaria*, *Vanessa urticæ* (commonly); 9th, *Euchloë cardamines* (male and female); 13th, *Anisopteryx æscularia* and *Anticlea badiata*; 14th, *Pararge ægeria*, *Anticlea derivata*, *Tæniocampa populeti* (one specimen at rest), *Dicranura vinula* (male), *Pieris napi*; 17th, *Eupithecia pumilata*; 18th, *Pieris brassicæ*; 20th, *Pararge megæra*, *Rumia luteolata* (*cratægata*), *Euchelia jacobææ*; 21st, *Hemerophila abruptaria*; 22nd, *Gonoptera libatrix* (at sugar), *Vanessa io*, *Coremia designata*, *Eupithecia coronata*, *Eurrhypara urticata*, *Euchloë cardamines* (very abundant at this time); 29th, *Spilosoma mendica* (female, flying in sunshine), *Acidalia remutaria*. From a relative in Pembrokeshire I hear *Lycæna argiolus* was seen on Easter Monday; *Argynnis euphrosyne* the following week; *Nisoniades tages* and *Syrichthus malvæ* were common on April 22nd.—T. B. Jefferys; Langharne, Carmarthenshire, May 4. 1893.

Chester and North Wales.—A most extraordinary, early season. A fine, dry March, and a spell of fifteen warm, rainless days in April; a couple of "dropping" days on the 16th and 17th, followed by dry, and positively hot, weather up to date. The sallow catkins were almost over before the Tæniocampæ appeared. I saw only one representative of the family (*T. gothica*) on some catkins in the neighbourhood, late ones, March 23rd. On visiting these sallows again, April 5th, I found them entirely out of bloom; and so ended my sallow season for 1893. Released from catkin attractions, the early moths, I suppose, had time to investigate the mysteries of gas-lamps. At any rate, I took Tæniocampæ, for the first time in many years, at the Chester lamps; but very sparingly. On March 21st, I secured a *T. gothica*; April 7th, a reddish form of *T. instabilis*, and a typical specimen on the 18th; April 19th, one *T. stabilis*; on and about the 19th, I got from the lamps three examples of a moth I have never before taken in the district, *T. populeti*. Mr. A. O. Walker records it in his list for the "Wirral, *scarce*, but generally distributed." Such is my season's record for the Tæniocampæ—all told. *Diurnea fagella*, *Hybernia marginaria* (*progemmaria*), and *Anticlea badiata* replaced *H. defoliaria* at the lamps about the middle of February, and were joined at the end of the month by *Anisopteryx æscularia*. On March 21st and April 13th, I had the good fortune to take a specimen of the dark smoky unicolorous variety (*fuscata*) of *H. marginaria*. A remarkable, median variety of this species I bred, February 19th, from Delamere Forest larvæ. On the upper wings in this specimen the area between the bent transverse line and the outer margin is filled up with the smoky colour; otherwise, the insect, with the exception of the lower wings being a little darker, is a typical one. On April 18th, two small specimens, but very beautiful and with dark markings, of *Melanippe fluctuata*; two *Eupitheciæ*, which I have not yet determined, as they are on the setting-board; and another species I have

never taken before in the district, *Hemerophila abruptaria*. Of this insect, Mr. A. O. Walker writes:—"Upton; Tranmere; Rock Ferry; Ness; scarce. Chester (*Manning*)." On April 20th, I took a *Selenia bilunaria* (*illunaria*); but I had seen the species a week ago. Such are my gas-lamp notes; and they close, for the present, with the 21st, when a crescent moon frightened away all the moths, except a roving Geometer, which escaped capture, and a dilapidated *D. fagella*. Butterflies have been early, and in promising numbers. In North Wales (Denbighshire), April 3rd, I saw my first, a fine female *Vanessa io;* of course it was not disturbed. On April 6th, a friend in Montgomeryshire sent me four living (hybernated) *V. c-album* from Welshpool, two males and two females; but I failed to get eggs. On April 10th, I saw my first white butterfly, a male *Pieris rapæ*. On the 15th, when I saw the first swallow, and with the lilacs and apple trees all in bloom, I came across a freshly-emerged male *P. napi*. Other local entomologists report specimens of *P. rapæ*, seen in the district on April 3rd; and *V. urticæ* as early as March 27th. On April 17th, a living specimen of *Caradrina quadripunctata* (*cubicularis*) was sent me by Mr. J. Lyon Denson, of Chester. To-day, April 22nd, we had *P. brassicæ* (males) flying about in the Chester streets. An expedition this afternoon for two or three miles into Sealand, just beyond the city, was enlivened by the martial strains of the first corncrake. The following butterflies were either captured or distinctly seen:—*P. napi*, plentiful, all males, netted six; of these six, two had the black spot on the upper wings very distinctly marked, two had it indistinctly, and the remaining couple were without it. Several *P. brassicæ* were seen, all males. *P. rapæ*, a few observed; no females. *Euchloë cardamines*, one splendid male example, with very large "orange tips"; nearly captured. Trees in blossom: hawthorn, laburnum, and horse-chestnut. Night: starry, bright moonlight; not a cloud, and—not a moth! My first hybernated larva turned up, out of doors, in a hedge root, outside Chester, March 12th; a Geometer, and now in the chrysalis; species uncertain. Larvæ of *Arctia caia* seem exceptionally numerous; the first I saw was on March 25th. April 3rd, I took, in the valley of the Alwyn, North Wales (Denbighshire), a larva of *Agrotis ashworthii*.—J. Arkle; Chester, April 22, 1893.

Cumberland.—Insects at Keswick are exceptionally early this spring. I took eight *Thecla rubi* on April 26th, some of them quite worn; and since then about seventy more good specimens and a number of worn ones, which were set at liberty again. On April 24th, I picked off the lake a dead *Notodonta trepida*, and most other things are equally early. My latest capture, April 7th, is *N. dromedarius*, for which Newman gives June. I think the present season bids fair to eclipse the last, as larvæ are very abundant wherever I have collected.—H. A. Beadle; 28, Lake Road, Keswick.

Essex.—On May 6th, I captured a rather worn *Vanessa polychloros*, at a spot about half a mile east of the Ambresburg Banks, Epping Forest. Of the other Rhopalocera in that neighbourhood, a few *Euchloë cardamines*, *Lycæna icarus*, and *L. argiolus* were taken; *Argynnis euphrosyne*, *Thanaos tages*, and the "whites" may be said to be fairly common; whilst *Syrichthus malvæ* was abundant. It may be interesting to note that as early as April 14th I took both *E. cardamines* and *S. malvæ* at Long Running, also in Epping Forest; and on the 21st, *L. argiolus* at Woodford.—H. F. Hunt; 14, Thistlewaite Road, Clapton, N.E., May 11, 1893.

Sussex and Isle of Wight.—*Lycæna icarus* appeared in W. Sussex this year on April 29th, and *Sphinx ligustri* emerged May 1st, *Hepialus lupu-*

linus was on the wing on May 7th, and on the same date *Pœcilocampa populi* pupated; *Pericallia syringaria* and *Geometra papilionaria* had both entered the pupa state on or before May 1st. At Ventnor *Hesperia sylvanus* occurred on May 11th. *Arctia villica* was noted on May 11th. Pupæ of *Vanessa urticæ* were seen on May 8th in W. Sussex, and an imago taken at Ventnor on the 11th was so fresh that it appeared to have just emerged; *Colias edusa* was captured at same time and place, and several others were seen. Ova of *Dicranura vinula* were noticed in W. Sussex on the 10th May.—W. M. Christy; Watergate, Emsworth, Hants, May 13, 1893.

Herefordshire, &c.—On April 14th, I first saw *Syrichthus malvæ*, *Euchloë cardamines*, and *Nisoniades tages*; the next day I saw *Polyommatus phlœas* taken by a friend. On April 19th we went to Moreton Jeffreys, a village of three houses, eight miles from Hereford. On the 20th, I took *Leucophasia sinapis*, *Argynnis euphrosyne*, and *Pararge egeria* in Moreton Wood; I saw *Lycæna argiolus* in the garden, where it seemed to have its head-quarters round a row of hollies; it was very common in the neighbourhood. On the 21st, I took *Pieris napi* and *Pararge megæra*. On the 22nd, I saw a *Vanessa atalanta* in the garden, flying about some clematis, at 10.15 a.m. The next day I caught *Cœnonympha pamphilus* in the wood, and *Vanessa c-album* in the garden. On May 3rd, I missed a *Vanessa c-album* near the hop-yards, but the next day I caught one; the brown on the under side was a uniform dull colour. The same day I caught two female *Euchloë cardamines*, only $1\frac{3}{8}$ inches from tip to tip. On May 5th, we went to Colwall near Malvern, and the same morning I got a fine *Vanessa c-album* in my net, but it escaped through a hole. However, in the afternoon, I caught one with a beautifully mottled under side. It is rather odd that the lane where the last two specimens were flying was a long way from any hop-yards. In all three specimens the green spots are not at all conspicuous. On the afternoon of May 5th, I caught a *Thecla rubi*.—D. P. Turner; 14, Havelock Road, Tonbridge, May 10, 1893.

Kent.—*Colias edusa* has put in an early appearance here this year. I saw several on the wing yesterday under the cliffs near Dover; and I am informed that specimens were seen flying along the cliffs a week ago. Those that I saw were all males, and in such good condition that they might have emerged from the chrysalis this season. I have taken several species unusually early this year, among which I may mention *Scoparia angustea* and *Eupœcilia atricapitana*.—W. Purdey; 129, Sea View Terrace, Folkestone, April 24, 1893.

Having been staying at Forest Row this spring, I send you a few notes. All insects on the Forest have been out over a month earlier this season. On April 20th, *Hesperia malvæ*, *Argynnis euphrosyne*, *Anthocharis cardamines*, *Cœnonympha pamphilus*, *Polyommatus phlœas*, were in abundance. On April 26th, *Lycæna argiolus* was flying round the holly bloom, and *Bombyx rubi* and *Saturnia carpini* flying over the heather, usually between 4 and 5 p.m. I tried sugar once, but only found *Gonoptera libatrix*. At light I took *Hypsipetes ruberata*, *Cilix spinula*, *Rumia cratægata*, *Spilosoma menthastri*, *Numeria pulveraria*, *Habrostola urticæ*, *Melanippe montanata*, *Panagra petraria*, *Iodis lactearia*, *Cabera exanthemaria*, *Lomaspilis marginata*. I have noticed the very great abundance of larvæ this spring. All the rides in the Broadstone Warren were almost black with the "frass" from the larvæ feeding in the trees above.—R. A. Dallas Beeching; Tunbridge Wells, May 15, 1893.

Lancashire.—During a stay at Blackpool I captured the following:—*Pieris rapæ*, *P. napi*, *Polyommatus phlæas*, *Vanessa urticæ*, several in fair condition. *Nyssia zonaria*, abundant on April 22nd; *Rumia cratægata*, on 28th. *Melanippe montanata* and *M. fluctuata*, on May 5th; *Anticlea badiata* and *Hypsipetes impluviata* were captured by my brother on May 1st; *Plusia gamma*, one on the sand-hills on May 6th *Euchelia jacobææ*, very common on the sand-hills, and in very good condition, on April 25th. *Arctia menthastri*, two freshly emerged, on May 3rd. Since I have come home, my brother has taken *Mamestra brassicæ* on May 9th; and I took *Hadena oleracea*, at sugar, on the 8th.—S. Stones; Northwood, Seymour Grove, Old Trafford, near Manchester, May 10, 1893.

Monmouthshire.—On April 25th, *Argynnis euphrosyne* was common in open spots at Wentwood; I picked up a freshly-emerged specimen of *Melitæa aurinia* (*artemis*), and saw another on the wing on April 30th. May 8th, I took *A. selene* with *A. euphrosyne*, *Thecla rubi*, and worn examples of *Lycæna argiolus*, at the foot of the Twm Barlwyn mountain.—J. E. Knights; 3, Mount Joy Street, Newport, Mon.

Radnorshire.—Several species have put in an extremely early appearance in the Wye Valley. In an average year, I notice the dates given in Newman are, as a rule, quite a month or three weeks too early for this neighbourhood, which is a late one; but this season I have already taken *Arctia menthastri*, *Eupithecia vulgata*, *Cidaria immanata* [? *truncata* (*russata*), Ed.], *Coremia propugnata*, *Melanippe fluctuata*, and *Anaitis plagiata*. And among the butterflies, I took, on April 22nd, *Nisoniades tages* and *Lycæna argiolus*. But the great feature of the season, so far, has been the extreme abundance of *Argynnis euphrosyne*. Generally speaking, this insect is by no means common in this neighbourhood, although it appears sparingly in the woods every season. This season, however, it fairly swarms in the gardens, road-sides, and everywhere. I noticed the first two on April 12th, since which time I could have taken hundreds if I had wanted them. They seem all to be in the most perfect condition, and look as if they had just emerged from the chrysalis.—J. W. Vaughan, Jun.; The Skreen, Erwood, R.S.O., Radnorshire.

Surrey.—I noticed, during the second and third weeks in April, a very considerable number of insects due at least a month hence. The following is a list of those I have observed more especially:—April 14th, two *Argynnis euphrosyne;* 15th, *Pieris brassicæ* (quite fresh); 16th, *Euchloë cardamines;* 17th, three skippers all together, viz., *Syrichthus malvæ*, *Nisoniades tages*, *Hesperia sylvanus;* 18th, *Thecla rubi*, in more or less abundance, among which were to be seen a few *Strenia clathrata;* 19th, *E. cardamines*, abundant; and in the evening I netted numbers of *Coremia unidentaria* and *C. ferrugata*, and might have been equally well employed in catching *Rumia cratægata*, had I been so disposed. I do not know if it is a recognised fact, or a suggestion of my own, but it struck me very forcibly the other day on seeing *Syrichthus malvæ* and *Strenia clathrata* together on the railway bank, that the one mimicked the other; I mean *clathrata* mimicked *malvæ*. If anyone could give any information as to this, I should be very glad.—W. J. Kaye; The Court, Worcester Park, Surrey, April 20, 1893.

As evidence of the extreme forwardness of the season, the following list of butterflies, taken by me at Woking this morning, may interest your readers:—*Pieris brassicæ* (common), *P. rapæ* (common), *P. napi* (common), *Euchloë cardamines* (two), *Pararge megæra* (several), *Cœnonympha pam-*

philus (several), *Vanessa io* (several), *V. atalanta* (several), *V. urticæ* (several), *V. polychloros* (one), *Argynnis euphrosyne* (plentiful), *Lycæna argiolus* (nine), *Polyommatus phlæas* (plentiful), *Syrichthus malvæ* (plentiful), *Nisoniades tages* (plentiful). Fifteen species. A specimen of *S. malvæ* that I took turned out to be a very nice variety, the upper wings being suffused with white.—S. G. C. Russell; Priory Villa, Woking, April 23, 1893.

Melitæa cinxia abundant in Sark.—It is with much pleasure I beg to record the capture of *Melitæa cinxia* in Sark. Almost the first thing I saw on landing was one of these beautiful insects, and my surprise and delight on finding that the whole hill-side was covered with them may be better imagined than described. There were thousands flying gaily about from flower to flower, especially those of the wild rose and kidney vetch. The butterflies were by no means confined to that one hill, but were more or less rarer right through the island, a distance of about two miles. They were fairly numerous in Little Sark, a peninsula on the other side of the island, rather less than a mile in extent; but nowhere were they to be seen in such numbers as on the first hill, opposite the landing-place.—Stanley Guiton; 31, Bath Street, Jersey, April 27, 1893.

Nyssia zonaria in Lancashire.—When I was at Blackpool, *Nyssia zonaria* was discovered by my friend Wilfrid Stones, of Northwood, Seymour Grove, Old Trafford, with whom I was staying. L. Stones and myself took over ninety males and sixty females, and also left many more. The date of the discovery was April 22nd, and I think this is the first record from Lancashire. The moths were taken on the cliffs, at the point where they begin to get lower and covered with grass, seated on the tall coarse grass which grows on all sand-hills. Many ova were obtained, larvæ from which have emerged to-day. *E. jacobææ* was also taken plentifully on the sand-hills, and a specimen of *Anticlea badiata*.—S. Renshaw; Ash House, Stretford, Manchester, May 14, 1893.

Nyssia hispidaria and Acronycta leporina in Herts.—Two specimens of the first-named insect were taken by myself and Mr. E. Wigg on February 19th, and four on March 5th, in Cassiobury Park on the oaks. On July 6th, 1892, we took twelve larvæ of *A. leporina* on the birch trees. Only two of the larvæ pupated; all the others died off rather suddenly. The first specimen emerged on April 29th, it having been kept in a temperature the maximum of which was 65° and the minimum 40°, Fahr.—S. H. Spencer, Jun.; Watford, Herts.

Colias hyale reported from Berks.—I have just seen a specimen of *Colias hyale*, which was taken here by a lad on May 7th. It was in rather bad condition, and had the appearance of having hybernated.—A. H. Hamm; 24, Hatherley Road, Reading.

Yellow variety of Zygæna trifolii.—There are now large numbers of *Zygæna trifolii* flying in a locality in W. Sussex, where I do not remember to have seen the species in previous years. The form with confluent spots is common, and I have taken several specimens with deformed wings, and two examples which are destitute of wings. On the 18th, I secured fourteen specimens with the spots and hind wings yellow. [Our correspondent has very kindly sent us a living example of this form.—Ed.] The cocoons are hidden down among the tufts and tussocks of grass.—W. M. Christy; Watergate, Emsworth, Hants, May 20, 1893.

Deilephila livornica at Christchurch.—On May 20th I had the pleasure of taking on the wing an example of *Deilephila livornica* on my premises at Christchurch. The specimen is in good condition. It was seen alive by my brother, and identification confirmed by Mr. R. E. Brameld, of this place. Can any reader give the records of the capture of this insect for the last ten years or so?—John H. Ashford; Christchurch.

SOCIETIES.

Entomological Society of London. — *May 10th*, 1893. — Henry John Elwes, Esq., F.L.S., F.Z.S., President, in the chair. Mr. A. Cowper Field, of 81, Wiltshire Road, Brixton, S.W., was elected a Fellow of the Society. Mr. McLachlan exhibited, for Dr. Fritz Müller, of Blumenau, Santa Catarina, Brazil, specimens of larvæ and pupæ of a dipterous insect, *Paltostoma torrentium*, and read a letter from Dr. Fritz Müller on the subject. The writer stated that these larvæ were of the same nature as those exhibited by Mr. Gahan, at a meeting of the Society in October, 1890, and which were then thought by Lord Walsingham and Mr. McLachlan to be allied to the Myriapoda. Mr. Gahan, Mr. Jenner Weir, Colonel Swinhoe, Mr. Blandford, Mr. Verrall, Mr. Slater, and Mr. Jacoby took part in the discussion which ensued (*cf.* Proc. Ent. Soc. 1891, p. ii.). Mr. S. G. C. Russell exhibited *Hesperia alveolus*, variety *taras*, taken by him at Woking in April last. Mr. J. M. Adye exhibited a long series of *Moma orion*, *Eurymene dolobraria*, *Amphidasys betularia*, and *Hylophila prasinana*, and a few specimens of *Notodonta dodonea*, *N. chaonia*, and *N. trepida*, *Acronycta alni*, and *Selenia illustraria*, the majority having been bred by him in March and April last, indoors, from larvæ obtained in the autumn of 1892 in the New Forest. Mr. Goss read a copy of a letter received by the Marquess of Ripon, at the Colonial Office, from the Governor of the Gold Coast, reporting the occurrence of vast swarms of locusts at Aburi and Accra, West Africa, about the middle of February last. The writer stated that at Accra the swarm extended from east to west as far as the eye could see, and appeared to occupy a space about two miles wide. Colonel Swinhoe stated that some years ago he had been requested by the Indian Government to report on plagues of locusts. He said he had witnessed swarms of these insects far larger than the one just reported from the Gold Coast, and mentioned that many years ago, when going up the Red Sea in one of the old P. and O. paddle-boats, the boat had frequently to stop to clear her paddle-wheels from locusts, which had settled in such swarms as to choke the wheels and stop their action. Mr. C. G. Barrett called attention to a field excursion to the Cotswolds which it was proposed to have in June, Fellows of the Society were requested by the President to communicate to Mr. Barrett, as early as possible, their views as to the date which would be most generally convenient for such excursion, and to offer any other suggestions on the subject which might occur to them. Mr. E. C. Reed, of Valparaiso, Chili, communicated a paper entitled "Notes on *Acridium paranense*, the migratory locust of the Argentine Republic." Colonel Swinhoe, Mr. Champion, Mr. Elwes, Mr. McLachlan, and Mr. Merrifield took part in the discussion which ensued. Professor L. C. Miall communicated a paper entitled "Dicranota; a Carnivorous Tipulid Larva." Dr. T. A.

Chapman communicated a paper entitled "On a Lepidopterous pupa (*Micropteryx purpurella*) with functionally active mandibles." Mr. McLachlan said Dr. Chapman's observations were of great value, and tended to show that the position of *Micropteryx* was still nearer the Trichoptera than had been supposed. The President announced that the new Library Catalogue, which had been edited by Mr. Champion, with the assistance of Mr. McLachlan and Dr. Sharp, was now ready for sale to the public at 9s., and to the Fellows of the Society at 6s. a copy.—H. Goss, *Hon. Secretary.*

South London Entomological and Natural History Society.—*April 27th*, 1893.—J. Jenner Weir, Esq., President, in the chair. Mr. Tutt exhibited a series of *Tapinostola concolor*, Gn., from Cambridgeshire, and remarked upon the extremely restricted range of this species, and in how very few localities it had been taken in any number. He pointed out the confusion that had arisen with regard to the nomenclature of this insect, in consequence of Hübner's figure of *T. extrema* having blackish cilia. Mr. Weir mentioned that specimens of *Polyommatus dispar*, Haw., had realised £6 each on Tuesday last, at Stevens's Auction Rooms. Mr. W. H. Wright exhibited a very long and variable series of *Bombyx castrensis*, L., bred from larvæ captured on the banks of the Medway, and mentioned that his experience was, that unless the larvæ were, say, within about a week of being full fed when captured, they usually refused to feed, and seldom came to perfection. Mr. R. Adkin and Mr. Tutt both corroborated this view, stating this species was especially resentful to a change of habitat. In proof of the recent extraordinarily fine weather, Mr. Tutt mentioned that *Melitæa cinxia*, L., and other June species were on the wing in Guernsey, and that *Lycæna argiolus*, L., was flying at Hereford during the first week in April, and Mr. R. Adkin noted the rare occurrence of the blackthorn (*Prunus spinosa*) and whitethorn (*Cratægus oxyacantha*) being in bloom at the same time. In the course of some remarks upon *Colias edusa*, Fb., Mr. Tutt said it ought to have had a good chance of hybernating here this last winter. In Algeria and Morocco it could be got in all its stages, with the exception of the egg, nearly the whole year through, and that in the Mediterranean littoral it practically did not hybernate at all, but one brood followed the other in rapid succession.

May 11th.—Charles G. Barrett, Esq., F.E.S., Vice-President, in the chair. Mr. R. South exhibited a series of *Diurnea fagella*, Fb., from Buckinghamshire, the light and dark forms being about equal in number. Mr. South said that the trees in the wood in which they were taken were darker on their western side than on their eastern, and at the time he collected these specimens the wind was in the east and most of the moths were at rest on the western side of the trees, the dark insects being inconspicuous, and he thought that if this often happened when this species was on the wing, it would, by natural selection, tend to produce a darker race. Mr. Barrett, in referring to the breeding of *Bombyx castrensis*, L., in captivity, said the larvæ should be well wetted at times and exposed when possible to the sun, and he thought the absence of the latter in some years might account for the uncertain appearance of this species. Mr. Turner said that he had bred *B. castrensis* very successfully on rose-leaves dipped in salt water, the discussion being continued by Messrs. Tutt, Frohawk, and South. Mr. Adye exhibited a long series each of *Moma orion*, Esp., *Eurymene dolobraria*, L., *Amphidasys betularia*, L., *Hylophila prasinana*, L., &c., and odd specimens of *Acronycta alni*, L., *Notodonta chaonia*, Hb.,

N. dodonea, Hb., *N. trepida*, Esp., &c., the majority having been bred in March and April, indoors, from larvæ taken in the New Forest last autumn. Mr. Tutt said that on the 6th May *Lycæna bellargus*, Rott., was on the wing in Kent; also *Nemeophila plantaginis*, L., *Euclidia glyphica*, L., &c., whilst pupæ and larvæ of *Vanessa urticæ*, L., were reported for the same date. Mr. Jäger mentioned that *Cidaria truncata*, Hufn., was now emerging, and Mr. South said he had bred *Coccyx strobilana*, Hb., from cones of the spruce fir obtained in Buckinghamshire.—F. W. Hawes and H. Williams, *Hon. Secretaries.*

Field Meeting.—An afternoon excursion was made on Saturday, May 13th, to Horsley, six miles from Guildford. The members assembled at Waterloo about 2 o'clock, as the Committee had arranged; and after an hour's pleasant journey by train, mainly through a fine collecting district, arrived at their destination. The first insect captured was *Euchloë cardamines*, on the road-side near the station, and quickly nets were swinging in all directions, for *Emmelesia albulata* was crossing the road in numbers. We entered the field to the right, and were soon busy with the pretty, but swift, *Heliaca tenebrata* (*arbuti*). Here were more *E. cardamines* with *Pieris napi; Syrichthus malvæ* and *Nisoniades tages*, somewhat worn; *Polyommatus phlæas*, *Lycæna icarus*, and *Cœnonympha pamphilus*, freshly emerged; *Euclidia mi*, *E. glyphica*, and *Pyrausta purpuralis*, in their usually damaged state; and of course the two pests, *Crambus hortuellus* and *C. pratellus*, were well in evidence. Adjoining these fields was a shady pond, which produced, among other treasures, several species of *Agabrus* to the only coleopterist of the party. Proceeding along the edge of the wood many Geometers were driven out; *Lamasphilus marginata*, *Cabera pusaria*, *Acidalia remutaria*, and *Asthena candidata*, in good condition; one or two *Bapta temerata* and a single *Zonosoma annulata* (*omicronaria*) were captured. The larva of *Cleora lichenaria* was searched for, but failed to put in an appearance. Almost every bush of spindle was swarming with the larvæ of *Hyponomeuta evonymella*. Among some young birch and underwood, *Euchelia jacobææ* was in full force, and an odd *Pararge megæra* was noted with *Melanippe montana*. Wandering on through the fields, the beautiful larvæ of *Diloba cæruleocephala* were seen defoliating the sloe; *Emmelesia albulata* was in swarms, flying over the grass in the field next the Guildford Road. Geometerid larvæ, including the beautiful *Hybernia defoliaria*, seemed plentiful wherever any beating was done. Crossing the road by the church, we took the path leading to the sheep leas. Under the beech trees on the right were many spikes of *Cephalanthera grandiflora*, with a few *Listera ovata;* there was also *Daphne laureola*. When the open leas were reached, there were the blues, *L. astrarche*, *L. icarus*, with *Cœnonympha pamphilus*, in large numbers, gradually seeking rest, as the sun went down, on tall stems of grass and other elevated coigns of vantage. On our return these were all quiet, and vars. were eagerly sought, but without satisfactory result. At the top of the leas more than two dozen were counted on one dead flower-spike of burdock. A plant of deadly nightshade (*Belladonna atropa*), which on a former visit of the Society was more than seven feet high, was again rearing its head; and on an old stump near, the allied *Solanum nigrum* was growing. All the burdock leaves around this part were well riddled by the larvæ of *Aciptilia galactodactylus*, and a few late ones were found by the searchers. Now we dispersed; and when afterwards comparing notes several additional species were added to our list, including one *Epione advenaria* and one *Bapta bimaculata* (*taminata*);

Bupalus piniaria, *Cidaria associata*, *Phytometra viridaria* (*ænea*), *Iodis lactearia*, *Ematurga atomaria*, and *Strenia clathrata*, recorded; *Anaitis plagiata* and *Botys hyalinalis* were just emerging; specimens were also taken of *Spilodes verticalis* (*cinctalis*), *Xanthosetia hamana*, *Cidaria corylata*, and *Melanippe rivata*. Our Micro-lepidopterists, among other things, noted the cases of *Fumea intermediella* (*nitidella*); and imagines of *Carpocapsa grossana*, *Eupœcilia ciliella*, *Glyphipteryx fuscoviridella*, and *Elachista argentella* (*cygnipennella*). Our return, over a portion of the same ground, was most productive in specimens, but only *Phalera bucephala* and *Zonosoma linearia* (*trilinearia*) were new. The walk to the station through the quaint village produced a specimen of *Melanthia ocellata;* and two of our number who had gone to the rhododendrons reported that, to their chagrin, all the shrubs were burnt, together with much of the surrounding forest. Our journey home was most pleasantly spent in relating experiences, &c.; and I believe all returned thoroughly pleased with the meeting, and heartily wishing that the field outing to Oxshott on June 10th, under the guidance of Mr. R. South, may be both as enjoyable and successful as this one had been.—Hy. J. Turner (on behalf of the Committee).

Lancashire and Cheshire Entomological Society.—*May 8th.*—Mr. S. J. Capper, F.L.S., F.E.S., President, in the chair. Mr. Robert Newstead, F.E.S., communicated a paper entitled "On a successful method of rearing *Deilephila galii*," in which he gave his experience of rearing this species in 1888, and stated that cold was fatal to the larvæ, and that forcing was absolutely necessary for the pupæ. The author also added some notes on "Lepidoptera attracted by Honey-dew." The President exhibited some fine varieties of *Boarmia rhomboidaria*. Mr. Collins, *Hadena suasa*, and a Lancashire specimen of *Boarmia abietaria*. Mr. Deville, African *Pieridæ*. Mr. Sharp, Coleoptera from Wales. Dr. Ellis, Coleoptera from Grahamstown, South Africa. Mr. Watson, *Papilio macleayana* and *P. sarpedon*.—F. N. Pierce, *Hon. Sec.*

Birmingham Entomological Society.—*April 17th*, 1893.—Mr. W. G. Blatch, President, in the chair. Messrs. R. C. Bradley, W. Harrison, and C. J. Wainwright, each exhibited long series of *Bombylius major*, from Trench Woods, where they were quite common at Easter. Mr. Wainwright also exhibited a long series of *Melanostoma ambigua* and other Diptera, taken at the same time and place. Mr. A. H. Martineau, *Prionus coriareus* and other insects, from Solihull. Mr. R. Freer read a paper upon "Variation, with special reference to Melanism," and exhibited insects in illustration. He said that melanism was due to scales, in which he believed granules of pigment were deposited in rows; this conclusion he had arrived at from microscopical observations. He believed that both a deficiency and a superabundance of pigment were pathological conditions, and this he illustrated by reference to the human race. He showed that in those localities where melanic forms mostly occurred, the conditions of life were not very favourable; such were sea-shores, where food-plants had low nutritive power; isolated spots where there was much inbreeding; the neighbourhood of large towns, &c.; and he believed that these conditions of life were the cause of pathological conditions in the organism, with melanic results. He believed pigment to be an expression of energy.—Colbran J. Wainwright, *Hon. Sec.*

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SEX RATIOS IN BUTTERFLIES, AND AN INFERENCE.

BY THOMAS E. BEAN.

MUCH has been said for and against the proposition that in general more male than female butterflies are produced. As a contribution to that discussion I present below the results in a pretty extensive breeding of *Colias christina* and *C. elis*. Each brood mentioned is a family raised from eggs of one female. This experiment was conducted very carefully, the object being to ascertain the variational capacity of the two species and their degree of alliance to other closely related forms. *C. christina* was fed on *Hedysarum boreale*, var. *albiflorum*, *C. elis* on *Astragalus alpinus*, special care being taken to avoid introduction of a stray larva, and also to keep the several families strictly separate. The broods of *C. elis* were numbered 1 to 9 inclusive, those of *C. christina* 1 to 18 inclusive (omitting number 4). *All the families were subject to uniform treatment and conditions.* The eggs were laid during July and August, 1890, the larvæ, wintered under a deep shelter of snow, resuming active life in May, 1891.

The butterflies came from pupa in June and July, the proportion of males and females being as follows:—

C. christina.

Brood No.	1	...	...	7	males,	11	females.
,,	2	...	...	1	male,	2	,,
,,	3	...	...	5	males,	18	,,
,,	5	...	...	19	,,	21	,,
,,	6	...	...	17	,,	10	,,
,,	7	...	...	5	,,	5	,,
,,	8	...	...	5	,,	3	,,
,,	9	...	...	1	male,	9	,,
,,	10	...	...	16	males,	8	,,
,,	11	...	...	8	,,	12	,,

Brood No.	12	... ...	7 males,	5 females.
„	13	... ...	8 „	16 „
„	14	... ...	10 „	5 „
„	15	... ...	6 „	4 „
„	16	... ...	No males,	5 „
„	17	... ...	„	6 „
„	18	... ...	1 male,	3 „
			Total 116 males,	143 females.

C. elis.

Brood No.	1	... ...	17 males,	9 females.
„	2	... ...	2 „	5 „
„	3	... ...	No males,	12 „
„	4	... ...	8 „	1 „
„	5	... ...	No males,	8 „
„	6	... ...	„	13 „
„	7	... ...	„	18 „
„	8	... ...	4 males,	2 „
„	9	... ...	1 male,	1 „
			Total 32 males,	69 females.

In above experiments the resulting numerical proportion of the sexes conclusively shows *a control from some cause or causes entirely apart from the influence of variations in nutrition.* Some writers, contending that sex is partly decided by the quantity or quality of food available to the larva, have been too prompt in claiming as proofs all incidents which seemed capable of bearing such construction, ignoring the fact that the same incidents would equally well support other and quite dissimilar solutions of the general problem. It is not my purpose to discuss here the question whether nutrition and other elements of environment do in any instance determine sex, but merely to show that in some cases at least sex is evidently *dependent upon antecedent causes*, the influence of external conditions not applying. Regarding the peculiarly variant numerical results in the present experiment, my impression is that they are due to a cause which has been too much neglected in the study of various problems regarding species. In considering this incongruous set of sex ratios, it is of importance to remember that each of the *C. elis* and *C. christina* females which laid one of the several sets of eggs, was only in an incomplete degree representative of its species. To exhibit fully the species *C. christina*, very many varying individuals would be required. Although I have collected this butterfly during seven seasons, and my collection shows several hundred instances, all noticeably differing, I am not confident that the entire species has been obtained. And to fully

reproduce these two species in one season, the entire egg product from a very large number of females might be requisite. It is easily seen then, that each of these broods from eggs of one female constitutes *a mere fragment* of a species. As the several broods, though bred in practically identical conditions of environment, differ abruptly and decisively in their sex averages, it seems evident that this emphatic diversity is a result of antecedent causes. In the main, the amount and kind of character the brood possesses was conditioned in advance by the limitations of the antecedent female. I do not mean that in every brood the progeny (if females) will closely resemble the female which lays the eggs; but in my experience such similarity occurs in a very large proportion of cases, sometimes combined with a minor quantity of character strikingly dissimilar. If the sex proportions in these broods agreed with the early or late laying of the eggs, a seasonal law would seem to be indicated. Since, however, the sex ratios appear to be out of relation to the seasonal stage, my conclusion must be limited to the statement that apparently *some of the females laid a greater number of male eggs, while others produced female eggs in larger proportion*, with the inference that *in the present experiment sex must be referred back to the egg.*

Laggan, Alberta Province, Canada.

SUGGESTIONS FOR DECOYING BUTTERFLIES.

By H. G. Knaggs, M.D., F.L.S.

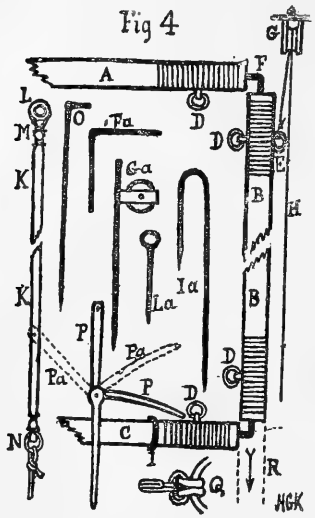
(Concluded from p. 182).

In the trap which we are about to discuss, rapidity of action is of paramount importance; lightness combined with strength, and a spring of sufficient power to act almost instantaneously, are the great desiderata: the materials here suggested are considered adequate, but of course by increasing the calibre of the spring still swifter action may be obtained, or a larger net may be used.

This brings us to Fig. 4. A, B B, its opposite fellow (not shown), and C, are four bamboos, such as used for gardening purposes, each two feet long; this size is preferred because, although a larger four foot square net would cover more space, the spring required to work it must be very powerful, and on the whole I find the smaller one acts with much greater rapidity. All these four sticks agree in having a moveable ring D whipped on at about an inch and a half from each end, but B and its double have also another ring E, fixed and rigid, as used for fishing rods, opposite to the corresponding ring D, as shown in the

figure. The stick C is held down to the ground securely, but with plenty of "play," by bent wires, I*a*, as indicated at I, one towards each end of it, spaces being left in the hem of the net for the purpose. The ends of the sticks are connected by means of the wires F*a* (each arm being four inches long), as shown at F, and all work quite loosely (a hole having been prepared for them by means of a red-hot wire) excepting those two which enter the sticks B B, and its fellow, in a direction opposite to the arrow at R. The reason for these being so firmly fixed is to stand the strain of the stretched spring, while the object in having the others loose is to afford facility in putting the net together and taking it to pieces. NOTE.—All the wires F*a*, L*a*, I*a*, and O, can be easily made out of "No. 8 galvanized"; the pulleys require a stouter wire.

Fig 4



For the two foot net a square yard of leno will be required; and a square six inches cut out of each corner will give it a box-like shape, then fix it to the sticks B B and fellow by means of glazed lining stitched closely round them, but with the rings protruding through button holes. The other two sides are then stitched to a hem of lining large enough to allow the sticks A and C to pass in and out, and with button holes opposite the position of the rings. Next slightly open the eyes of a hook such as used for ladies' dresses, slip one of those stout little india rubber rings, less than half an inch diameter outside measure, into one of the eyes, and close the latter, pull the rubber ring through one of the moveable brass rings on B B, and hook it on to the other eye, and then close that (see Q, Fig. 4), tie a tag of thin water cord to the bend of the hook to aid in fastening it to, or unfastening it from, the adjacent ring; serve the four rings on B B and fellow the same. Get a yard of $\frac{5}{16}$ or $\frac{3}{8}$ india rubber "cord," K K, to one end of which attach a sail eyelet, L, by passing a stout bit of water line round it, and wiring or tying it at M: at the other end fix a loop, N, to which six feet and a half of strong water line has to be attached.

To set the net, first having selected the spot, peg in the decoy temporarily, and take the cord of it in the direction of the place chosen for concealment, then lay the net, leno upwards, upon the decoy string, taking care that it shall not pinch upon it, then peg down the cane C with the wires I*a*, as shown at I, next drive in the pulleys G*a* an inch or two in front of the net, and as

nearly as possible just outside the axis of the stick B B, as shown at G. Now pass the free end of the cord H over the pulley G, bring it under and fasten it to the fixed ring E, then take the cord H and spring K back the full length, keeping them parallel with the stick B, but without stretching, and peg down the sail eyelet with the wire L *a*; when both sides have been thus prepared, the stick A may be steadily made to describe a semi-circle round C until, in the direction of the arrow and dotted line R, it reaches the ground, here it will probably have to be pegged down with a bent wire O in the case of a two foot net, but much depends on the nature of the ground. With a four foot net it is generally necessary to give it a start with a lever represented at P, the dotted lines P *a* showing the action of the same; with the wire O it is a good plan to whip on a ring such as used for the end of the top joint of a fishing-rod, and attach the pulling cord to this. Having fixed the decoy five or six inches in front of the set net, perhaps the operator would like to stick an artificial flower, mounted on wire and of the colour of the species sought, in front of the decoy, or, in the case of *Apatura*, possibly a dead animal or reptile, though to my fancy a piece of broken looking-glass would be best for the purpose; this might first be used as a heliograph to throw a few Morse dots and dashes on to his Majesty's august person in order to attract his attention, and then laid down before his effigy as a fair imitation of water, and an invitation "to liquor."

Then having retired to the place of concealment with the two cords, pull remittingly at the thin one to work the decoy, and bide your time. Should the species wanted catch sight of the bait, it will probably make for it, and hover over it for a few moments. Now is your chance, let fly with the thick cord, hurry up, don't be excited, secure the prize, reset the net, and when you get home, write off to the 'Entomologist,' and tell us all about it.

I have satisfied myself that the *modus operandi* is quite practicable, that the apparatus will work effectively, and that butterflies will "tumble into it"; my apparatus was set on our grass plot, and our first attempt with a white paper decoy met with no success to speak of; but I recollected that there were the remains of a white butterfly captured last year by one of my grandchildren; I managed to find these, pasted them on to the decoy frame, and, being rather out of spirits with my previous failure, gave the cords to my attendant to work; in less than a minute he missed a splendid chance—had time enough to pull the cord half a dozen times, but left it till too late. And so I reset the trap, and took up the reins myself, and in less than another minute—Swish, whack! and mechanical decoying was a *fait accompli* so far as *P. rapæ* was concerned. I did set the trap again, but before I could get to my hiding-place our kitten came

upon the scene, and, being used to playing with string, inadvertently let the thing off, which so astonished it that it gave a big buck-jump, and went scampering down the garden with—oh! such a tail! After that I drew the stumps, and at once set to work to finish this paper.

I should not like to have floated the idea as pure theory, but, as you see, I have had sufficient practical experience to convince me that, if somebody will only oblige by giving mechanical decoying a trial in the coming season, it will soon rank as one of the best methods of capturing our high-flying and swift-flying butterflies.

Camden Road, N.W., April, 1893.

A FORTNIGHT'S COLLECTING AT BUDAPEST.

By W. E. Nicholson.

(Concluded from p. 193.)

The following is a list of the species we captured or noticed during our visit:—

Papilio machaon and *P. podalirius*.—Both these species occurred here and there, but were far from common.

Thaïs polyxena.—The larvæ were abundant on *Aristolochia clematitis*, especially on the Adlersberg, Notwithstanding their defensive osmateria, a large number of them are stung by *Agrypon tenuicorne*, Gravenhorst.

Parnassius mnemosyne.—Single specimens of this species were taken in the wood near Budafok and on the Schwabenberg. Both localities are at rather a low elevation for this mountain butterfly.

Aporia crataegi.—Very abundant. We noticed the larvæ doing considerable damage to fruit trees at Budafok.

Pieris brassicæ, *P. rapæ*, and *P. napi*.—Fairly common and generally distributed. *P. daplidice*.—Not uncommon in open places.

Euchloë cardamines.—Occurred singly near Budafok.

Leucophasia sinapis.—A rather well-marked form of this species occurred near the Wolfsthal.

Colias hyale.—Occasional specimens were seen near Budafok. *C. edusa*.—Two or three specimens only were seen. We were, unfortunately, too early for the local species *C. myrmidone* and *C. chrysothome*, which occur near Budapest.

Gonepteryx rhamni.—Not uncommon in wooded places.

Thecla spini.—A fine form occurred in the wood near Budafok. *T. w-album*.—A few specimens were taken at Budafok, flying round elm trees, by Mr. Lemann. *T. ilicis* var. *æsculi*.—Specimens of this form of the species occurred with *T. pruni* at Budafok. *T. acaciæ*.—The commonest species in the district, occurring in all the localities. It was especially abundant at the Adlersberg, frequenting the flowers of various Compositæ. *T. pruni*.—Not uncommon at Budafok and near the Blocksberg, frequenting blackthorn bushes, but difficult to obtain in fine condition. *T. rubi*.—A few belated specimens occurred throughout the district.

Polyommatus dispar var. *rutilus*.—A few worn specimens were taken, both at Budafok and on the Adlersberg. From a few ova, which I obtained by enclosing a female in a gauze bag over a piece of dock, I had the pleasure of rearing three fine specimens on my return to England. I do not remember noticing *T. phlæas* during our visit.

Lycæna argiades.—Two specimens were taken by Mr. Lemann on a large island, known as Csepel, below Budapest, near the left bank of the river. *L. ægon* and *L. argus*.—Occurred throughout the district in open places. *L. icarus*.—Common everywhere. *L. corydon*.—Rather common. *L. admetus*.—This species was just beginning to emerge. A single specimen was captured by Mr. Lemann on the 24th June at the Schwabenberg. *L. argiolus*.—Occasionally in bushy places. *L. semiargus*.—A rather fine form was not uncommon in the Wolfsthal. *L. alsus*.—Generally distributed. *L. cyllarus*.—Occurred in various places. The females are of the dark form. *L. iolas*.—Not uncommon round *Colutea arborescens*, principally near the Blocksberg locality.

Vanessa c-album.—Rather common near Budafok, often frequenting the beds of dried-up torrents. *V. polychloros*.—Two specimens of a rather small form were taken near the Wolfsthal, and traces of the larvæ were noticed on some trees of *Celtis australis* in Buda. *V. urticæ*, *V. io*, *V. atalanta*, and *V. cardui*.—Occurred singly throughout the district. *V. cardui* was not in the same abundance as it was in England at that time.

Melitæa dictynna.—A few specimens were seen in the Wolfsthal. *M. cinxia*.—Occurred near Budafok, between the village and the wood. *M. trivia* was said by Herr Pavel to occur along with *M. cinxia;* but I have not been able to identify any of my specimens as belonging to this species. *M. phœbe*.—Abundant throughout the district. *M. athalia*.—Common in open places in woods, especially near the Schwabenberg.

Argynnis paphia, *A. aglaia*, *A. adippe* and var. *cleodoxa*, and *A. niobe* ab. *eris*.—All these species occurred in meadows near the Schwabenberg. *A. latona*.—Rather common, especially near Budafok. *A. hecate*.—Occurred throughout the district, but most abundant in the meadows on the Schwabenberg, especially in a field near the station of the cog-wheeled railway. *A. dia*.—Common, and generally distributed.

Melanargia galatea.—Abundant. A single specimen of the var. *leucomelas*, female, was secured.

Satyrus hermione.—Not very common. *S. circe*.—Not common, frequenting the trunks of trees in the Schwabenberg locality. *S. semele*.—Rather scarce. The specimens secured are rather dark.

Pararge megæra.—Dry places throughout the district.

Epinephele hyperanthus.—Not very common. Occurred at Budafok. *E. janira*.—Common everywhere.

Cœnonympha iphis.—Not uncommon in a damp meadow near Budafok, but nearly over. *C. pamphilus*.—Common everywhere. Some of the specimens are unusually large. *C. arcania*.—Common in the wood at Budafok.

Spilothyrus althææ and *S. lavateræ*.—Occurred singly in stony places on the Blocksberg, but were far from common.

Syrichthus carthami.—Generally distributed, but not common. *S. orbifer*.—Occurred in the Adlersberg and in the Wolfsthal. The spring brood, however, was very nearly over at the time of our visit.

Hesperia thaumas.—Common everywhere. *H. lineola*.—A rather large form of this species occurred with the last. Some of the specimens are

rather larger than average specimens of *H. thaumas*. *H. sylvanus* and *H. comma*.—Occurred singly, but not in any abundance.

The limited time at our disposal, and the absence of facilities for night-work, prevented us giving much attention to the Heterocera, though, of course, some of the commoner species thrust themselves upon our notice. The handsome *Smerinthus quercus* was found at rest in the Schwabenberg locality; and several species of *Zygæna*, including the local *Z. brizæ*, were common in various places. We understood from Herr Pavel that the larvæ of *Acherontia atropos* was not uncommon in the autumn on *Lycium barbarum*.

Among the Bombyces, the larvæ of *Ocneria dispar* occurred in extraordinary abundance on some small willows, growing in a piece of marshy ground bordering on the Danube. The willows were, in many cases, entirely stripped of their leaves, and the hungry larvæ were hurrying up and down the naked stems searching for food; while the central portion of the bushes was a tangled mass of web and cocoons. The larvæ of *Saturnia spini* were scarcely less abundant in some places on blackthorn.

Among the Noctuæ, a single specimen of *Cloantha perspicillaris* was taken at Budafok, where the larvæ of *Cucullia chamomillæ* were common on a species of *Matricaria*. While for the Geometræ, the sight of the pretty little *Lythria purpuraria*, which was abundant in open spaces by the sides of the roads, was somewhat novel for an English collector.

Lewes, March 22, 1893.

A CATALOGUE OF THE LEPIDOPTERA OF IRELAND.

By W. F. de Vismes Kane, M.A., M.R.I.A., F.E.S.

(Continued from p. 190.)

SATYRIDÆ.

Erebia epiphron v. cassiope, *Fb.*—"Croagh Patrick near Westport, Mayo. The locality for this species is about half-way up the mountain on the Westport side, in a grassy hollow, where a little hut is erected for the shelter of pilgrims. I captured a fine series here in June, 1854" (*B.*). I have seen no Irish specimens, nor have I heard that any visit to the above locality has been made since for the purpose. It would seem probable that other habitats may be found for the species on the range of mountains extending from Achill towards Nephin. Were it not that the alpine flora and entomological fauna have not usually, so I understand, a parallel distribution in Ireland, we might expect that the heights of Slieve League, Benbulben, and Mount Brandon, would reward an entomologist by interesting discoveries in this direction.

Pararge egeria v. egerides, *Stgr.*—Everywhere abundant, and double-brooded.

Pararge megæra, *L.*—Everywhere abundant throughout Ireland.

Satyrus semele, *L.*—Widely distributed throughout the coast-line from Donegal, Derry, Antrim, Newcastle, Co. Down, Howth, Arklow, Minehead, Kinsale, Dursey Island, Galway, and Sligo; and often it is very numerous. It also occurs locally inland in rocky districts in Ulster, and the South and West; such as New Ross, Wexford (*B.-H.*); and Moycullen and elsewhere in Co. Galway. The Irish insect is fine and well marked, but neither in size nor colour is comparable to specimens I have taken in France, North Italy, and Switzerland. The blotches of upper side are occasionally of a deep rusty red in male, and paler rufous in female. Minehead, Co. Waterford; and Markree, Co. Sligo, &c.

Var. *aristæus*, Bon.—A very fine form occurs rarely, which seems referable to this variety. A female, sent me from Co. Galway by a friend, may be thus described:—Expanse, 2 in. The whole inner area of all wings tawny fulvous, the streak or blotch bearing the apical ocellus of fore wing paler, and bounded interiorly by a dark rectangular costal patch, sharply defined against the fulvous ground. The apex of the fore wing and outer margins are dark greyish brown like the type, and the costa and inner margins lightly shaded with the same. The under side of fore wing entirely fulvous, except the costal and outer margins and the ocelli. That of hind wing is very strongly marked, and the waved pale median band very white.

Epinephele ianira, *L.*—Everywhere common. The male sometimes shows on the fore wing a series of faintly-marked fulvous blotches, and the apical ocellus has sometimes a second small one attached below. The Rev. James Bristow has a specimen with a small ocellus towards the anal angle, and a minute one between it and the apical. This aberration is evidently a reversion to the general design of the Satyridæ, and thus is very interesting. Mr. Dale refers to this aberration as having come under his notice also ('British Butterflies,' p. 98). Occasionally in Ireland the female shows an equally interesting genetic character, in the apical ocellus being bipupilled as in *tithonus* and *ida*. This aberration has been taken in Westmeath by Miss Reynell, and I have others. I have also seen similar specimens from Scotland and Kent in Mr. Tugwell's and Mr. Tutt's cabinets respectively. The female is often very large and brightly coloured, the fulvous patch much extended, and on both wings. I have seen this in Galway and in Monaghan, and elsewhere. It would appear to be the var. *splendida* of Dr. Buchanan White. I have one specimen from Waterford (*U.*), with large fulvous band on fore wing only, and the ocellus unpupilled.

Epinephele tithonus, *L.*—This species seems to be almost confined to the southern counties. Mr. Birchall records it from the Co. Wicklow, where, however, it must be scarce. Mr. Sinclair mentions a specimen taken by Mr. G. Webb near Dublin. A few taken in Galway (*R. E. D.*). It occurs at New Ross (*B.-H.*), Co. Wexford; in Co. Waterford at Cappagh, abundant; Minehead, Queenstown, and Glengarriff, abundant. A similar genetic aberration, both in male and female, to that described as occurring in the preceding species, *i. e.*, with two spots below the apical ocellus, is preserved in Mr. Tugwell's cabinet from Devonshire; and I have a similar one from Brecknockshire. I have not observed it in Ireland. I have an Irish specimen with the whole upper and under sides of a unicolorous ochre colour, like that of *Cœnonympha pamphilus*, the apical ocellus of fore wing being dark and distinct above and beneath, but the marginal border almost obsolete. The paler waved band on under side of hind wing is represented.

Epinephele hyperanthus, *L.*—Mr. Birchall remarks that this butterfly is rather local in Ireland; but I think this is only true in so far as that it is chiefly confined to sheltered meadows. It is very common in many places in the counties of Dublin, Wicklow, Waterford, Cork, Kerry, Limerick (*N.*), Galway, King's Co., Westmeath, and Leitrim; in Monaghan at Drumreaske, and elsewhere; Tyrone at Favour Royal; and in Donegal, about the town of Donegal and Lough Eske, Mountcharles, Rathmullen, and Inishowen (*W. E. H.*); near Derry rare and local (*C.*); Co. Antrim, Ballymoney, abundant (*C.*), also at Antrim; and generally abundant near woods throughout the county (*W.*). It varies in the size and number of the ocelli, and the male sometimes is devoid of them on the upper side; but I have not noticed the var. *arete*, perhaps for want of searching. A female has been taken at Cromlyn (*Mrs. B.*), with the annular spots on the fore wing as large above as they are generally beneath. The tendency seems rather toward the development of the ocelli in the Irish insect than their suppression.

Cœnonympha typhon, *Rott.* — Widely spread throughout Ireland on the bogs and mountains. Mr. Birchall, who found it commonly in Galway, Mayo, and Kerry, was of opinion that the Irish form was the typical *davus* of Fabricius, as distinguished from the darker and more ocellated var. *philoxenus*, Esp. (*rothliebii*, Stgr.), from Lancashire, Westmoreland, and Yorkshire. It is true that I have at Killarney, Westmeath, Galway, and Sligo, met with single specimens of the var. *laidion*, but the Irish usual form is well ocellated, frequently of a dingy brown coloration, and is distinctly a transitional form between the two extremes. It is interesting that the characters presented do not much differ over such wide tracts of bog and moor. In the vicinity of Mohill, Co. Leitrim, and on the banks of the Shannon

near Ballinasloe, I have found the darkest specimens, with the under side of hind wing darkly shaded, and the ocelli large and strongly marked. It varies in size, but generally averages that of the Yorkshire variety. Localities:—Co. Kerry, widely spread; also Co. Cork, Co. Sligo, on the Oxhill range and near Lake Gill; plentiful near Ballinasloe and by Banagher eastward over the bog Allen to Kildare, King's and Queen's Cos.; near Mullingar and on the bogs of Westmeath, very abundant; Connemara and Co. Galway, generally abundant; Tyrone and Monaghan, &c.

Cœnonympha pamphilus, *L.*—Common in every suitable locality, varying somewhat from pale yellow to a strong ochreous colour. The ocellated markings and interrupted band on the under side of hind wing also vary, but not in any remarkable degree. Mr. Russ takes specimens near Sligo with fringes slightly tinged with yellow.

(To be continued.)

NOTES AND OBSERVATIONS.

Variation of Zygæna trifolii.—Although the fact does not appear to be generally recognised, the typical form of this species is that in which the central pair of spots are united. I have examined considerable numbers of living specimens in the field, also a great many set specimens which have been sent me by correspondents in various parts of the country, and find that the typical form is much less common than that in which the central spots are well separated. In the following remarks on the variation of *Z. trifolii*, it will be convenient to consider the commonest form as the type; the various mutations can then be tabulated as follows:—

a. (*orobi*, Hübn., fig. 133.) Central pair of spots well separated. In some examples of this form the upper spot of central pair is very small. The lower one is variable in shape; most frequently it is round or nearly round, but often more or less oblong or square, and sometimes triangular.

b. (*trifolii*, Esper, pl. xxxiv. fig. 5; Hübn., fig. 135.) The central spots united, but quite free from either basal or outer spots.

c. (*glycirrhizæ*, Hübn., fig. 138.) The central spots united together, and also with the outer or fifth spot. Union of the central confluent spots with the outer spot is effected by an inward extension of the lower edge of the latter, and an outward expansion of the former. Sometimes the spots referred to are only united on one wing.

d. (*basalis*, Selys, Ann. Soc. Belg. 1872.) The central spots confluent and united with the basal pair. In most examples of this form union of the spots is effected by an inward and outward expansion of the lower central and basal spots respectively, but in some rare instances the four spots are as broadly connected as they are in var. *e*; the outer or fifth spot is in all cases isolated.

e. (*minoides*, Selys, Mém. Soc. Roy. Sci. Liége. 1844; *confluens*, Staud. Cat. 1871.) All the spots united, forming a longitudinal band with irregular edges. This is probably the most extreme form of variation in marking to which the species is subject. Sometimes the basal and confluent central

spots are only connected by a thin dash, and a similar dash unites the central spots with the outer one. This modification is represented by Hübner's figure 166, and appears to be a combination in part of the forms *c* and *d*.

I have taken one or more specimens of each of the above forms this year in Middlesex. Besides the aberration in markings the species also varies in colour.

f. Hind wings and spots on fore wings yellow. Mr. Christy discovered several specimens of this form (which, I believe, had not been previously observed) in West Sussex this year. I understand that they were found in company with ordinary coloured specimens, and that they exhibit a tendency to vary in the same way as typically coloured *trifolii*.

g. Hind wings and spots on fore wings orange-red. I have two examples of this colour, and some others of a slightly deeper shade. All these were taken in Middlesex this year, together with a specimen of the *orobi* form, in which the lower spot of central pair is yellowish red.

The blue-black border of hind wings varies greatly in width; it is often narrower in the typical form than in var. *orobi*, but some examples of the latter have the hind wings more narrowly bordered than typical *trifolii*. As a rule, modification in the width of this border appears to be quite independent of variation in the markings of fore wings.—Richard South; 12, Abbey Gardens, St. John's Wood, N.W.

Note on the Larva of Acronycta alni.—On the 12th of August, last year, I was fortunate enough to take, near Cardiff, a single larva of *Acronycta alni*, and on the 25th inst. I had the satisfaction of seeing a fine female imago emerge. A few notes which I made respecting this larva may be of interest, and I venture to send them to you. The colour of the larva is sooty black, the surface of the body being dull, while the head and legs are very glossy and like jet. The head is about as broad as the second segment. On each segment is a raised sulphur-coloured patch crossing the back transversely, and terminating abruptly without reaching the spiracles; these patches have rather the form of a blister, and are depressed in the middle in the direction of their length; they vary in size, and those on the 11th and 13th segments are absent or nearly so. The larva carries a remarkable series of black appendages, each of which may be compared to a feather stripped to the quill, excepting the tip; they are soft, and proceed from the ends of the dorsal patches; there are three on each side of the 2nd segment and one on each side of the 5th to 10th inclusive, and of the 12th. The 12th segment is rather more prominent than the others. I found this larva feeding at about sunset on the broad-leaved sallow, at a height of about 10 ft. from the ground and resting on the upper surface of the leaf; in fact, the mysterious appearance of its black head and six anterior appendages in motion at the edge of the leaf it was eating was what drew my attention. When disturbed I found it to have a habit of swinging the head round to the side of the body, and taking up the posture so remarkable in its near relative, *A. megacephala;* much annoyance only caused it to crawl away quickly. I should be glad to hear whether it has been found that this larva has the power of emitting any odour. A tin box in which it was confined was perfectly sweet before it contained it, but in a few hours afterwards I found it smelling quite putrid. I tried to trace the odour to the larva, but could not with certainty, and for the few remaining days of the latter's existence it remained. The larva then descended to

the bottom of the box (I had omitted to put any mould for burrowing) and lay motionless under its food, without making any attempt to protect itself, and there in due time pupated.—L. R. Crawshay; 11, Manilla Crescent, Weston-super-Mare, April 29, 1893.

Insects and the Search-light of a Warship.—In a recent lecture Mr. L. Newitt, electrician at the Elswick Works, referring to the electrical search-lights, said that in the late wars around the coast of Egypt, when the ships were over two miles from the shore, it was found that millions of winged insects were attracted by this beam of light, and travelled along the beam until they struck the glass in front of the projector, and fell into the well around the search-light, where they accumulated into a seething mass two feet deep. They had to be cleared out by the free use of a hose pipe; but these insects were such a pest that it became difficult to find a man who would stand by the projector to keep it working, owing to the attacks made upon him.

Lithostege griseata.—This local moth is one of the species which sometimes passes two winters in the pupa state. In July, 1891, I was staying at Tuddenham, Suffolk, and having read in the 'Entomologist' that it occurred there, I searched the food-plant (*Sisymbrium sophia*) and found a few larvæ feeding upon the seeds, which changed to pupæ soon after. Only one moth emerged the following year (on 29th May). Four others appeared in April of the present year. They are very early, probably on account of the remarkably warm weather and having been bred indoors.—W. Paskell; 48, Whyteville Road, Forest Gate, E.

Removal of Grease from Moths.—The following additional remarks upon this interesting subject may be useful:— Petroleum is rock-oil (Canada; United States). Benzoline is the spirit distilled from petroleum; but it is not entirely free from oil. Benzine (or benzole) is the spirit still further rectified by distillation, and is (or ought to be) entirely free from oil. The difference in purity between benzoline and benzine can be tested in the following manner:—Pour a little on a piece of clean paper. After evaporation the benzoline will leave a trace of grease, varying in intensity according to the purity of the spirit. The best benzoline should have a delicate steel-blue tint. In the case of benzine, so evanescent is it that you have hardly time to turn before it is gone; but there should be no trace left behind, except the smell. The name "benzine" is often applied to benzoline, the test in this case being the price. "Collas" is, if I remember rightly, the name of a maker. The price, per pint, of benzoline is (about) fourpence, of benzine (about) two shillings. It will be observed from my remarks (Entom., p. 109) that I use *benzoline* for cleaning moths —and plaster of paris. The latter is applied as soon as the insect is lifted from the benzoline. It materially assists the drying, and absorbs any oil that may attach to the spirit. Even with the use of benzine, if the cleaning of a moth be confined to one immersion, the benzine will hold, in solution, the "grease" of the insect, and will therefore become impure. Hence the value of the plaster of paris, or of the continued use of benzine. It is evident that an insect can be thoroughly cleaned with the use of this spirit and without the help of plaster of paris. The chief consideration, to my mind, is the one of cost. I can assure Mr. Greene I have tried eviscerating the bodies of moths, labelling, breaking them off and putting them on again. But I failed. I never could, for instance, in re-fixing a

body, imitate to my satisfaction the natural symmetry and *pose*. But this, of course, only proves my individual inability, and not, as Mr. Greene generously suggests, that I am a skilful manipulator. The deviations from Mr. Greene's method, handed to me by a friend, were, in my case, most welcome. They may be of service to others who are not expert.—J. Arkle; Chester, May 3, 1893.

Cidaria truncata (russata) var. perfuscata.—The caterpillar I referred to in my notes dated April 22nd (p. 197) turned out to be *Cidaria truncata* var. *perfuscata*. I found it at the bottom of a hedge just outside Chester, upon *Geum urbanum* (herb bennet or common avens), March 12th. It was in the act of changing its last skin. The following is a description:—About ¾ in. long, and very thin. Colour, pale green, with two whitish, dorsal lines. Segment divisions yellow. Two pale green, anal, lateral and pointed projections faintly tipped with pink. The caterpillar folded over a portion of a leaf of its food-plant, March 19th. Although supplied with earth it spun a very slight silken covering inside this fold, and changed into a smoky-looking, ochreous chrysalis. The moth appeared April 24th.—J. Arkle; Chester, April 25, 1893.

Note on the Larva of Antheræa cytherea.—I see, *ante* p. 135, a note from Johannesburg concerning a caterpillar stated to be "a large, handsome *Bombyx* . . . which seems to be widely distributed in South Africa." Perhaps this insect is the larva of *Antheræa cytherea*, which is very common in certain localities near here, and which is very fond of the guava tree. I got a few of the larvæ last season (October and November), and under very adverse circumstances managed to get three to the pupa stage, of which apparently one is a female. The perfect insect is due to appear this month. My information concerning this insect was kindly given me by Mr. Trimen, the Curator of the S. African Museum.—Philip de la Garde; H.M.S. "Raleigh," Cape of Good Hope, April 20, 1893.

Lepidoptera bred in May, 1893.—The following species of Lepideptera were bred by myself during May of the present year, viz.:—*Papilio podalirius*, L., a female, apparently slightly passing to the variety *undecimlineata*, Eimer, from a chrysalis found on a wall here, on April 17th last. *Undecimlineata*, it may be well to state, has eleven black bands on the front wings, instead of the usual number, which give the insect a somewhat striking appearance. *Anthocaris belia*, Cr., one female, bred from a larva found at La Roquette (Alpes-Maritimes) on March 24th last, which pupated on April 20th following, and am expecting more from chrysalids of this year's rearing. I may here be excused for noting, that the spring pupæ of *belia* are of a faint greenish hue, with dull crimson-reddish dorsal line, and edged with stripes of the same colour; tip, reddish. Hybernating chrysalids of the summer brood, on the other hand, are greyish brown, and the points are black. This latter batch also seems somewhat smaller than those of the spring brood, and they often remain for two or even three years in the pupal state. A male example of *A. cardamines*, L., came out in my puparium, reared, *ab ovo*, from an egg found, among others, in Nice, last spring. I also got a crippled female of the same species in one of my cages, also from last season, but am unable to find the date of its emergence in my diary. Of *Anthocaris euphenoides* (which seems rather scarce this year), a female was bred with a tendency to deformity, on May 3rd last, from a larva, among others, fed on *Sisymbrium*

sp.? at St. Martin Vésubie, Alpes-Maritimes. This locality is just 3300 feet above sea-level, and it is interesting to note that this is almost the extreme limit of its distribution in the mountains, though I have seen it in a spot, near this latter place, which is nearly 4000 feet in elevation. And here, perhaps, I may be allowed to ask, have any readers of the 'Entomologist,' engaged in rearing pupæ, ever noticed the apparent tendency of many species bred from hybernating chrysalids to emerge in a crumpled, or otherwise deformed state? I do not remember to have ever seen the fact referred to. It also appears to me that pupæ which pass the winter months, require a much greater amount of attention (proportionately) to make them yield imagos in good condition, than those spring or summer ones which hatch out in a few weeks' time. *Charaxes jasius*, L. (a female), came out in my puparium on May 1st, from a caterpillar, among others, received from Hyères. The pupa from which it emerged was formed on March 14th last. I may add that I continue to breed specimens of *jasius* in my cages at the time of writing. *Pterogon proserpina*, Pall. (= *œnotheræ*, Schiff.), one example in my puparium on May 3rd last, from a hybernating chrysalis bred last autumn in the Alps, to the north of Nice; and as I still have two more pupæ left, I hope to get further specimens.—F. Bromilow; Nice, France, May 22, 1893.

Prolonged period of emergence of larvæ of Orgyia antiqua.—On Sept. 18th, 1892, I found a web of the above moth, the ova laid, the female being still present and alive. Some few, about half a dozen outlying ova, hatched in about three weeks afterwards. The main lot, however, did not begin to hatch till March 20th, 1893, since which time they have been coming out in batches of a few at a time, with intervals of ten days or a fortnight between the batches; the last hatched a fortnight ago, and many eggs still remain unhatched. Newman gives ten weeks as the period of emergence, but if all these eggs prove fertile, and keep on hatching as they have done hitherto, there will be quite ten months between the emergence of the first and last larva.—N. F. Searancke; Mitcheldean, Gloucester, June 18, 1893.

Larvæ of Vanessa io feeding on Hop.—On June 17th I found about twenty larvæ of *V. io* feeding on the common hop (*Humulus lupulus*). Never having seen or heard of this caterpillar feeding on any plant other than *Urtica dioica*, I think it worth while to record the fact.—N. F. Searancke; Mitcheldean, Gloucester, June 18, 1893.

Hybernated Vanessa antiopa with yellow borders.—On March 30th last I captured, about ten miles from Wiesbaden, a fine hybernated specimen of *Vanessa antiopa* with yellow-bordered wings. Several hybernated specimens have been taken here, but all, with this one exception, had white borders.—E. A. Molesworth; Villa Allblick, Bachmayerstrasse 10, Wiesbaden, Germany.

Note on Abraxas grossulariata.—A friend of mine, writing to me from Hertfordshire on the 10th of June, called my attention to the fact that the larvæ of *A. grossulariata* had during this season deserted their usual food, *i.e.*, gooseberry, for a particular species of evergreen. Since the receipt of this letter I have made several enquiries from men owning fruit-gardens. One informs me that last year the larvæ did commence eating some of his evergreen shrubs, but the damage was trifling compared to

this season. It seems they have made this plant their sole food this summer, as almost all the currant and gooseberry bushes have escaped being attacked by these voracious pests. I have taken larvæ and pupæ, the latter being found on the under surface of the leaves of the evergreen. During the last few days I have captured many imagines, which could be seen flying from dusk till an hour after midnight. On the 14th I netted 26 females, but only 4 males, within an hour, our hall-door lamp proving a great attraction. The following night I again captured 32 females and 12 males, making a total of 74 on the two occasions. I notice that where this evergreen flourishes the moth is certain to be found. On the latter occasion they were most numerous up till half-past one o'clock in the morning, seeming to take advantage of the fresh midnight air. Though a resident in a London suburb, I find both larvæ and imagines of *A. grossulariata* most plentiful. As regards these Lepidoptera taking to evergreen in preference to gooseberry or currant, I should like to know if this fact has been recognised by other entomologists.—H. W. Bell-Marley; 60, Shaftesbury Road, Hammersmith, London, W., June 20, 1893.

[The evergreen to which our correspondent refers is probably the Japanese spindle-tree (*Euonymus japonicus*), which was introduced into this country about the beginning of the present century. The larva of *A. grossulariata* is known to feed on this shrub; indeed, in most of the London gardens the *Euonymus* is about the only food the larva in question could find to feed upon. We do not, however, remember to have seen any previous record of the larva preferring *Euonymus* to *Ribes*.—Ed.].

Larvæ of Agrotis ripæ. — I should be very glad of any assistance to solve a question that has been puzzling me for some time, namely, what becomes of the larvæ of *Agrotis ripæ* in the spring, after hybernation; they are very plentiful here in autumn, but in spring, search where I will, I can find none, though I have looked for them about where the food-plant grew, and some way up into the sandhills, under the banks, dry roots of sedge, &c., and dug down some depth in case the larvæ had gone deep into the sand. I shall be much obliged for any enlightenment on the subject.—Spotswood Graves; 29, Victoria Street, Tenby, June 17, 1893.

Notes on Nyctemera annulata.—The introduction of alien plants and insects into remote islands, and their effects, sooner or later, on the indigenous faunas and floras, is well illustrated in New Zealand. The rapid or slow extinction, in some districts, of some native plants, has caused numerous species of endemic insects to disappear at a corresponding ratio, When, however, alien plants of the same natural order have supplanted the native species, it is interesting to note how several species of insects have adopted the alien plants as food, and continue to multiply more than when their larvæ fed on the native plants; others, again, are becoming practically omnivorous, and are already causing serious loss to owners of both large and small gardens. The case of *N. annulata*, a large diurnal moth, may be cited as one of perfect adaptation to new food, by which the species continues to increase annually. The larvæ originally fed (and still feeds, in districts where the native flora is little affected) on *Senecio bellidioides*. In settled districts this plant has been supplanted by the introduced *S. vulgaris*. On the latter, and on the introduced *Cineraria maritima*, the larvæ now subsist, and thrive well on both. It may be here interesting to note that the larvæ, when feeding on *C. maritima*, consume only the soft fleshy upper surface of the leaves, and never, so far as I know,

eat the whole leaves or other solid parts of the plant. The substance must be very nutritious, as they feed up in about the same time as when fed on *S. vulgaris*, and are equally well developed. Mr. G. M. Thomson, F.L.S., informs me that last spring he planted out some greenhouse cinerarias in the flower border, and in a short time they were stripped of their foliage by larvæ of *N. annulata*. The same gentleman also records the larvæ as feeding at Dunedin on a glabrous-leaved species of introduced pelargonium. It is important to record these and other changes in the insect fauna of newly colonized countries, as they are interesting in their bearing on the specialisation of species. Although many are highly specialised, some are able to adopt new food or acquire omnivorous habits, and thus survive the change; others are unable to change their food or environment, and rapidly become extinct. No doubt many remarkable forms have already passed and are now passing away from this cause alone. It is the same cause, only in degree, which has extirpated, and continues to extirpate, several anomalous species in the New Zealand Avifauna.—W. W. Smith; Ashburton, N. Z., April, 1893.

Homoptera of Britain. — J. Edwards, Colesborne, Cheltenham, appeals to collectors of Homoptera for notices of captures in any part of the United Kingdom, for his forthcoming work on that group.

CAPTURES AND FIELD REPORTS.

The Early Season :—

Bucks.—I have to record the capture of a specimen of *Argynnis adippe* this afternoon, a short distance from the Chalfont Road station, in fine condition, and that to all appearance had freshly emerged from the chrysalis. Is not June 8th a very early date for this species?—F. A. Walker; Dun Mallard, Cricklewood, June 8, 1893.

Cambridgeshire.—Papilio machaon was out in full force in Wicken Fen on Thursday, April 27th, and a number were taken by about half a dozen Cambridge undergraduates, who had come up the river in a steam-launch, each armed with a net for that purpose. I decided to leave the field to the younger men, as I had captured the butterfly in the same locality several years ago, and perceiving that there were already quite as many engaged in the exciting chase as were likely to prove successful. Another large party was present on the occasion, consisting of male and female pupils of the popular Professor McKenny Hughes.—F. A. Walker; Dun Mallard, Cricklewood, June 8, 1893.

Devonshire.—I was much interested with the various notices of early captures which appeared in the last number of the 'Entomologist,' and as I spent a considerable part of April at Instow, North Devon, and met with some species at an earlier date than yet mentioned, I send you a few notes of my experience. I arrived at Instow on the 14th of the month, and on that day, while the train was stopping at Morchard Road, noticed a bright and fresh *A. euphrosyne* disporting itself among the flowers in the pretty little station garden. *N. tages* was also seen the same day; and on the 16th was followed by *S. alveolus*. On the 18th, *tages* and *alveolus* were out in numbers; and *C. phlæas*, *A. fuliginosa*, *P. gamma*, *H. cespitalis*, and

P. purpuralis were taken. After sunset I went to the sand-hills, and took about fifty full-grown larvæ of *L. littoralis*. They were not as plentiful as usual, and no doubt the greater part had already buried. In ordinary seasons they are not fit to take until nearly the end of May. On the 20th, near Torrington, *A. euphrosyne* was well out, and *Euchloë cardamines*, *P. napi*, and *Pararge egeria* were in numbers; one *L. sinapis* was taken, and *L. argiolus* seen. On 21st, *P. palpina* emerged in a breeding-cage out of doors, and several *S. alveolus* ab. *taras* were taken. On the 25th, *E. mi*, *A. plagiata*, *C. unidentaria*, *L. petraria*, *C. pusaria*, *F. atomaria*, *M. montanata*, *A. candidata*, *L. adustata*, *C. propugnaria*, and *E. venosata* were obtained. On 26th, *E. glyphica* joined *E. mi*. On the 27th, a hot, hazy day, a party of us went to some woods and marshy meadows near Torrington. Here we found *A. euphrosyne* out in profusion, and many of them were already much worn. A beautiful variety was obtained. The chief feature of the day, however, was the capture of *A. selene* (1), *M. athalia* (2), and *M. artemis* (5), surely wonderfully early for these three species. Larvæ of *H. elutata* were in great abundance upon bilberry; *A. villica* was found sitting on a wall, just emerged. On the 29th, a full-fed larva of *G. papilionaria* and a dozen half-grown larvæ of *A. flavicornis* were taken from birch. The following were observed at Instow, previous to the 14th April, at the dates given:—*P. egeria*, 23rd March; *P. rapæ*, 25th; *P. brassicæ*, 30th; *A. cardamines*, 7th April; *P. megæra*, 11th. At Dovercourt, Essex, *P. rapæ* was first seen on the 12th March; and *B. parthenias* was common at Urabness on 21st. —Gervase F. Mathew; Lee House, Dovercourt, June 12, 1893.

Many species of Lepidoptera having been unusually early during the extremely hot weather of the last two months, a few dates may be of interest:—April 6th, *Nisoniades tages;* 13th, *Pararge egeria*, *P. megæra*, *Lycæna icarus;* 17th, *Euchloë cardamines;* 19th, *Arctia menthastri;* 24th, *Platyptilia gonodactyla*, *Leioptilus microdactyla;* 25th, *Hepialus lupulinus;* 29th, *Argynnis euphrosyne*. May 2nd, *Arctia lubricipeda*, *Acidalia marginepunctata;* 3rd, *Arctia villica;* 5th, *Dicranura vinula;* 9th, *Dasychira pudibunda;* 10th, *Notodonta trimacula* var. *dodonea*, *Grammesia trigrammica*, *Dianthœcia albimacula*, *Hadena adusta*, *H. genistæ*, *Agrotis exclamationis*, *Miana strigilis*, *Eubolia plumbaria;* 11th, *Notodonta camelina*, *Euplexia lucipara;* 12th, *Agrotis plecta*, *Axylia putris;* 13th, *Leucania pallens;* 14th, *Phalera bucephala;* 15th, *Neuria reticulata*, *Rusina tenebrosa*, *Agrotis c-nigrum;* 17th, *Xylophasia rurea*, *Melanippe montanata;* 19th, *Camptogramma bilineata*. Three insects, viz., *D. pudibunda*, *A. villica*, and *G. trigrammica*, have been more than abundant.—John H. Still; Seaton, Devon, May 20, 1893.

Gloucestershire.—I saw a male specimen of *Colias edusa*, in good condition, at Bitton, on the 28th of April this year.—Chas. Bartlett; Branscombe, Woodstock Road, Redland, Bristol, June 9, 1893.

Hants.—The following is a list of my principal captures whilst staying in the New Forest:— May 18th, *Macaria alternaria* and *Eupisteria heparata* (out of alder), *Dasychira pudibunda*, *Bombyx rubi*, *Odontoptera bidentata*, and *Drepanula falcula;* 19th, *Notodonta dodonea*, three specimens, two male and one female, the latter laying about sixty eggs on the 21st, from which larvæ emerged on the 1st and 2nd June; 20th, *Sphinx ligustri* (at rest on a fence) and *D. pudibunda* (several males assembling round a newly-emerged female); 21st, *Macroglossa fuciformis* (common), *M. bombyliformis* (one specimen rather worn), and *Macaria liturata* 22nd, *M. fuciformis*, *Lithosia mesomella*, and *Amphidasys betularia;* 23rd,

Lithosia rubricollis, *Venilia macularia*, *Tanagra chærophyllata*, and *Sphinx ligustri*, hovering around rhododendrons at dusk; 24th, *M. fuciformis*, *M. bombyliformis* (in extremely bad condition), *Nemeophila russula*, *Bombyx rubi*, and *Drepanula falcula*; 25th, *N. russula*, *D. pudibunda*, *L. rubricollis*, *Lycæna trifolii*, *D. falcula*, *Diphthera orion* (two at sugar), and *Argynnis adippe*; 26th, *Euchelia jacobææ*, *Aplecta herbida* (one at sugar); 27th, *Zygæna trifolii* and *Argynnis adippe*. I also found the following larvæ:—*Liparis monacha*, *Amphidasys prodromaria*, *Cymatophora ridens*, and *Thecla quercus*, on oak; *Geometra papilionaria*, on alder; *Apatura iris* (one full-grown specimen on May 25th, which turned into the chrysalis state on the 29th, and from which a beautiful male emerged on June 15th), *Smerinthus ocellatus*, *Notodonta ziczac*, and *Vanessa polychloros* (common), on sallow; the last named was also common on the elm trees round Lyndhurst and Brockenhurst; and *Macroglossa fuciformis*, twenty-two larvæ on May 27th, feeding on scabious; one full-grown, two more in the last stage, and the others of various sizes. Sugaring was a complete failure, only eight moths being taken in six nights.—Geo. Richardson; 19, Avondale Road, Peckham, S.E., June 19, 1893.

Kent.—On Whit-Monday last a male *Colias hyale* was taken by one of the Messrs. Davis, of Hythe Street, Dartford. It was flying near the railway station in that town, and is in tolerable condition, but has evidently hybernated.—E. Sabine; Erith, June, 1893.

Middlesex.—In May I took a cocoon of *Zygæna filipendulæ*; the moth emerged a few days ago. This is the only specimen of *Z. filipendulæ* I have ever taken in this neighbourhood. Of other day-flying moths, *Tanagra atrata* has been particularly abundant here, but *Euclidia mi* less common than usual. I have lately seen a specimen of *Deiopeia pulchella*, which was captured on the railway bank near Barnet last June.—R. Dymond; Ferney House, Southgate, N., June 19, 1893.

Surrey.—On the 15th June I observed a specimen of *Orgyia antiqua* flying in this neighbourhood, and another this afternoon in Clapham Park. The extraordinary continuance of dry and warm weather has brought out many species a month or six weeks earlier than usual. I never remember having seen this species on the wing before the end of July. I have been trying sugar, and failed; the honey-dew prevents anything coming to it, I suppose.—Samuel Stevens; "Loanda," Beulah Hill, Upper Norwood, June 17, 1893.

At Dorking, on June 4th, I had the good fortune to come across a newly emerged female *Stauropus fagi* at rest on a beech tree.—G. Richardson; 19, Avondale Road, Peckham, S.E., June 19, 1893.

Wales (*South*).—The long continuance of hot, dry weather has made the season here an unusually early one. *Argynnis euphrosyne* was out near here on April 5th. On April the 19th I saw the first *Euchloë cardamines*; also several *Pararge megæra*, *P. egeria*, *Nisoniades tages*, &c.; three days later I found *Aspilates citraria*. On looking back to my notes, I see the first of this insect I took last year was on May 25th. Many of the common June insects I have taken during May, as, for instance, *Xylophasia rurea*, *Hepialus humuli*, *Plusia chrysitis*, &c.; in fact everything seems a month earlier than usual. *Argynnis paphia* and *A. aglaia* have been on the wing some time; one of the latter, which I took the other day, was quite worn. I never remember to have seen *A. paphia* here earlier than the second week in July. Sugar, so far, has been a failure.—Spotswood Graves; Victoria Street, Tenby, June 17, 1893.

Plusia moneta at Dorking.—I have the pleasure of informing you that, on the evening of 29th May, I took in my garden an example of *Plusia moneta* in excellent condition.—Frederick Hood; Denfield, Dorking, June 12, 1893.

Plusia moneta at Tunbridge Wells.—This insect seems to have become a resident here, as my friend Dr. Francis Jaffrey captured two specimens at light in the middle of the town on the 19th and 24th inst.; and my son took another on the 26th inst., in the same garden where I took five specimens in 1890 and 1892. The three taken this year here are very small.—R. A. Dallas Beeching; Tunbridge Wells, June 27, 1893.

Sphinx pinastri in Suffolk.—I have taken six more *Sphinx pinastri* in the same fir woods as last year, and nearly in the same position in the wood.—Rendlesham; Rendlesham, Woodbridge, June 13, 1893.

Acronycta alni in April.—On April 10th I had the pleasure of breeding a splendid female specimen of *Acronycta alni* from a pupa found here last autumn in the decayed wood of an ash tree, growing near a hawthorn hedge, upon which the larva had probably fed.—Chas. Bartlett; Branscombe, Woodstock Road, Redland, Bristol, June 9, 1893.

Captures at West Wickham.—Whilst staying at West Wickham on the 22nd May last, my friend Mr. Ilstonbox and I had the good fortune to take three specimens of that lovely insect *Cymatophora fluctuosa*. Two of these were in perfect condition, whilst the third was decidedly worn. We took them at rest about mid-day from trees on the little patch of ground in the woods, which is known as "Glebe-Land." Amongst other things taken were *Ephyra trilinearia* (3), *E. punctaria* (1), *Corycia temerata* (1), *Macaria notata* (in abundance), *M. liturata* (3), *Fidonia piniaria* (a regular nuisance, all males but one), and *Notodonta camelina* (1). On the following Sunday, the 4th of June, I took in precisely the same spot two specimens of *Boarmia roboraria*, and about a dozen *Tephrosia extersaria*.—F. J. Robinson, Jun.; Surrey Cottage, Water Lane, Brixton, June 13, 1893.

Erratum.—Page 197, line 10 from bottom, *for* Ambresburg *read* Ambresbury.

SOCIETIES.

Entomological Society of London.—*June 7th*, 1893.—H. J. Elwes, Esq., F.L.S., F.Z.S., President, in the chair. Mr. George Willis Kirkaldy, of St. Abbs, Worple Road, Wimbledon, S.W., was elected a Fellow of the Society. Mr. W. C. Boyd exhibited varieties of *Fidonia piniaria* and *Thecla rubi*, taken at Bournemouth on May 20th, 1893. Mr. C. O. Waterhouse exhibited certain large galls on oak-leaves from Mexico, one of which was apparently produced by a species of Cynipidæ. Mr. A. Cowper Field exhibited varieties of *Smerinthus tiliæ*, bred between 1890 and 1893, under varying conditions of temperature, those which had been exposed to a lower temperature being much darker than those which had been exposed to a higher. Mr. Merrifield made some observations on the subject, and remarked that, as far as his experience went, no hard and fast rule could be laid down with regard to the production of the lighter or darker colourings, as a high temperature sometimes produced dark forms. Mr. W. M.

Christy exhibited a series of *Zygæna trifolii*, including very many yellow forms, all, with one exception, taken at one spot during the latter half of May, 1893, and belonging to one colony. Some of the specimens were more or less incomplete, both in structure and colour. Lord Walsingham, Mr. Merrifield, and others took part in the discussion which followed. Canon Fowler exhibited cocoons and specimens of *Coniatus suavis* var. *chrysochlora*, Luc., taken by Lord Walsingham in great abundance on the flower-shoots of tamarisk in the West of Italy. Mr. Chitty exhibited black varieties of the following Coleoptera from the slopes of Ben Cruachan, N.B.:—*Carabus violaceus* and *arvensis*, *Pterostichus versicolor*, *Phyllopertha horticola* and *Telephorus figuratus*, and stated that the latter seemed a permanent race, as it occurred both in 1892 and 1893. The President remarked on the great abundance of *Coleophora laricella* in Gloucestershire, and stated that they were committing great ravages among young larches. Lord Walsingham stated that he had seen young larches at Carlsbad completely bleached by this moth. It was suggested by several Fellows of the Society that care should be taken to observe the occurrence of second broods of insects during the year. Mons. Wailly exhibited a collection of Lepidoptera, Coleoptera, and Orthoptera from New Zealand. A discussion followed, in which Lord Walsingham, Dr. Sharp, Mr. McLachlan, Mr. Durrant and others took part. Mons. Wailly further exhibited cocoons of various silk-producing Lepidoptera, and stated that the larva of *Attacus pernyi*, whose food-plant is oak, had been reared in Trinidad on *Terminalia latifolia*.—W. W. Fowler, *Hon. Secretary*.

South London Entomological and Natural History Society.—*Thursday, May 25th*, 1893.—The President in the chair. Mr. Adkin exhibited a bred series of *Cidaria suffumata*, Hb., from Forres, with bred series from Dover and Box Hill for comparison; also a bred series of *Lobophora carpinata*, Bork. (*lobulata*, Hb.) from Rannoch, including one extreme banded form, with southern series for comparison. Mr. Gerrard, a specimen of *Syrichthus malvæ*, L. (*alveolus*, Hb.), var. *fritillum*, W. V., from Epping. Mr. C. G. Barrett, a box containing more than twenty species of the Psychidæ, from the Continent of Europe, and especially desired to gain further information with regard to these little-known and obscure insects. He stated that the larvæ lived in cases, after the manner of the Coleophora, on fir, furze, heath, grass, and the lichen of trees, rocks, and bushes; and that many entomologists considered them to be Bombyces, not Tineina. Mr. Weir remarked that all the species seemed excessively local, and gave his experience with *P. villosella*, Och., stating that the female did not leave the case, that the eggs were laid and hatched within this shelter, and that most likely the first meal of the young larvæ was the body of their mother. Mr. West, of Streatham, on behalf of Mr. Trenerry, male and female of *Pieris daplidice*, L., captured by a boy at Plymouth; also a specimen of *Smerinthus tiliæ*, L., in which the rosy tint was very strongly developed, making a very beautiful variety. Mr. Turner, a long series of *Hybernia leucophæaria*, Schiff., from varieties with but few markings on a light ground, to forms which were very dark with the transverse lines obliterated, selected from various localities near south London; a specimen of *Panolis piniperda*, Panz., from Westerham, in which green was the prevailing colour; also hybernated specimens of *Pterophorus monodactylus*, L., taken on Feb. 18th in this year. Mr. Warne, a nodule of kauri gum from New Zealand, enclosing a large Longicorn beetle. Mr.

Weir, a species of Hippoboscide taken from an exhausted house-martin (*Chelidon urbica*), most likely *Stenopteryx hirundinis;* also a mass of eggs and young larvæ from the wild rose (*Rosa canina*), which appeared to be those of *Hemerophila abruptaria*, Thunb. He earnestly requested members to make notes of all unusual occurrences during the present phenomenal season, and report to the Society the results of their observations and experiences. Mr. Adkin remarked that a considerable number of species had appeared in his breeding-cages which had been two years or more in pupa. Mr. Perks, a large specimen of a Polyporus, full of coleopterous larvæ, taken at the Society's field meeting at Horsley. Mr Turner then read the report of the Society's field meeting at Horsley on May 13th, which had been most successful and enjoyable.—Hy. J. Turner, *Acting Secretary.*

June 8th.—J. Jenner Weir, F.L.S., President, in the chair. Mr. F. W. Frohawk exhibited a variety of *Melitæa aurinia*, Rott., a most remarkable form, especially on the under side, the normal orange-tawny colouring being replaced by a fulvous-brown, and the markings of the outer half of the secondaries being almost entirely missing; also a somewhat similar aberration of the same species on behalf of Mr. Carpenter. Mr. H. A. Auld exhibited a specimen of *Spilosoma urticæ*, Esp., in which the usual row of black spots down the centre of the body were absent; also a bred series of *Phibalapteryx vitalbata*, Hb. Mr. R. Adkin showed a splendid box of *Asteroscopus nubeculosa*, Esp., from Rannoch, bred in 1893, two being from larvæ fed up in 1890, and the remainder in 1891, Mr. Adkin stating it was not an uncommon thing for this species to remain two years in the pupa. Mr. Weir referred to the view held by some, that certain species resisted any forcing when pupæ, and instanced the second brood of *Pieris napi*, L., in this respect, Mr. Barrett stating it was of the utmost importance that a species like *A. nubeculosa* should have the power of delaying their emergence, if the weather be too unfavourable. Mr. Weir exhibited a specimen of *Aporia cratægi*, L., one of four taken by him in the early part of June, 1839, at Keymer, Sussex, it being then abundant. In 1840, in the same locality, he saw but one; and in subsequent years none at all. This specimen he generously placed in the Society's collection. Mr. Weir also said that large numbers of this species, bred from continental pupæ, had been liberated in the neighbourhood of Windsor. Mr. Frohawk recorded the extraordinary fact of *Limenitis sibylla*, L., having been taken in the New Forest, on the 22nd May.—F. W. Hawes and H. Williams, *Hon. Secretaries.*

Field Meeting.— On Saturday afternoon, June 10th, an excursion was made to Oxshot, under the guidance of Mr. R. South. The railway is very convenient for this spot, as it lands one right on the collecting-ground. Turning to the left after leaving the station, the members quickly dispersed, and among the scattered fir and birch trees *Eubolia plumbaria* was noted in fine condition; *Epinephele ianira, E. tithonus Cœnonympha pamphilus, Syrichthus malvæ*, and one or two *Lycæna ægon* represented the Rhopalocera. From the heather *Ematurga atomaria*, which has been about so long this year, a few *Aspilates strigillaria*, and an odd specimen of *Nemeophila russula* were disturbed; while the denser portion yielded *Cabera pusaria, Acidalia remutaria, Asthenia candidata, Camptogramma bilineata*, and *Lomaspilis marginata.* In this part of the heath the sundew (*Drosera rotundifolia*) flourished, and many patches of the parasitical dodder (*Cuscuta epithymum*) were seen. On entering the fir-woods proper, going north, members were astonished at the vast numbers of

Bupalus piniaria and *Thera variata* which the beating-stick produced, many of the former being in fine condition. On the trunks *Scoparia dubitalis* and *S. truncicolella* were present, one *Ellopia prosapiaria*, a few *Macaria liturata*, in fine condition, and plenty of *Eupithecia indigata*, almost unrecognizable. *Iodis lactearia* was flying, and *Retinia pinivorana* was reported. Specimens of the coleopterous family Coccinellidæ were observed in all four stages, the pupa stage of *Coccinella oblongo-guttata* being especially noticeable, both for its striking colours, and its power of suddenly standing at right angles to the trunk of the tree when disturbed. At length we reached a hedge bordering the fir-wood, and here *Aplecta nebulosa* and *Melanthia albicillata* were taken from the trees, full-fed larvæ of *Panolis piniperda* were beaten, and *Melanippe montanata*, *M. sociata*, *Larentia viridaria*, and *Ebulea sambucalis* were driven out, while *Tortrix viridana* was certainly there. Turning sharp to the left, we reached a damp situation where the bog myrtle (*Myrica gale*), so attractive to Lycænidæ, grows with the marsh violet (*Viola palustris*) and the pennywort (*Hydrocampa vulgaris*). Here *Cataclysta lemnata* and *Hydrocampa nymphæata*, with a solitary specimen of *Leucania impura*, were obtained. Farther on a beautiful piece of undergrowth was reached, which with the adjoining palings produced considerable numbers both of species and specimens. *Melanthia ocellata*, *Phorodesma pustulata*, *Tephrosia punctularia*, among the Geometers, and *Triphæna pronuba*, *Noctua c-nigrum*, *Agrotis exclamationis*, *Xylophasia monoglypha*, among the Noctuæ, were added to our list. A solitary specimen of *Drepana cultraria* was taken, and among the Micros *Pædisca bilunana*, *P. corticana*, *Eupœcilia nana*, and *Elachista argentella*. Many species found before were present, here again including a number of fine specimens of *Melanthia albicillata*. The road was now reached, and the party turned for tea. The walk produced *Coremia designata*, on trunks; a single *Eupisteria obliterata*, from stunted alders; and a nest of *Bombyx neustria*, strange to say, feeding on birch. After a pleasant tea at the porter's cottage, we rambled over the heath, taking abundance of *Pempelia palumbella*, with *Eupithecia nanata* sparingly, and one or two *Hadena porphyrea*. *Acidalia subsericeata* was taken in some numbers just at dusk. Many thanks are due to Mr. Lewcock, who although he lost the proper train and did not join the party till the return journey, has kindly supplied the following notes on the Coleoptera:—"I started to meet the 2·17 train, but just missed it by two minutes. Under the circumstances I decided to take the next train to Surbiton and walk round by the fields through Claygate to Oxshot and collect by the way. I arrived at Surbiton at 3·15, and turned to the left coming out of the station, making for the footpath which skirts the railway bank, and eventually turned into Claygate Lane. Having on one occasion seen a specimen of *Megapenthes lunicollis* taken almost under my nose in this lane, I began working for it, but without success. However, I found a single *Mordellistena humeralis*, sitting on Heracleum flowers; and I may here record that I also obtained one on June 20, 1891, at the Eynesford excursion. In other Umbelliferæ I found several *Grammoptera tabacicolor*, a species common to this locality. In elder blossom one *Quedius cruentus*, which occurs sometimes under bark, but only singly. Also several *Anthocomus fasciatus*, a pretty little red-and-black malacoderm which is frequently found during June at Claygate. By using the sweeping net among the meadow plants, several *Ceuthorrhynchus campestris* and *Prasocuris aucta* turned up, with a few *C. cochleariæ*, *Gymnetron pascuorum*, and several others. All

these are common to the locality. Of course one meets with many species over and over again by working at one place, and it would be quite useless to record all the species found here; for instance, I met with ten species of *Telephorus*, and with the exception of *T. fuscicornis* and *T. discoideus* all are common. It may be worthy of remark that at Eynesford, in 1891, *T. fuscicornis* was the commonest of the group in that district. Another very common beetle on birch, hornbeam, and a variety of things at Claygate is *Luperus betulinus*, and common enough it was on Saturday, falling literally in hundreds into the umbrella. The Black Pond was reached soon after 7 o'clock, but nearly all the Donaciæ had retired for the day, so that only *D. sericea*, with the intermediate forms to *D. comari*, were to be obtained. *Athous niger* and *Gonioctena viminalis* were beaten from sallow, as also was *Crepidodera helxines*. Two or three *Coccinella ocellata* were found on the reeds, and one or two *Erirrhinus nereis*. The final capture was a nice specimen of *Cryptocephalus lineola*, making the third captured at this spot by myself. A great many odd and common things put in an appearance, such as *Adimonia capreæ* and *Strophosomus limbatus*, but the captures are all decidedly uninteresting." So ended another very successful and enjoyable field outing of the Society. The next meeting will be at Westerham, Kent, on July 15.—Henry J. Turner.

North London Natural History Society.—On Friday, May 19th, 1893, the N. L. N. H. S. made their annual excursion to the New Forest. Nine members started; most of them left Waterloo by the 5.50 p.m. train, reaching Lyndhurst Road about 9 o'clock. Thence they went on by omnibus to Lyndhurst, and, dismounting at the 'Crown,' walked about a quarter of a mile to a pretty little cottage on the Brockenhurst Road, known as Lynwood, the recognised head-quarters of the "North London" in the New Forest. Here we received a warm welcome from our worthy landlady, Mrs. Axford, of whom, as regards making her visitors comfortable on the most reasonable possible terms, we cannot speak too highly; and having enjoyed a hearty supper, retired early to bed. On the following morning, Messrs. Battley and Tremayne opened the campaign by working Lyndhurst fences from 5 to 6 a.m. They only obtained one *Lobophora halterata*, and a larva of *Vanessa polychloros* about to pupate. After this, being joined by Mr. Bacot, they started beating up Beechen Lane to see what was about. It soon became evident that if imagines were scarce, larvæ were very much the reverse. *Asphalia ridens*, in swarms; *Thecla quercus*, in good numbers; *Gonopteryx rhamni*, *Miselia oxyacanthæ*, *Psilura monacha*, *Hybernia aurantiaria*, *Nyssia hispidaria*, *Phigalia pedaria*, and one specimen of *Geometra papilionaria*, fell into Mr. Bacot's beating-tray. The day was rather dull, and not many insects were on the wing; so, after breakfast, the whole party started larva-beating, and, in addition to the above, brought down single specimens of *Agriopus aprilina*, *Catocala promissa*, *Asphalia diluta*, and *Pœcilocampa populi*; together with several *Hybernia leucophœaria*, *H. rupicapraria*, *Himera pennaria*, *Eupithecia abbreviata*, *Amphidasys strataria*, and *Boarmia roboraria*. *Asphalia ridens*, as I mentioned before, were in very unusual numbers; you could be almost sure of getting several off every oak bough. *Psilura monacha*, I may remark, we seemed to beat off everything; we certainly beat it off oak, beech, birch, and hazel, which was a surprise to me, at any rate; I had no idea the larva was such a general feeder. We also beat a great many larvæ which we could not name; whilst the larvæ of *Tæniocampa stabilis* and *Calymnia trapezina* were a perfect

pest. A great many *Brephos parthenias* and *Asphalia flavicornis* were also obtained from the birch; the latter (which join two leaves together and spin between them) more by searching than by beating. When we were tired of larva-beating, we made for that magnificent clump of beeches, known as Denny Wood, to work the trunks for *Stauropus fagi* and the "prominents." Messrs. Smith and L. J. Tremayne arrived there about mid-day, but an hour's hard searching only produced a couple of *Lophopteryx camelina*, one *Tephrosia consonaria*, one *T. punctularia*, and several *Dasychira pudibunda*, which was common all over the forest. The inevitable larva of *Asphalia ridens* still turned up, Mr. Tremayne finding two crawling up the beech trunks; and of course *T. stabilis* and *H. trapezina* were common as usual. At about a quarter-past one we sat down to a bread and cheese lunch under the beech trees, after which it came on to rain. We worked the trunks under umbrellas for a time, but were soon forced to give it up. On the trunks we found one or two pupæ of an *Argynnis*, probably *paphia*, but possibly *adippe*, as I do not know the difference between these two pupæ. Presently the others of the party arrived. They had found *Euclidia glyphica* flying in some numbers over the heath; and Mr. Bacot had turned up a "nest" of *Vanessa polychloros* on a sallow bush, containing about a hundred larvæ, to which all the party helped themselves freely. Mr. Bacot had also found a pair of *Notodonta chaonia*. Rain kept us idle for a time, but it cleared up about 4 o'clock, and we were able to resume working the tree trunks, with the result that Mr. Rose found another *Tephrosia consonaria*, Mr. Tremayne found another *Lophopteryx camelina*, and Mr. Bacot found a pair of *Notodonta trepida* in cop. We returned to Lyndhurst *viâ* Matley Bog, beating a great number of the larvæ of *A. flavicornis* and *B. parthenias*. At tea we were joined by Mr. Oliver C. Goldthwaite, who came in very useful in naming a great many of our larvæ, and giving hints as to rearing them. After tea we tried "sugaring" in Hurst Wood, but it was an utter failure, the only captures being two *Moma orion*, one *Aplecta herbida*, and one *Hadena thalassina*. Dusking on the heath beforehand was not much better, as, except for a *Boarmia consortaria* which Mr. Battley took, it produced only common Geometers. On the following morning, Mr. Tremayne worked the fences alone; he only obtained one *Acidalia trigeminata*, but discovered another nest of *Vanessa polychloros* up a high elm tree. After breakfast, accordingly, the members "went for" that elm. A long piece of string was procured, and a stone tied on to the end of it, which was then thrown over the bough. The bough was then shaken with force, and the *V. polychloros* larvæ descended rapidly into umbrellas spread carefully out to receive them. When all the members had had enough, the bough was abandoned, and the party set out for the work of the day, which it had been decided to devote to *Nemeobius lucina*. Accordingly, we walked straight along the Brockenhurst Road, without stopping to collect, and, striking off to the left just before Brockenhurst, made straight for the well-known *lucina* ground. The three spots for *lucina* were worked one after another. The day was fine and bright, and the common butterflies and day-flying moths were on the wing in good numbers. In the first *lucina* glade, *Lycæna icarus*, *Cœnonympha pamphilus*, *Polyommatus phlæas*, *Argynnis euphrosyne* (worn) and *A. selene* (splendid), *Syrichthus malvæ*, *Nisoniades tages*, and *Hesperia sylvanus* were very plentiful; nor were they, as might have been expected from the early season, all in bad condition, as, though some were extremely worn, others were

equally fresh. *N. lucina* flew occasionally in the sunshine, and all our members succeeded in obtaining some. We also turned up *Euclidia mi* and *E. glyphica*, *Panagra petraria*, the common "carpets," and many other common Geometers. Hybernated *Gonopteryx rhamni*, of both sexes, were also common, but they really were "rips," and not worth taking. Just before leaving the glade, Mr. Battley managed to net a specimen of *Macroglossa fuciformis* on the wing. In the second glade very few *N. lucina* were taken; but several gentlemen took *Thecla rubi* in fair condition. After lunch the party divided, Messrs. Battley, Goldthwaite, Quail, and Rose, going straight home *viâ* Stubby Copse. They did hardly any collecting on the way, and only found two more nests of *Vanessa polychloros*, which, being already satiated with this larva, they scarcely touched. Messrs. Smith, Robbins, and L. J. Tremayne, in the meantime, went round by the railway line to work for *Macroglossa bombyliformis*. During their walk of rather over a mile along the line, they succeeded in obtaining a few worn specimens of this species. Several were flying about, and occasionally they stayed hovering over the flowers of the scabious (which I am told they feed on), when of course they were easily captured. One *M. fuciformis* was also taken; and *Euclidia glyphica* was still on the wing. Messrs. Smith, Robbins, and Tremayne subsequently returned home *viâ* Stubby Copse, Denny Bog, and Denny Wood. Sugaring was tried again in the evening, with no more success than on the previous night. The sole captures were one *Moma orion*, one *Acronycta rumicis*, one *A. psi*, and one *Agrotis exclamationis*. Dusking on the heath beforehand was a little better, producing *Lobophora halterata*, *Drepana falcataria*, *Boarmia consortaria*, *Lithosia sororcula*, and *L. mesomella*. On Monday morning most of the members rose late, and no fence-work was done. We were, however, all out by 10 o'clock, and decided to make for Rinefield for *Macroglossa fuciformis*. We took our way through Hurst Wood, in which we threw up sticks, &c., into the high oaks to try and dislodge *Gnophria rubricollis;* but though we caused several to fly, they declined to come down, and we soon found that our best plan was to search the bracken, on which several were taken. Mr. Robbins also found a *Boarmia consortaria* on one of our sugar-patches of the night before; and Mr. Smith found a full-fed larva of *Limenitis sibylla* on the honeysuckle. On reaching Rinefield we found the glorious rhododendron avenue already tenanted by about twenty nets, which were steadily working the rhododendrons up and down. Fortunately, however, *Macroglossa fuciformis* was plentiful, and all the party succeeded in obtaining some; Mr. Rose also taking a specimen of *M. bombyliformis*, which is very uncommon here. We left the avenue early, in view of our approaching departure, and got back to Lyndwood in good time, only taking one or two more *Gnophria rubricollis* on our way back. We left the forest that evening by a train leaving Lyndhurst Road about 7 o'clock, and reached Waterloo at a quarter to 11, having spent a most enjoyable time. The larvæ were undoubtedly the chief feature of the excursion, but we had taken plenty of good imagines also. Amongst others which I have mentioned above, specimens were also taken of *Tephrosia extersaria* (fairly common), *Venilia macularia*, *Chœrocampa elpenor* (seen, but not taken, round sugar), *Macaria liturata* (beaten out of pine), *Thera variata* (beaten out of pine), *Eupithecia rectangulata* (one or two off the fences), *Anaitis plagiata* (one taken by Mr. Bacot off a fence on the Saturday morning), *Ematurga atomaria* (very common over the heath), *Eupisteria obliterata* (one), *Bupalus piniaria* (common amongst the pine), *Eubolia plumbaria* (a few), *Tephrosia biundu-*

laria (several), *Pieris brassicæ*, *P. rapæ*, *P. napi* (all three, of course, common everywhere), *Euchloë cardamines* (common in the fields, lanes, &c.), *Bapta bimaculata* (a few at dusk), *B. temerata* (a few at dusk), *Epione advenaria* (one), *Eurymene dolobraria* (one or two), *Acidalia remutaria* (very common), *Melanippe sociata*, *M. montanata*, and *M. fluctuata*, *Cabera pusaria* (common), *Cidaria truncata* (one or two), *Camptogramma bilineata*, *Amphidasys betularia*, *Lomaspilis marginata* (one or two), *Bombyx rubi* (very plentiful over the heaths), *Zonosoma linearia*, and *Iodis lactearia*. *Pechypogon barbalis*, and *Zanclognatha grisealis* and *Z. tarsipennalis*, were also very plentiful. The weather on the whole was good. The first day was dull, and we had some rain, as I have mentioned above; but the last two days were quite fine, warm, and bright. The only disappointing part of the business was the sugar, and that only corresponds with almost every other experience in that direction I have heard of this year. It is to be feared that this year is likely to prove as bad a year for sugaring as last one was the reverse. As for the remarkable mixture of the seasons, it may be illustrated by the fact that, whereas, on the Saturday Mr. Tremayne took a *Tæniocampa stabilis*, in fair condition, off a tree trunk, on the Sunday following, Mr. Smith took a perfect *Argynnis adippe* in Stubby Copse. I have since learnt that, on the Whit-Monday, Mr. F. W. Frohawk saw the imago of *Limenitis sibylla* at Lyndhurst.—L. J. Tremayne, *Hon. Sec.*

Birmingham Entomological Society.—*May 15th*, 1893. Mr. R. C. Bradley in the chair. Mr. G. W. Wynn showed *Acherontia atropos*, from Cannock Chase. Mr. A. H. Martineau said that at Solihull a specimen of *Sphinx ligustri* had entered a hive and been killed by the bees. The bees then, unable to remove so large a body, had covered it up with wax. The Secretary announced the receipt from Mr. John Willis, of Edgbaston, of a handsome present of books (about forty volumes), &c.; and a cordial vote of thanks was passed to Mr. Willis for his kind gift. An excursion was made to the Cotswolds at Whitsuntide, when, under the kind guidance of Mr. Frank Stephens, of Ebley, a pleasant three days were spent in the neighbourhood of Stroud, by the few members who went. *Lycæna adonis* and *Ino geryon* were common amongst the Lepidoptera, and a number of interesting Diptera and Hymenoptera were taken. Probably the best capture was *Cheilosia chrysocoma*, one of which was taken near Painswick. —Colbran J. Wainwright, *Hon. Sec.*

RECENT LITERATURE.

The Hemiptera-Heteroptera of the British Islands: a Descriptive Account of the Families, Genera, and Species indigenous to Great Britain and Ireland, with Notes as to Localities, Habitats, &c. By Edward Saunders, F.L.S. London: L. Reeve & Co. 8vo, pp. vi, 350, pls. 32.

Slowly and surely the once "neglected Orders" are attracting the attention which was denied to them after British entomologists gave up the earlier practice of collecting all Orders of insects, and became exclusively Lepidopterists or Coleopterists, as the case might be. To Messrs. Douglas and Scott is due the credit of the revival of the study

of Hemiptera-Heteroptera in England, and their work on the subject, published by the Ray Society, well illustrated, as the Ray Society's publications always are, did good service in its day.

But the Ray Society's publications are not always easy to obtain, and our knowledge of British Hemiptera has largely increased since 1865; and therefore Mr. Saunders has rendered considerable service to science by the production of this handsome volume, which originally appeared in parts. The introduction includes general matter on the characters, structure, and habits of the Sub-Order, with notes on collecting, habits, &c., and a table of families. Each family has a table of sub-families or genera, and each genus a table of species, so that the ambiguity so often felt by those who commence the study of a new group, from want of well-defined characters in a convenient form, cannot occur here. A large number of species (if not all) are figured on the plates, and full information respecting localities, &c., is given in the text; and the work closes with a good alphabetical index. The book appears to have been very carefully worked out, and the principal Continental authorities have been freely consulted; but yet there are one or two deficiencies which we regret to notice. Firstly, there is no reference to the figures in the text, nor any index of plates except the explanation opposite to each. Secondly, there should have been a systematic index of families at the commencement of the book, in addition to the alphabetical index at the end. Now that alphabetical indices are very properly deemed indispensable to a book, we fear that there is sometimes a tendency to neglect giving a table of contents, which is, however, often almost as necessary for comfort and convenience in using a book as an alphabetical index itself. And there should have been a short list of the plates, showing at least on which plates the principal families were represented.

We are glad to see that this work has received so much encouragement that Mr. Saunders has already announced one of similar character on the Hymenoptera Aculeata. This is even more wanted, as we have no good illustrated works on this group of insects of recent date on our British species; notwithstanding that the Ants, Bees, and Wasps are among the most interesting of all insects. We hope Mr. Saunders may bring this new venture also to an equally successful conclusion.

Catalogue of British Coleoptera. By D. Sharp, M.A., F.R.S., &c., and W. W. Fowler, M.A., F.E.S., &c. 46 pp. 8vo. London: L. Reeve & Co. 1893.

During the past ten years or so the coleopterists of this country have for the most part used either Dr. Sharp's Catalogue, or that of Canon Fowler and the Rev. A. Mathews, the chief points of difference between these two lists being rather in the arrangement than in the nomenclature. The present work is more complete than either of its predecessors, and as it is the outcome of the joint labour of two acknowledged authorities, it will certainly be accepted, by all who are interested in the Coleoptera of the British Islands, as the standard list of the future.

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AN ENTOMOLOGIST'S JUBILEE.

BY W. F. KIRBY, F.L.S., F.E.S., &c.

PROFESSOR GRAVENHORST, the author of a great monograph on the Ichneumon Flies ('Ichneumonologia Europæa'), one of the most difficult and extensive groups of insects, was born at Brunswick in 1777, and died in 1857 at Breslau, as Professor of Natural History, and Director of the Zoological Museum of the University; in addition to which he held the rank of Privy Councillor. He studied at Helmstadt and Göttingen, and took his Doctor's degree at the former place in 1801; and in 1811 he was appointed Professor of Natural History at the University of Frankfort-on-Oder, which, however, was transferred to Breslau in the same year, where he continued his scientific work for the rest of his life.

On August 7th, 1851, the fiftieth anniversary of his doctorate was celebrated at Breslau. The Curator of the University, Upper Privy Councillor Heinke, and deputations from the Senate, and from the Philosophical and Medical Faculties, assembled at Prof. Gravenhorst's house, where Herr Heinke invested him with the Order of the Red Eagle of the third class, with the sash, on behalf of the King of Prussia. The deputations then congratulated the Professor on the occasion; and he received a renewal of his Doctor's diploma from the Philosophical Faculty of the University of Göttingen, and the honorary degree of Doctor of Medicine from the Medical Faculty of the University of Breslau. Rector Barkow presented Prof. Gravenhorst with a congratulatory address, and with a new work, 'Zootomische Bemerkungen,' which he had just dedicated to him in honour of the occasion. Other addresses were then presented from the students of the University, the Silesian Society for National Culture, and the Entomological Society of Stettin.

In the afternoon the festivities terminated with a banquet, at which several congratulatory poems were recited. One of these,

by Dr. Cohn, was included in the account of the proceedings published in the local paper at the time, and is of more than passing interest. It was set to the tune of a well-known German song, commencing, "When Noah came out of the ark," which may have been composed by Gravenhorst himself, who appears to have been an extremely versatile man; for I find that he is stated to have composed a poem called "Father Noah," which may be the same.

The translation of Dr. Cohn's ode here given (to which the foregoing observations are merely introductory) is as literal as possible, and may be trusted to give a faithful representation of the original. It has probably never appeared in English before; and even the original German is likely to be known to very few.

Dr. Cohn's Ode on Prof. Gravenhorst's Jubilee.

"When the Lord, the God of Nature,
Had created every creature,
These in Adam's view he placed,
Who should name them to his taste;
And what he called both great and small,
Henceforth should be the names of all.

Adam soon his task began,
Named the beasts in wood that ran,
Birds that fly, and fish that swim;
Easy was the work to him;
And all he classed that met his view,
In genera and species too.

When at length his work was done,
He gave their names to every one,
And his system, as I hear,
Was simple, natural, and clear.
Thus without much toil, was he
Founder of Zoology.

But when he to the insects came,
His flagging energy grew lame;
So many species, and so small!
It was no joke to name them all;
And Adam said, 'I'll do no more;
I think I'll leave the rest to Noah.'

What creeps and flies was on the list
Of Noah, the Entomologist;
The Diptera, Orthoptera,
Hemiptera, Neuroptera,
The butterflies and beetles all,
And nothing was for Noah too small.

But the Ichneumons, as he found,
Were like a sea without a bound;
'This group is too confused,' said he;
'I find it much too hard for me;
How to determine this mass well,
Not Cuvier could, nor Linné tell.'

But Gravenhorst at length was born,
To darkness now succeeded morn;
The chaos left by former men,
He brought into a system then;
And the Ichneumons first were known
Completely, through his work alone.

But howsoe'er the work was tough,
His energy had not enough;
Whate'er lays eggs, or suckles young,
Whatever crept, or flew, or sung,
Whatever leaps or swims the flood,
Has he compared, and understood.

The living things in ocean's tide,
And those the drops of water hide;
He studied all with energy,
But chiefly Entomology,
Though worms and reptiles well he knew,
And many other creatures too.

And what he knew, and thus could tell,
He taught it to his pupils well;
Like grains of sand they throng around,
And he who in their ranks is found,
Goes well rewarded from the place,
And thinks upon his friendly face.

Nature is kind, and loves him still,
And gives him what she rarely will;
The strength of youth in green old age,
A pride to Science, truly sage;
And whatsoever he has done,
God's blessing always rests upon.

Fill, fill your bumpers to the brim;
Our worthy friend, we'll drink to him,
The sage revered and loved by all,
Who teaches truth, whate'er befall;
For fifty years he's laboured on:
Cry, 'Gravenhorst, hurrah!' each one."

AMONG THE BUTTERFLIES IN CORSICA.

By R. S. Standen, F.L.S., F.E.S.

It had long been a favourite project of mine to visit some outlying province of Europe where the insect fauna should present strongly-marked characteristics, either tropical or arctic; and when my friend Mr. Albert Jones suggested Corsica, I rose to the bait like a hungry fish. A few days before that fixed for leaving England, my friend found that he must postpone his departure for another week, but Mr. G. C. Champion, also an old friend, kindly stepped into the breach, and at 11 o'clock on the morning of May 28th last we left Charing Cross for Marseilles, arriving at this southern metropolis in a blistering sun at 10.30 on the following morning. The packet for Ajaccio started at 4 o'clock the same afternoon, and by 6.30 on the morning of the 30th, after a passage of absolute tranquillity, we lay anchored in the broad harbour of the capital.

An amber haze still hung over the town, spreading itself along the overlapping hills that encircled it and ran on, range behind range, to the far end of the wide bay. The water was alive with small boats, hurrying up to secure the new arrivals. The process by which this is affected is by no means soothing to the nerves; eventually, however, we reached the quay, and there we had to force our way through a lot of swarthy ruffians who fought for our belongings as the boatmen had fought for our persons.

After depositing our effects at the railway station, we unfurled our "engins de chasse" and set out for a long morning's work along the coast. A grove of eucalyptus just outside the station reminded us that this side of the town has a reputation not wholly unconnected with fever, but the self-assertive *Opuntia vulgaris*, with its lovely orange tufts of bloom, and the aggressive blades of the *Agave americana* which lined the shore, awakened such reminiscences of another hemisphere in the breast of my companion, that the sun's vertical rays streamed down on him unobserved; at all events we soon forgot our proximity to the malarious Campo dell' oro, and stepped gaily aside into a cheery little dell, where it was clear that my net and my friend's little bottles would soon be brought into requisition.

A dusky and very hirsute form of *Epinephele*, which proved to be *ianira* var. *hispulla*, at once appeared in considerable numbers. Then, in succession, *Lycæna astrarche*, *L. icarus*, *Polyommatus phlæas*, with its dark ab. *eleus*, *Pieris brassicæ* and *rapæ*, large and strongly marked, *Papilio machaon* ab. *sphyrus*, *P. podalirius*, and one fine example of *Lybithea celtis*. In the afternoon, on the north side of the town, in addition to some of the foregoing, I obtained several *P. daplidice* and two *Spilothyrus altheæ*.

At 4.50 we took train to Vizzavona, a mountain resort about three hours from Ajaccio and 4000 ft. above sea-level. The so-called "macchie" is with us nearly all the way. It is a mixture of low shrubs with which the slopes are thickly clothed up to about 3000 ft., the chief ingredients being *Erica arborea*, *Myrtus communis*, *Juniperus communis*, *Arbutus unedo*, a species of *Cytisus* no longer in flower, *Cistus monspeliensis*, and *C. albidus*, of the former of which Napoleon said he should know his native land with his eyes shut from the scent of this plant; and, indeed, wherever we went the air was filled with its aromatic perfume. Conspicuous also in the clearings is the stately *Asphodelus albus*, with its towering spike of white flowers; the more lowly but sweet-scented *Pancratium maritimum*, the ubiquitous *Cyclamen europæum*, and the large rose-coloured *Convolvulus althæoides*. We soon leave the olive and the ilex behind. They are replaced by chestnuts of enormous girth, then beech and the Lariccio pine, the former frequently growing at a higher altitude than the latter, and lastly, higher than either, *Juniperas nana* and a stunted alder. The line makes tremendous zigzags as we ascend, and it seems more than likely that we shall topple over into one of the little red-roofed villages so jauntily perched on a promontory beneath, or into the rushing torrent at its feet. As we near the long tunnel of Vizzavona, the scenery grows what the Teuton calls "wild-romantisch" to a degree. The kind of granite which prevails in this part of the island appears to be of a friable nature when exposed to the air, and the consequence is that the outlines of the mountains (which run up to 8000 ft. here) are often very rugged and fantastic in form, and their sides riddled with countless caves, which come in very handy for the bandits.

The Hôtel Monte d'Oro, on the Foce or Pass of Vizzavona, is about on a par, in accommodation and cuisine, with a small mountain hotel in Switzerland, but the climate is rather severe before the month of July, until which period the species of butterflies that occur there may almost be counted on the ten fingers. At no time indeed do Lepidoptera appear in anything like the abundance that one is familiar with in Switzerland or the South of France, and 40 species of Rhopalocera for the month of June seems a poor total. It was disappointing too to find oneself, on a still and cloudless day, in a perfect paradise of flowers, and brambles and sweet scents, and not a butterfly of any description on the wing; this was a common experience, and patience was the only cure for it. Occasionally things occurred in some abundance, and this was notably the case with *Cœnonympha corinna* in the open spaces of the forest below the hotel; also with a beautiful form of *Lycæna argus*, in which the female has the wings deeply suffused with blue, probably the ab. *calliopsis* of Boisduval.

The first capture of *Papilio hospiton* was an event of some importance, and by a mere accident I was that fortunate captor. My friend Jones and I had strolled down one lovely morning, about June 15th, to Tattone, the first station from Vizzavona in the direction of Corte. We were just then intent on the new form of *L. argus* referred to above. We had each our favourite field for it, to the left of the high road just before reaching the village. *Hospiton*, though never entirely absent from our thoughts, was for the moment overshadowed by the less pretentious little stranger. Jones, on this occasion, had consented to enter my domain; in common courtesy I should have given him the *pas*, but a habit engendered by long legs and an eager temperament took me first over the wall, and there, almost at my feet, was the gorgeous *Papilio*, resting on a head of clover—a superb female, which I promptly and easily secured. The food-plant given by Lang and Kane is *Ferrula communis*, and a magnificent plant it is. At Vivario, about 2000 ft., it was at least 5 ft. high, with round flat-topped umbels of a dazzling Indian yellow; at Tattone, 500 ft. higher, it was not yet in flower. Generally speaking, perhaps it may be said that when a plant arrives at maturity, the insect whose larva feeds on it is already in a moribund condition, or approaching it; in other words, *ceteris paribus*, the higher the elevation the later the emergence of the imago. So, on the day following that on which I took the female *hospiton* at Tattone, Mr. Raine, of Hyères, took a fine male at the same spot; and Mr. Jones took a worn female the next day at Corte, 1200 ft. lower, and a worn male several days later at Tattone. These are probably the only captures of the imago in Corsica this year, but after we left several larvæ were taken, I am told, on a species of *Peucedanum*, the name of which has not yet reached me.

(To be continued.)

THE EARLY STAGES OF *THESTOR BALLUS*, Fab.

By F. Bromilow.

On the 29th of March last, I had the pleasure of receiving twenty-six eggs of *Thestor ballus*, taken the previous day on *Lotus hispidus*, at Hyères, by Mr. Frederick Raine. The species is, I believe, common there, though always very rare at other places along the South of France. These ova are shiny, round, considerably flattened at the poles, and in colour are pale pea-green. They are usually laid singly, on the upper surface of the leaves, or between the hairy calyces of the plant.

According to most authors, the species is stated as feeding

only on *Lotus hispidus*, but Rambur says the larva lives on "Herbaceous *Leguminosæ*," which would, I suppose, imply that *T. ballus* feeds on *all* low-growing papilionaceous plants. The statement, notwithstanding, seems somewhat loose. The same writer says that the caterpillars "devour each other."

Immediately on arrival, the eggs changed from their normal colour to a dull blackish, and some larvæ hatched out on the same day, and continued to emerge daily for about a week. These caterpillars, in captivity, have a tendency to wander from their food-plants, which makes them rather difficult to rear; and for some unaccountable reason, even when on their plants, many of them seem to die, while others do well. When very young, the larva of *ballus* is blackish, and is thickly *covered with rough hairs;* spiracles black; but it afterwards changes in colour, a fact which Guenée, who described the species, seems to have overlooked.

The caterpillar which I am now describing was born on March 29th last, and was kept from the first entirely in a corked bottle, in a room with partially opened windows facing south, and averaging about 65° Fahr. It was fed exclusively on *Medicago denticulata.*

On April 22nd it changed its skin for the first time. During the periods of moulting the larva remained quite stationary, generally at the bottom of the bottle, without eating. This operation usually lasted for three days.

Up to April 24th it only consumed the chlorophyl, eating holes in the middle of the leaves.

The second moult was undergone on May 1st, and the caterpillar now ate not only the chlorophyl of the plant, but also the parenchyma itself, devouring the sides as well as the centre of the leaves.

On May 12th it cast its skin for the third time. It would be interesting to know whether these changes are accelerated in a state of confinement, or *vice versâ.*

On the 27th ult. I transferred the larva, which now measured exactly half an inch in length, to a cage; but it was afterwards returned to the forcing-glass; and on the 31st inst. it ceased eating, and wandered restlessly about. At this time the caterpillar began to assume a pale pinkish colour; it also emitted a reddish-coloured fluid, and on the 6th of June it settled on a piece of paper to pupate. On looking for the larva at 9 a.m. on the morning of the 11th ult., I found that the transformation had already taken place, although it was still in the caterpillar state late on the previous evening.

The time thus occupied, from the birth of the larva to the completion of the chrysalis, was seventy-four days; the pupa hybernates. The chrysalid of *Thestor ballus* is not attached at the head and tail by silken threads, and the discarded skin of the

whilom larva remains firmly fastened at the tail, which might lead one to suppose that the caterpillar, in a state of nature, undergoes its metamorphosis beneath the surface of the earth, as the larvæ of *Thecla quercus* and *Polyommatus phlœas* have been known to do.

It measures one-third of an inch in length, and in girth at the broadest part, *i. e.*, the middle, the same. In shape and colour, being fully matured, it appears to most resemble the chrysalid of an ichneumon fly (*Pimpla turionellæ*). When first formed the pupa of *Thestor ballus* is light Indian yellow in colour, deeply tinged with crimson on the back, and especially at each extremity; the dorsal line is black, edged with crimson reddish, and bordered by eight small diagonal streaks, larger at the head and becoming smaller towards the anal point; wing-cases yellowish.

The next day (the 12th inst.), however, the chrysalis changed to reddish brown, lighter on the back, and with clear black dorsal line; wing-cases ochreous yellow with a decided crimson tint; head dark brown, the antennæ standing out in relief. As far as I have observed, it is not capable of any appreciable movements, a fact which is, I think, noticeable in the pupæ of many of the Lycænidæ, e. g., *Thecla betulæ*, *T. spini*, and *Polyommatus phlœas*, among others.

Nice, France, June, 1893.

A CATALOGUE OF THE LEPIDOPTERA OF IRELAND.

By W. F. de Vismes Kane, M.A., M.R.I.A., F.E.S.

(Continued from p. 215.)

LYCÆNIDÆ.

Thecla betulæ, *L.*—"Very common in the lanes and road-side hedges of the South and West of Ireland in August, frequenting the flowers of the bramble, and settling the moment the sun is obscured, when it may readily be taken with the fingers; has not been noticed in Ulster or Leinster" (*B.*). I doubt if, in late years, this species can be met with in such numbers, and prefer to say that it is abundant in certain localities in Munster; and in Co. Galway at Claring Bridge, and Oranmore (*B.*); Cork (*G. F. Mathews*); Killoghrum Wood, Enniscorthy (*M.*); Blarney (*B.*), Killarney.

Thecla quercus, *L.*—Near Dundrum, and elsewhere in Co. Dublin; also in Wicklow at Bray Head, &c.; Co. Kerry; Limerick (*N.*); Skibbereen, rare; Galway, a few (*R. E. D.*).

Thecla rubi, *L.*—Generally distributed throughout the southern counties, where it is frequently abundant. It does not

vary appreciably, except in the series of white streaks on the under side of hind wing, which in most Irish specimens are wanting, wholly or in part; often represented only by a single one on the costa. Occasional in Co. Dublin; in Co. Wicklow at Powerscourt, Tinahely, not scarce (*Bw.*); Westmeath, abundant on the bogs at Cromlyn (*Mrs. B.*) and Killynon (*Miss R.*); in King's Co. at Tullamore and Toberdaly, abundant; rare at Sligo and Markree; abundant at Cappagh, Co. Waterford; common in many places in Co. Cork, Bandon; and very abundant at Glengarriff, Killarney, Bere Island, and Kerry, generally; Galway, abundant; Limerick (*N.*) near Crossmolina, Co. Mayo.

Polyommatus phlœas, *L.*—Occurs throughout Ireland, but not, I think, in large numbers in the northern counties. I have noticed the late brood in Ards, North Donegal, in Sept.—Oct. I have an Irish specimen with the orange bleached to a straw colour, approaching var. *schmidtii*, taken near Favour Royal, Co. Tyrone; and another with a similar colour on one fore wing, otherwise normal. The ordinary variations, with broad hind marginal black bands and large spots, and more or less blue spots on orange band of hind wing, occur.

Lycæna ægon, *Schiff.*—"The Murrough of Wicklow, and near Rostrevor" (*B.*).

Lycæna icarus, *Rott.*—Some years ago I was so much struck by the unusual characters presented by Irish specimens of this species, the brilliant female of which I referred to in 1885 ('Handbook of European Butterflies'), that I was preparing to publish a notice on the Irish forms of *icarus;* but, fortunately, in January, 1887, Mr. South commenced a series of articles on the genus *Lycæna*, and, with the abundant materials at his disposal, was able to deal with the subject much more thoroughly than I could have done, illustrating his remarks by comparison with various English and Scotch varieties. The monograph dealing with *L. icarus*, appearing in vol. xx., p. 73, of the 'Entomologist,' and accompanied by a coloured plate (pl. ii.), will obviate the necessity of my doing more than refer to the descriptions there very fully given. In the first place, the Irish butterfly usually considerably exceeds in size that of England, varying from about 1 inch 2 lines to 1½ inches in the June emergence; but the individuals of the second emergence are much smaller, and generally conform much more nearly to the usual English type in both sexes, to which, therefore, I need not further refer. Probably referable to var. *pusillus*, Gerhard (*cf.* Dale's 'British Butterflies'). Mr. South notes that the Irish and Scotch *icarus* are similarly characterised by their large size, and the brilliant blue of the female bordered with bright orange marginal ocelli. The chief aberrations observed in the male are as follows:—1. The colour approaching that of *L. bellargus*

(*cf.* pl. ii., fig. 2, of Mr. South's paper above referred to). 2. The colour approaching that of *L. semiargus* (fig. 3), of which I have seen none so dark in Ireland. 3. Of a very pale lavender, not mentioned by Mr. South. All these occasional aberrations are found rarely in Ireland with the type. 4. With the extremities of the nervures black, and slightly intruding on the fringes of all wings, thus approaching *L. bellargus* in being chequered. The most remarkable specimen of this I have ever seen was taken at Killynon, Westmeath, by Miss Reynell, and the under side is that of var. *icarinus*, but with all the pupilled spots reduced in size, and several, as well as the basal ones on the fore wing, obsolete; Cappagh, Co. Waterford, Co. Sligo, and Galway. 5. The marginal line next the fringe is generally broadly marked in Irish specimens, contrasting with those of England in this respect (South). 6. Not unusually there is a series of six black spots, or less, on the margin of the hind wing. I have this form from near the town of Donegal; at Cappagh, Waterford; and Markree Castle; and Mr. Russ takes it occasionally on the other side of Sligo. 7. The contour of the hind wings is occasionally very angular at the apex. Varieties of under side:—1. Ab. *icarinus*, Scriba, crops up occasionally with type (see note, p. 75, of Mr. South's paper); Markree, Castletown, Co. Cork, and elsewhere. The increscent form with confluent spots I have taken on the Continent, but not in Ireland. Other aberrations, as noticed in Mr. South's paper, I need only quote. 2. With white discoidal spot on hind wing unpupilled. 3. With the comet-shaped white streak on hind wings prolonged interiorly toward the discoidal spot (fig. 4), approaching the character developed in *L. donzelii*, *chiron*, and *damon;* Donegal and Markree. 4. With the outer margins external to the orange peacock-eye shaped ocelli pure white, a character developed in its extreme form in *L. hylas*, Esp. (*dorylas*, Hüb.); Mr. South records this character as occurring also in some Scotch examples. 5. In some specimens the ground is of a smooth pearly grey, a very general character in Swiss examples, but occasionally a warm rusty brown is shown (fig. 4). The female offers the most conspicuous divergence from the normal English and Continental type, in which the basal half only is dusted with blue scales (fig. 8), the brown of the upper side being widely replaced by a violet or occasionally wholly by the bright blue of *L. bellargus*. These forms are not uncommon in Ireland, in Galway, Sligo, Donegal, Antrim, Down, Westmeath, Waterford, &c., and are accompanied by a series (often almost confluent) of very bright orange peacock-eye markings on the outer margins of all wings, so that some specimens (if not too brilliant) would pass muster as the var. *ceronus* of *L. bellargus* (fig. 12); another most interesting testimony to the genetic affinities of this species. This var. *ceronus* of *icarus* occurs in some abundance at Ballynahinch, Connemara, and at Ardrahan

and other parts of Galway, as well as in some central and southern localities. The figure 11 of Mr. South's plate II. is not of so vivid a tint as some specimens I have taken of this beautiful variety. The Scotch form (fig. 6), with violet dusting on the basal areas, also frequently occurs; and modifications of it, in which the discoidal spots of the under side are indicated on each wing by pale markings, and the comet-like streak similarly and more distinctly. Some specimens, with dark brown ground shot with violet, have the orange peacock-eye marks of hind wing bordered interiorly by a looped edging of pale bluish grey (a trait just suggested in fig. 9), and pale markings on costal apex of fore wing. The form with the hind margins broadly shaded, and the costa (fig. 9), is not unfrequently met with in Ireland, but of a larger size and more brilliant colour. This would appear to be the var. *cærulea*, Gar. I have met with a large brown female form in Galway without trace of blue, and with the orange ocelli very large. The under side of females varies in the relative strength of the warm brown ground tint, often being of a dark bistre on the central area of hind wing. I know of no distinctively Irish characters displayed. Taking a general view of the foregoing, we note, firstly, that the Scotch and Irish races are unusually large (Mr. Jenner Weir notes the Orkney insect being "unexpectedly large," 1 inch 5 lines—Ent. xiv. 3), that they vary in parallel directions from the English type, and present as numerous genetic characters linking them to other species as do the latter; and in the female sex have acquired generally a very remarkable one in addition, an instance of gynandrochromism. It may be that the acquisition of more brilliant colours in the female may be of advantage under less sunny skies, where the sun-loving Rhopalocera have less opportunities of selecting their mates, and cannot afford to indulge in long engagements. *L. icarus* is universally distributed throughout Ireland, but in greater abundance along the coast, and in such localities as possess wide areas of untilled coarse pasture lands. In the rich grazing counties, and such as are chiefly devoted to tillage, the species becomes less numerous and more localised, and haunts railway banks, &c. I have not heard that this Irish variety of the female has been recorded as a local form from the Continent; and as it is an important parallel variation to that of *L. bellargus* and var. *syngrapha* of *L. corydon*, think it may receive the varietal name of *mariscolore*.

Lycæna argiolus, *L.*—Locally abundant in woodlands where holly is abundant, but not occurring, so far as I have noticed, in unsheltered districts with holly bushes. I have not seen the second brood in Ireland, but it probably may be met with in the south, as I have taken this butterfly at Killarney as early as the third week of April, and in Wicklow at Powerscourt on the 3rd of May; but in Ulster usually from the middle of May to begin-

ning of June. Nevertheless, I have reason to think that after an early genial spring an occasional second emergence takes place in the autumn. It would be interesting to learn whether the horeomorphic character of the female is shown in Ireland in the second brood, the colour being very pallid, and the apical and outer marginal black band much increased in size, as pointed out by Mr. Jenner Weir. The females of the May brood in Ireland seem, however, to be very broadly banded. Co. Down, abundant (*Bw.*); Donard demesne, May 21st, some years, abundant (*W.*); Co. Monaghan and Tyrone woods about Favour Royal, not very abundant; Co. Dublin, rare; Co. Wicklow, not rare at Powerscourt and the Dargle; Shillelagh Wood, abundant (*Bw.*); Co. Kerry, Mucross, and upper Lake of Killarney, abundant; Co. Cork, Curriglass (*L.*).

Lycæna minima, *Fues.*—Somewhat local, rare generally inland, but widely dispersed throughout the island. In the north, Mr. Watts records it as abundant on the Antrim coast; between Carrickfergus and Whitehead, abundant (*Bw.*); Co. Sligo at Markree, and abundant in Mr. Russ' neighbourhood; Co. Galway, generally abundant, as at Moycullen and Ardrahan (*Miss N.*); near Galway (*A.*); Ennis, Co. Clare (*Br.*); Kilpeaton Bog, Limerick (*N.*); Co. Fermanagh, near Enniskillen (*S.*); Co. Dublin, Sutton, Malahide, in a quarry between Blanchardstown and Clonsilla (*S.*); Co. Wicklow, Newcastle, and Kilcool, &c.

(To be continued.)

NOTES ON THE SYNONYMY OF NOCTUID MOTHS.

By Arthur G. Butler, F.L.S., F.Z.S., &c.

(Continued from p. 195.)

Sypna obscurata.

Sypna obscurata, Butler, Trans. Ent. Soc. 1881, p. 207.
S. renisigma, Moore, Proc. Zool. Soc. 1883, p. 25.

Shillong, Khasia Hills, Darjiling, &c. Type in Coll. B. M.

Strictly speaking, the female type of *S. obscurata* belongs to the slight variety named *S. renisigma*, which only differs in having white dots round the margin of the reniform spot.

S. lucilla, Butler, only differs from *S. obscurata* in having the paler central area of the wings replaced by a whitish buff-coloured belt. It may, I think, be no more than a well-marked variety.

S. martina, Felder, appears to be nothing more than the female of *S. albilinea*, Walk.

It is quite impossible to separate *Speiredonia* from the family in which *Latebraria* is placed. *S. anops* has the same pattern on

the upper surface as *L. errans*, and the only structural differences that I have been able to discover for the separation of the two genera are represented by the shorter and thicker third joint of the palpi, and a short recurrent vein from the lower radial of the primaries in *Speiredonia*.

SPEIREDONIA, *Hübn.*

Speiredonia substruens.

Tavia substruens, Walker, Lep. Het. xiv. p. 1276, n. 2 (1857).

Silhet, Dharmsala, Java. Type in Coll. B. M.

With this species Walker confounded specimens of his *Syrnia sparsa* (Lep. Het. xiv. p. 1280), a larger and far more variable species, differing constantly in having, on both surfaces, a submarginal series of white dots. Although Walker queries the locality of the type, a second example, received from the same collection, is labelled "Silhet" by the donor.

Speiredonia alix.

Speiredonia alix, Guenée, Noct. iii. p. 1294, n. 3 (1852).

Syrnia sparsa, Walker, Lep. Het. xiv. p. 1280, n. 8 (1857).

Silhet and Andamans. In Coll. B. M.

The species identified as *S. alix* by Walker is simply the *S. zamis* of Stoll.

Speiredonia zamis.

Phalæna zamis, Stoll, Suppl. Cram. p. 162, pl. 36, fig. 11.

Speiredonia alix, Walker (not Guenée), Lep. Het. xiv. p. 1294, n. 3 (1857).

Var. *S. retrahens*, Walker, *l. c.*, n. 4 (1857).

Var. *Ommatophora albifascia*, Walker, Lep. Het. Suppl. 3, p. 947 (1865).

Ceylon, Java, Andamans. In Coll. B. M.

CYLIGRAMMA, *Boisd.*

Cyligramma latona.

Phalæna latona, Cramer, Pap. Exot. i. p. 20, pl. 13, fig. B (1779).

Cyligramma magus, Guérin, Cuv. Règne Anim. p. 521 (1842).

South, West, and East Africa. In Coll. B. M.

Cyligramma fluctuosa.

♀ *Phalæna fluctuosa*, Drury, Ill. Ins. Exot. ii. p. 24, pl. 14, fig. 1.

♂? *Cyligramma rudilinea*, Walker, Lep. Het. xiv. p. 1311, n. 5 (1857).

♂ Lake Tanganyika; ♀ Masai. In Coll. B. M.

I think there can be little doubt that Walker's type is a male; his description exactly answers to two males in the Museum collection.

Guenée remarks that *C. limacina* is slightly larger than *C. fluctuosa;* as a matter of fact this is generally true, though the figures and Guérin's description show the reverse; size is not a very important item in the distinction of these species.

The idea that *C. limacina* may be only a variety of *C. fluctuosa* is evidently based upon the similarity of the upper surface of the two females; but the under surface differs considerably. On the other hand, Guenée undoubtedly confounded *C. limacina* with his *C. argillosa;* and no wonder, for the latter is only a form occurring in Western Africa, Madagascar, and Mauritius.

Cyligramma limacina.

Cyligramma limacina, Guérin, Cuv. Icon. Règne Anim. p. 520, pl. 89, fig. 2 (1842).

Var. *C. argillosa*, Guenée, Noct. iii. p. 186, n. 1578 (1852).

Brujas bisignata, Walker, Lep. Het. xiv. p. 1255, n. 11 (1857).

Eastern and Western Africa, and Madagascar. In Coll. B. M.

The only distinction between typical *C. limacina* and *C. argillosa* is in the indistinct character of the inner series of yellowish spots on the under surface of the secondaries in the female of the latter, and the less prominent submarginal spots on the same surface of the primaries of the male.

Cyligramma acutior.

Cyligramma acutior, Guenée, Noct. iii. p. 187, n. 1580 (1852).

——— ?

This appears to me to be nothing more than typical male *C. limacina*. We have examples from Abyssinia and the river Niger, which fit Guenée's description to a nicety.

(To be continued.)

NOTES AND OBSERVATIONS.

Retarded Emergences.—The exceptionally warm weather of the past spring appears to have been conducive to an unusually large number of emergences from pupæ that had lain over for more than one year, the percentage assuming the perfect state being, in the majority of cases that have come under my notice, very much in excess of what I have usually regarded as an average. Thus, from a brood of *Eriogaster lanestris* fed up in 1891 there were no emergences in 1892, but this year more than half of the total number became imagines. *Asteroscopus nubeculosa* is always an uncertain species, so many larvæ dying after going down; but, assuming that the majority of those that went down in the autumn of 1891 became pupæ, the proportion of emergences this year would again be about 50 per cent., although none put in an appearance in 1892. Three imagines of this species also emerged from 1890 pupæ, thus having passed three winters in that stage. From several batches of *Biston hirtaria* fed up in 1891

a considerable number of imagines emerged in 1892, the proportion of those appearing this year being about one to three of the 1892 emergences. Small numbers of *Lophopteryx carmelita, Cucullia verbasci,* and *Tephrosia luridata* have also appeared from broods that went to pupa in the autumn of 1891. Whether the unusually warm spring and the exceptional number of such emergences are really cause and effect, or are merely a coincidence, I do not pretend to say on the slender evidence coming under my own notice; but if those entomologists who keep their breeding-cages going from year to year would record their experiences of the present as compared with past years, an amount of evidence would no doubt be forthcoming that would admit of some conclusion being arrived at.—Robert Adkin; 4, Lingard's Road, Lewisham, S.E., July, 1893.

Varieties of Spilosoma (Arctia) lubricipeda and Psilura monacha.—Whilst my brothers of the net have been ranging the hill, field, wood, and fen, in active pursuit of their entomological game during the splendid weather of this marvellous summer, unfortunately for myself I have been confined to the solitude of my sick-room through a severe attack of lumbar-neuritis; yet, thanks to the charms of larva-rearing, I have still been able to get some most interesting experiences from amongst my breeding-cages. Last year I fortunately obtained a few ova of *Arctia lubricipeda* var. *radiata,* Curtis, thanks to Mr. Harrison, of Barnsley, both male and female parents being true *radiata* type. The warm April brought all out, and each example proved of *radiata* type—every specimen true to heredity, varying in intensity, still all *radiata.* I obtained a pairing, which duly hatched, and fed up during May and early June; and on the 8th July the first imago made its welcome appearance in my cage, and to date (July 18th) several more; so that, at any rate, there will be this year a partial double brood. All again are quite true to type of parents; some four are almost black, only three small intercellular streaks of cream-colour on the superior wings; the under wings entirely black, relieved only by the fine yellow lines of the nerves of the wings and with black fringes: truly grand *vars.* A great point of interest is the remarkable manner in which the offspring have followed the type of the parents; and the same thing occurred with a very large brood I this year bred of another type of the same species. I last year reared several hundred larvæ from a selected Yorkshire form, but of a totally different type; in these the character was to form a strong central fascia of the Noctua pattern, and from my many pupæ of this form I have indeed bred a wonderful series. These varied from normal southern type to the grand banded form, but totally differing from the *radiata* of Curtis. I selected a female of the strongest banded form and crossed with a good male var. *radiata.* The larvæ from this pairing are now feeding, and I shall watch with much interest the emergence of these imagines to see if there is any blending of the two distinct forms of this curiously variable insect. Besides the beautiful vars. of *lubricipeda,* I, too, have bred some extremely fine varieties of *Psilura monacha.* Mr. Chas. Fenn most kindly sent me a few young larvæ of his most interesting brood of this species, from which he, by selection and in-breeding, has been trying to obtain a perfectly black form; and, to judge by my result, I little doubt but that he has succeeded, as in my short series three of them may very fairly be called black, and all are very nearly so, as even on the white markings they are strongly flecked with black scales.—W. H. Tugwell; 16, Lewisham Road, July 18, 1893.

Note on the Larva of Dicranura vinula.—On May 15th I found a larva of *Dicranura vinula*. It was uniformly black. It changed its skin on May 21st, June 2nd, June 11th, June 20th, and spun up on July 2nd. Another, also found in the black stage, on June 6th, changed its skin on June 8th, June 22nd, July 1st, and spun up on July 9th. Is this difference in the number of skins sexual, or is it because the second one was fed after July 1st on poplar?—D. P. Turner; 14, Havelock Road, Tonbridge, July 18, 1893.

Larvæ of Lycæna arion, L., on Origanum vulgare.—I found ten larvæ of *Lycæna arion*, on the 1st ult., and another caterpillar on the 4th inst., in the Vallon des Fleurs, Nice. They measured one-twelfth of an inch each, and were found on *Origanum vulgare* (marjoram). This is, I believe, a new food-plant for the species, as it is always stated as living on *Thymus serpyllum* (wild thyme), which, it is interesting to note, is botanically allied to *Origanum*. I have taken besides (June 27th to July 1st) seventeen imagines of *L. arion*.—F. Bromilow; Nice, France, July 7, 1893.

On breeding Agrotis ripæ.—Having had some experience in breeding this species, I am pleased to answer my friend Mr. Graves' enquiry (*ante*, p. 220). After several unsuccessful attempts to rear *A. ripæ* from the larva, I procured a new earthenware drain-pipe, about three feet in length, and filled it with sea-sand nearly to the top. My larvæ were then placed in this receptacle after my return to London in September, and I supplied them with sliced carrot, of which they freely partook. They disappeared about October, and reappeared about the middle of May, when they changed to pupæ in a slight cocoon just below the surface, from which the moths emerged in about a fortnight's time. On examining my breeding apparatus, I found they had been right down to the bottom of the sand, where they probably hybernated. In this way I have reared imagines from larvæ collected at Tenby, Cumberland, and the Essex coast. The larva is, like many others in confinement, a cannibal.—J. Jager; 180, Kensington Park Road, Notting Hill, July, 1893.

Note on Abraxas grossulariata.—From Mr. Bell-Marley's letter (*ante*, p. 219), it seems that the larvæ of *A. grossulariata* have been deserting the currant and gooseberry bushes for *Euonymus japonicus* in England; they have done exactly the same thing in Jersey. In addition to my own observations here, I have made several enquiries, and always with the same result—namely, that the currant and gooseberry bushes are left almost unharmed, while everywhere the evergreen shrubs are attacked; and this has occurred in all parts of the island. Several of these larvæ were kept in confinement, and currant-leaves placed with the evergreen. They took no notice of the currant, but when the *Euonymus* was removed they ate the *Ribes*, although reluctantly, and when the *Euonymus* was returned they instantly deserted the currant-leaves for it. Gooseberry-leaves were then tried instead of currant-leaves, with a like result. Last year *Abraxas grossulariata* did a great deal of damage to the currant and gooseberry bushes, and also attacked *Euonymus japonicus*, but very rarely. I should be glad if anyone would explain this, to me, strange desertion of their usual food-plant by these larvæ.—Stanley Guiton; 31, Bath Street, St. Heliers, Jersey, July 8, 1893.

Sesia myopiformis with Yellow Belt. — At the beginning of the fourth week of June last I took a specimen of *Sesia myopiformis* with the abdominal band yellow, instead of red. — C. A. Bird; Rosedale, 162, Dalling Road, Hammersmith, July 12, 1893.

Migration of Butterflies.—As the April number of this journal has only just reached me *viâ* Japan, I have only now seen Mr. Radley's query (*ante*, p. 134). I would refer him to Mr. M. C. Pisper's paper, "Observations sur des vols de Lépidoptères aux Indes Orientales Neerlandaises et considérations sur la nature probable de ce phénomène," published, in French, by Ernst & Co., Batavia (Java), 1890, in pamphlet form, being extracted from the 'Natuurkundig Tijdschrift voor Ned-Indië,' vol. 50, part 2. It contains particulars of thirty flights of butterflies observed in Netherlands India between 1872—1889, together with a lot of valuable and interesting notes on the subject.—T. E. Sansom; Esculonia, St. Leonards Road, Eastbourne.

Note on Coccinella ocellata, L.—Larvæ were beaten on June 10th from various foliage, but had evidently dropped from the fir trees. Colour in general slaty blue. Head and thorax black, margined with and having at base of latter a blotch of pale yellow. Abdomen with several pairs of pale spots down the centre of back; also six rows of black spines extending from base to apex, those on side margin of third and fourth segments being of pale yellow. Legs black; coxæ pale yellow. The larvæ pupated on June 11th, the pattern of the wing-cases being plainly visible through the thin pupal covering. As in lepidopterous pupæ, the wings were folded round the front. The beetles commenced their emergence on June 18th, and at time of writing have all (12) made their appearance, the duration of time in this stage being from seven to nine days. Among the specimens bred is one very remarkable variety. Instead of having black spots, encircled with white, only three black spots at base are present, the remainder being entirely white.—G. A. Lewcock; 73, Oxford Road, Canonbury, N., June 22, 1893.

Larval Food of Nyssia zonaria.—During a stay at Blackpool I took, during June, over 400 larvæ of *Nyssia zonaria*, feeding on the following plants;—*Taraxacum officinale*, *Plantago*, *Rumex*, *Trifolium pratense*, and *Tussilago farfara*. Has the larva been known to feed on these plants before?—Lionel Stones; Northwood, Seymour Grove, Old Trafford, near Manchester.

L. cyllarus *v.* costa. — When writing in the 'Entomologist' (xxvi. 91), I noticed the capture of a specimen of *L. cyllarus*, Rott., by myself, in which the ocellated spots on the under side of the hind wings were completely absent. The individual in question (a female), was caught at St. Martin-Vésubie (Department of Alpes-Maritimes), on June 5th last. This form is described in Antonio Curò's 'Saggio di un Catalogo dei Lepidotteri d'Italia' (Firenze, 1885), p. 52, as var. *costa*. Signor Curò states it as occurring in "Central and Southern Italy (rare)"; so the above appears to be a new locality.—F. Bromilow; Nice, France, April, 1893.

Remarkable Aberration of Carabus violaceus.—Whilst collecting at Cowley, towards the end of 1892, I found under a stone a specimen of *Carabus violaceus* which has turned out to be a most curious variety worth, perhaps, recording. The head does not differ from the type, nor does the body,

except in being slightly narrower. The thorax has the posterior angles very strongly and peculiarly developed. It may be described in the following terms:—Thorax slightly broader than long; anterior angles blunt, the margin slightly emarginate, but with a very slightly curved raised carina extending from angle to angle; lateral margins very strongly emarginate, a slight longitudinal almost obsolete depression towards posterior portion; posterior angles very much developed, and produced into a blunt point with the centres depressed. In the centre of the produced angles there is a raised carina, which seems to divide the produced angles into two portions; the outermost portions of the angles are deeply excavated. Posterior margins slightly emarginate and sinuate. Two small depressions are situated close to the margin at the inner side of the origin of the posterior angles.—John W. Shipp; Oxford University Museum, March 23, 1893.

Extraordinary Aberration of Triphæna pronuba.—A remarkable variety of *T. pronuba* was taken by my friend Mr. Woodforde and myself at sugar, in Dovedale, on Saturday last. The right upper wing and right side of the thorax are coloured as in the dark mottled forms of the species; the left upper wing and half of thorax as in the light reddish yellow variety. —E. W. H. Blagg; Green Hill, Cheadle, July 4, 1893.

[As our correspondent most kindly proposed to send us the specimen referred to above for examination, we very gladly accepted his offer. We find that the insect is quite as described; that is, the left half of the thorax is unicolorous with the fore wing on that side, and represents the var. *innuba*, whilst the right half of thorax is darker, edged in front with pale colour, and the fore wing on this side is mottled as in the typical form of the species. It is certainly a very curious and most interesting aberration. —Ed.].

CAPTURES AND FIELD REPORTS.

The Early Season:—

Bucks, Herts, and Middlesex.—With the exception of excursions to Horsley and Oxshott with members of the South London Entomological and Natural History Society, my collecting has so far this season been confined to afternoon rambles in the neighbourhood of one or other of the stations on the Metropolitan Railway between Harrow and Aylesbury. Although many species of Lepidoptera have been unusually early in their appearance, I am inclined to think that several of them have been less common than in other years. The following notes are extracted from my diary:—

April 11th.—Amersham, Bucks (cloudy with gleams of sunshine; wind N.E.; cool). Saw two specimens of *Pieris brassicæ* and one of *Coremia unidentaria*.

April 22nd.—Amersham (warm sunny day; wind N.E.). *P. brassicæ, P. rapæ, and P. napi*, all common. One or more specimens of the following species were also captured or noticed:—*Euchloë cardamines, Pararge egeria, Strenia clathrata, Bapta temerata, B. bimaculata* (*taminata*), *Coremia unidentaria, C. ferrugata, Phoxopteryx lundana*, and *Coccyx strobilella*. The last-named species was flying in numbers about spruce firs (*Abies excelsa*), but mostly out of reach. Five specimens were bred a few days earlier, from a fir cone picked up in the same locality on April 11th.

May 6th.—Rickmansworth, Herts (sunny; wind N.E.). *Rumia luteolata* (*cratægata*), *Panagra petraria, Coremia ferrugata*, and *C. uniden-*

taria were fairly common, and a few examples of each of the following Tortrices were captured:—*Tortrix ministrana, Hedya servillana, Grapholitha subocellana* (*campoliliana*), *Stigmonota germarana, S. internana, Catoptria albersana,* and *Argyrolepia hartmanniana* (*baumanniana*). Among the larvæ obtained were *Tæniocampa populeti,* quite half-grown; *Asphalia flavicornis,* small; and full-grown *Phycis betulæ. Coccyx tædella* (*hyrciniana*) abundant and very variable, ranging from a unicolorous fuliginous to a silvery white with narrow brown markings.

May 10th.—Pinner, Middlesex (warm sunny afternoon; wind N.E.). *Syrichthus malvæ* (*alveolus*) and *Heliaca tenebrata* (*arbuti*) fairly plentiful, but the latter rather worn. One example each of *Macaria liturata, Emmelesia alchemillata,* and *Cidaria truncata* (*russata*). A few *Miana fasciuncula* were flying over the meadows in the evening. *Coccyx tædella* was common and variable, and one example of *C. ochsenheimeriana* was captured.

May 22nd.—Northwood, Middlesex (fine bright sun and little wind). *Zygæna trifolii* common; secured several varieties. *Z. filipendulæ,* one imago; also observed a pupa and several larvæ. *Ino statices,* common; one female example very blue in colour. *Euclidia mi* and *E. glyphica* occasionally seen, but the latter were worn. Several *E. cardamines* and one male *Epinephele ianira* were noticed, also numbers of *Cœnonympha pamphilus,* a few *Tortrix tenebrata* and *T. icterana.*

May 2th.—Chorley Wood (sunhine and cloud, wind N.E.; cold after sunset). *Abraxas sylvata* (*ulmata*) common; among the numerous specimens examined one pale variety was detected and duly boxed. Four *Asthena blomeri* were captured and three others escaped. *Melanippe montanata* occurred with *A. sylvata* sitting on the herbage under the wych elms; most of the specimens were whiter in ground colour than those obtained from hedgerows in same district. *Bapta temerata, Cabera exanthemata* and *Larentia viridaria* (*pectinitaria*) were also seen.

June 3rd.—Northwood (warm but dull). *Z. trifolii* and *I. statices* still common. *Emmelesia albulata,* abundant. *Camptogramma bilineata,* one specimen. Pinner.—There were several *C. tædella* to be had, but they were mostly worn. *C. nanana,* a few, and one example each of *C. ochsenheimeriana* and *S. germarana.*

June 17th.—Chalfont Road, Bucks (fine and warm), A few *A. blomeri. A. sylvata* less common than on previous visit. *M. montanata,* scarce. *B. temerata* and *B. bimaculata* still out. *Melanippe unangulata* and *Cidaria fulvata,* one of each. *Metrocampa margaritaria,* common, but mostly worn. Several female specimens of *Strenia clathrata.* Larvæ, almost full-grown, of *Pieris napi* and *Euchloë cardamines;* one of the former pupated the next day, and the imago emerged on June 26th.

June 24th.—Chorley Wood (dull, showery at intervals) *A. blomeri* and *A. sylvata* fairly common. *Coremia quadrifasciaria,* several; also a few *Miana strigilis* at rest on tree-trunks. Larva of *Eupithecia pulchellata* common and almost full-grown in flowers of foxglove. [July 25th.—Although the plants are mostly in seed, there are still plenty of larvæ in all sizes.]

July 1st.—Northwood (a hot day). *Pædisca corticana,* common on oak trunks, and beaten out of bushes under oaks. One example of *Grapholitha cinerana* at rest on aspen. *Miana arcuosa* common after sunset; the specimens were mostly worn.

July 6th.—Wendover, Bucks (an exceedingly hot day, brilliant sun during the greater part of the day). *Epinephele hyperanthes* generally

common, but nothing in the way of a good variety could be found. One example of *E. tithonus* and one of *Pamphila comma* were captured on the chalk. *Eubolia bipunctaria* was common, and so also were *Pyrausta purpuralis* and *P. ostrinalis;* and in a lesser degree *Ennychia nigrata. Phoxopteryx comptana* was abundant.

I may mention that a specimen of *Uropteryx sambucaria* was seen in the garden here on June 30th.—Richard South; Abbey Gardens, St. John's Wood, N.W., July 15, 1893.

Lancashire.—Most of the usual June insects were out this year in May. May 11th, *Acronycta psi;* 13th, *Caradrina cubicularis;* 14th, *Hadena pisi;* 18th, *H. thalassina* (very common); 19th, *Hepialus lupulinus* (common); 20th, *Hadena adusta;* 21st, *Xylophasia rurea* (common); 22nd, *Tryphæna pronuba* (at rest); 27th, *Abraxas grossulariata;* June 1st, *Chelonia caia* and *Hepialus humuli;* 3rd, *Miana fasciuncula* and *Noctua plecta;* 20th, *Macroglossa stellatarum* (in splendid condition). July 8th, A yellow variety of *Pieris napi* (a female, the yellow being the same shade as *Colias hyale*); 10th, *Xylophasia polyodon* (dark variety in splendid condition), *Charæas graminis.*—Lionel Stones; Northwood, Seymour Grove, Old Trafford, near Manchester.

Middlesex.—A friend of mine states that on April 2nd he visited a railway embankment at Wormwood Scrubbs, where *Trifolium repens* was already well advanced. Three imagines of *Colias edusa* were soon taken, being two males and one female, undoubtedly hybernated, and, as usual, decidedly worn. I have no record of this species having appeared here so early previously.—H. W. Bell Marley; Hammersmith, W., July 15.

Monmouthshire.—During the early part of June I took *Argynnis aglaia* at Cwm Carn, where it was not uncommon on the mountain sides and in the valleys. On the 19th, at Wentwood, I took *A. paphia* and *A. adippe;* both species were somewhat plentiful, although very difficult to capture, owing to the rapidity with which they moved over the rough ground. Four *Vanessa c-album* fell to my net on the same day. As I only worked one road, I cannot say if this species is distributed throughout the wood, but am inclined to think so, as I saw one early in the year in another part. The following week I went to Llantarnam and captured one *A. aglaia*, a dark female, and one *Melanargia galatea*, and then proceeded to Ponthir and took a rich-coloured *V. c-album.* On the 3rd July I again visited Wentwood and took more *V. c-album, A. adippe*, and *A. paphia.* The two latter were slower on the wing than on the previous visit, and a little worn. I saw *Apatura iris* flying around some oak trees; its dark ground colour crossed by the white markings were plainly discernible in the strong sunlight. I was unable to follow it, as the bushes were much too thick and high, so I had to very reluctantly leave the spot. Up to the present sugaring has been a complete failure.—J. E. Knights; 3, Mount Joy Street, Newport, Mon., July 7.

Various localities.—Rhopalocera:—*Anthocharis cardamines*, Dorchester and Wareham, May 4th; Northwood, also in May; not abundant. *Gonopteryx rhamni*, Wicken Fen, Cambs., April 27th; one specimen. *Satyrus megæra*, Isle of Portland, Dorchester; Swanage Bay; fairly common, first week of May. *S. ianira*, now in full force and fine condition in lanes round Kingsbury. *S. egeria*, two or three seen at Amersham, June. *Cœnonympha pamphilus*, earliest seen at Burwell Fen, Cambs., April 27th; abundant at Northwood, in May. *Polyommatus phlæas*, Northwood, May. *Lycæna alexis*, Northwood; Amersham, May and June.

Vanessa io, Burwell Fen, April 27th, one specimen. *V. urticæ*, Burwell Fen, April 27th; Isle of Portland, May 1st; Amersham, June (hybernated). *V. atalanta*, one fine specimen, Windsor, May. *Melitæa artemis*, banks of Frome, Wareham, May 5th; four specimens taken, others seen, but out of reach, as the low-lying meadows are intersected by dykes. *Argynnis euphrosyne*, four specimens taken, Northwood, fairly common by side of wood there, middle of May. *Syrichthus malvæ*, one specimen, Northwood, June. I do not know whether the scarcity of *G. rhamni* and *A. cardamines* is a matter of general observation, or I have not happened to be in the right locality, but many years have elapsed since I saw either species in abundance. As regards *A. euphrosyne*, Middlesex is not recorded in Newman's 'British Butterflies' as one of the counties where it occurs, but I took it and *M. artemis* at my native place, Southgate, many years since. Newman mentions the latter species as occurring at Kingsbury, on F. Bond's authority. It is likely enough that both species may long ago have disappeared from Southgate, and therefore Middlesex is not given. But as *A. euphrosyne* is found at Northwood that home county may now be added, as regards that species, at any rate. Neuroptera:—*Libellula depressa*, ponds round Northwood and at Kingsbury, May and June; males very abundant this season, and, in comparison of females, in proportion of six to one. *Calepteryx ludoviciana*, osier beds by Thames, a short distance from Victoria Bridge, Windsor, May; males, in comparision of females, in proportion of three to one.—(Rev.) F. A. Walker; June 7, 1893.

In February I found *Hybernia leucophæaria* extremely abundant in Surrey, and took some fine varieties. On April 21st I saw *Pieris rapæ* in the Embankment Gardens at Charing Cross, and on June 13th took *Agrotis exclamationis* in the Burlington Arcade. When in the New Forest, in May, I found a larva of *Catocala promissa* stretched at full length on a dead leaf on the ground, and my wife detected one on an oak tree, among the lichen, which the larva greatly resembles. These larvæ spun up about the 18th May, and produced two fine imagines on June 21st, a very early date, I think. — Alfred Sich; Villa Amalinda, Burlington Lane, Chiswick, July 11, 1893.

Plusia moneta.—I have been so fortunate as to breed thirty-three examples of this beautiful species during the past two months, from larvæ found in May, and hope to send you an account of them shortly.—Gervase F. Mathew; H.M.S. 'Mersey,' Milford Haven, July 14, 1893.

Plusia moneta in Hants.—On the evening of June 18th my son took a *Plusia* new to me, flying at dusk, near some reeds at the bottom of our garden here. It has since then been identified as *P. moneta* by my friends Messrs. J. M. Adye and MacRae, of Bournemouth.—R. E. Brameld; Mudeford, Christchurch, July 7, 1893.

Rhopalocera at Wiesbaden.—To-day a friend of mine took a fine female specimen of *Pieris daplidice* in a meadow by Wiesbaden; also a male *Limenitis populi* was taken. Neither of these are mentioned, in "The Rhopalocera at Wiesbaden," in the 'Entomologist,' vol. xxii. p. 88, &c. We have already taken more than forty different sorts of butterflies this year.—M. P. Smith; 10, Bachmeyer Strasse, Wiesbaden, May 22, 1893.

Vanessa atalanta near Manchester.—*Vanessa atalanta* has reappeared this spring, and larvæ are quite common. This, I think, is an extraordinary occurrence. We are only five miles from the centre of Manchester.—J. Renshaw; Ash House, Stretford, June 27, 1893.

Macroglossa stellatarum abundant at Barmouth.—*Macroglossa stellatarum* is very abundant this year at Barmouth and in the surrounding district, and may be seen in hundreds flying over the numerous patches of red valerian which grow on the tops of the walls. All appear, however, to be in a very worn condition.—Alfred J. Johnson; Erdington, July 9.

SOCIETIES.

South London Entomological and Natural History Society.—*July 13th*, 1893.—C. G. Barrett, Esq., F.E.S., Vice-President, in the chair. Mr. C. Oldham exhibited specimens of *Macaria liturata*, Clerck., *Melanthia albicillata*, L., and many others; some fine forms of *Odonestis potatoria*, L.; and a specimen of *Plusia moneta*, captured at Woodford on the 2nd June. Mr. Adkin remarked that this last exhibit was interesting as showing a continued spreading of the species in this country. Mr. South, on behalf of Mr. Blagg, exhibited a remarkable form of *Triphæna pronuba*, L., which was typical *pronuba* on one side and the variety *innuba*, Tr., on the other. Mr. South also showed a variable series of *Coccyx tædella*, and two examples of *C. ochsenheimeriana*, Zell., from Middlesex. Mr. Fenn exhibited long bred series of *Dicranura bifida*, Hb., *Boarmia roboraria*, Schiff., and *Notodonta dictæa*, L., from Bexley, the New Forest, and Deal respectively. Messrs. R. Adkin, South, Frohawk, and C. A. Briggs showed very long series of *Pieris brassicæ*, L., from many parts of the British Isles, the conversation which followed turning chiefly upon the question of the grey-tipped form, which Mr. Briggs suggested occurred in its extreme phase only in the midland counties. It was, however, pointed out that among the series from Folkestone, Harwich, Sutherland, and other places, many of the specimens had the black tips thickly sprinkled with white scales, thus giving them a very grey appearance, closely approaching the midland county examples; and the conclusion arrived at was that the variation was one of general, rather than local or seasonal, occurrence. Mr. Frohawk also exhibited a specimen, the tip of one wing of which had been brushed, thus giving the insect the appearance of having one grey and one black tip, and said that of a very large number that he had reared, all had the tips more or less grey on emergence, but that the white scales were so lightly attached that the slightest rubbing, probably even that caused by flight, would be sufficient to remove them. A specimen taken at Lynmouth, N. Devon, and shown by Mr. South among other examples of this species, was of very small dimensions, not exceeding an ordinary *P. rapæ*, L., in size; and one in Mr. Briggs's series had the black tips, spots and streak of inner margin very strongly developed and to some extent confluent. Mr. H. Moore showed three specimens of the harlequin beetle, *Acrocinus longimanus*, from Trinidad, &c. Mr. Auld, a fine variety of *Lomaspilis marginata*, L., from Folkestone. Mr. Step, a number of pupæ of the bacon beetle, *Dermestes lardarius*, which he stated were being experimentally tried as bait for fishing when in the larval condition. Mr. Barrett mentioned a curious instance in which a number of lepidopterous larvæ had been found in earthen cells in a book drawer, and were supposed to have been placed there by one of the Fossorial Hymenoptera. Mr. West, of Streatham, showed *Sesia bembeciformis*, D.L. Mr. Turner, two varieties of *Argynnis selene*, Schiff., and a number of Tortrices and Tinea,

including *Penthina pruniana*, Hb., *Sciaphila subjectana*, Gn., *S. hybridana*, Hb., *Tortrix ministrana*, L., *Phoxopteryx mitterpachneriana*, Schiff., *Nemophora swammerdammella*, L., &c. Mr. Briggs also exhibited a portion of the outer covering of a tree wasp's nest, which was curiously striped with bright blue. Mr. Step said it was well known that wasps, when short of the usual material for their nests, would utilise ready-made paper and similar substances, and he suggested that the blue colour might have been caused by the insect appropriating portions of a blue poster from some hoarding, and the fact of the colour being in stripes would be accounted for by the manner in which the wasp works.—H. WILLIAMS, *Hon. Secretary*.

RECENT LITERATURE.

The Lepidoptera of the British Islands. By CHARLES G. BARRETT, F.E.S. Vol. I. Rhopalocera; pp. viii, 313, 8vo. London: L. Reeve & Co. 1893.

As our knowledge of the species of Lepidoptera occurring in the British Islands increases, it is obvious that new works upon the subject become a necessity from time to time. During the ten years which elapsed between the publication of Stainton's 'Manual' and the appearance of Newman's 'British Moths and Butterflies,' much interesting and valuable matter had been stored up in the Entomological Magazines, Proceedings of Societies, and private note-books. The last-mentioned author did not, however, avail himself so fully as he should have done of the information at his disposal. Seeing how greatly the number of assiduous collectors and careful observers has increased during the latter quarter of the present century, and having regard to the improved system of recording facts and observations, it follows that at the present time there should be a vast amount of trustworthy and important material ready to be dealt with by any one undertaking the task of writing a monograph of our Lepidoptera. The nineteenth century is fast drawing to a close, and the time seems a very suitable one for the production of such a work as that upon which Mr. Barrett is engaged, and of which the first volume, dealing with the Rhopalocera, is now before us.

In his Preface, our author states that he has ransacked all the store-houses of information; we are therefore somewhat surprised that he has found so little in the course of his research that he deemed worthy to be incorporated in his book. We cannot, however, suppose that any items have been purposely ignored; on the contrary, we feel assured that he has most carefully perused and impartially considered every note and paper bearing upon his subject. To have done less than this would have been an injustice to the intelligence of British lepidopterists. It may then be taken for granted that all that is sound and wholesome for us to assimilate has been judiciously garnered, whilst the unprofitable and pernicious has been rejected. This laudable care is well exemplified in the accounts of the earlier stages of the various species, as these are either drawn up from his own observations or from that of others on whom he could rely.

Localities for the more or less local species are given, but we think that in some cases the remarks under this head might well have been extended. Turning to Geographical distribution, we find that this phase of the subject has not been treated as fully or correctly as it might have been if writers on other faunas than that of Britain had been more freely consulted. Some

species, such as *Pieris brassicæ* and *Colias edusa*, are erroneously stated to occur in Japan, whilst of some others, such as *Leucophasia sinapis*, *Colias hyale*, and *Vanessa io*, all of which are found in Japan and Amurland, no mention is made of their distribution outside of the British Islands.

Variation is considered at some length, but, as a rule, reference is only made to a few of the more striking forms of variation. Of course it is very interesting to know that curious aberrations or abnormal specimens of certain species are contained in a particular collection, but such information does not help us to understand much about the general range of variation obtaining in such species. In the present day there should be no difficulty in comparing forms of a species occurring in Britain with those that occur in other parts of Europe or in Asia. On p. 86 a variety of female *Lycæna* (*Polyommatus*) *corydon* is mentioned as "probably unique as a variety," but from the description it appears to be an example of the well-known var. *syngrapha*. Again, on p. 132, reference is made to forms of *Vanessa urticæ*, one of which seems to approach the Japanese var. *connexa*, Butler, and another to a local Indian race of the species, but these interesting facts are omitted. Many similar instances might be quoted.

In the matter of synonymy, we think that Mr. Barrett has acted unwisely in adopting the somewhat evasive expedient of giving some of the various trivial names by which a species is known, and inviting his readers to use that which they may happen to prefer. Apparently the fact was overlooked that one of these names must of a necessity precede the others, and that the first one would be considered to be the one adopted by him. If, therefore, Mr. Barrett, in those cases where he uses a name for a species different to that of Staudinger's Catalogue, has not assured himself that the nomenclature of Dr. Staudinger, which is accepted by a very large majority of European—including British—entomologists, is wrong, he cannot be certain that he is not himself in error. The plea that he has not had time to study the question is an insufficient one, and does not justify him in ignoring the opinion of those who have given a very great deal of time and consideration to the subject.

In adopting *Chrysophanus* for *dispar*, *phlæas*, &c., Mr. Barrett is quite correct, but we are unable to understand why he places *bætica* and *argiades* in *Lycæna*, and uses *Polyommatus* for all the other "blues." As he has thought it desirable to generically separate *bætica* and *argiades* from the other species usually included in *Lycæna*, he should have placed the former in *Polyommatus* and the latter in *Everes*, as they are considered to be the respective types of those genera. Again, as *minima* (*alsus*) is the type of *Zizera* and *argiolus* the type of *Cyaniris*, he might have still further broken up the little band of British Lycænidæ, and been quite up to date in doing so *Palæmon* (*paniscus*) is the type of *Carterocephalus*, Lederer, and should not be placed in *Cyclopides*, as none of the species belonging to that genus have anything in common with *palæmon*.

On the whole, Mr. Barrett is to be congratulated on the successful completion of his first volume, which, although it is not beyond criticism in the matters we have indicated, compares most favourably with any previous work on British Butterflies. The type is clear, and there are few printer's errors. It would perhaps have been an improvement if the descriptive portions had been distinguished by a different type. We understand that an edition on large paper, with coloured plates, has been published, but we have not seen this.

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Exchange.—Received after going to press with usual Exchange paper:

Desiderata.—Pale form of A. Grossulariata and A. Caja. [illegible]. Address *Rev. J. Greene, [illegible], Clifton, Bristol.*

Duplicates.—In fine condition: [illegible], [illegible],* [illegible],* Fuciformis, [illegible] v. [illegible], [illegible], [illegible], [illegible],* [illegible], Angularia,* Promissa, all on black pins; Sponsa, Pudibunda,* on black or white pins; Russula, Villica, Statices, Monacha,* [illegible], Derasa, Aprilina, Repandata v. Conversaria, Betularia,* on white pins. *Desiderata.*—Rare and local species, especially Eupithecia and Sesiidae. Accepted offers answered in four days. *J. M. Adye, c/o Mrs. Dukes, Brockenhurst, Hants.*

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SPILOSOMA LUBRICIPEDA VAR. *ZATIMA*.

BY RICHARD SOUTH.

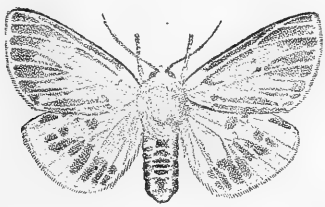

Fig. 1

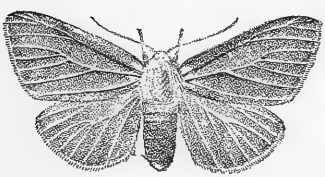

Fig. 2

Fig. 1. Form of *Spilosoma lubricipeda* intermediate between var. *zatima* and type. Fig. 2. Var. *deschangei*, Depuiset. Both enlarged one-sixth.

THIS form of *Spilosoma lubricipeda*, which is considered by many continental entomologists to be a distinct species, was figured by Cramer in 1781 as *Noctua zatima* (Pap. Exot. iv. pl. cccIxxxi. fig. F). The specimen represented was said to be from Surinam, but this was probably an error. In the year 1863, about a dozen examples of *zatima* were taken one day during May in Heligoland, and since that time most of the continental collections have been supplied with this interesting form of *S. lubricipeda*, either direct from Heligoland or from the semi-domesticated descendants of stock from that island. Millière (Icon. pl. xlix. figs. 5, 6, 7) figures a male and a female of this

form as *Spilosoma zatima*, and also a modification in which the ground colour is pale buff, and the black bordering of the neuration is narrow and restricted to the outer marginal area. Another modification of the *zatima* form, but in the opposite direction, is the example figured by Depuiset as var. *deschangei* (Ann. Soc. Ent. Fr. 1886, pl. iv. fig. 4). In this all the wings are fuliginous on both surfaces, and the neuration is pale buff, as also are the head, thorax, and tip of abdomen.

Bombyx radiatus, Haworth, Trans. Ent. Soc. i. p. 336 (1812), = *Spilosoma radiata*, Stephens, Ill. Brit. Ent. Haust. ii. p. 77 (1828), as figured by Westwood and Humphreys, Brit. Moths, pl. xviii. fig. 19 (1843), is certainly only a slight modification of *zatima* as figured by Cramer. The specimen was taken in Yorkshire. Another example is figured in the 'Entomologist' for 1874, but the locality from which it came is not mentioned. Mr. Carrington (Entom. xxiii. p. 207) is reported to have stated, at a meeting of the South London Entom. and Nat. Hist. Society, that, between the years 1860 and 1870, *S. lubricipeda* var. *radiata* "only occurred in a timber-yard close to the railway station at York; he had recently visited the neighbourhood, and was interested to find that although the timber-yard had been taken by the railway company, the variety now occurred in fair numbers throughout the whole district." In a most instructive paper on "The 'Radiated' Varieties in the genus *Arctia*," &c., Mr. Porritt (the 'Naturalist,' 1889, p. 233) remarks of *Spilosoma* (*Arctia*) *lubricipeda* var. *radiata:* "The form is not at all uncommon about York, and all the collections of that city contain it. That of the late Mr. T. H. Allis, now in the York Museum, contains a long series of it; and another collector in York, less than a year ago, showed me in his boxes, I should say, quite two hundred specimens, all bred from larvæ collected, when nearly full-grown, from the gardens, &c., in York. The variety also occurs in other parts of the county as well, but York appears to be its head-quarters."

An important addition to the above information concerning the variety of *S. lubricipeda* under consideration, is Mr. Tugwell's account of his experiment in rearing the form from ova deposited by a female *radiata*, which had paired with a male of the same form (*ante*, p. 247). All the offspring, he tells us, emerged in April, and were of the *radiata* form; and from these he again obtained a pairing, the larvæ from which fed-up during May and June, and a portion of them had attained the imago state between July 8th and 18th. All the imagines of this second brood were of the *radiata* form, and some of them appear, from Mr. Tugwell's description, to be referable to var. *deschangei*. It is exceedingly interesting to find that the range of variation of the Yorkshire *radiata* is co-equal with that of the Heligoland *zatima*, and that in each case the varieties are reproduced even when reared from the egg

in a locality widely distant from the native habitat. It is also remarkable that this curious form should almost simultaneously become comparatively common in Heligoland and York.

An analogous form of *S. menthastri*, figured by Curtis in 1825, under the name *walkeri*, bears a very strong resemblance to *S. lubricipeda* var. *zatima;* it occurs in Scotland, and more rarely in Yorkshire. Mr. Porritt has bred examples of *S. mendica*, which he states are "more streaked or 'radiated' than any *radiata* or *walkeri*" that he had ever seen. There is an excellent plate of these and other varieties of *S. mendica* in the 'Transactions of the Entomological Society' for 1889.

In the illustration at the head of these remarks, fig. 1 represents a form of *S. lubricipeda* intermediate between var. *zatima* and the type; and fig. 2 agrees exactly with var. *deschangei*, Depuiset. For the loan of these specimens I am indebted to Mr. J. H. Leech, who has a splendid series of *zatima*, comprising all the various modifications of the form.

AMONG THE BUTTERFLIES IN CORSICA.

By R. S. Standen, F.L.S., F.E.S.

(Concluded from p. 238.)

Corte, a highly picturesque old town, domineered by a large fortress, to which we paid a visit of two days, appeared to be a fine centre for collecting. Jones created quite a panic there amongst *Argynnis pandora;* he also took a specimen each of the rare *A. elisa* and *Satyrus neomyris*, whilst I was braving the authorities and sketching the fort. Two fine streams, the Tavignano and Restonica, flow down from the hills behind the town and out into the extensive plain in front of it, and it was along the narrow margin of these streams, where the bramble and various aromatic shrubs and plants strive hard for a foothold on the rocky banks, that insect-life abounded most. Bocognano, six miles from Vizzavona in the direction of Ajaccio, was also a good locality, and the abode for the time of Dr. and Mrs. Trotter, whose open-handed hospitality on our rather frequent visits will be long remembered.

This village was the home of the two most famous bandits of modern times, Antoine and Jacques Bellacoscia. The former is stated, in the guide-books, to have committed nine murders, and his brother seventeen. Commencing with one death in satisfaction of the family honour, the outlaw flies to the hills; subsequent murders are never committed, they say, except in self-defence, and gendarmes, therefore, have been the most frequent victims. Antoine, after forty-six years of hiding in caves, obtained his

pardon from the government last year, and has taken up the profession of mountain-guide. He came to our hotel one morning with a large bouquet of flowers, from his own garden, for the visitors, and a more benevolent-looking, mild-mannered old gentleman you could not desire to see. Jacques is still at large; and when, occasionally, we heard the report of a rifle in the forest near the hotel where we very commonly collected, the natives would hint that it was only an exchange of courtesies between Jacques and the gendarmes. He is said to have sent two of his most beautiful children to President Carnot last year to supplicate his pardon, but without success. Before leaving England we were gravely cautioned to beware of brigands; whereas, so far as we could learn, this particular form of rascal does not exist—in Corsica at all events. Certainly we were daily in solitudes most favourable for his exploits, but he let us severely alone. It is true that the ordinary peasant often looks as though he would cut your throat for a song, but address a few words of Italian to him, his face brightens up, and he looks the picture of good-nature and amiability, with a large amount of intelligence thrown in. The fact is, in their code of morals, the outlaw, or bandit, is looked upon as a noble fellow, who has done the proper thing and avenged the family honour; the robber, or brigand, as a miserable weak-kneed skunk. We found the peasants almost invariably polite, good-natured, and hospitable.

Before leaving our head-quarters at Vizzavona, no less than eight English entomologists, two of whom were ladies, had foregathered there, and another was on the way; so I am afraid that Coleoptera, Lepidoptera and Diptera have had rather a bad time of it this year; and one can only lament that so much energy was expended for so comparatively small a result, although it is perhaps a case where quality, and the peculiar interest attaching to local forms, compensate largely for lack of quantity.

On June 25th, six of our party assembled at Ajaccio to see what novelties had emerged during the fortnight or more which had elapsed since our previous visit. In addition to the butterflies recorded before, only *Epinephile ida*, which was quite common, and *Syrichthus sao* var. *therapne*, second brood, were added to the list. I secured also two *Papilio podalirius* and a few *Pieris daplidice*, so fresh as to induce the supposition that they also, in this very abnormal season, belonged to the second brood.

Ajaccio, on the south-west, with its 20,000 inhabitants, may be called the social capital of the island; Bastia, on the north-east, with 23,000, its commercial capital. At Ajaccio, as may be supposed, with its almost tropical climate, the art of strolling and lounging is understood to perfection. What serious occupation the people have is a perfect mystery, as they appear to be in the streets or the cafés all day long. At night the whole town collects in the principal street to listen to two small orchestras,

which play alternately at their respective cafés. These are crammed both inside and out; and the roadway is so tightly packed with human beings that, from one end of it, in the uncertain light, the appearance is that of a compact mass of stationary human heads, so slowly do they move. But I have already trespassed too long with my digressions on the indulgent Editor's patience, and must hasten home.

At midnight of the 25th, then, my friend Jones and I got on board the packet for Marseilles; the tree-frogs croaked out their deafening farewell from the Place des Palmiers, and we bade a long "adieu!" to Corsica with its fascinating people and climate, and natural history. We made one break only in our journey across France, *viz.*, at Avignon, in order to visit the famous Roman viaduct of Pont du Gard, and secure a few of the *Melanargia lachesis* and *Gonepteryx cleopatra* which so abound there.

I append a list of the Rhopalocera taken and observed during our visit:—

Papilio podalirius, L.—A few at Tattone, 2500 feet, and at Ajaccio. *P. machaon*, L., and the ab. *sphyrus*, Hüb., in which the black bands are wider and the tails shorter than in the type, occurred sparingly at Ajaccio, but we were rather late for the first brood; of the ab. *aurantiaca*, in which the ground colour is of red-gold, I procured one sample from a local collector. Both these forms are somewhat smaller than the type. *P. hospiton*, Géné.—Very scarce. Three were taken in flowery meadows sloping to the river at Tattone, and one at Corte, 1200 feet. Food-plant said to be *Ferrula communis*, which is plentiful enough by the roadside. After we left Mr. Gemann captured two more, and Mr. Raine took one more and saw three others.

Pieris brassicæ, L., *P. rapæ*, L., and *P. napi*, L.—Generally distributed; the latter not so common as the two former, but all large, strongly marked, and varied. *P. daplidice*, L.—Abundant and fine, occasionally up to 2500 feet.

Euchloë tagis var. *insularis*, Stgr.—Tips of fore wings paler than type; spots on under side greener and very small. Two specimens presented by local collector. Fairly common in March. One fresh specimen, presumably second brood, was taken at Ajaccio in June.

Leucophasia sinapis, L.—Common everywhere. Failed to meet with the spring ab. *lathyri*, Hüb., said to occur here.

Colias hyale, L.—Two or three solitary specimens observed at Bocognano, 2000 feet. *C. edusa*, F.—Abundant at Bocognano and Tattone. Mr. Jones took a fine example of the ab. *helice*, Hüb., at the former place.

Gonepteryx rhamni, L., and *G. cleopatra*, L.—When one takes a solitary female, as was my case at Bocognano, it is impossible to say to which of these species it belongs, and I believe no others were taken before we left; but there is no doubt that both species *do* occur. We were probably too late for the first brood.

Thecla rubi, L.—Two worn specimens only, at Vizzavona.

Polyommatus phlæas, L., and the ab. *eleus*, F., were both well represented at Vizzavona, and both exceptionally fine in form. Many of the former had the beautiful series of blue dots on the inner margin of the

copper band in the hind wing, and the latter had the deep purple of the hind wings largely suffused over the fore wings also.

Lycæna telicanus, Hüb.—Sparingly up to 3500 feet. *L. argus*, L.—Swarming in the meadows at Tattone, the female deeply shot with blue; a beautiful variety, probably var. *calliopis*, Bdv. Kane gives it as a "Dauphiny *Lycæna*." *L. baton*, Berg.—A fine large form of the type; we took a few, but were rather late for the spring brood. *L. astrarche*, Berg.—Abundant and fine; orange marginal band of under side very broad and brilliant. *L. icarus*.—A remarkable form of this insect occurred at Tattone. The male is of a brighter blue on the upper side and paler on the under side, in the fore wing of which the basal spots are occasionally wanting, as in the ab. *icarinus*, Meig. The females have no trace of blue on the upper side, and the under side also in many specimens bears a close resemblance to that of *L. escheri*, Hüb., for a small form of which species we at first mistook it. Mr. J. J. Walker has since told me that at Gibraltar this is the typal form of *L. icarus*. *L. argiolus*, L.—Generally distributed, and remarkably fine. *L. cyllarus*, Rott.—Too late for spring brood; one worn specimen only taken.

Libythea celtis, Esp.—One in fine condition on June 5th, at Ajaccio, where the food-plant, *Celtis australis*, is common in some of the streets, the leaf bearing a resemblance to that of the wych elm.

Charaxes jasius, L.—One only seen at Ajaccio. It is said to be fairly common in May, and again in August, near the sea, where its food-plant, *Arbutus unedo*, grows wild.

Vanessa c-album, L.—Generally distributed. Spring form larger than with us, and so pale as to tempt one with the delusion of its being *V. egea*, which we did not see at all, although Kane gives a locality for it near Ajaccio. *V. urticæ* var. *ichnusa*, Bon.—Larvæ in large families on the nettles all round the hotel at Vizzavona. Last year's and this year's imagos flying together before we left. In Corsica this variety appears to replace the type, and is alpine in its choice of climate, being observed by one of our party up to 6000 feet. *V. io*, L., *V. atalanta*, L., and *V. cardui*, L.—All putting in an appearance as we left. Those I took were large, but otherwise not remarkable.

Argynnis latonia, L.—Common and fine everywhere. *A. elisa*, Godt.—This very striking and purely Corsican insect was beginning to appear in some numbers as we left, and was taken at various altitudes, and in diverse surroundings, from Corte to Vizzavona. *A. pandora*, Schiff.—A similar distribution to the last, but more abundant. Quite a number were taken at Corte, Tattone, and Bocognano before we left; and they are said to occur plentifully a little later at Vizzavona.

Satyrus circe, Fab.—Said to be common at Ajaccio in June, but only one example of it was taken up to the date of our leaving. *S. neomyris*, Godt.—Only three or four taken and observed during our stay; but I have since heard that they were not at all scarce at Bocognano early in July. *S. semele* var. *aristæus*, Bon.—This beautiful insular variety, with its broad and deeply fulvous coloration, was putting in an appearance just as we left, and is said to occur rather commonly up to quite high altitudes.

Pararge megæra var. *tigelius*, Bon.—Abundant everywhere, from the sea up to great elevations. They are smaller and paler than the type, the male having many distinctive characters, but the female wanting only the second median band in the hind wing. The type, as far as our observation went, does not occur. *P. egeria*, L.—Universally distributed. The fulvous ground colour in some cases inclines to orange.

Epinephele janira var. *hispulla*, Hüb.—Extremely abundant up to 2500 feet; replacing type and somewhat larger, but not so large as some I have from Greece. *E. ida*, Esp.—Common at Ajaccio end of June.

Cœnonympha pamphilus, L.—Generally distributed. *C. pamphilus* var. *lyllus*, Esp.—Appearing commonly at Ajaccio as we left; in this case, probably the form assumed by the second brood of the type. *C. corinna*, Hüb.—Quite the commonest butterfly at Vizzavona on our arrival; not so common lower down.

Spilothyrus althææ, Hüb.—Occurs sparingly from sea-coast up to about 2500 feet.

Syrichthus malvæ, L.—Similar distribution to the foregoing. *S. sao* var. *therapne*, Ramb.—A handsome bronzed form, not at all common, and hard to take from its method of flight and assimilation of colour to its surroundings. Impartial in its choice of climate; for at Vizzavona, above the hotel, some score or so of specimens had already been taken in May by Mr. Raine. They were still flying there in a more or less battered condition up to the middle of June; and on the 25th the second brood was already in full flight at Ajaccio, 4000 feet lower.

To summarise briefly the result of our observations:—There are five good species, viz., *P. hospiton*, *A. elisa*, *S. neomyris*, *E. nurag*, and *C. corinna;* and four varieties, viz., *E. tagis* var. *insularis*, *S. semele* var. *aristæus*, *P. megæra* var. *tigelius*, and *S. sao* var. *therapne*, peculiar to the Islands of Corsica and Sardinia; and of these nine we may congratulate ourselves on having taken eight, *E. nurag* alone evading our observation. Out of the thirty-eight European genera, only nineteen—just one-half—are credited to Corsica. The important families of *Thais*, *Parnassius*, *Melanargia*, *Erebia*, and *Hesperia*, are entirely unrepresented; and when those gentlemen who lingered some time after us have made out their lists, it will probably be found that the number of species falls far short even of those comprised within the British Isles.

My notes of Heterocera, I regret to say, are far too meagre to be worth recording, and I can only hope that others have been more observant.

67, Earl's Court Square, S.W., July 27, 1893.

A LIST OF THE SPECIMENS BELONGING TO THE GENUS *PERGA*, Leach, IN THE OXFORD UNIVERSITY MUSEUM.

By John W. Shipp.

1. *Perga dorsalis*, Leach, Zool. Misc. iii. p. 117, n. 4. pl. cxlviii. fig. 1, 1817; Westwood, P. Z. S. 1880, p. 362; Kirby, List Hymen. vol. i. p. 18, 1882. *P. scutellata*, ♀, Westwood, Griff. Anim. Kingd. xv. p. 402, pl. lxvi. fig. 2, 1832. Type, part in B. M. and Mus. Oxon. *a*, New South Wales (2), (coll.

Saunders); *b*, New Holland (Kirby); *c*, Moreton Bay, 1858; *d*, Tasmania; *e*, Queensland; *f*, *scutellata* (type), New South Wales (2), (coll. Westwood).

2. *Perga schiodtei*, Westwood, P. Z. S. 1880, p. 364, pl. xxxiv. figs. 3, 4; Kirby, List Hym. vol. i. p. 20. Type in Mus. Oxon. *a*, ♂ (type), Australia; *b*, ♂, Australia; *c*, ♀ (type), Adelaide (Wilson); *d*, ♀, New South Wales; *e*, ♀, Adelaide (2).

3. *Perga kirbii*, Leach, Zool. Misc. iii. p. 117, n. 8, 1816; Westwood, P. Z. S. 1880, p. 371, pl. xxxvii. fig. 4; Kirby, List Hym. vol. i. p. 21, pl. ii. fig. 2, ♀, 1882. Type in Mus. Oxon. *a* (type), Swan River (ex. Mus. Kirby).

4. *Perga polita*, Leach, Zool. Misc. iii. p. 115, n. 1, pl. 148, fig. 3, 1817; Westwood, P. Z. S. 1880, p. 363; Kirby, List. Hym. vol. i. p. 21, pl. ii. fig. 1, 1882. Types in B. M. and Mus. Oxon. *a* (type), New Holland (Leach); *b*, Van Dieman's Land (2); *c*, Melbourne (Bakewell); *d*, Moreton Bay, 1858; *e*, Gold diggings ?.

5. *Perga klugii*, Westwood, P. Z. S. 1880, p. 363, pl. xxxiv. figs. 1, 2; Kirby, List Hym. vol. i. p. 22. Type in Mus. Oxon. *a* (types of species), New South Wales (2); *b*, Australia (3); *c*, Albany (Brewer).

6. *Perga bella*, Newman, Ent. i. p. 89, 1841; Westwood, P. Z. S. 1880, p. 373; Kirby, List Hym. vol. i. p. 22, 1882. Type in cabinet of the Entomological Club (Newman). *a*, ♂, New Holland (Higgins, 1868); *b*, ♂, Adelaide (Wilson); *c*, ♂, Australia (coll. Saunders); *d*, ♂, Australia (2), (Hope); *e*, ♂, New Holland (coll. Smith); *f*, ♀, New South Wales (coll. Smith); *g* (*basalis*, Smith), Adelaide (coll. Smith); *V. ferrugineus* (part), Leach, Adelaide (coll. Smith).

7. *Perga gravenhorstii*, Westwood, P. Z. S. 1880, p. 366, pl. xxxv. fig. 7; Kirby, List Hym. vol. i. p. 22, 1882. Type in Mus. Oxon. *a* (type), Melbourne, N. S. W. 1841 (Sir S. Saunders).

8. *Perga hartigii*, Westwood, P. Z. S. 1880, p. 369; Kirby, List Hym. vol. i. p. 22, 1882. Type in Mus. Oxon. *a* (type), Australia (coll. Smith); *b* (type), New Holland (coll. Saunders).

9. *Perga peletierii*, Westwood, P. Z. S. 1880, p. 370, pl. xxxv. fig. 6. Type in Mus. Oxon. *a* (type), New Holland (coll. Smith).

10. *Perga newmanii*, Westwood, P. Z. S. 1880, p. 370. Type in Mus. Oxon. *a*, ♂ (type), New South Wales (coll. Saunders); *b*, ♀ (type), Adelaide (coll. Saunders).

11. *Perga lewisii*, Westwood, Trans. Ent. Soc. i. p. 232, 1836; Arc. Ent. i. p. 23, pl. vii. fig. 1 (1841); P. Z. S. 1880, p. 374; Kirby, List Hym. vol. i. p. 24. Type in Mus. Oxon. *a* (type), Adelaide (Hope); *b* (type), Van Dieman's Land (3); *c* (type), Adelaide (2), (coll. Saunders).

12. *Perga smithii*, Westwood, P. Z. S. 1880, p. 375, pl. xxxvi. fig. 6; Kirby, List Hym. vol. i. p. 24. Type in Mus. Oxon. *a* (type), Australia (2), (coll. Saunders).

13. *Perga ferruginea*, Leach, Zool. Misc. iii. p. 118, n. 6, pl. 148, fig. 4, 1817; Westwood, P. Z. S. 1880, p. 376; Kirby, List Hym. p. 24, pl. ii. fig. 6, 1882. Types in Mus. Oxon and B. M. *a* (type), Australia (coll. Kirby ex. Mus. Leach); *b*, Australia (3), (coll. Saunders); *c*, Moreton Bay, 1858 (2).

14. *Perga esenbeckii*, Westwood, P. Z. S. 1880, p. 365, pl. xxxv. fig. 5; Kirby, List Hym. 1882, p. 24. Type in Mus. Oxon. *a* (type), Swan River, West Australia (coll. Smith).

15. *Perga christii*, Westwood, P. Z. S. 1880, p. 366, pl. xxxvii. fig. 2. Type in Mus. Oxon. *a* (type), Swan River, 1865 (Stevens).

16. *Perga guerinii*, Westwood, P. Z. S. 1880, p. 367, pl. xxxv. fig. 1. Type in Mus. Oxon. *a* (type), Australia (coll. Saunders).

17. *Perga cameronii*, Westwood, P. Z. S. 1880, p. 367, pl. xxxvii. fig. 3. Type in Mus. Oxon. *a* (type), Australia (coll. Smith).

18. *Perga dalmannii*, Westwood, P. Z. S. 1880, p. 369, pl. xxxvi. fig. 2; Kirby, List Hym. 1882, p. 25. Type in Mus. Oxon. *a* (type of species), New Holland (Parry); *b* (type), Melbourne (Thwaites).

19. *Perga macleaii*, Westwood, P. Z. S. 1880, p. 371, pl. xxxv. fig. 2. Type in Mus. Oxon. *a* (types of species), Australia (coll. Saunders); *b*, Moreton Bay.

20. *Perga spinolæ*, Westwood, P. Z. S. 1880, p. 371, pl. xxxvi. fig. 4; Kirby, List. Hym. 1882, p. 26. Type in Mus. Oxon. *a* (type), Australia (coll. Smith).

21. *Perga bicolor*, Leach, Zool. Misc. iii. p. 116, pl. 148, fig. 5, 1817; Westwood, P. Z. S. 1880, p. 371; Kirby, List Hym. 1882, p. 26. *a* (type ?), Australia (3), (Kirby); *b*, South Australia (Damell, 1863).

22. *Perga foersteri*, Westwood, P. Z. S. 1880, p. 368, pl. xxxvi. fig. 1; Kirby, List Hym. 1882, p. 26. Type in Mus. Oxon. *a* (types of species), New Holland (Higgins, 1868); *b*, Melbourne (3).

23. *Perga cressonii*, Westwood, P. Z. S. 1880, p. 368, pl. xxxvii. fig. 1. Type in Mus. Oxon. *a* (type), Swan River, West Australia (De Boulay).

24. *Perga walkeri*, Westwood, P. Z. S. 1880, p. 368, pl. xxxvi. fig. 5. Type in Mus. Oxon. *a* (type), Sydney (coll. Smith).

25. *Perga vollenhovii*, Westwood, P. Z. S. 1880, p. 365, pl. xxxiv. fig. 5. Type in Mus. Oxon. *a* (type), New Holland (Higgins, 1868).

26. *Perga ritsemei*, Westwood, P. Z. S. 1880, p. 365, pl. xxxiv. fig. 7; Kirby, List Hym. 1882, p. 27. Type in Mus. Oxon. *a* (type), Adelaide (Hope).

27. *Perga brullei*, Westwood, P. Z. S. 1880, p. 364, pl. xxxiv. fig. 6; Kirby, List Hym. 1882, p. 28. Type in Mus. Oxon. *a* (type), South Australia.

28. *Perga dahlbomii*, Westwood, P. Z. S. 1880, p. 371, pl. xxxv. figs. 3, 4; Kirby, List Hym. 1882, p. 28. Type in Mus. Oxon. *a*, ♂ (types of species), Australia (coll Saunders); *b*, ♀ Australia (coll. Smith).

29. *Perga jurinei*, Westwood, P. Z. S. 1880, p. 378, pl. xxxvii. fig. 6; Kirby, List Hym. 1882, p. 29. Type in Mus. Oxon. *a* (types of species), Swan River (Hope); *b*, Melbourne (Bakewell).

30. *Perga mayrii*, Westwood, P. Z. S. 1880, p. 378, pl. xxxvii. fig. 7. Type in Mus. Oxon. *a* (type), Swan River, West Australia (De Boulay).

31. *Perga leachii*, Westwood, P. Z. S. 1880, p. 377; Kirby, List. Hym. 1882, p. 30, pl. ii. fig. 11. Types in Mus. Oxon and B. M. *a*, ♂ (type), Melbourne (Sir S. Saunders).

32. *Perga halidaii*, Westwood, P. Z. S. 1880, p. 377, pl. xxxvii. fig. 5; Kirby, List Hym. 1882, p. 30. Type in Mus. Oxon. *a* (types of species), Adelaide (2), (Hope); *b*, Adelaide (Wilson); *c*, Australia (coll. Saunders).

33. *Perga latreillei*, Leach, Zool. Misc. iii. p. 116, n. 3, pl. 148, fig. 2; Westwood, P. Z. S. 1880, p. 372, pl. xxxvi. fig. 3; Kirby, List Hym. 1882, p. 25, pl. ii. fig. 8. Types in Mus. Oxon and B. M. *a* (type), Australia (coll. Saunders); *b*, Australia (coll. Smith); *c*, South Australia (Damell, 1863).

Oxford University Museum.

THE WEST INDIAN SPECIES OF *DACTYLOPIUS*.

By Prof. T. D. A. Cockerell, F.Z.S., F.E.S.

(Concluded from p. 179.)

(2.) *Dactylopius longifilis*, Comstock.

This species, which is easily recognised by its distinct lateral appendages, and its long fine caudal filaments, is common and injurious in Kingston. I have found it on species of *Adiantum*, *Ficus*, &c. In June, 1892, Miss H. Kilburn sent me two mango fruits, badly attacked by this species.

I have not seen Signoret's *D. ficus*, but, judging from the description, it seems closely allied to *longifilis*.

(3.) *Dactylopius*, sp. incert.

Mr. Bowrey brought me some specimens of the egg-plant (*Solanum melongena*) grown in his garden in Kingston, which had been severely attacked in some way, and were dying in consequence. On examination the stems showed several holes, which proved to be blind cavities, tenanted by young individuals of

a *Dactylopius*. The roots were most severely injured, being extensively corroded and excavated, and the excavations inhabited by *Dactylopii*. Ants were swarming over the plants.

This species of *Dactylopius* is presumably undescribed, but the specimens were not sufficiently adult for descriptive purposes. It has been recorded ('Insect Life,' iii. pp. 413, 419) that a probably undescribed *Dactylopius* infests the roots of tomato in the same fashion in New Mexico.

(4.) *Dactylopius citri*, Boisduval.

All I know about the occurrence of this species in the West Indies is derived from a few examples in the Jamaica museum, contained in a tube marked, "Scale Insect on Crosset [?Gosset] Coffee." The specimens are not in good condition, but they appear to be the same as *D. destructor*, Comst., which is now regarded as a synonym of *citri*. Comstock remarks that he found *destructor* abundant on coffee-plants.

(5.) *Dactylopius brevipes*, n. sp.

In the natural cavities of pine-apples, bought in Kingston, Jamaica, I find specimens of a small active *Dactylopius*, allied to *D. citri*.

D. brevipes. (much enlarged)

It is pale pink in colour, and little over 1 mm. long. Body oval, pink, sparsely white-mealy, segmentation distinct; no bands or spots. Sides with white-mealy processes, seventeen on each side, about equally long, except the four last on each side, which are longer and thicker, but none nearly half the length of the body. Legs and antennæ pale brown. Tarsus decidedly shorter than tibia; there is a "false-joint," quite short, at end of tibia. Femur stout, and a little shorter than tibia and tarsus. Four knobbed digitules; those of the claw short, the other pair very long and slender. Tarsus with at least two pairs of hairs on inner side, and three single ones on outer. Tibia with seven hairs on inner, and seven on outer side. Femur with four short hairs on inner side. Trochanter with one very long hair, almost as long as femur, on its inner side. Antennæ with eight joints, slightly hairy:—3 a little longer than 2, and about as long as 1, or perhaps a little shorter; 4 and 5 about equal, 5 perhaps a little longer; 6 and 7 equal, and shortest; 8 nearly or quite as long as 3.

This insect appears to be a stumpy form, adapted for life in the cavities of the fruit. It seems to be quite distinct from *D. bromeliæ*, which was found on a pine-apple from Zanzibar.

(6.) *Dactylopius simplex*, n. sp.

Forming scattered patches of white secretion, quite irregular in outline, on the upper side of leaf of *Pancratium caribæum*.

♀.—About 2 mm. long, oval, brown, with mealy white secretion; segmentation distinct. No lateral processes or caudal filaments. Tibia nearly as long as femur; tarsus about one-third length of tibia. Claw with

knobbed digitule. Legs brownish yellow, hairy; trochanter with two short hairs. Antennæ 8-jointed;—4, 5, and 6 subequal, and shortest; 7 next shortest; then 1, then 2; 3 and 8 longest. These differences are rather insignificant, except the decided shortness of 4, 5, and 6. Joint 8 emits several hairs, none as long as itself. Boiled in soda, they do not colour it red or brown. The female, after soda treatment, is yellowish red. The white secretion is in the form of long straight threads.

Larva.—Elongate-oval, with parallel sides; two caudal filaments, not so long as diameter of body, and joined together by secretion. Colour of larva yellowish brown.

This species was found by Dr. Strachan, in his garden in Kingston, Jamaica, August, 1892.

D. liliacearum, Bouché, which has been found on *Pancratium*, must be similar; but so far as I can judge, from the very few details published concerning it, it is probably distinct. *D. calceolariæ*, Maskell, seems also to be allied to *D. simplex*.

(7.) *Dactylopius filamentosus*, n. sp.

On a plant resembling a *Vaccinium*, with entire mucronate leaves, 20 mm. long. Found at Cockburn's Harbour, South Caicos, Bahamas, by Dr. Hy. Strachan, June, 1892. In clusters, many together, on the stem; clusters 8 or 9 mm. across, composed of about ten individuals.

♀.—About 3 mm. long, shape of *Coccus cacti*, grey, but covered with white secretion. The female, boiled in caustic soda, turns black, and gives off a purplish black colour. By transmitted light it appears not black, but violet. The margin has a series of short hairs. The caudal tubercles emit the usual filaments, which, however, are very short. Between the tubercles, when the secretion is removed, four hairs, longer than the tubercles, can be seen. The legs are very small. Tibia not nearly twice as long as tarsus. Claw slender, with a very short knobbed digitule. Tarsus with two long knobbed hairs as usual. Inner side of tarsus with a long, rather stout hair, which extends as far as to end of claw. Femur as long, or nearly as long, as tibia and tarsus. Trochanter with a long hair. Colour of legs brownish. Antennæ very short, with only seven joints:—1 and 2 about equal; 3 and 4 equal, shorter than 2; 5 and 6 subequal, shorter still; 6 shortest; 7 long.

Larva reddish. Eggs oval, with contents partly of a verdis-green colour.

The characters of this insect would remove it from *Dactylopius*, as strictly defined; but it is surely congeneric with Maskell's *D. albizziæ* and *D. acaciæ*. I had, at first, referred it to the genus *Rhizococcus*, sens. Comstock; but, as Mr. Newstead has pointed out to me, the terminal joint of the antennæ is *Dactylopioid*.

Institute of Jamaica, Jan. 25, 1893.

A CATALOGUE OF THE LEPIDOPTERA OF IRELAND.

By W. F. de Vismes Kane, M.A., M.R.I.A., F.E.S.

(Continued from p. 244.)

HESPERIIDÆ.

Nisoniades tages, *L.*—Very local, and not known to be widely distributed in Ireland. Galway seems to be its head-quarters, specimens from which are characterised generally by very distinct grey markings on the fore wing. The Enniskillen form, similarly. Near Galway, abundant (*A.*), Ardrahan (*Miss N.*), and Castle Taylor; Co. Clare, Cratloe (*N.*), and Ennis. Enniskillen locally somewhat abundant (*S.*).

Hesperia thaumas, *Hufn.*—"Powerscourt, Co. Wicklow, and near Cork" (*B.*).

Hesperia sylvanus, *Esp.*—"The Morrough of Wicklow" (*B.*); not uncommon in a meadow in Lord Kenmare's demesne, Killarney (*W.*).

HETEROCERA.

SPHINGES.

SPHINGIDÆ.

Acherontia atropos, *L.*—Generally distributed; sporadic in its occurrence, only single specimens being taken for the most part. There is no doubt that the climate usually does not favour its propagation, and that it occasionally is an immigrant. In the 'Entomologist,' vol. x. p. 300, the following account is given:—"On October 8th, an engineer of one of the Dublin Steam Packet Co.'s steamers brought me a live *Acherontia atropos*, which had lighted on a crate of cabbages on deck, when twenty-five miles from the Irish coast; and on October 6th, 1876, a *Sphinx convolvuli* alighted on the same steamer." I have also a note of this species being taken at the Tuscar Rock Lighthouse, six miles from the S.E. point of Ireland. Its migrating powers explain the fact that it is almost as often taken in Ulster and the less genial climate of the north-west as in the south. (In 1865, *A. atropos*, *S. convolvuli*, and *V. cardui* were noted to be abundant at Dingwall in the Orkneys.—Ent. vol. iii.) Co. Donegal, Greencastle (*W. E. H.*); Derry (*C.*); Co. Antrim, Ballycastle, 1 by Mr. Milne (*C.*); Lisburn, S. Stears (*W.*); Co. Tyrone, Caledon (*J.*) and Kilskeery (*Br.*); twice taken near Sligo; Co. Dublin, occasional specimens; Howth, 1 (*S. R. F.*); Co. Wicklow, Kilcool, Wooden Bridge (*M. F.*); near Bray, plentiful in 1885 or 1886; Co. Waterford, Cappagh (*U.*); Co. Cork, Bandon (*L.*); near Ballinasloe (*R. E. D.*).

Sphinx convolvuli, *L.*—Also an occasional immigrant, and increasingly so of late years; so much so that it appears probable that it breeds in Ireland in fine seasons, and is a commoner species than *A. atropos*. "In 1859, very common in Dublin and adjoining counties" (*B.*). In 1882 it occurred in various places; and in 1887 was very numerous all over Ireland. In 1891 and 1892 it also occurred in widely distant localities. The following are places in which it has been taken more or less freely from time to time:—Belfast, Glenarm, Armagh (*J.*); Caledon, Tyrone; Kingstown, Dublin, Howth, Wicklow (*Bw.*); Glandore, Co. Cork (*D.*); Enniscoe, Crossmolina, Co. Mayo; Co. Sligo, Knocknarea (*Russ*), Lissadell (*Miss G.-B.*).

[*Sphinx ligustri*, L.—I have no certain record of the occurrence of this species. Mr. Birchall remarks:—"Mr. Haliday has found the same, but I am unable to say where." I have been unable to verify this record from Haliday's diary or MSS., except from second-hand information. Mr. Bristow has a specimen, sent him in 1862 or 1863 from Ballymena by an acquaintance, but is unable to verify the capture. Also one from Limerick, of which nothing certain is known. Mr. Brakey once had a number of pupæ of this moth from England, and set free twenty imagines as they emerged, at Trillick, Co. Tyrone, in 1872. The food-plant is common enough in Ireland; and although this fine insect is rather a southern species, being rare in Yorkshire and the north, yet one would imagine that the climate of Southern Ireland would be sufficiently congenial. Even if not originally indigenous, and although not such a migrant as *S. convolvuli*, one would expect that it must occasionally reach the Irish shores, and establish itself. Nor is it an insect likely to escape notice. It is, therefore, probable that, with the increase of observers, *S. ligustri* may be added to our list from southern counties.]

Deilephila galii, *Schiff.*—"Two specimens are said to have been taken on the coast" (*Greene*). These were captured by Mr. Coulter, of Dublin; and I have no reason to doubt the record. One at Howth, in 1888, by G. V. Hart, Esq., LL.D.

Deilephila livornica, *Esp.*—"Two specimens are in the collection of Trinity College, Dublin, captured near Youghal by the late Dr. Ball; and I possess a pair (out of four) (*W. K.*), taken near Killarney, in 1864, hovering over a bed of petunias" (*B.*). I have one, taken at Kingstown in 1888, apparently just emerged. The Rev. S. L. Brakey took two at Ennis, Co. Clare, many years ago, at a bed of lilies of the valley. One was also taken at Kilkenny, by the Rev. James Bristow. Two at Ormeau Park, Belfast, on 7th and 11th June, 1888, by Mr. Chas. Watts.

Chœrocampa celerio, *L.*—The Rev. Joseph Greene records the only capture of this rare species, September 17th, 1881, at Mullaghmore, Co. Sligo, at light.

Chœrocampa porcellus, *L.*—Distributed throughout the island, and fairly numerous in some localities. On the Dublin coast, Killiney, Kingstown, Howth, and Malahide (*Bw.*). I have also met with it at Tramore, Dunmore, on the Waterford coast, as well as in Co. Cork, Sligo, &c. Inland it is found in Westmeath, at Cromlyn (*Mrs. B.*); and near the Lakes of Derrevaragh and Belvidere, and at Killynon (*Miss R.*). In Galway it abounds at Ardrahan, and in central and eastern localities of that county is not scarce.

Chœrocampa elpenor, *L.*—This handsome species is everywhere to be met with, and very abundant in many localities, and is more numerous inland than the preceding, which is more frequently found on the sea-coast. Near Belfast it is not scarce (*Bw.*); in the Co. Tyrone, at Favour Royal, abundant; at Farnham Cavan, and Drumreaske Monaghan. In Westmeath, at Cromlyn (*Mrs. B*) and at Killynon (*Miss R.*), it is abundant. In the Cos. Dublin, Wicklow and Wexford, Waterford and Cork; at Killarney and Sneem, Kerry; at Ennis, Co. Clare; in Co. Galway, Castle Taylor and near Ballinasloe; at Markree Castle, and elsewhere in Co. Sligo, &c.

Smerinthus ocellatus, *L.*—This handsome species seems to be widely distributed, but usually scarce. Single specimens have been taken as follows:—Near the Phœnix Park, Co. Dublin (*Mr. Rathborne*); Tinahely, Co. Wicklow (*Bw.*), three in the fens of Wicklow, by myself; Cromlyn, Westmeath (*Mrs. B.*); Limerick (*Bw.*); Ennis (*Br.*); Cappagh (*U.*). In Co. Galway it is very abundant locally (*R. E. D.*).

Smerinthus populi, *L.*—Abundant throughout Ireland, from Malin Head (*W. E. H.*) to Cork. Some handsome varieties are often bred, suffused with lavender on the bases and oblique antemarginal band. Mr. Fetherston H. has specimens of this from Mayo; and Mr. M. Fitzgibbon, from Howth. The latter has also bred specimens with rich olive-green central band and hind margin, and similar lavender suffusions, and the discoidal mark very white and prolonged to the costal nervure. Another, in which russet takes the place of the green, and the lavender is of a warmer tone. All these possess the usual fuscous basal patch on the hind wing. I have seen very similar aberrations from mid-Galway (*R. E. D.*).

Smerinthus tiliæ, *L.*—The only locality for this species that I know in Ireland is in the Co. Galway, where it is scarce; but I have seen several specimens, one of which has the hind wings very pale russet, and the central band of the fore wing large and continuous, and the green replaced by an olive-brown. This accession to the Irish list, together with a large number of others of most remarkable character and importance, is due to

the energy and good fortune of a friend who has only lately taken up the study of Lepidoptera, and seems to have turned up a perfect treasury of rarities in portions of the old forest districts and extensive moors and bogs of Galway. I have had the pleasure of examining his collection, and naming many extraordinary rarities which had escaped his notice.

Macroglossa stellatarum, *L.*—Very variable in numbers, according to the amount of sunshine enjoyed each summer. Often abundant even near Belfast and Lisburn (*W.*); but in cold summers scarcely to be seen. The larvæ feed up very rapidly in warm weather, so that it is possible that there may be a succession of broods on the Continent. At Kingstown I have watched the female depositing her ova, and from these, within about six weeks, have bred two imagines in September, the rest of the pupæ hybernating.

Macroglossa bombyliformis, *Och.*—Abundant in many Irish localities, but appears to be rather fickle in habits, disappearing suddenly from its usual habitat without apparent cause. It is easily taken when feeding on the flowers of bugle or marsh-rattle; but on very hot days its activity on the wing is prodigious, as it scarcely pauses to taste the flowers, and flies as rapidly as the preceding species. When first emerged from the pupa, the clear membrane of the wings is slightly scaled. In the north it is found at Inishowen (*W. E. H.*), in Colin and Crawfordsburn Glens (*Bw.*), and elsewhere on hills about Belfast (*W.*). In Co. Monaghan, at Drumreaske, where it used to be very abundant; and near Favour Royal and Altadiawan, Tyrone, it is numerous. Cromlyn, Westmeath, scarce (*Mrs. B.*); Ardrahan, Co. Galway (*Miss N.*); Hollybrook, Roscommon (*Miss ff.*); L. Gill, Sligo; in Co. Dublin, and Killynauly Wood (*Bw.*) Wicklow; and at Killarney; Co. Cork (*L.*) at Glandore (*D.*), very abundant near Kenmare (*Miss V.*). Its congener, *M. fuciformis*, the commoner species in the sister country, has never been observed in Ireland.

SESIIDÆ.

Trochilium apiformis, *Clerck.*—"Cork and Waterford, but has not been observed further north" (*B.*). Osier beds being rather infrequent in Ireland, *T. crabroniformis* is often found in the common poplar, as well as in sallow in willow. I have found poplar trees infested with *Trochilium* at Lissadell, Sligo, and in the Co. Monaghan and elsewhere, but have not taken the imago. I have, however, reason to believe that *T. apiformis* is occasionally to be found in the northern half of the island. In a marsh near the city of Waterford I found the larvæ of *apiformis* plentiful in young poplars, and saw the imago bred by a resident in that neighbourhood. The Rev. J. Greene has taken it near Dublin. Glandore, Co. Cork (*D.*).

Trochilium crabroniformis, *Lewin.*—Widely spread and abundant in many parts of Ireland, infesting poplar, willow, sallow, and osiers. Knockbreda, Co. Down (*Bw.*); Derry; near Monaghan; Cromlyn, Westmeath (*Mrs. B.*); Howth, abundant; in the suburbs of Dublin (Rathmines and Drumcondra) and Kingstown, abundant; Malahide (*N.*); at Armagh and Castledermot, Co. Kildare (*J.*).

Sesia scoliiformis, *Bork.*—Cromaglaun Glen, Killarney, is the locality where Mr. Birchall found birch trees infested, he believed, with this species, but he did not get the imago. I also noticed similar traces in the same neighbourhood in 1885, but saw no imagines.

Sesia tipuliformis, *Clerck.*—Common near Dublin, and elsewhere found in Ireland. Derry (*C.*). I have reason to believe it is widely distributed, but it seems to have been overlooked by collectors.

Sesia myopiformis, *Bork.*—"Dublin and Cork" (*B.*).

Sesia culiciformis, *L.*—Killarney (*B.*).—The Rev. Joseph Greene records it as Irish, on the authority of Mr. A. H. Haliday. I have found birch logs bored and empty pupæ near Ballinasloe. Mr. Milne, of Derry, reports traces of a similar nature in his neighbourhood.

Sesia musciformis, *View.*—Mr. Gregson is said to have taken a specimen at Howth. I found it on the Saltee Islands, Co. Wexford, where, however, it was scarce.

(To be continued.)

NOTES AND OBSERVATIONS.

Butterflies and Colour.—Bearing on the subject of butterflies being attracted to flowers or objects of a colour resembling their own, I recently stumbled upon a note, by Mr. E. C. Lefroy, in 'Science Gossip' (1871, p. 258), of which the following is an extract:—"When reading some papers on butterflies by the Rev. J. Johns, in a monthly serial, I came across a paragraph in which the writer said that *P. brassicæ* and other white butterflies had a predilection for settling on flowers of the same colour as themselves, and although I was at first inclined to doubt the statement, I resolved to watch for myself. The result was that not only am I firmly convinced that the whites have a preference for white flowers, but, going further than this, I have noticed that a small bed of *Nemophila* had such attractions for the blues as to prevent them settling on other flowers."—H. G. Knaggs; Camden Road, August 7.

Note on the Larva of Dicranura vinula.—In reply to Mr. Turner's query concerning the larval ecdyses of *Dicranura vinula* (*ante*, p. 248), I believe that the number of ecdyses depends largely upon the food. I have reared a good many broods of this moth, and have found that black poplar

invariably seems to produce three ecdyses in the larvæ after the "black" stage. White willow, white poplar, and sallow, produce, in most cases, four ecdyses. With white willow, however, I have occasionally found five ecdyses; in one case (which turned out to be a somewhat rare variety) six. White poplar sometimes produces three ecdyses. — W. H. Seyfang; St. Peter's College, Cambridge, August 15, 1893.

Sugar versus Honeydew.—In 1875, and again in 1876, I had excellent opportunities for observing the nightly attendance of moths at sugar and honeydew, and an account of these observations will be found in the 'Entomologist' for 1878 (xi. 271). In 1876, 202 specimens were taken between July 14th and August 15th, and of these 61 were attracted by the honeydew. Of the 476 specimens of Noctuæ taken between July 9th and August 28th in the previous year, only 96 were from honeydew. The numbers were made up in the respective years as follows:—

1875.		
	Sugar.	Honeydew.
Calymnia diffinis	76	11
Noctua rubi	68	5
Calymnia pyralina	60	7
Caradrina taraxaci	54	43
Calymnia affinis	42	16
Mania maura	34	3
Cerigo matura	32	0
Caradrina alsines	14	6
Tethea subtusa	0	4
T. retusa	0	1

1876.		
	Sugar.	Honeydew.
Caradrina taraxaci	40	27
Calymnia diffinis	37	6
Cerigo matura	24	0
Calymnia pyralina	17	9
Caradrina alsines	13	3
Calymnia affinis	8	2
Tethea subtusa	2	14
T. retusa	0	4
Triphæna interjecta	0	2

Besides the species enumerated above, a large number of commoner ones also came to the sugar, but very few to the honeydew. Two or three Geometræ visited the latter attraction, and *Zanclognatha tarsipennalis*, *Pyralis costalis*, and *P. glaucinalis* were common at the sugar. This year honeydew has been excessively abundant, but I cannot suppose that the poor results which have attended sugaring expeditions are directly attributable to this fact. I should say that the scarcity of moths at sugar is not because honeydew proved more attractive, but rather because the meteorological conditions favourable to aphides, enabling them to increase and multiply prodigiously, have been to a greater or lesser extent injurious to moths. It seems only reasonable to assume that to many species of moths occurring in this country abnormal heat and drought are as disastrous as exceptional cold and wet. The observations and opinions of others relative to these matters would be exceedingly interesting.—Richard South; 12, Abbey Gardens, St. John's Wood.

Pachetra leucophæa in England.—A few years ago an entomological friend showed me a series of six specimens of the above insect, which he had captured on the South Downs, pointing out the spot where he had taken them on condition that I would not publish or otherwise reveal the same. As, however, the locality is one from which this species has been already recorded, nothing is lost to science by my compliance with his wishes, and I only mention the above facts to disclaim any credit for having made the discovery myself. My object in sending this note is to point out that although I have collected this insect in the past, it has hitherto occurred so sparingly that, until now, I had been unable to complete

my own series. This year, however, it was found in sufficient numbers to enable me to fill up my own set and distribute a few pairs among my friends. The South Downs of England are, I believe, the extreme northern limit of its occurrence, and it is doubtless owing to the exceptionally fine and hot spring favouring the growth of the larvæ, that it occurred this year so much more freely than usual. I obtained a large batch of eggs from one of the females, but as I started for a botanical tour in North Italy the very day on which they hatched, the bulk of my larvæ died or ate one another, and I have now but four left.—Frederick J. Hanbury; 37, Lombard Street, E.C., August 23, 1893.

The Plague of Wasps.—This morning's 'Standard' (August 23rd, 1893) contains an account of the very destructive damage inflicted on the fruit crops in Essex by wasps, and the consequent destruction by gardeners in one neighbourhood alone of 300 nests during the last few days. Mention is also made of an island in the same county swarming with wasps, which instantaneously attack all the food brought by tourists bent on enjoying a picnic there. Not long since, at an open-air tea given by the Salvation Army in the South of England, the wasps covered all the jam, sugar, &c., and stung several of the children; a scene of confusion ensued, and the teachers and conductors of the party were at their wits' end what to do, until they bethought themselves of the expedient of daubing the branches of neighbouring trees all over with the jam, and thus occasioned a diversion thither of the winged pests. Only a few days since, a French gentleman, resident at Chalons-sur-Marne, was engaged in taking a nest in his garden one morning, when he was attacked by a strong swarm, and severely stung all over the head and face. The unfortunate man rushed into his house in a pitiable state and immediately sent for a doctor, but was dead before medical aid, though summoned with all haste, arrived. The unusual number of wasps this year is no doubt attributable to the extreme dryness of the spring, and also to the almost unprecedented length and heat of the present summer. In reference to the 300 nests above mentioned, these probably averaged, on the most moderate computation, 2000 wasps per nest (and a strong nest will frequently reach 4000). But to take the lowest figure, 300 nests containing 2000 each make a total of 600,000 wasps. Now in spite of great care, cost and labour, expended in searching out and destroying, when summer is well advanced, the nests that send forth their hordes to our orchards and wall-fruit, several nests are nearly sure to escape observation, and it is equally certain that there will be numerous absentees when any particular nest is taken. The easiest and most efficacious method is, if possible, to catch the mothers of the very numerous progeny, the queens, as they flit about a sunny bank in April, before they are permanently located inside their self-chosen domicile. I adopted this plan in 1888, capturing 25 queens, chiefly in the direction of Dudden Hill, 22 of *Vespa germanica* and 3 of *V. vulgaris;* and a marked diminution of wasps was observable in Kilburn last summer. If my memory serves me right, 1852, 1853, 1854, and 1856 were all seasons remarkable for the abundance of wasps. Gas tar, paraffin, lighted straw, and boiling water, may be quoted among the various methods resorted to for destroying the nests, the two last named being probably the least efficacious. Personally, I believe there is no plan better than the old-fashioned one of a coarse rag folded many times, with a layer of sulphur between each fold, stuck deep into the hole at dusk, and then to ignite the end, and to blow long,

slowly, and steadily with bellows. I have myself taken many nests in this way. As a rule, the numerical strength of the nest will be found to correspond to the size of the hole, a weak nest being entered through only a small aperture.—F. A. Walker, D.D.; Dun Mallard, Cricklewood.

CAPTURES AND FIELD REPORTS.

Colias hyale at Chichester.—On August 14th my brother, Mr. F. Anderson, took two fine *Colias hyale* in a clover field here, and owing to the cane unfortunately slipping out of the net, and a high wind at the time, which carried the insect out of sight, missed another. On the 16th another specimen was captured. Any notes respecting the genus *Colias* will this year be especially interesting and valuable, after the abnormal abundance of *Colias edusa* in the preceding. It is very remarkable that up to the present time not a single *Colias edusa*, nor its variety *helice*, has been seen here; in marked contrast to the swarms of last autumn. Equally singular too is the absence of the Vanessas,—*atalanta*, *io*, *cardui*, and *urticæ*, and of *Plusia gamma*.—Joseph Anderson, Jun.; Chichester, August 17, 1893.

Colias edusa in Cambridgeshire. — On Friday, August 18th, I was walking across a stubble-field about 6 o'clock in the evening, when a specimen of *Colias edusa* flew up in front of me. I had not a net with me, but I captured it under my hat. It was a male.—(Miss) M. Wilson; The Vicarage, Guilden Morden, Royston, August 21, 1893.

Vanessa c-album, &c., at Cheadle.—I have just returned from a few days' visit to a place near Welshpool, where I have been taking *Vanessa c-album* in fine condition, and a second brood of *Lycæna argiolus*. *Amphipyra pyramidea* came freely to sugar.—E. W. H. Blagg; Cheadle, Staffs., July 27, 1893.

Acherontia atropos. — Last week I received two fine larvæ of *Acherontia atropos* from potato gardens here, and being full-fed they at once buried in the cocoa-nut fibre provided for them. As I have not previously bred this species, I shall be glad to know if it would be better to force them in the spring or to leave them to come out naturally. — Douglas H. Pearson; Chilwell, Notts, August 12, 1893.

[Possibly the imagines may emerge in September or October.—Ed.]

Acherontia atropos.—I bred a fine female of this moth from a larva found on potatoes on August 5th, 1892. It was a very noisy insect, protesting vigorously with loud squeaks when handled whilst being chloroformed. On the 12th July last, a larva was brought me, which went to earth immediately on being placed in the flower-pot.—Joseph Anderson. Jun.; Chichester, August 17, 1893.

Gnophria rubricollis, L.—What is the usual time of appearance of this species? According to Newman the moth emerges in August, and a writer in the 'Entomologist' for February last (p. 52) states that it used to be taken in Gloucestershire in that month, but that it was taken in June last year in Somerset. I can vouch for its still earlier emergence, as my

brother and I took two specimens of the moth on the 22nd and 23rd May last at Newball, Lincolnshire. — J. W. Carr; University College, Nottingham, July 27, 1893.

Plusia moneta at Southborough, Tunbridge Wells.—I have much pleasure in again recording the capture, and also the breeding from larvæ, of *P. moneta*. I was fortunate in obtaining a brood of larvæ from monk's-hood on April 17th, from a friend's garden; but I am very sorry to state that the percentage of imagines bred was very small, owing to my neglect in not keeping the pupa moist enough during the very hot weather we had in May. Both captured and bred specimens, I am pleased to say, are of full size. Before concluding, I should like to note that the pupa is parti-coloured, the upper half is glossy black, and the under half pale green. I do not think this has been previously mentioned. — M. M. Phipps; Southborough Brewery, Tunbridge Wells, August 11, 1893.

Macaria liturata in Middlesex.—This species may be added to the list of moths taken in Middlesex. I captured one in this garden on 16th of this month, near a Scotch fir. I may mention that the fir-tree is quite isolated, and I am not aware of any other in the neighbourhood. [See also *ante* p. 251.—Ed.]—C. A. Bird; Rosedale, 162, Dalling Road, Hammersmith, W., August 22, 1893.

Note on Tortrix semialbana.—I have the pleasure to record the capture of *Tortrix semialbana* in June last. Although scarce in the locality, it is interesting to know that the species is still in existence, and by closely searching the locality a few times I was enabled to capture a sufficient number to complete my series. It is very secluded in its habits, and when disturbed simply falls upon the upper side of the leaves exposed to view. Very few of the specimens I captured flew any distance when disturbed.—W. Purdey; Folkestone, August 20, 1893.

Stigmonota ravulana.—I have discovered a specimen of this Tortrix among my captures this year. It was netted in May, but I had overlooked it until I was taking my specimens off the setting-boards. I have not taken this species for years, and as far as my experience goes it is scarce in this locality, although I have searched for it at convenient times. — W. Purdey; 129, Dover Street, Folkestone, August 23, 1893.

The Early Season :—May 28th, *Platytes cerussellus*; June 9th, *Halia vauaria;* 13th, *Cidaria populata;* 14th, *Hylophila prasinana* (worn); 16th, *Argynnis aglaia* (abundant); 21st, *Epinephele hyperanthus* (abundant), *Crambus pinetellus*; 26th, *Crocallis elinguaria* (worn), female deposited ova; 29th, *Thecla quercus, Melanargia galatea;* 30th, *Epinephele tithonus* (abundant), *Vanessa io*. July 13th, *Argynnis selene* (second brood), *Amphipyra pyramidea, Hydræcia micacea;* 20th, *Leucophasia sinapis* (second brood).—John N. Still; Bridestowe, Devon, August 5, 1893.

The following is a list of Lepidoptera observed this year at or near Hereford :—March 12th, *Pieris rapæ;* 28th, *Xylocampa lithoriza;* 29th, *Lycæna argiolus*. April 5th, *Pieris napi, Saturnia carpini;* 6th, *Coremia unidentata;* 7th, *Argynnis euphrosyne, Syrichthus malvæ, Euchloë cardamines;* 8th, *Amphidasys prodromaria, Hadena suasa;* 10th, *Pieris brassicæ, Leucophasia sinapis, Pararge egeria, Arctia fuliginosa;* 14th, *Lobophora lobulata;* 17th, *Melanippe fluctuata;* 19th, *Acidalia remutata, Abraxas ulmata, Hemerophila abruptaria, Cilix spinula;* 20th, *Nisoniades tages*,

Pararge megæra, Coremia propugnata, Venilia maculata, Numeria pulveraria, Corycia temerata; 22nd, *Nemeobius lucina, Tephrosia punctulata, Ephyra punctaria, Fidonia atomaria, Lomaspilis marginata;* 25th, *Thecla rubi, Cœnonympha pamphilus, Arctia mendica, Asthena candidata, Cabera exanthemaria, Euclidia mi, E. glyphica, Phytometra ænea;* 26th, *Melanippe subtristata, Plusia gamma;* 29th, *Platypteryx hamula, Iodis lactearia, Minoa euphorbiata, Eubolia palumbaria;* 30th, *Heliodes arbuti.* May 2nd, *Eupisteria heparata;* 3rd, *Epione vespertaria, Melanippe hastata, Emmelesia albulata, Dasychira pudibunda;* 4th, *Melanippe montanata;* 8th, *Lycæna icarus;* 9th, *Hesperia sylvanus, Lycæna medon;* 12th, *Procris geryon.* June 1st, *Acidalia aversata;* 17th, *Vanessa c-album* (early brood); 22nd, *Hesperia linea.* August 17th, *Xanthia silago;* 18th, *Vanessa c-album* (late brood); 19th, *Neuronia popularis;* 21st, *Xanthia cerago.*—F. L. Blathwayt; Hereford, August 21, 1893.

Notes from Reading.—On March 7th *Cymatophora flavicornis* was certainly worn; *Brephos parthenias* was out the same day and fresh; the next day it was common. On April 3rd I took *Endromis versicolor* from birch. *Saturnia carpini* was flying over the heath on the 7th, *B. parthenias* still being on the wing. Tuesday, the 18th, *Phytometra ænea* was taken; on the 19th *Demas coryli* and *Tephrosia consonaria;* 20th, *Lithosia aureola* and *Orgyia pudibunda.* On the 25th *Leucophasia sinapis* and *Argynnis euphrosyne* were fully out. On May 2nd, from beech trunks, I took two dark forms of *Stauropus fagi;* this is ten days earlier than last year. On the 3rd *Ephyra omicronaria, Lomaspilis marginata, Minoa euphorbiata,* and *Melanippe hastata;* the 6th *Lobophora viretata.* On the 11th and 12th *M. hastata* was flying freely in the sunshine. The 22nd *Hypsipetes impluviata* appeared, while *L. sinapis* had almost ceased flying. On the 29th *Asthena blomeri, Abraxas ulmata,* and *Hepialus velleda,* were taken. June 6th *Eucosmia undulata, Lobophora sexalisata,* and *Eupisteria heparata,* the latter much worn. My friend Mr. Holland and self tried sugar this night, but it turned out a dismal failure. On the 29th *A. blomeri* was still out and fresh, but only a few worn stragglers of *A. ulmata* were left. On July 1st *Macroglossa stellatarum* was about in unusual numbers. On the 2nd the second brood of *P. ænea* and *L. sinapis* had appeared; the same day I netted my first *G. rhamni,* and *Vanessa polychloris* was ragged. On the 9th *L. sinapis* and *Boarmia roboraria* were worn, while *V. polychloris* had disappeared for the season. The second broods of *L. marginata* and *Ephyra pendularia* were out this day.—J. Clarke; Reading, Aug. 22.

Bracon scutellaris, Wesmael, at Plumstead.—Amongst the very few entomological rambles that I have been enabled to enjoy this season, was one paid to the banks of the Thames at Plumstead, on June 1st, when it was my pleasure, while sweeping the rushes, &c., that are getatable at low water, to capture, amongst other things, several good species of Braconidæ, one of which did not seem at all familiar to me. I at first thought it might be *B. erythrostictus* of the Rev. T. A. Marshall's 'Monograph,' 1885, but on referring to his description I found it did not agree. I sent it on to that gentleman, who, with his usual kindness, at once identified and returned it to me as *Bracon scutellaris,* Wesm., the second known capture in this country, he forestalling me by taking one specimen last year in a wood in Cornwall. This species has, however, never been recorded as British; hence, perhaps, I may be forgiven for making this species known as a native of these Isles. The other species of Braconidæ taken were a

male and female of *B. colpophorus*, Wesm., not at all a common species; *B. fuscicoxis*, Wesm.; *B. stablis*, Wesm., both sexes, and which Mr. Marshall says is uncommon; also several specimens of *B. regularis*, Wesm., which seemed to me to be fairly plentiful, although Mr. Marshall, in his 'Monograph,' speaks of only two males as being taken by himself, while Mr. Fitch has taken females at Maldon.—T. R. Billups.

Bracon ostmaelii, Wesmael.—This is another previously unrecorded species, taken by myself at Oxshott, in the month of July of last year. It is only right to say that this species has been known as British to the Rev. T. A. Marshall for several years past, but, like the preceding species, has been reserved with a number of other things to be described in a Supplement to his valuable 'Monograph,' whenever that may be called for. Amongst other good things taken at the same place were a male and female of *B. roberti*, Wesm., and a solitary female of *Chelonus latrunculus*, Marshall.—T. R. B.

Erratum. — Page 251, for "*Tortrix tenebrata*" read "*Heliaca tenebrata*."

SOCIETIES.

South London Entomological and Natural History Society.—*July 27th*, 1893.—J. Jenner Weir, Esq., F.L.S., President, in the chair. Mr. A. Robinson exhibited a magnificent series of *Callimorpha hera*, L., bred from ova obtained from a female captured in Devonshire in August, 1892. He pointed out that the hind wings showed three distinct varieties of coloration, namely, the typical scarlet, the var. *lutescens*, and an intermediate orange colour, the relative numbers of each being about equal; he also mentioned that among those he bred a large number were deformed in the hind wings, and principally in the left one. Mr. Robinson also had two specimens of *Dicranura bicuspis*, Bork., from Tilgate Forest, in one of which the dark colour was absent from the central fascia and apical patch, thus giving the insect a remarkably pale appearance. Mr. Turner exhibited a fine series of *Pempelia palumbella*, Fb., from Oxshott; also a few extreme forms of *Thera variata*, Schiff., bred from various suburban localities, one being almost unicolorous, and *T. firmata*, Hb., &c. Mr. Dennis, a box of *Thecla betulæ*, L., bred at the end of June, from larvæ taken in Epping Forest, one having the orange band somewhat smaller than usual. Mr. R. Adkin exhibited a short series of *Smerinthus populi*, L., bred from larvæ taken last autumn in Sutherlandshire; the majority of the specimens were of the usual Scotch form, but in one the prevailing colour was a pinkish grey, and closely resembled two others from the New Forest and Lewisham respectively, which were shown for comparison; also three *Smerinthus ocellatus*, L., bred from larvæ found in his garden at Lewisham, one of them having the ground colour unusually pale, thus giving the insect a particularly bright appearance. Mr. Barrett exhibited the larvæ belonging to the *Diurnea* group, referred to by him at the last meeting, and made some comments thereon. These larvæ, if not actually still alive, were in a state of very fresh preservation, and Mr. Weir said he thought there was hardly any doubt about their having been stored by one of the mason wasps, as food for its young. Mr. H. Williams exhibited five pupæ of *Leucophasia sinapis*, L., for the purpose of showing the gradual development of the perfect insect, and mentioned that the black tip showed

through the pupa-skin only a very few hours before emergence. One of the specimens in which it had become visible during the afternoon, emerged during the course of the evening. The average dates were—ova laid 26th May, hatched 6th June, the first pupating on the 9th July. Mr. Step exhibited the following species of galls from Epsom, viz., *Andricus fecundatrix*, Htg., *Neuroterus lenticularis*, Olivier, *Andricus ostreus*, *Cynips kollari*, *Rhodites nervosus*, Curt., *R. rosæ*, Htg., *R. eglanteriæ*, Htg. Mr. Step expatiated upon the advantages of studying the Phytophagous Hymenoptera, and a discussion ensued, in which Messrs. Step, Barrett, Weir, and others took part.

August 10*th*.—The President in the chair. Mr. Weir exhibited some cases which had been found under a sycamore by a neighbour of his, Mr. Tolhurst, at Beckenham. He said that attention had been called to these cases by seeing them hopping over a gravel walk, a power which they retained for some days after they were obtained. The cases were circular disks about 13 mm. in diameter and had been made from the upper cuticle of the sycamore leaf, forming one side, and silk the other. Upon examining the leaves of the tree, the round spots from which the cases were partly formed were plainly visible, and also the large blotch from which the larva had eaten the parenchyma. It was at first thought that they might be the cases of a *Tischeria*, but they had since been identified by Mr. McLachlan as the work of a sawfly, *Phyllotoma aceris*, a somewhat detailed life-history of which is given by Charles Healy, 'Ent. Mo. Mag.,' iv. pp. 105–107 (1867). The President also exhibited nearly adult larvæ of *Hemerophila abruptaria*, and drew attention to the fact that two pairs of prolegs were, as usual in Geometers, fully developed, and that there were also two other imperfect pairs in front of these. He considered these very imperfect prolegs to be vestigial. Mr. Frohawk exhibited specimens of *Macroglossa bombyliformis*, together with a species of humble-bee, which it mimics, both captured in company over rhododendrons in the New Forest, 21st May last. Mr. Robt. Adkin exhibited a specimen of *Sesia asiliformis*, Rott. (*cynipiformis*, Esp.), that he had reared from a pupa received from the neighbourhood of Abbot's Wood, and pointed out that the colour of the band of the left fore wing was yellow instead of red; and that the narrow costal streak of the same wing, although red at the base, assumed the yellow coloration for a considerable portion of its length, the red gradually giving way to the yellow. He regarded this specimen as of some interest, as being another example of the change of colour from red to yellow in the Sesiidæ, and, he believed, in a species where the change had not been previously noticed. He also exhibited a series of *Spilosoma lubricipeda*, Esp., the descendants of Barnsley ancestors, and he believed the same stock from which the extreme radiated forms reared in some numbers of late had sprung, but in the most strongly marked specimens of the series now shown the tendency of the spots to become elongated was not great. Mr. Oldham exhibited series of *Sphinx ligustri*, *Apamea ophiogramma*, *Calymnia affinis*, and other species chiefly taken at Woodford. The remainder of the evening was occupied by a discussion on the relative abundance or scarcity of Lepidoptera since the excessively hot weather of the past spring, in which Messrs. Weir, Oldham, Hall, Winkley, Frohawk, Adkin, Waller, and others took part, the concensus of opinion being, that with one notable exception,—namely, *Polyommatus phlæas*, which had been more or less abundant throughout the time from April last,—Lepidoptera generally had been below the average in point of numbers.—H. Williams, *Hon. Secretary*.

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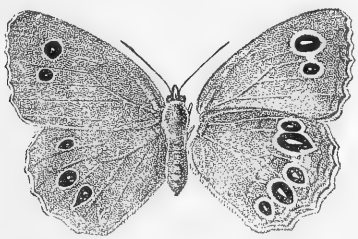
EPINEPHELE HYPERANTHES, var.



The above figure represents a female example of an uncommon variety of *Epinephele hyperanthes*.

Mr. Weir captured a specimen of this form in the New Forest in 1878, and one or two specimens have since been taken in the same district. In his interesting remarks on this aberration, which he terms the lanceolate form, Mr. Frohawk (Entom. xxv. 215) states that in 1891 he captured a typical female specimen of *E. hyperanthes* in the New Forest, and from ova which she deposited he obtained seven imagines in 1892. Three of these (two males and one female) were somewhat similar, as regards markings, and the female specimen, here figured, Mr. Frohawk says is the finest example of this particular form he has yet seen.

It is probably well known that the ocellated markings of this species are subject to considerable variation in the matters of number, size, and definition. As a rule, there are three well-formed ocelli on the under surface of fore wings and five on that of hind wings, but these are either not present at all or only slightly indicated on the upper surface of the wings. Occasionally specimens, generally females, occur with three well-marked ocelli on fore wings and two on the hind wings, whilst on the under surface the hind wings have an additional ocellus, thus increasing the number to six. Sometimes the yellowish irides are abnormally

wide on the under side, and a figure of such a variety will be found in the 'Entomologist,' vol. vi. p. 417.

Perhaps the variety most frequently met with is that known as var. *arete*. In this form the ocelli on under surface of all the wings are represented by white spots, the pupils, in fact, of the ocelli, the other parts of these eye-spots having disappeared more or less completely. The application of the name *arete* is not, however, generally confined to this particular aberration, but is understood to embrace all the various modifications between specimens in which the ocelli are smaller than usual and abnormal in number, and an extreme form in which every trace of an ocellus has vanished from both surfaces of all the wings.

Richard South.

BREEDING EXOTIC BOMBYCES in 1893.

By John Watson.

The season 1893 will be long remembered, I think, by those who devote some portion of their entomological energies and time (a rapidly-increasing fraternity) to breeding the silk-spinning Lepidoptera of other and warmer climes than our own. An almost tropical summer has been most advantageous to the welfare of the larvæ, especially in the open air, and under cover has brought the larvæ on with almost (at all events to me) unprecedented speed. As far as my experience goes, I never had so successful a season. Commencing with the pairing of the moths, I find that heat is more conducive to a successful pairing. I have had no difficulty in obtaining pairings with *selene*—a species by no means easy to pair in our very precarious climate. I have to record the mating twice—*e. g.* two successive nights—of one pair of this species. In *Attacus cynthia* I also had a pair which separated after copulation, about seven o'clock in the evening; and looking at them about nine o'clock, I was astonished to find them again mated. The ova were fertile, of course. This instance led me to put the next male I had out with two females on successive nights, and was most astonished to find the male, two hours and a half only after separation from the first female, pair with another fresh one, and the ova from the second pairing were as fertile as from the first one.

My importation of *selene* came to hand late this season, and as a result a number of them emerged on the way, having been hastened, no doubt, by the excessive heat in the Red Sea and Mediterranean. There were a very large number of eggs laid by the moths on the top of the cocoons; and in the space between the box-lid and the cocoons (caused by the falling of the cocoons

during transit) were a number of the moths. I collected the ova, and afterwards was surprised that some of them hatched, and calculation showed that they must have been fertilized while in the post-office.

P. H. Gosse says, in his 'Monograph of the Atlas Moth (*Attacus atlas*),' that the longer the larval period is protracted, the weaker the larvæ naturally become. This I find is so, and so my larvæ must perforce be healthy, as they spun up in much shorter time than they have hitherto done. The most noticeable in this respect was *selene*, which this season I bred, both in the open air and under cover, on the common willow, and have in the garden one or two in the last age, which emerged July 23rd, forty-three days old. I am leaving these out, but I am afraid, if we get a few cold nights similar to what we had last week, the larvæ will die; in the mornings now they seem very loth to move. Those I bred under cover of this species, also on willow, fed and spun-up in thirty-one to thirty-four days, from hatching of the eggs. The table of moults is as follows:—

Emerged . . . . . July 17th.
Spun up for 1st moult, July 21st; moulted, ,, 23rd.
,, ,, 2nd ,, ,, 27th; ,, ,, 29th.
Two moulted on 28th, after 35 hours' quiescence.
Spun up for 3rd moult, July 30th; moulted, Aug. 1st & 2nd.
In the 4th age, at 16 days old—
Spun up for 4th moult, Aug. 8th to 9th; moulted, Aug. 11th & 12th.
Some others took a week longer than this.

The earliest larvæ commenced to purge on Wednesday, the 16th, and spun up on Thursday and Friday, the 17th and 18th August, pupation taking place about the 23rd.

Antherea yama-mai (Japan), fed on oak, spun up in fifty-six days from hatching of the ova, and emergence of the moths took place rather irregularly from thirty-seven days after pupation till now, and even some have yet to emerge.

In 'The Yama-mai' (1866), by Ward, the larval life is computed at sixty-four days; so mine were a week earlier,—the result, I have little doubt, of the hot season, as I have invariably found larvæ eat more in hot days. One of the moths I have had out is of a most delicate yellow, a clear bright mustard-colour above and rosy brown below, with, in some lights, a bluish gloss in the dark portions.

Amongst other things, *Attacus cynthia* I also fed upon willow in the open air, and in this species I have an instance of their very polyphagous character. My fellow-entomologist, Mr. Paul Schill, of Didsbury, who has also been breeding a large number of Bombyces in the open air, put a number of larvæ of *cynthia* out on a small hedge of lilac in the grounds of Fairoak, and to keep the larvæ at the end of the hedge, so as not to wander all over it, a muslin partition was intervened. The lilac had a background

of hollies, and a number of the larvæ wandered off the lilac and ascended the hollies, and there fed and spun their cocoons, eating the fleshy parts and veins of the leaves, and rejecting the hard, almost chitinous edges and spines, exactly as is done by the Geometrid larva, *Odontoptera bidentata*, when it feeds on holly. Owing to the phenomenal abundance of wasps, there was a goodly number of them eaten by these "yellow stripes." Mr. Schill was, for a time, under the impression that they had been falling and wandering, as there was an increasing diminution of them; but at last he was lucky enough to catch a wasp seated upon the back of a fine larva, eating its evening meal, for some minutes. Of course they were then taken in, but afterwards the cocoons of those on the hollies were noticed and gathered. I have reared this species on privet, willow, hawthorn, lilac, laburnum, *Ailanthus glandulosa* (its favourite and natural food), and *Ricinus;* now it will also feed on holly.

Antherea pernyi were also placed upon oak trees, and did well till the blackbirds found them and ate a number of them (none of the larvæ were netted over), and they were promptly taken inside and spun up very quickly. Next season they will be netted over. Some of the imagos have appeared (in a good season I have bred two broods), one female having a distinct lobed ocellus on the secondaries, and a brown line running from the costa of primaries to the ocellus (similar to *Actias luna*).

Of course I am quite aware that these species have been bred in the open air before, but I think not in the vicissitudes of the Manchester district, where there is so much rain and cold winds. Indeed, had it not been a very exceptional year, they would not have been able to live up to spinning. I lost a number of the *selene* (from inside) from a disease which I have been unable to make out. The infected larvæ did not at all become "peppered," like pebrinous ones, nor did they become diarrhœous as in flacherie; larvæ apparently healthy in the morning would be found on the floor in the evening, and dead the next morning. I microscopically examined the fluid contents of the bodies of a few of them, and found therein a large number of jointed cane-like filaments connecting and ramifying through a largish micrococcus-like elliptic or nodular body.

I prepared a culture in Pasteur's fluid, but in my absence it was accidentally overturned, the tube broken; and when I returned there was no chance of obtaining another culture, as the floor had been cleaned up with that greatest of disease preventives, good carbolic soap. I am not acquainted with Muscardine nor its lesions, so it may be this most fell destroyer.

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LIFE-HISTORY OF *LYCÆNA ÆGON*.

By F. W. Frohawk, F.E.S.

On the 18th of last March, my friend Mr. G. Bryant very kindly sent me some ova of *L. ægon*, which he had succeeded in obtaining from females captured the previous summer. I am also indebted to Mr. F. W. Hawes for information relating to his success in rearing this species last year, attained by feeding the larvæ upon gorse (*Ulex europeus*).

The ovum is of a very compressed spherical form, its greatest diameter measuring one-fortieth of an inch, and only one-eightieth of an inch in height; the base is slightly concave, the crown being more so, and the operculum is deeply sunken and very finely punctured; the punctures are smallest in the centre, increasing in size on nearing the side, where they develop into a very beautifully formed pattern resembling fine lace-work, composed of a number of prominences placed at somewhat regular intervals and connected one to another by six keels or spokes, the interstices between each being very deep; the reticulations again lessening in size on nearing the under surface, which is likewise deeply punctured of a spongy character. Both the colour and texture greatly resemble white porcelain; all the depths produce a deep purplish grey shade. The ova are deposited singly, and adhere firmly to the receptacle.

The first eggs hatched on April 1st, the remainder hatching the two following days. The larva makes its exit by eating away a small round hole in the crown of the egg, which has the appearance of a small black dot, otherwise the ova remains unchanged in colour.

Directly after emergence the larva measures one-twenty-fourth of an inch long, and is rather stout in proportion; the colour is pale ochreous green, darkest on the dorsal surface, becoming paler laterally and palest on the ventral surface. The body is sprinkled with dark brown warts, some extremely small; the largest are those on the dorsal area, and these emit long greyish hairs curving backwards, excepting those on the first segment, which curve forwards; the other warts principally run in longitudinal rows, forming superspiracular and subspiracular series, each wart emitting a fine greyish hair. The head is black, the legs brown, and the claspers of the same colour as the ventral surface. Upon emergence I placed the larvæ inside the expanding gorse blossoms, and shortly after noticed them feeding on the tender portions of the stamens and petals.

The first moult took place at the end of April, remaining nearly a month in the first skin. After the first moult, when thirty days old, it measures one-twelfth of an inch in length; the back is arched, the sides very sloping, and the ventral surface

much flattened. The head is shining black, and while at rest it is completely withdrawn under the large overlapping anterior segment; it is only protruded while feeding, and partially so when crawling; during its progress the head is kept in incessant motion waving from side to side. The colour of the body is pale ochreous, with medio-dorsal, subdorsal, and lateral dark chocolate-brown longitudinal lines, each being bordered by a whitish buff line; the whole surface is sprinkled with dark brown warty discs, flattened and semitransparent on their summits; there are also longitudinal rows of greyish green short tubercles, each emitting a curved whitish hair. The legs are black, and the claspers ochreous; on the anterior segment is a dark purplish brown dorsal blotch. The stamens and petals of the flowers still form their only food, some of the blossoms having the petals thickly perforated by them. The larva is extremely sluggish in its movements.

On June 1st, I carefully examined all the larvæ I had feeding, and found them in various stages, and varying from one-tenth to three-twelfths of an inch in length; two were in their second skin, about half had moulted twice, and the remainder had moulted for the third time. They all very closely resembled each other in their different stages, but after the third moult the colouring is more vivid. After the second moult it is precisely similar to its previous stage, excepting the advanced growth, measuring one-sixth of an inch in length. After the third moult it is a quarter of an inch long. Colour pale greyish green, with a dark chocolate-brown medio-dorsal stripe bordered on either side by a white line and a double grey-green (darker than the ground colour) subdorsal stripe composed of two slightly oblique marks on each segment, each bordered above by whitish; a lateral dilated white stripe bordered below by an olive band; the under surface is grey-green. The head is small, intensely black and shining; the large compressed anterior segment has a conspicuous chocolate-brown patch in the centre. The body is clothed in exceedingly fine short hairs; those on the dorsal area are the longest, and curve backwards. They still continued feeding upon the blossoms.

During the first week of June a few moulted for the fourth and last time, and the first became full-grown about June 20th. When full-grown it measures while at rest half an inch in length; the anterior segment is projected, flattened and rounded in front, completely concealing the head; from the second to ninth segments (both inclusive) the back is considerably elevated, and the segments of uniform size, their sides are flat and sloping to the lateral dilated ridge, the second segment rising abruptly above the first; the last three posterior segments are flattened, especially the last, which terminates in a broad rounded flap much compressed, similar to the first segment; the eleventh segment is

furnished with two retractile tubercles, which are occasionally thrust out when it is suddenly alarmed, otherwise they remain withdrawn, forming short blunt processes; the tubercle is pale straw-yellow in colour, and surrounding the apex of the sheath is a series of black warts, each terminating in a short spine resembling a thorn. The ventral surface of the larva is much flattened, and while resting it lies so flat that the legs and claspers are almost hidden; the head is very black and shining. The ground colour of the body is very pale green, a dark purplish medio-dorsal stripe runs the entire length; it is broadest on the first segment, and is bordered on each side by a white line, then a pinkish and green band blending into the pale green of the ground colour, followed by a conspicuous subdorsal dark green stripe, composed of a series of rather oblique marks, one on each segment, and a somewhat similar stripe, but narrower, runs parallel to it immediately above the spiracles; a subspiracular dark green stripe, bordered below by a white stripe, passes along the lateral ridge, which borders on the green of the ventral surface; the spiracles are white; the entire surface is thickly sprinkled with black and white granulations, the white ones predominating, each granule emits a very minute fine ochreous hair, those along the dorsal surface are the longest and stoutest. The legs are greenish, and the claspers green and brown-pink; the segments are strongly defined, and somewhat overlapping.

Another form of the larva, which appears of almost equal occurrence, has the first subdorsal and subspiracular stripes lilac-red, and generally the ground colour is more tinged with olive, giving the whole a decided reddish hue.

The larva in all its stages is very sluggish in its movements; it has a slow gliding motion, continually protruding and withdrawing its head, and waving it to and fro during progression. It feeds upon the gorse blossoms as long as it remains in bloom, and when they cease it readily takes to the young and tender spines, which formed the sole food of the larvæ during their last stage. The larvæ in their earlier stages closely resemble in form and colour the small brown bracts of the bloom. The first pupated on June 22nd.

The pupa measures four-twelfths of an inch in length. Dorsal view: it is widest across the middle of the abdomen; the head is rounded; base of the wing is slightly angular and prominent, the wing curving gently over the side of the abdomen, and is rather swollen; the abdomen is attenuated to the anal extremity. Lateral view: head rounded; thorax rounded and swollen, and nipped in behind; the abdomen is swollen about the middle and curves to the anal segment, which is blunt, rounded, and furnished with hooks; the wing is a little swollen near the apex. The whole surface is smooth, but not very shining. The colour is pale ochreous green; the abdomen is darker olive-green; head and

anal segment only very slightly tinged with green; the wing shades into whitish at the apex, and is semitransparent; spiracles are brown; a dull brown medio-dorsal streak traverses the abdomen, and terminates in a dark spot on the seventh abdominal segment. Such is the description when twelve days old.

About three days before the emergence of the imago the pupa begins to deepen in colour, gradually changing to a dark leaden-grey, and finally the wings assume the colouring of the imago, but of course of a paler hue; the neuration and dark marginal band of the wing in the male specimens show very clearly. The pupa apparently is not attached by the anal hooks, my specimens being merely suspended by a few strands of silk spun around them to a stem of the plant close to the earth. The first, a male, emerged on July 10th.

TWO DAYS AT ABERSOCH.

By J. Arkle.

In the midst of the continued drought and heat which will mark the summer of 1893, I left Chester by an afternoon train, June 9th, for Tan-y-Bwlch. There I was to enjoy, once more, the hospitality of Mr. W. J. Kerr, and, on the morrow, journey on with him to Abersoch. Our object was *Zygæna pilosellæ* (*minos*). All my efforts to obtain the insect from this locality had failed, and I had therefore scanned—and endeavoured to scan between the lines previous to my departure—all available literature on the little burnet. The result was, granting the early season would not be against us, that I began my long railway ride in all confidence. And what a lovely ride—all along the Dee valley, and beyond! All through the Vale of Llangollen, and up the steep to the river's source in Bala Lake; then higher and higher until the train reached the top of the watershed at an altitude of 2800 ft. above the sea; and, lastly, down into the Tan-y-Bwlch Valley with which the Vale of Llangollen, lovely as it is, absolutely sinks in comparison. The whole ride is through greenest field, or shady, scented fir-wood; by river pool with coracle; or past crag and heath, where the early heather-bells peep in through the carriage window. And there is much more of floral ornament. Look across the river on the famous birch grove, as the train stops at Berwyn in the Vale of Llangollen! Observe the tall foxgloves all along, and the fringe of tongue-fern here and there at the foot of the débris! The climax is reached with the grand Vale of Tan-y-Bwlch, its meandering river, natural oak woods, and all shut in by some of Cambria's highest mountains. Here and there among these woods are open spaces fringed with birch, and in one of these, in the Plas grounds, after

dusk, my friend and I found ourselves, net in hand. A fairy spot—and it looked as if the fairies had just left it at the approach of mortals. Here and there were numerous glow-worms (*Lampyris noctiluca*), looking like fairy lamps left in hasty flight. We had no difficulty in taking both sexes. It was rather early, in even this forward season, for *Geometra papilionaria*. Other moths, however, were abundant, such as *Metrocampa margaritaria, Macaria liturata, Larentia viridaria* (*pectinitaria*) and *Xylophasia rurea;* but our best capture was a fine specimen of *Lithosia mesomella*, probably the first record of the insect for North Wales.

We were up early and away next morning. A look into the garden showed the early character of the season. Here were gooseberries ripe, and currants—black, white, and red. Our drive lay under the shady oaks of the Tan-y-Bwlch Valley to Penrhyn Deudraeth, where we caught the train for Pwllheli. There is, after all, something luxurious in a well-appointed Welsh car, with a quick, easy and shapely stepper in the shafts, and a Jehu in front who knows his business. Very different was my solitary progress from Pwllheli to Abersoch three years ago, a progress which might be described, in the language of the politician, as one of leaps and bounds. In weather like ours there is much along this interesting road to occupy the mind. Here, a mile away from Pwllheli, a pile of rock looks like a miniature Gibraltar. It is crowned by a castellated building, and, no doubt, if the enemy would kindly attack in front, it could defy all comers. Lots of the summer brood of *Vanessa urticæ* flitted about the road, and we looked admiringly on the numerous *Argynnis aglaia* which scoured the fern-and-bramble-clad banks along our way. Whites, too, were well represented, such as *Pieris rapæ* and *P. napi*. The marshy flats were clothed with the sabre-shaped leaves of the common iris, surmounted by its glorious yellow flowers, while, here and there, were red blossoming beds of ragged robin, suggesting *Dianthœcia*.

Abersoch was soon reached, and we at once took up our quarters in the only hotel, St. Tudwal's, a very comfortable place. At lunch we met an elderly gentleman, a young one, and a young lady. They were botanists, and, in conversation, it leaked out that we were in search of *Z. minos*. Four of us, therefore, repaired to the "cliffs" as soon as possible. To our disappointment we found all our search fruitless, and that *Z. minos* was not everywhere. That is so. Its existence is a very local one, and, for certain reasons, precarious. Therefore it is to be hoped it may be allowed to continue, practically an insect preserved. To my friend belong all the honours of our discovery, and, when we returned to our hotel in the evening, he had secured one specimen. On our arrival we were informed that another entomologist had turned up, Mr. E. W. H. Blagg. We were in

luck. For is it not written in the chronicles of *Z. minos* that there is Blagg's as well as Oldham's ground! Though the season was in reality over, we took, with the kind assistance of this gentleman, exactly twelve examples of the moth. Visions of friends in want of a series had therefore to fade, for the time.

In the following comparison which I am able to make between Abersoch and Irish *Z. minos*, it will be well to bear in mind that my observations are based on a limited number of specimens, and that these were in no case fresh from the chrysalis. In this latter respect, however, they were probably equal, and, from the quiet flight and habits of the moth, I am inclined to infer that it does not become much rubbed or chipped. Nevertheless, the comparison is not expected to be conclusive. In general size, semi-transparency, and length of wing, I find the specimens alike. The red in the Irish is more scarlet,—brighter; in the Abersoch form this colour is more of a magenta-pink. In *both* the broad, red, forked area of the upper wing is the same. The lower wings of the Irish specimens are entirely red, except the narrow black margin; in those from Abersoch the red appears to shade off just below the middle, smoky black faintly taking its place. There is, I am well informed, a very dark variety to be obtained at Abersoch. In short, the Irish insect appears to be *a brighter-coloured one* than the Welsh.

It may now be interesting to note what other insects we saw at Abersoch. *Lycæna ægon* swarmed on the heaths and sandhills. In the evening, at 7 o'clock, they were all conspicuously at rest, and I counted two dozen on a square yard of maritime grass. It is a fact worth recording that this butterfly, all along the north-west coast of Wales, is larger than the inland form; in fact, until I saw my mistake, I found I was passing over the Abersoch specimens as *L. icarus* (*alexis*). The Delamere insect is much smaller, and so is the form on the North Lancashire mosses. *Satyrus semele* was everywhere on the sandhills, fine, and freshly emerged. On the heaths were lots of *Argynnis selene*, *A. euphrosyne*, and *Cœnonympha pamphilus*. Of the latter butterfly a fine specimen of the variety *albescens* ("whitish yellow"—see Robson's List, page 4) fell to the net of Mr. Blagg. The other form mentioned by Mr. Robson (*lyllus*—"dark borders to all wings") we have, commonly enough, at Delamere. *Hesperia sylvanus*, in plenty, closes my butterfly list.

Amongst the moths we frequently came across *Ennychia cingulata* (*cingulalis*) flitting over the short grass between the sandhills. By marshy edges were both of the "china-marks," *Hydrocampa nympheata* and *H. stagnata* (*stagnalis*). Larvæ of *Z. filipendulæ* were spinning up on stones and grass-stems, and the cocoons I found were brought home, in case they should turn

out to be *Z. trifolii*, which I have had sent me from Abersoch. These cocoons, however, all turned out *Z. filipendulæ*. On the heaths *Pseudoterpna pruinata* (*cytisaria*) and *Eubolia palumbaria* were abundant, especially the latter, and now and then a worn *Nemeophila russula* would start up. *Tanagra atrata* (*chærophyllata*) concluded the list of dayfliers. This little black geometer was in splendid condition.

On one evening only did we try sugar. Mr. Kerr and Mr. Blagg went to try the sweets on a line of posts among the sandhills, whilst I was told off to watch some honeysuckle, a mile or more away along the coast, where we had seen *Chœrocampa porcellus*. I took charge of my post before dusk, and, like a careful officer in command of a detachment, at once made such observations as would enable me to retire on the main body after dark. In doing so I noticed lots of moths flying about the cliffs and sandhills, which I put down as *Leucania littoralis*. There was a strong breeze from the sea on the heated land, which blew the honeysuckle about, so that I saw no *C. porcellus*. I netted a few common moths, the only species worth quoting being *Boarmia repandata*, since the form here is quite as strongly marked as the figure in Newman's 'British Moths,' page 63. With nothing to disturb the quiet but the moan from the sea, I took the way to my companions, whose lamp at length shone cheerily between the sandhills. I was accompanied by a pair of enormous owls, which flapped close overhead against the darkened sky. The luck at sugar turned out good—plenty of *L. littoralis*, *Mamestra albicolon*, with commoner insects.

What struck me most on the heaths, by day, was the large quantity of grasshoppers. There were grasshoppers red, grasshoppers green, and grasshoppers mottled and grey. One of wainscot colour was ornamented with a white dorsal stripe, strongly suggesting the colours of *L. littoralis*.

Not only would the student in Orthoptera find plenty of interest at Abersoch, but the lover of Neuroptera could hardly be less fortunate. Hovering over pools we took the dragon-fly, (*Platetrum depressum*), an addition to my list for the Chester district. The male of this large species has a lavender-blue body which, with the rich brown of the head and thorax, gives it a very showy appearance when on the wing. The female looks uniformly brown. The sexes are equal in size, and both have broad and flattened bodies. The only other *Odonata* worth mentioning—and it may be remarked we were not searching for them, but only fell in with them by chance—were *Sympetrum vulgatum*, and what I took to be *Brachytron pratense*, hovering over a wide ditch. Beetles were also common on the wing by day, over the heaths. There were *Phyllopertha horticola*, with its green thorax; *Necrophorus mortuorum*, the yellow-banded burying-beetle; *Aphodius fimetarius*, with red wing-covers; and

the little cockchafer, *Rhizotrogus solstitialis*, a perfect pest, as it resembled the burnets so much in its flight.

We bade Mr. Blagg good-bye on the 12th, in the early morning, and again seated ourselves in our Welsh car for Pwllheli. Away we went, between hedges gay with wild roses, pink and red, and here and there through clouds of honeysuckle scent. At Mynfford Junction we took the narrow-gauge mountain railway for Tan-y-Bwlch. The first experience is not pleasant, as you keep wondering if you have any footing at all on *terra firma*, or whether the train is not a flying-machine; but you soon get accustomed to it. At Tan-y-Bwlch I parted with Mr. Kerr and then went home, after a short halt at Blaenau Festiniog. My boxes contained a nice series of *Z. minos*, and all curiosity had been satisfied by an examination of the insect's haunts and habits.

Chester, August 3rd, 1893.

NOTES ON THE SYNONYMY OF NOCTUID MOTHS.

By Arthur G. Butler, F.L.S., F.Z.S., &c.

(Continued from p. 246).

Calliodes, *Guen.*

This genus was founded for the reception of two species, an African and an Australian; principally on the character of pectinated antennæ. Guenée also mentions that one of them has the third palpal joint very short, and the other has a mere rudiment of that joint. Unfortunately there are other species closely related to his *C. apollina*, but with rather longer third joints to the palpi. All the Australian species differ from the African in having the button-like third joint, and all of them have a rounded ocellus on the primaries, instead of the spiral caudate ocellus of true *Calliodes*. I would, therefore, propose the name *Eucyclomma* for the Australian forms.

Calliodes pyrula.

Spirama pyrula, Hopffer in Peters' Reise n. Mossambique, pl. xxviii. figs. 10, 11 (1862).

S. lucida, Felder, Reise der Nov. Lep. iv. pl. cxiii. fig. 8.

Tette and Natal.

I cannot conceive the reason for renaming this species. Hopffer's figure is evidently taken from a broken and faded example, and Felder's from a fresh specimen; otherwise there is nothing of any importance by which to distinguish them. This species and another (which we have received from Delagoa Bay) undoubtedly belong to *Calliodes*, not to *Spirama*.

Eucyclomma castalia.

Bombyx castalia, Fabricius, Ent. Syst. iii. p. 416, n. 31 (1793).
Calliodes saturatior, Walker, Lep. Het. xiv. p. 1318, n. 3 (1857).

Moreton Bay, &c. Types in Coll. B. M.

Without examining the type in the Banksian collection, it would not have been possible to decide that the above were synonymous.

SPIRAMA, *Guen.*

Spirama retorta.

Phalæna retorta, Linneus, Mus. Lud. Ulr. ii. p. 376.
Spiramia (sic) *cohærens*, Walker, Lep. Het. xiv. p. 1321, n. 6.

India, Ceylon, Java, Burma, Japan. In Coll. B. M.

The supposed female of my *S. simplicior* belongs also to this species; the true *S. simplicior*, ♀, is much nearer to that sex of *S. japonica*.

Spirama simplicior.

Spirama simplicior, Butler, Trans. Ent. Soc. 1881, p. 198, n. 87.
S. confusa, Butler, Ill. Typ. Lep. Het. vii. p. 78, pl. cxxxii. figs. 6–8 (1889).

India and Japan. In Coll. B. M.

The type, ♂, of *S. simplicior*, from Japan, is rather smaller than those of *S. confusa* from India; but we have Indian examples of the latter which appear to differ in no constant characters from the former. The type of *S. simplicior*, ♀, as already noted, was that sex of *S. retorta*.

Spirama jinchuena.

Spirama jinchuena, Butler, Ann. & Mag. Nat. Hist. ser. 5, vol. xi. p. 115, n. 28 (1883).
S. inæqualis, Butler, *l. c.*, p. 116, n. 29 (1883).

Corea and Chekiang. Types in Coll. B. M.

Spirama triloba.

Spirama triloba, Guenée, Noct. iii. p. 197, n. 1595 (1852).

Silhet, Dharmsala, and Nilgiris. In Coll. B. M.

In spite of differences of pattern on both surfaces, I now believe that my *S. rosacea*, from Dharmsala, must be an aberrant form of this species. It is also probable, from the fact that Guenée's type of *S. triloba* was from Java, that his *S. mollis* (also a female, the type of which we possess), from the same locality, is a further development of the same species.

(To be continued.)

NOTES AND OBSERVATIONS.

Colias edusa and C. hyale in England. — Several records of the occurrence of these species during the season have been received, but as others will probably be sent in later it seems advisable to defer publication until November, when the details will be presented in a convenient form.

Chrysophanus (Polyommatus) phlœas.—This species appears to have been rather commoner this year than usual in several Metropolitan localities. I observed it in scores during August between Northwood and Rickmansworth, and also towards Harefield. In other years I have never noticed more than about half-a-dozen specimens in either of these places. Mr. Jenner Weir informs me that at Beckenham, in Kent, he has seen more specimens of *C. phlœas* in his garden this autumn than during the ten preceding years that he has lived there. The species seems also to have been inclined to wander away from its breeding-ground. Mr. R. W. Thompson tells me that he took a specimen early in September in his garden near here; and in a communication received from Mr. Alfred Sich, that gentleman mentions seeing a specimen fluttering against a shop-window in St. James Street, near the Piccadilly end.—Richard South.

Variation of Chrysophanus (Polyommatus) phlœas.— During the past few weeks *C. phlœas* has been remarkably abundant in this neighbourhood, and from what I learn it has been unusually numerous in various districts this autumn. On the 5th and 6th of September they were flying in profusion over a small extent of ground, which gave me a good opportunity of examining some hundreds for the purpose of selecting any well-marked or abnormal forms, with the result that I obtained a small but very variable series. The specimens range in expanse from $\frac{7}{8}$ in. to $1\frac{2}{5}$ in., thus differing in size rather more than half an inch. The copper colouring of all the specimens is very brilliant, varying from bright golden-copper to deeper fiery-copper; and two approach the var *schmidtii*, one having the left primary pale silvery-gold shading into copper at the base, the other has the right primary silvery-white. The size of the spots in different specimens vary from small dots to bold blotches. Two examples are exceptionally fine aberrations, having the copper bands of the secondaries replaced by a black band formed by the enlargement of the submarginal velvety-black spots, and the ground colour of these wings is lustrous steel-grey; in one a few of the nervures show coppery scales, the other has only the merest trace of copper on one or two nervures; both are females. In the other specimens the coppery band varies in width; in one the copper is extended along the nervures, and the rest of the wing is sprinkled with copper scales. The blue spots which sometimes occur on the secondaries are in one of the specimens under consideration conspicuously shown, and are five in number on each wing; these spots are also present, but less apparent, in two other examples. The above notes are, to a great extent, adverse to Mr. Merrifield's views on the effects of temperature on the colouring of *C. phlœas* (Trans. Ent. Soc. 1893, Pt. 1, p. 62). I quite expected to find the majority of specimens with the copper colouring dull and the black markings pale, corresponding with Mr. Merrifield's high temperature forms; but I found it exactly the reverse, as all those I examined were of brilliant colouring, the copper being rich and bright and the black deep; in most cases they closely resembled his low temperature forms.

Therefore, considering the vast numbers I saw on the same piece of ground at the same time, all having evidently been bred close by, they must necessarily have all been subjected to high temperatures during their various stages, and especially while in the pupa, as the temperature both day and night remained so high for weeks previous to, and at the time of, emergence; many were in rich condition, having evidently only just emerged. How many broods there have been this season it is impossible for me to say, as I have seen the species on the wing continually for the last six months. I have now a great number of larvæ feeding from eggs laid in the middle of August, and others just hatched from eggs deposited this month.—F. W. Frohawk; Balham, S.W., September, 1893.

Varieties of Chrysophanus (Polyommatus) phlœas in Kent.—On the 7th Sept. my son captured a freshly-emerged specimen of a beautiful variety on the railway embankment near Dartford. It is of a pale straw colour, and intermediate between the type and var. *schmidtii*, I may add that *C. phlœas* has been extraordinarily abundant here lately, and we have paid considerable attention to the species, thereby obtaining several other very nice varieties, including one or two of a "streaked" form (under side), approaching somewhat to that obtaining occasionally amongst the Lycænæ, and which I have never before met with, although for years I have closely observed this species on every possible occasion.—E. Sabine; Erith.

Pallid Variety of Vanessa urticæ.—On the 2nd ult. I captured, at Henllys Wood, near Newport, a specimen of *V. urticæ* in which the prevailing colour on the upper sides of the wings, instead of the usual reddish brown, is whitish buff, which colour also takes the place of the usual yellow spots on the costa and inner margin of the fore wings. The usual black markings and the white spots near the tips of the fore wings are present, but slightly smaller than in typical specimens. The under side is normal. —William E. Cox; 25, Caeran Road, Newport, Monmouthshire, Aug. 25.

[We have seen the very interesting aberration which our correspondent accurately describes above. The only traces of the typical fulvous or reddish brown colour are seen towards base and below third costal black spot of fore wing, and on the band of hind wing. Somewhat similar specimens of *V. urticæ* have been bred occasionally, but such aberrations are probably met with but rarely in the field.—Ed.]

Pachetra leucophæa.—Reading Mr. Hanbury's article (Entom. 274) of this month reminds me that about thirty or thirty-five years ago I discovered this species in the Boxhill district, and in the course of seven or eight years managed to capture sixteen or eighteen specimens. It was always rare; a few I caught on the wing, flying round the privet flowers; the rest at sugar; but it was very skittish and did not take it freely, and I could not get it at light, which I supposed from its antennæ it would be attracted to. I tried to find it on trunks of trees, but never succeeded; but a few have been taken in this way by others in that neighbourhood. I *know* it occurs on the South Downs, and in the Rev. Mr. Burney's collection there is a nice series from there I believe. It seems to occur in the chalky districts, and generally on high ground; all my specimens were taken in June and July. On the Continent I believe it is found in May, and the specimens are larger and more strongly marked than any I have met with.—Samuel Stevens; "Loanda," Beulah Hill, Norwood, Sept. 4.

A Locality for Pachetra leucophæa.—I have taken this species for twenty-five years; some years only very few, others more plentifully.

On one occasion I captured twenty-three specimens in a single night. The locality is the "Devil's Kneading Trough," Brook, about a mile and a half from Wye Station, S.E. Railway. It is a very fine locality for several other species as well as *P. leucophæa*. There are two very high banks, the further and highest bank being the best. The following is the mode of capture:—Get sticks about 18 inches long; insert them in the bank, about 10 yards apart, in rows; then tie up bundles of grass, and put them on the heads of the sticks and daub them with sugar, which must be very thick or it soaks into the grass. In ordinary years the time should be the last week in May and first week in June, when a warm balmy night, without wind, should be sure to yield a dozen or more specimens of *P. leucophæa*. The species occurs all along the Wye Downs, but the "Devil's Kneading Trough" is its chief breeding-place. I shall be pleased to give every information to anyone wishing to go after this species.—G. Parry; Church Street, St. Paul's, Canterbury, Sept. 13, 1893.

Spilosoma lubricipeda *var.* zatima (= radiata).—I have just read Mr. South's paper, under the above heading (Entom. 257), with great interest; on my own account, because it gives me a favourable opportunity to modify the remarks I made on this variety in the 'Naturalist' for 1889, as quoted by Mr. South, and which—ever since I first saw, several months ago, the extreme form of *radiata* now being bred—I felt it would be necessary to do. My remarks, as quoted by Mr. South, no doubt imply that the York specimens of *radiata* are exactly the same form as that which Mr. Harrison, of Barnsley, was two years ago so fortunate as to breed; but such is not the case. The fact is, that any specimen of *lubricipeda* strongly marked with radiate streaks was called by us variety *radiata*, and it was to such specimens I, and no doubt Mr. Carrington also (Entom. xxii., p. 207), alluded in the remarks referred to. Fig. 1, illustrating Mr. South's paper, represents what, until the breeding of Mr. Harrison's grand specimens, had been considered a fairly good specimen of *radiata;* but Mr. Harrison's specimens much more nearly approach Fig. 2, and there seems little doubt that if the strain holds out, by selection, we shall in a year or two get this form (var. *deschangei*) absolutely. Mr. H. B. Fletcher, of Worthing, informs me that this extreme form of *radiata* was for very many years known to occur on the Lincolnshire coast, and that he has a fine but old specimen in his collection taken there. I believe it has occurred in Yorkshire; indeed, Mr. Hewett, of York, informs me that he has seen three specimens of the extreme form of *radiata*, which were taken at Driffield. They are like Mr. Harrison's specimens, but smaller. It is certainly rare, whereas the form we have called *radiata*—the intermediate form—is of frequent occurrence in some districts. Through the kindness of Mr. Harrison, who last year sent me a small batch of eggs, I bred, from May 23rd to 31st last, fifty splendid specimens of *radiata*, and from eggs obtained from them have, during the past fortnight or so, bred nine more as second brood. To those who note the priority in emergence of the sexes, the following facts will be interesting, and probably puzzling. Of the first twenty-two specimens which emerged in May, only two were females, some dozen males emerging before a female appeared, whereas the latter half of the brood emerged nearly all females. In the second brood all the nine specimens which have emerged up to now are females, not a single male having put in an appearance.—Geo. T. Porritt; Huddersfield, Sept. 1, 1893.

Spilosoma mendica and its var. rustica. — At the present time, when the local forms of the various species of the genus *Spilosoma* are attracting some amount of attention, it may be interesting to mention the pairing of individuals of these two very distinct forms. In the year 1886 I received ova of the Irish form (var. *rustica*, Hub.), at that time thought by some to be a distinct species, and, wishing to note any possible differences in the larvæ of the two forms, I also obtained ova of the typical English form,—veritable cockneys from the north of London,—and fed the larvæ resulting from the two under as nearly as possible similar circumstances. So far as I could detect there was no material difference between them. In May, 1887, the moths from the English ova began to appear, and I was at once desirous of obtaining a pairing between them and the Irish form; but in this I was not successful, owing to the former being all out before the latter began to emerge. In 1888 I was equally unsuccessful, for the same reason, and unfortunately my broods were becoming sickly, and the moths that came out in the following year were few in number and small in size. In point of time and emergence they were, however, nearer than they had previously been, which admitted of a freshly-emerged English female being paired with an almost white, but miserably undersized, Irish male. The pairing took place readily, but only four eggs were deposited; these all hatched. One larva either died or was lost, and three went to pupa; and on the 18th of May, 1890, I had the satisfaction of rearing two fine males: in size they are fully up to average, and in colour are intermediate between the two forms.—Robert Adkin; Lewisham, Sept., 1893.

Nyssia zonaria in Lancashire.—Your correspondent's note (Entom. 200) on this species is, as regards the distribution of the insect, rather misleading. Even so far back as the year 1867 its known geographical range extended from the estuary of the River Conway, Rhyl, Prestatyn, Hoylake, Wallasey, to the Crosby sand-hills in Lancashire! Since then it has been taken freely at Ainsdale and Crossens, in the Southport district, and at Lytham. There are also records of its capture in Epping Forest; on the Antrim coast, and on Achill Island in the West of Ireland. I can refer Mr. Renshaw to notices in the 'Entomologist' volumes:—iii. 365, x. 216, xxi. 156, xii. 108, xvii. 60, and xxv. 145.—C. E. Stott; Bolton-le-Moors.

Gnophria rubricollis. — In reference to the note of your correspondent, Mr. Carr, concerning *G. rubricollis* (Entom. 276), I may state that I also took four of the above-named insect, one being a cripple, on the 24th of May in the present year, between Dolgelly and Arthog, in North Wales; and that I have never taken it in August, though I have often been there during that month.—S. Renshaw; Ash House, Stretford, Manchester, Sept. 9, 1893.

Cerastis erythrocephala.—This species, which was first taken in England I believe by Mr. Henry Cooke, who resided at Brighton some thirty or thirty-five years ago, and exhibited at the Entomological Society of London at the time, I think is not so rare if collectors would only search for it at the *proper time* and in its localities. I have a fine series, which I have obtained from time to time, taken under the South Downs between Brighton and Eastbourne, and again inland between Dover and Canterbury. Mr. Hammond, who used to reside midway between the latter places, informed me that he had taken several in his own garden, on ivy, towards the

end of October and early in November, and they were sold in his collection by auction about twenty-eight years ago. I see in Mr. Burney's collection there are several specimens, mostly, I think, obtained from the latter neighbourhood. — Samuel Stevens; "Loanda," Beulah Hill, Norwood, Sept. 4, 1893.

Nemeophila plantaginis, Second Brood. — On May 22nd I found this moth in great profusion, but nearly all were males. From three females twenty-five eggs were obtained on May 26th, which hatched on the 31st. The young larvæ were of a pale sage-green colour, covered with long hairs. They took readily to lettuce, upon which they rapidly fed up. After the first change of skin, on June 8th, the colour changed to brown, finally becoming black, the ferruginous tufts of hair not appearing until after the second cast of skin, on June 17th. The third skin was cast on June 27th, fourth on July 10th, and fifth on July 16th. Three of the larvæ spun up on July 31st, the imagos (females) appearing Aug. 23rd. The remainder of the larvæ are still in various stages of growth. On Aug. 21st I took a freshly-emerged male, and also found two larvæ half grown. Eggs were also obtained from a female captured on this date, which have since hatched, the young larvæ taking to the lettuce as before. — Edgar W. Lifton; Gloster.

Phalera (Pygæra) bucephala feeding on Tropæolum. — Last month (August) I found in the garden a small brood of *P. bucephala*, in their third age, feeding on a plant of the common garden nasturtium (*Tropæolum lobbianum*), which was growing out of a window-box. I very promptly transferred them to a willow tree, as they were defoliating the nasturtium; but on looking on the willow next morning they were gone—perhaps ascended the tree. I have in other years taken them a mile further out from home, which is about two miles only from the centre of Manchester, but never so near the centre before. Neither have I heard of them feeding on nasturtium, having taken them on willow and lime (Gatley), sycamore (Withington), and oak (Alexandra Park, Charlton, Withington, and Didsbury).—John Watson; 177, Moss Lane East, Madchester.

The Butterflies of Corsica.—Having spent five seasons at Ajaccio, and having read Mr. Standen's notes on the butterflies of Corsica (Entom. 236), I feel induced to make some remarks on them in connection with my experience there. Mr. Standen states that the families of *Parnassius*, *Melangaria*, *Erebia*, *Hesperia*, and *Thais* are not represented in that island. I have with me at this moment only a few notes of my captures there in 1892 and '93; but I have caught numerous specimens of *Erebia*, *Hesperia*, *Parnassius*, and one specimen of *Thais*, round about Ajaccio and Cauro. Mr. W. F. Kirby, in his 'Manual of European Butterflies,' names *Doritis apollinus*, *Thais cerisyi*, *Syrichthus therapne*, *Hesperia nostrodamus*, *Erebia melas*, *Cœnonympha corinna*, &c.; L. Figuier, in his 'Insect World,' speaks of *Parnassius mnemosyne*, *Thais cerisyi;* and Lang, in his 'Rhopalocera Europæ,' gives *Erebia manto*, *Melanargia ines*, *Thais rumina*, *T. polyxena*, &c., as being found in Corsica. A Corsican friend who had been out with me in previous years began to collect last year, and gave me, on my arrival in January last, some specimens of *Erebia*, among which I detected a few battered specimens of *E. melas*. I have found two specimens of *E. melas*, but of these two I will not be certain; they may have been *E. evias*. I have caught this year a battered specimen of *Thais rumina*, but it was in

very bad condition. On Feb. 26th, 1892, I caught good specimens of *Spilothyrus alceæ;* they were very plentiful along the banks of rivulets. A list of my captures of butterflies, and dates of their first appearances last year, gives the following:—*Insularis* (var.), Feb. 26th. *Spilothyrus alceæ*, Feb. 26th. *Pieris brassicæ*, March 11th. *P. podalirius*, *Thecla rubi*, *Libythea celtis*, *Zegris eupheme*, April 4th. *Pieris chloridice*, March 3rd. *P. machaon*, April 7th. *Leucophasia sinapis*, April 6th. *Euchloë cardamines*, May 3rd. *Thais rumina*, May 4th. *Limenitis camilla*, May 6th. *Euchloë tagis*, *E. belemia*, May 8th. *Lycæna bellargus*, April 20th. *Hesperia nostrodamus*, May 7th. *Parnassius apollo*, May 22nd. Of the following I kept no date of their capture:—*Colias edusa* and var. *helice*, *C. hyale*, *Gonepteryx rhamni*, *G. cleopatra*, *Polyommatus phlæas*, *Lycæna bætica*, *L. ægon*, *L. argus*, *L. orion*, *L. astrarche*, *L. argiolus*, *Vanessa egea*, *V. c-album*, *V. urticæ* var. *ichnusa*, *V. polychloros*, *V. io*, *V. atalanta*, *V. cardui*, *Parage egeria* var. *egerides*, *Syrichthus alveus*. I think I have over eighty different sorts of butterflies captured in Corsica, and I believe that is a larger number than is to be found in Great Britain.—George H. Coleby; Diekirch, Luxemburg, Sept. 10, 1893.

Note on Zonosoma punctaria.—Last year I obtained about a hundred ova from females of first brood; most of the larvæ pupated about midsummer, but about twelve fed very slowly, and pupated at the time when the others were appearing in the perfect state; these remained in the pupa state throughout the winter, and emerged with the usual spring brood. Among these pupæ there were both the green and brown varieties.—P. T. Lathy; Bexley Heath, Sept. 20, 1893.

Greasy Lepidoptera.—I have been for some time past experimenting with ether for the extraction of grease. This fluid, so far as I am aware, has not hitherto been employed by entomologists for this particular purpose, though its properties as a solvent of fats and oils are well known to chemists; indeed in a modified form (acetic ether) it is this medium by means of which the epispastic principle of *Cantharis vesicatoria* is obtained. My object in writing this is to say that my work has come to a standstill for want of material, and to solicit the loan of *very*, very greasy specimens (saturated to the cilia if possible), for which I will cheerfully pay postage both ways.—H. G. Knaggs; Camden Villa, Lennard Road, Folkestone.

Sugar versus Honeydew.—In connection with this question (Entom. 274) I experienced a curious instance of the failure of artificial sweets whilst "sugaring" on one of the Lancashire "mosses" last month. I had sugared a number of trees on the edge of the "moss," but not a single moth was attracted thereto. The rays of my lantern, however, happened to fall on a conspicuous object on the flower of a species of rank grass that grows on such places, and, pursuing my observations further over a larger area, there, sure enough, were the moths feeding—each hanging on to a single stalk and "guzzling" at the flower. But whether the flowers exuded sweets or there was honeydew on them, I did not examine. True the moths were only common things,—*Xanthia fulvago* (*cerago*), *Hydræcia micacea*, *H. nictitans*, *Phlogophora meticulosa*, &c.,—but the fact remains that they were on the grass and not on my sugar, although the latter was within a few yards. And my sugaring mixture, too, is usually most successful, and is admitted by my entomological friends to be particularly attractive.—Geo. O. Day; Parr's Bank House, Knutsford, Sept. 6, 1893.

Wasps destructive to Larvæ, &c.—I have heard a good deal of the harm done by wasps, but not a word on the other side. There can be no doubt, however, that they are very active scavengers, destroying aphides and larvæ in enormous quantities. The scarcity of larvæ in the New Forest this August was probably greatly due to their industry. The destruction of larvæ, of course, is to the entomologist by no means an unmixed blessing, though from a wider point of view it may be. For the destruction of nests, I have found by far the easiest and most effectual method to be a lump of cyanide of potassium dropped in the mouth of the hole.—F. C. Woodforde; Market Drayton, Salop, Sept. 23, 1893.

CAPTURES AND FIELD REPORTS.

Notes on Vanessidæ, &c., in the Cotswolds.—With reference to Mr. J. Anderson's note (Entom. 276) I may state that, though *Vanessa cardui* was very plentiful in this district (about seven miles from Stroud) last year, and *Colias edusa* swarmed round Dursley, I have not seen a single specimen of either of these two species this season. *Plusia gamma*, too, has been very scarce; last Saturday I noticed two or three in very good condition, the first, I believe, that I have seen here this year. *Vanessa io*, *V. atalanta*, and *V. urticæ*, on the other hand, have been plentiful enough; at the present time *V. atalanta* is particularly abundant in orchards, &c., feeding on fallen pears. I took *V. c-album* on Sept. 2nd. *Macroglossa stellatarum* has been noticed in considerable numbers round here of late. The August brood of *Lycæna bellargus* was fairly abundant here; this is, I believe, rather a local insect in Gloucestershire. I have not heard of any Cotswold captures of *L. arion* this year, nor have I found it myself.—R. W. Fitzgerald; Uley, Dursley, Gloucestershire, Sept. 12, 1893.

Macroglossa stellatarum at Kilburn.—On the 3rd inst. my uncle and myself were pleased to see a fine *M. stellatarum* hovering over the petunias in our garden, about 6.15 p.m.—George Bergman; 29, Priory Road, Kilburn, N.W., Sept. 5, 1893.

Argynnis euphrosyne late in August.—On August 26th, at Bagley Wood, Berks, I took a small *A. euphrosyne* on the wing. It was a dark specimen with very light fringe, in splendid condition, and had evidently but shortly left the chrysalis. It appeared weak on the wing, but that may have been on account of the weather being somewhat unfavourable. I have recorded the capture as the insect is evidently a member of an abnormal second brood, though, I believe, it is not an unknown occurrence for a few individuals of this species to appear in the autumn.—W. J. Lucas (B.A.); Juxon Street, Oxford, Aug. 31, 1893.

Polyommatus bœtica near Dartford.—While seeking for varieties of *P. phlæas* on the railway embankment near this town, on the 7th inst., my son noticed a butterfly (with its wings closed) which he did not recognise, settled on a flower. He accordingly at once netted and boxed it, and showed it to me (I was only a few yards distant at the time), when I was soon able to identify it as *P. bœtica*. It is a male, and in very fair condition, but is considerably smaller than Newman figures them in his 'British Butterflies.' Doubtless, had the insect been on the wing, it would have been passed over as a worn common blue, a few of which are about, and we

have since given such every attention, but with, as yet, no further result as regards *P. bœtica*.—E. Sabine; Sept. 9, 1893.

Polyommatus bœtica in Sussex.—I captured a specimen of this rare British butterfly on the 28th of August last, near Beckley, Sussex. It was flying in a rough meadow near hop-grounds.—Harold M. Warner; 44, Highbury Park, N., Sept. 4, 1893.

Notes on the Season from Carmarthenshire.—The Rhopalocera have generally been abundant this season, especially the "Whites," *Euchloë cardamines*, *Lycæna icarus*, and particularly *Polyommatus phlæas*, the latter being still so. From the exceptionally warm spring many appeared much earlier than usual; the second brood of *Lycæna icarus* was coming out on July 5th; *Argynnis aglaia* appeared on May 31st. Of the Heterocera the Geometræ were abundant, especially *Crocallis elinguaria*, *Cidaria russata*, *C. fulvata*, and *C. ribesiaria*. The Noctuæ, on the other hand, with a few exceptions, have been scarce; some species usually seen I missed. The exceptions were *Xylophasia polyodon*, *X. lithoxylea*, and *Apamea didyma* (*oculea*), the last being in endless variety. I noticed *Hadena suasa* on July 14th: would this be a retarded emergence from the long drought? Three broods appeared of *Rumia cratægata*—in April, June, and August. Many Tortrices were abundant. Several larvæ of *Acherontia atropos* have been found at Tenby.—T. B. Jefferys; Langharne, Carmarthenshire.

Notes from Nottinghamshire.—On Sept. 1st I was fortunate enough to take a specimen of *Cirrhœdia xerampelina* at light in my house, being the first time I have met with this species. *Heliophobus popularis* have been very common on the lamps, and among them I have taken three or four females. While "mothing" last week I was surprised to see a *Vanessa atalanta* settle on a gas-lamp, as I have never before known a butterfly to be attracted by light.—Douglas H. Pearson; Chilwell, Notts, Sept. 11, 1893.

Catocala fraxini in Tunbridge Wells.—In August a friend of mine saw a splendid example of *C. fraxini* at rest on a tree in the Pantiles, Tunbridge Wells. He followed it into a shop, where it was eventually lost. —H. W. Shepheard-Walwyn; Bidborough, Sept. 15, 1893.

Abnormal Example of Vanessa atalanta.—I bred from a larva found near Eastbourne a curious variety of *Vanessa atalanta*, having the upper half of the right lower wing fulvous-yellow, and the markings on the upper right wing paler than the other side. One imago emerged six days after pupation. It was kept in a cool cupboard, and could not have been affected by the great heat at that time. *Lycæna adonis* appeared fairly plentiful at Beechy Head, and I captured some exceedingly fine specimens; also *Lycæna corydon;* two good examples of *Aspilates citraria*, and one *Agrotis lunigera*.—H. W. Shepheard-Walwyn; Bidborough, near Tunbridge Wells, Sept. 15, 1893.

Sugaring.—Among the forty-two species which have visited the sugared tree-trunks are the following:—*Drepana binaria*, *Hydræcia micacea*, *Dipterygia scabriuscula*, *Agrotis puta* and *A. suffusa*, *Noctua umbrosa* and *N. baia*, *Xanthia citrago*, *Tethea subtusa*, and *Macaria liturata*. The last is probably only a visitor in the district, like the specimen taken by Mr. Bird

at Hammersmith (Entom. 277). It would be interesting to know if *M. liturata* has this year been more than usually abundant in the pine woods of Surrey and Berkshire. *Drepana binaria* seems an unusual species at sugar; but sugar was evidently the attraction, as the moth was taken on a walnut tree, not on an oak.—Alfred Sich; Villa Amalinda, Burlington Lane, Chiswick, Sept. 7, 1893.

August Collecting in Dorsetshire.—During the last two weeks of August my brother and I entomologised in the neighbourhood of Lyme Regis (Dorset) with considerable success. I notice (Entom. 280) that certain members of the South London Entomological Society came to the conclusion that the present season, by reason of the unusual and prolonged heat, has not been favourable as a whole to insect life. As far as I myself am concerned, I have found the season a good one. At Oxshott, in Sherwood, in Norfolk, and at this place, with which the present communication is concerned, my record has been good. But to return to Lyme Regis. Just outside Lyme, in the direction of Charmouth, the land on the cliff side has slipped, and formed a broad slope covered with scrubby vegetation. This spot proved a most prolific hunting-ground. *Colias edusa* literally swarmed; they were in fine condition, and appeared in greater numbers than any other insect. Var. *helice* I have failed to discover here, and I have not seen *C. hyale;* but *C. edusa* is indubitably common, appearing, in addition to the locality mentioned, in the garden, and in the street of the village. It was amusing to watch the dead set made by other butterflies against these beautiful creatures. *Lycæna icarus* and *Polyommatus phlæas*, which were both extremely common, were especially intolerant, chasing their more gorgeous brethren about, and worrying them off the flowers. I also took in considerable numbers specimens of *Hesperia tages* in really good condition. Newman only gives May as the month for their appearance; but they were certainly plentiful here at the end of August. *Epinephele janira, Pararge megæra, Pieris napi, Epinephele tithonus,* and *Cœnonympha pamphilus* added quantity, if not quality, to the company. I also observed *Satyrus semele*, but it was not common. In the lanes *Pararge egeria, P. megæra,* and *Epinephele hyperanthus* were represented in great numbers. In the garden the geranium beds were visited largely by *Macroglossa stellatarum.* They were in excellent condition, and I have never before seen them in such great numbers. I mention this because I see a note to the same effect (Etom. 254) from a correspondent at Barmouth. Two insects have been conspicuous by their absence—*Vanessa io* and *Pieris brassicæ.* We have seen none of the former, and only one of the latter species. *V. atalanta* appeared in great numbers; I counted seven specimens in as many yards; and specimens of *V. urticæ*, like the wasps this year, were not so rare as to be diligently sought after. Of moths I cannot tell much, as circumstances prevented me from working by night. My brother, however, took a larva, nearly full-grown, of *Pygæra bucephala* off the nut-bushes, and also captured two specimens of *Bombyx quercus,* which supplied him with twenty eggs; these are now hatched out, and the larvæ are feeding well on rose-leaves. On the night of Sept. 6th our dinner-table was visited by two good specimens of *Heliophobus popularis,* which received what must have seemed to them an unnecessarily warm reception. My entomological excursions have perforce been few and far between; but I should imagine from the little I have done that Lyme Regis, and the country round it, was as profitable to entomologists as it is beautiful to the

less lucky individual who entomologises not. — Ernest B. Charles; Shelley House, Chelsea Embankment, London, S.W.

Pieris daplidice in Jersey.—It is with much pleasure that I record the capture of *P. daplidice* in Jersey. The specimen taken was a male, and was in perfect condition. It was caught on Monday, August 21st, at about eleven o'clock in the morning, on Gronville Common.—Stanley Guiton; 31, Bath Street, Jersey, Sept. 19, 1893.

Captures in the Lake District.—While staying at Grasmere, this year, I noticed that butterflies were scarce, but moths fairly abundant. Of the latter the following is a list:—*Epione apiciaria* (I saw one), *Crocallis elinguaria, Gnophos obscurata, Larentia olivata* (two, and saw some more), *Eupithecia sobrinata, Melanippe subtristata* (swarmed in pine woods), *Coremia propugnata, Cidaria russata* (all three varieties), *C. ribesiaria, Cymatophora diluta* (two), *Hydræcia nictitans, Xylophasia polyodon, Heliophobus popularis, Charæas graminis* (swarmed everywhere), *Tryphæna ianthina* and *T. fimbria, Noctua glareosa, N. depuncta* (one, battered), *N. xanthographa, Xanthia citrago* (five), *X. cerago* (two) *Cirrhædia xerampelina* (one), *Cosmia trapezina, Polia chi* (about forty, to be found everywhere on walls), *Phlogophora meticulosa, Hadena protea, Gonoptera libatrix, Mania maura* (eleven), *Stilbia anomala* (one, and saw others), and *Amphipyra tragopogonis*. These were taken in August, and I think searching walls and trees then very productive, especially of *Xanthas, Polia chi,* and *Geometers,* such as *Coremia propugnata.* — S. Renshaw; Ash House, Stretford, Manchester, Sept. 19.

Uropteryx sambucaria in September.—In the fourth week of August I found a larva of *U. sambucaria* in a cocoon; it pupated in two or three days, and emerged on the 17th of September. I may add that the larvæ of this moth which I have seen were very large for this time of the year.—J. F. Bird; Rosedale, 162, Dalling Road, Hammersmith, W., Sept. 19.

Vanessa c-album in Notts.—On Sept. 15th my brother captured a specimen of *Vanessa c-album* in our orchard. Newman mentions this species as formerly taken in Nottinghamshire, near Mansfield, and also at Warsop, Ollerton, and Newark; but during the seventeen years in which we have been collecting, we have never before observed a specimen in this neighbourhood.—E. Maude Alderson; Worksop, Notts.

Leucania vitellina.—During the last few weeks I have been so fortunate as to obtain three specimens of the above rare insect. The first was caught at sugar on August 24th, by Mrs. Hanbury, in the enclosure by Brockenhurst Bridge. The second and third were taken by myself, at Freshwater, on the 7th and 11th of September. All three specimens are in exceptionally fine condition; that captured on the 11th is in the possession of Mr. A. J. Hodges, who was collecting with me at the time I took it.—Frederick J. Hanbury; 37, Lombard Street, London, E.C.

Sirex gigas in Notts.—Towards the end of August I had brought to me a fine specimen of *Sirex gigas,* which had been caught in a shop in the town. The specimen is a large one, measuring nearly $2\frac{3}{4}$ in. from tip to tip of the wings.—E. Maude Alderson; Worksop, Notts.

Errata.—P. 252, line 16 from top, for *Pieris napi* read *Pieris rapæ.* P. 276, line 23, for "Cheadle" read "Montgomeryshire."

SOCIETIES.

South London Entomological and Natural History Society.—*Sept.* 14*th*, 1893.—J. Jenner Weir, F.L.S., President, in the chair. Mr. Auld exhibited living larvæ of *Phorodesma smaragdaria*, Fb.; also two breeding-cages for larvæ, as described by Mr. H. G. Knaggs in the 'Entomologist's Monthly Magazine' for July last. Mr. South showed a fine series of *Spilosoma lubricipeda* var. *zatima*, Cr., and modifications of that form from Heligoland; a splendid var. of *Argynnis euphrosyne*, L., taken in Lancashire by Mr. T. Baynes; a pale var. of *Vanessa urticæ*, L., from Monmouthshire, captured by Mr. W. E. Cox; a blue specimen of *Procris statices*, L.; and a number of *Zygæna trifolii*, Esp., including almost all the known forms. Mr. Tutt mentioned that out of about two hundred specimens of this insect taken in North Kent last year, five only were absolutely typical, the remainder having a tendency to assume a six-spotted form, these in most cases being well-marked and similar to *Z. filipendulæ*, L. Mr. Weir was of opinion that these two species do occasionally cross in a state of nature. Mr. Fenn exhibited a long series of *Spilosoma lubricipeda* var. *radiata*, St., bred from ova received from Mr. Tugwell; *Gnophos obscurata*, Hb., from Folkestone; and *Macaria notata*, L., bred form ova. Mr. Fenn also exhibited *Selenia lunaria*, Schiff., and read a note thereon. Mr. R. Adkin exhibited a series of *Thecla betulæ*, L., and read a note with reference to the order of sexual emergence. He also showed a short series of *Pygæra pigra*, Hufn. (*reclusa*, Fb.), bred from larvæ taken in Sutherlandshire last autumn. Mr. Jenner Weir read a note in which he stated that in a recent tour in Belgium he had seen no *Colias hyale*, L., and but one *C. edusa*, Fb. He also stated how exceedingly abundant the third brood of *Polyommatus phlæas*, L., had been in his garden, at Beckenham, this September. Mr. Tutt gave his experience of a day amongst the Lepidoptera in the suburbs of Paris, at the beginning of August, when *C. hyale*, L., was in numbers, with *Agrophila sulphuralis*, L., *Acontia luctuosa*, Esp., &c., and many other species in great numbers. Mr. Enock exhibited wheat-stems containing pupæ of the Hessian fly, from Sidmouth, where he found it infesting the wheat and barley; also examples of *Chlorops tæniopus*, the destructive ribbon-footed corn-fly, and made some interesting remarks on both species.—H. Williams, *Hon. Sec.*

Lancashire and Cheshire Entomological Society.—*Sept.* 11*th*.—Mr. W. E. Sharp, Vice-President, in the chair. Mr. G. Morel-Deville read a paper entitled "A Fortnight's Entomology in the Canary Islands," in which he described the difficulties of collecting specimens in Canary, owing to the intense heat, the large cactus, and the laval nature of the ground. He then recounted the species taken, the majority of which occurred in Great Britain, and gave a graphic description of the capital and general features of the country. The paper was illustrated by numerous photos and specimens. The chairman exhibited a number of Coleoptera from Worcester and Delamere. Mr. Harker, Lepidoptera from Missouri and Kentucky, Mr. Watson, the female of *Papilio phorcas*, which he stated was apparently very rare, although the male was commonly received from Africa. Mr. Newstead, nests or cells of *Crabro crysostoma* and *Pemphredon lugubris*, the former stored with a species of *Syrphus*, and the latter with an aphis (*Melananoxanthus salicis*, Linn.) common on willow, to be used as food; and *Cassida viridis*, taken on new land formed by the Manchester Ship Canal at Ince, Cheshire.—F. N. Pierce, *Hon. Sec.*

DESCRIPTIONS OF SOME NEW SPECIES OF PHYTOPHAGOUS COLEOPTERA FROM THE EAST.

By Martin Jacoby, F.E.S.

Chrysomela micans, n. sp.

Brownish æneous, very shining, the thorax impunctate at the disc, deeply punctured at the sides, the latter thickened; elytra very convex, with four double rows of very deep punctures, the interstices impunctate. Length, 4 lines.

Of ovate, strongly convex shape, metallic brownish æneous, the head entirely impunctate, with a central short longitudinal groove, antennæ extending slightly beyond the base of the elytra, the terminal joints thickened, the lower seven joints piceous, shining, the others black, opaque; thorax nearly three times broader than long, the sides rather strongly rounded anteriorly, the angles not produced, the disc very shining and impunctate, the sides thickened, with several rows of deep and irregularly-placed punctures; scutellum with a slight depression; elytra very convex at the middle, with four rows of double semifoveolate punctures and a single row near the suture; the breast and abdomen impunctate, coloured like the upper surface; prosternum slightly sulcate.

Hab. China. (My collection.)

C. micans seems allied to *C. foveopunctata*, Fairm., but differs in its general bronze coloration, in having no lateral thoracic deep sulcus, but deep punctures in its place, and in the four very deep rows of elytral punctures.

Chrysomela indica, n. sp.

Apterous, greenish or bluish æneous, the antennæ and tarsi black, thorax longitudinally sulcate at the sides, strongly and remotely punctured; elytra very convex at the middle, reddish fulvous, more or less æneous, very finely punctured, the interstices minutely aciculate.

Var. Elytra reddish fulvous, the suture obscure æneous. Length, 4½—5 lines.

Of medially strongly convex shape, the head finely and sparingly punctured, obscure greenish æneous, opaque; antennæ filiform, nearly extending to a third of the elytra, black, the third joint distinctly longer than the fourth; thorax twice as broad as long, broader in the female, the sides slightly rounded and widened towards the apex, the anterior angles rounded, not produced, the disc irregularly, strongly, but remotely punctured, the sides with a longitudinal sulcation, not strongly marked, but more closely punctured than on the disc; elytra strongly rounded towards the middle and very convex, fulvous or æneous with a slight fulvous tint, scarcely shining, very finely, closely and irregularly punctured, the interstices minutely scratched or aciculate; prosternum strongly longitudinally sulcate.

Southern India. (My collection.)

This species, by its strongly convex and posteriorly pointed shape, resembles *C. templetoni*, Baly, but the elytra are almost entirely without gloss, opaque, and closely and very finely and irregularly punctured; in the obscure æneous specimen the suture alone shows some metallic gloss; in the variety, which

is of smaller size, the elytra are reddish fulvous, but traces of that colour are also visible in the specimen upon which I look as the type.

CHRYSOMELA SEMIFULVA, n. sp.

Metallic dark bluish or slightly purplish, the head and thorax impunctate, the latter longitudinally sulcate at the sides; elytra obscure fulvous with purplish gloss, each with four double rows of irregularly placed deep punctures. Length, 3½ lines.

Head entirely impunctate, greenish, antennæ extending to the base of the elytra, black, the terminal joints gradually thickened; thorax more than twice as broad as long, the lateral margin straight at the base, slightly rounded anteriorly, the disc entirely impunctate, with a central longitudinal groove from the base to the apex, the sides thickened, bounded within by a longitudinal sulcation extending the whole length, metallic greenish, the disc more obscure purplish; elytra dark fulvous with a slight purplish gloss, with four double rows of deep punctures of greenish colour, and a single row placed near the suture; the punctures of this row are very distantly placed from the middle downwards, those of the third double row are entirely irregularly distributed with scarcely an arrangement in pairs, the lateral margin is also accompanied by a row of deep punctures; under side and legs greenish, scarcely punctured, prosternum without longitudinal sulcation.

Hab. India, Utakamand.

Much distinguished by the entirely impunctate head and thorax.

CHRYSOMELA BALYI, n. sp.

Ovate, strongly convex, greenish æneous, the apical joints of the antennæ black; thorax with a few deep punctures, bi-impressed at the sides; elytra reddish fulvous, strongly and rather closely punctured. Length, 5—6 lines.

♀. Larger, elytral interstices convex, variolose.

♂. Of metallic green and slightly brassy colour; the head with a very few fine punctures near the eyes, the labrum and mandibles black, antennæ very short, not extending beyond the base of the thorax, the basal joint metallic green, the apical five joints strongly dilated, broader than long, black; thorax more than twice as broad as long, the sides and the interior margin at the middle straight, the anterior angles rounded, and but slightly produced, the surface brilliant metallic greenish, with a few deep punctures and a short transverse fovea at each side, the latter without any longitudinal depression; scutellum metallic green; elytra reddish brown, gradually raised towards the middle, from there to the apex rather strongly deflexed, with a short transverse depression below the shoulders, strongly punctured, the punctures arranged in irregular rows near the suture and at the sides, more irregularly on the disc, and more finely so at the apex than anteriorly, the interstices smooth; under side and legs metallic green; prosternum longitudinally convex, metasternum very slightly tuberculate in front, abdominal segments finely punctured.

South India, Madras. (My collection.)

I do not think to err in considering specimens of larger size, and with strongly rugose or variolose elytra, as representing the female sex of the same species; there is absolutely no other difference to be found than the sculpture of the elytra, which are much more deeply punctured, and have the interstices throughout strongly convex and rugose, with traces also of longitudinal costæ.

GALERUCIDÆ.

XENODA BASALIS, n. sp.

Fulvous, finely pubescent above, head impunctate, antennæ black, the apical joints yellowish white; thorax short, impunctate; elyra transversely rugose and punctured, finely pubescent, black, the base fulvous; abdomen blackish.

♂. Antennæ with the third to the tenth joint greatly swollen and widened, the apical joint whitish, thin; elytra entirely black.

♀. Antennæ filiform, the intermediate joints very slightly dilated, the last two joints whitish.

Length, 1½ line.

Head broad, the vertex convex, impunctate, fulvous, the frontal elevations strongly raised, trigonate; palpi robust, the penultimate joint incrassate; antennæ extending to about the middle of the elytra, clothed with longish hairs, black, the second joint very short, the third and following joints strongly widened; thorax more than twice as broad as long, the sides nearly straight, the angles obtuse, the disc transversely and broadly sulcate, impunctate; scutellum fulvous; elytra broader at the base than the thorax, slightly widened posteriorly, the surface uneven and rugose, the interstices finely punctured and clothed with long greyish hairs, black, with a slight violaceous gloss, the base narrowly fulvous, the sides perpendicularly deflexed, forming a distinct edge or costa from the shoulder to the apex; under side and legs fulvous, the latter slender, clothed with yellowish hairs.

Hab. Sumatra. (My collection.)

The pubescence of the elytra, although long, is thin, and does not obscure the gloss; the fulvous portion does not occupy one-third of their length. I refer to this species (which is only half the size of the two others known) a single male specimen, contained in my collection, which has the antennæ structured as given above, but has entirely black elytra. All the other specimens are females, in which the base of the elytra is fulvous. *X. hirtipennis*, Jac., is much larger and is of different coloration, and possesses antennæ of different construction.

PSEUDOCOPHORA INORNATA, n. sp.

Pale fulvous, the four posterior legs and the breast and abdomen black; antennæ pale flavous; thorax impunctate; elytra closely and finely punctured.

♂. Elytra with a conical tubercle at the base, bounded by a dark coloured fovea; the last abdominal segment trilobate, the medial lobe plane.

♀. Elytra without tubercles or fovea, the last abdominal segment simple.

Length, 2½ lines.

Hab. Perak. (My collection.)

Closely allied to *P. uniplagiatc*, Jac., *ambusta*, Erichs., and *brunnea*, Baly, but differing in the colour of the elytra, which are of uniform pale fulvous, with the exception of the interior of the fovea, which is black. From *P. ambusta*, the plane—not concave—last abdominal segment, and the conical elytral tubercles, distinguish the present insect; the entirely fulvous elytra, smaller size, and the different anal segment in the female, separate it from *P. brunnea;* the sutural margin below the fovea of the

elytra is also slightly raised in *P. inornata*, without, however, assuming the shape of teeth. Baly, in his tabular arrangements of the species of *Pseudocophora*, gives the median lobe of the last abdominal segment in *P. uniplagiata* as plane, and in *P. brunnea* as being concave. This it an error, and should be reversed; the segment in question is plane in *P. brunnea*, and concave in *P. uniplagiata*.

MOMŒA RUGIPENNIS, n. sp.

Testaceous, the antennæ (the apical three joints excepted), and the tibiæ, and tarsi black; thorax with three depressions, and marked with black; elytra strongly rugose, blue or green, the lateral margins flavous, preceded by a purplish band. Length, $3\frac{1}{2}$ lines.

Head with some fine punctures, testaceous, the vertex blackish, frontal tubercles transverse, labrum black; antennæ extending nearly to the end of the elytra, black, the apical three joints yellowish white, third joint extremely long and the longest; thorax twice as broad as long, the sides straight at the base, slightly angulate before the middle, the surface with a deep transverse sulcus at the middle, and a short longitudinal groove at the base, somewhat rugosely punctured, the interior of the sulcus black; scutellum black, its apex truncate; elytra narrowly elongate, parallel, strongly rugose and punctured, with traces of longitudinal costæ, blue or green, the sides with a broad purplish longitudinal band, the lateral margins flavous; under side and femora testaceous, tibiæ and tarsi piceous or black; claws bifid; anterior coxal cavities open.

Hab. Celebes. (My collection.)

This species may easily be mistaken for *Calaïna mirabilis*, Schauf., which inhabits likewise Celebes; both insects are almost identical in coloration, and nearly in structure, except that in *Momœa* the elytral epipleuræ are narrow and continued to the apex, which is not the case in *Calaïna*; the present insect is also of narrower shape, and wants the discoidal purplish band of *C. mirabilis*.

YULENIA FLAVOFASCIATA, n. sp.

Elongate, parallel, flavous; antennæ (the basal joints excepted) fuscous; head and thorax impunctate; elytra closely punctured, metallic blue, with a broad flavous transverse band at the middle. Length, $2\frac{3}{4}$ lines.

Head deeply transversely grooved between the eyes, fulvous, the vertex piceous, the frontal tubercles strongly raised, transverse; clypeus triangular, penultimate joint of the palpi thickened; antennæ extending to the end of the elytra, fuscous, the basal three joints fulvous, the first joint elongate, strongly widened at the apex, the second short, the third slightly longer than the fourth joint, the last two joints obscure, fulvous, slender; thorax transverse, twice as broad as long, parallel, the sides narrowed at the base, subangulate before the middle, the surface impunctate, flavous; scutellum black; elytra finely and closely punctured, the basal and apical portion metallic blue or purplish, this colour interrupted by a transverse broad fulvous band, the anterior margin of which is straight, the posterior one widened towards the suture; claws bifid.

Hab. Batchian. (My collection.)

This is the second species of the genus described by me in the 'Genoa Annals' of 1886; it agrees in all structural characters with the type.

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VARIATION OF *CHRYSOPHANUS PHLŒAS* IN BRITAIN.

FIG. 1.

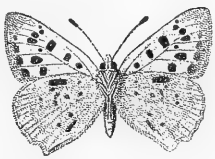

FIG. 2.

ALTHOUGH this species is subject to considerable variation within certain limits, the capture of strikingly aberrant specimens is a comparative rare occurrence. Mr. Frohawk, of Balham, and Mr. Sabine, of Erith, have detected, among the numerous specimens of *C. phlœas* occurring in their respective districts this year, some very interesting varieties. None of these examples exhibit anything absolutely novel in the way of aberration above, but the markings on the under surface of the specimens figured (taken by Mr. Sabine) are curiously abnormal.

C. phlœas, in Europe, ranges in colour from the typical copper towards the dark smoky suffused form, known as var. *eleus*, Fabr., on the one hand, and in the direction of the silvery white var. *schmidtii* on the other. Both these forms, together with various modifications of each, have occurred in Britain. The specimen recorded by Mr. Sabine (*ante*, p. 295) is an intermediate between the type and var. *schmidtii*. The fore wings are shining pale straw colour; the costa is broadly black along the apical half, and suffused with black along the basal half; the outer margin is also broadly black, and the spots are typical. Hind wings black; marginal band rather broader than usual, and of the same straw colour as fore wings; base of wings dusted with shining straw-coloured scales. Fringes greyish white. Under surface of fore wings pale straw, but quite typical in all other respects. Hind wings typical. Specimens sometimes occur with one fore wing only silvery

white, whilst the other wings are typical. In other specimens both fore wings are silvery white, and the hind wings quite normal. Another and not altogether rare form of colour-variation is that in which the hind wings alone are aberrant. In such specimens the copper-coloured band is either broken up into narrow streaks, or entirely obliterated by the encroachment of the ground colour.

The black spots on upper surface of the fore wings are sometimes very small, and not infrequently specimens are found with less than the normal number of spots, and in very rare instances the whole of the spots are obsolete. There is also aberration from typical lines in the opposite direction, and we find examples with the spots much larger than usual, and often tending to confluency. The extreme limit to this phase in the variation of *C. phlœas* appears to be reached in var. *fasciata*, the type of which was from Florida, and is described by Strecker as follows:—" ♀. All the black spots on upper surface of primaries, save one within the discoidal cell, are enormously enlarged and confluent, forming a broad, somewhat irregular, black band, extending from costa to inner margin. Under surface exactly as in common form." ('Butterflies and Moths of N. America,' p. 101, 1878.) In the 'Entomologist' for 1878 (xi., p. 25) is a figure of a banded example of *C. phlœas*, captured in Middlesex, which is certainly of the form described by Strecker. Intermediates between var. *fasciata*, and the type are not rare in Britain, and Mr. Sabine captured three examples this year, in all of which the black spots are very large, and those of transverse series inclined to coalesce; the outer discal spot in one example is almost united with fourth spot of transverse series; in another specimen, the third and fifth spots of transverse series are pyriform. Blue spots before the copper band of hind wings are not unusual, but these are rarely, if ever, so large and conspicuous in British specimens as they are in examples from Eastern Asia. On the under surface the black spots on primaries are very frequently distinctly ringed with yellowish, but the spots on the hind wings are not well defined as a rule. In some examples, however, the black spots are not only distinct on the hind wings, but these wings have also a black transverse waved line, edged externally with pale greyish brown.

Fig. 1. ♂. Upper surface: the black spots on the fore wings of this example are rather large, and those of the transverse series are almost confluent. On the under surface, the markings are of a very irregular character.

Fig. 2. ♂. In this specimen aberration is confined to the under surface of hind wings; these have all the black spots well defined, including a large quadrate one about middle of the costa, and an elongate one on the abdominal margin towards anal angle.

Richard South.

THE "MELANISM" CONTROVERSY.

By W. F. de Vismes Kane, M.A., F.E.S.

In the August number of the 'British Naturalist' there appeared an article by Mr. W. E. Sharp, which seems to be very opportune, and calculated to arrest temporarily the tide of speculative theories by which the subject seems likely ere long to be obscured. His criticism deals chiefly with the essays published by Mr. Tutt, but applies equally to various contributions of other writers from time to time. Now, Mr. Tutt has done yeoman service in attracting more general attention to the scientific aspect of Entomology, and eliciting the opinions of many observers; but it seems full time that some weak points in the chains of argument by which various theories have been supported should be pointed out. Besides the objections urged by Mr. Sharp, namely, a confusion of ideas as to the biological problems involved, I am of opinion that a good deal of the speculative discussion is somewhat "previous" and premature, by reason of the premises being as yet insufficiently ascertained and enunciated; so that there is some danger of the question being prejudiced in at least some of its aspects. Mr. Sharp, who disclaims any special knowledge of the order of Lepidoptera, takes for granted, or at least does not specially challenge, the premises on the ground of definiteness and precision. Now, this is the point I desire to draw attention to. No doubt Mr. Tutt and many others have amassed large and interesting collections of varietal forms, and many valuable contributions to our knowledge have appeared in the 'Record' and elsewhere. Nevertheless the subject is so complex, when carefully examined, that it would seem to me most advisable to have the facts sifted and correlated much more carefully than has hitherto been done, so that we may know much more precisely the phenomena we have to analyse. Among the matters that should, *in limine*, be ascertained, I may instance the following. Are the Rhopalocera and Heterocera, whose life-habits are for the most part so distinct in the imago stage, affected similarly by similar environments? I have a strong conviction to the contrary, though writers on melanism seem usually to take for granted that they are. Then as to Geometridæ and Noctuidæ in smoky districts, it would be interesting (bearing in mind the larger area of wing surface exposed by the former when at rest, and habits of diurnal concealment of species of the latter) to know the numerical proportion of species of each affected by melanochroism. Again, certain species of Lepidoptera we know present archaic or congenital constant varieties, in districts widely separated geographically and differing greatly in climatal and physical characters. The vars. *luneburgensis* and *sedi* of *E. lutulenta*, and

zatima of *S. lubricipeda*, seem to be cases in point. Let us eliminate such forms and put them into a group by themselves; with their known British and Continental distribution, if in anyway they are restricted to locality. Carefully compiled lists of melanic variations, found in particular districts peculiar in their physical or other characters, would be of much avail also for students of the subject. That some more precise information is desirable appears to me probable, for I observe almost every writer, Mr. Sharp included, refers to the Irish lepidopterous fauna as being melanic or melanochroic in its general tendency. Mr. Tutt invariably attributes this character to the Sligo neighbourhood in particular, a district better represented perhaps in English cabinets than any other Irish one, through the industry of Mr. Russ. Nevertheless I find, by a recent correspondence with that gentleman, that he agrees with me, who have also collected largely there, in denying that the Sligo Macro-Lepidoptera present any predominant melanic facies. And as a result of a good many years of work in widespread localities in Ireland, I would venture to enter a caveat against any conclusion that the Irish fauna generally is so characterised. I hope to point out in the Irish Catalogue, now being published, the range of variation of each species so far as ascertained. Specialists will then be in a better position to institute juster comparisons between our island fauna and that of wider areas. Would it be too much to hope that Mr. Tutt, with his fine collection, extensive correspondence, and indefatigable industry, will sooner or later tabulate the facts we desire to discuss, and define a little more exactly the phenomena certainly ascertained? His "Variation of the Noctuæ" does not deal as fully as is desirable with the geographical distribution of the principal melanic varieties.

Mr. Sharp has pointed out that in the discussion of the subject, biological doctrines and terms have been somewhat loosely and confusedly invoked. As there are many entomological workers who have not studied the points at issue, I may be pardoned for stating concisely the chief conclusions at which zoologists have arrived with regard to the agencies at work. In reference to varieties the three primary agents supposed to evolve variations are:—1. The immediate action of the environment, *i.e.*, humidity, food, temperature, &c. 2. Constitutional or congenital tendencies. 3. Change of function, or the exercise or disuse of organs. In reference to species, the secondary factors operating to crystallise variations into species appear to be as follows:— If they are transmissible (for the heritable nature of the first and third classes of variations is denied by many of our most eminent authorities), (1) accumulation may perpetuate them as environmental and functional modifications of species respectively. With regard to the second class, or constitutional variations, since they are undoubtedly heritable, either (2)

natural selection, or (3) the continuance of the conditions which gave rise to them, may produce new species. (4) Isolation is another secondary factor operating upon all variations. Mr. A. J. Thomson defines the two principal schools of biological speculation as follows: "A minority hold that the modification of species takes place by cumulative growth, influenced by function and environment, and pruned by natural selection; but the majority hold that new species result from the action of natural selection on numerous, spontaneous, and indefinite variations." And he states as his opinion that "until we know much more about the primary factors which directly cause variations, it will not be possible to decide in regard to the precise scope of natural selection, and the other secondary factors which foster and accumulate, thin or prune; which in short establish a new organic equilibrium. The argument has been too much in regard to possibilities, too little in regard to observed facts of variation." If this be so in relation to zoology generally, it seems more particularly to apply to those who have dealt with the study of evolution among Lepidoptera, of course with the exception of a few entomologists like Mr. Poulton and others, who are most perseveringly experimenting as to the action of immediate environment on certain species. I therefore heartily endorse Mr. Sharp's strictures, taken in a general sense, on the drift of the "melanic" discussion, and agree with him that the best service entomologists can render to biological science lies in the careful investigation, by exact experiment, of the primary factors inducing variation. For as Weissmann and others deny the transmissibility of changes produced by food, temperature, &c., as well as those arising from functional causes, use and disuse, &c., we should in the first place attack this problem, rather than take it for granted, as it seems to me Mr. Tutt has done, and indeed most writers on the subject. For if Weissmann's opinions are generally adopted, and they are gaining much acceptance, theories based on the opposite belief will be discredited. And workers in this field would do well not to overlook the strongly-expressed opinion of Romanes, to the effect that isolation is the universal condition to the establishment of specific modification. Now, in the melanic or melanochroic variations said to be peculiar to smoke-discoloured districts, where the factor of isolation does not seem to be present, we apparently have to deal with a series of parallel variations of various species which are said to be superseding the type very rapidly. The question is whether this is effected by natural selection, or, as many have argued, by the immediate action of the environment. Before we can venture to form an opinion in the absence of proof by experimental results, we require reliable statistics as to the distribution of each of these varieties, as to its spread locally in each district, and a list of the

melanic varieties in those districts. The cases of *Amphidasys betularia* v. *doubledayaria* and *Hybernia progemmaria* v. *infuscata* have been frequently brought forward, but a more precise array of statistics on the subject is desirable.

Toward the close of Mr. Sharp's paper he refers to Lord Walsingham's suggestion that melanism would be advantageous to insects in cold and sunless climates, by securing increased absorption of heat rays. The theory appears very plausible, as Mr. Sharp admits, and based on more tangible grounds than some others. But there are some facts which should be considered when estimating its claims to acceptance. Though it is easy to conceive that in a former epoch, mountain regions and many countries in high latitudes, may have suffered from a defect of sunshine, producing conditions which Lord Walsingham's theory would apply to, yet this seems very far from being the case now, either in Iceland, Scandinavia, or the Central European Alps, where the summers are very hot and sunny compared with those of the British Islands; so that we should expect to find melanism, if of modern origin, chiefly notable in Ireland and Scotland, and in a less degree in the rest of Great Britain. And what is really the fact as to the distribution of dark varieties in Alpine and Arctic regions? We should bear in mind that the theory in question seems only applicable to Diurnal Lepidoptera. As this includes only a small proportion of the Heterocera, let us take the case of the Rhopalocera only. I do not know that any portion of these in the British Islands, are remarkable for melanochroic tendencies. And further, it will, I think, be found that in case of species of wide range, in most instances a northerly latitude produces a tendency to pallid coloration, a loss of metallic lustre in several genera, such as *Cœnonympha*, *Argynnis*, and *Euchloë*: and an indefinite delineation:—phenomena indicating an inferior degree of vitality. Moreover, in the case of distinctively Northern or Alpine species, such as certain of the Pieridæ and Coliidæ, and the genera of *Parnassius* and *Œneis*, we do not find dark coloration to be the rule, excepting in the genus *Erebia*. Among the latter, however, we do not find any approximation to a gradation of tone, corresponding to the altitude or zone which they affect. Though one or two species which frequent the highest summits are extremely dark, those which are confined to the lowest region are only a shade lighter, paler species occurring in the intermediate zones. In the Pieridæ it is true that the var. *bryoniæ* of *P. napi* appears to be an instance in favour of Lord Walsingham's theory; but against this we have *P. callidice*, frequenting a much higher level, which shows no similar peculiarity. The Arctic and Alpine Coliidæ, both species and varieties, are paler than those of the warmer regions, with but a single exception as far as I know; and in the genera of *Argynnis* and *Melitæa* similar phenomena are

noticeable. *M. cynthia* has been cited as an instance of a high Alpine insect assuming darker tints than is usual, but it should be remembered that this is the attribute only of the male, and is accompanied by a whiter central series than is found in any of its congeners, while the female remains of an ordinary fulvous tint, with the black shadings very poorly developed; and as to the dwarf mountain form *merope* of *M. aurinia*, it is by no means of so dark coloration as some lowland forms, and has the fulvous patches very bleached. Nor in the genus *Cœnonympha* can I find any support to the theory, the bleached colour and obsolete markings of the northern form of *C. typhon* being a very striking instance of what I conceive to be the rule in species which have a northerly range. The exclusively Northern and Alpine genera, such as *Parnassius* and *Œneis*, are no darker than the Southern Pieridæ and Satyridæ. But I cannot here discuss the problems at any length, but may venture to suggest an opinion that we ought to study these phenomena from a narrower basis, and give more prominence to the effects of congenital tendencies. Some genera appear to tend to vary in one direction, some in another; and if we could have before us the archaic types of *Pieris* and *Melanargia*, it seems to me possible that we should find the pure white of the former was its most recent development, and the deep black of the latter, in South European forms, similarly a late acquisition; so that an Arctic climate would produce a reversion to a dingier type of *Pieris;* and a southern latitude give rise to the black forms *procida* and *turcica* of *Melanargia galatea*.

Just a few words, in conclusion, with regard to the Noctuæ. There can be no doubt that moisture and shade are most conducive to the welfare of the larval stage of many Noctuæ, while dry and sunny conditions bring others to the highest state of perfection. It is not therefore likely that the same causes would bring about the same results in every case, and it is therefore probable that generalisations based on external phenomena alone, unaccompanied by research into the racial characters of the particular genus or species, will only lead to confusion.

Drumreaske House, Monaghan.

ON CERTAIN SPECIES OF NORTH AMERICAN HYPENIDÆ.

By A. G. Butler, Ph.D., &c.

Professor John B. Smith, in his extremely useful 'Catalogue of Noctuidæ,' just published, has made a singular statement respecting Walker's *Hypena damnosalis*, which (as it is entirely incorrect) ought, I think, to be set right without delay. He

says: "Walker's type is in the British Museum, and is like the *perangulalis* of the Grote collection, and of American collections generally."

Now the type of Walker's *H. damnosalis* is neither more nor less than the female of *H. caducalis*, and, therefore, differs from *H. perangulalis* of the Grote collection in its shorter primaries, shorter palpi, in having entirely different markings, the two lines across the primaries not edged with white, the outer line undulated instead of simply subangulated. The *H. perangulalis* of the Grote collection, in fact, differs chiefly from the *H. deceptalis* of the same collection in its lighter colouring and its sex. It is a female, and is, in my opinion, unquestionably the female of *H. deceptalis*. Strictly speaking, I should say that *H. deceptalis*, being much more nearly related to *H. proboscidalis* than to the typical forms of *Bomolocha*, might be called a true *Hypena*.*

Professor Smith had the disadvantage, in the case of the Hypenidæ, of working with the Walkerian arrangement, still more confounded by subsequent accessions; and when he got down to these he was pressed for time. It would be odd, therefore, if he failed to make any mistakes in his synonymic notes; even the best workers, when hurried, are not infallible.

OBSERVATIONS ON THE HESSIAN FLY (*CECIDOMYIA DESTRUCTOR*) DURING 1893.

By Fred. Enock, F.L.S., F.E.S.

I have often been asked: "How is it that we hear so little about the Hessian Fly now?" "Is it exterminated from Great Britain?" "Do you think it really does any damage to the crops?" &c., &c. The following facts will be the best answer to these queries.

In Great Britain so little interest is taken by the public in Economic Entomology that we must not be surprised to find that editors of newspapers are unwilling to find room for short accounts of the occurrence of these pests, the doings at "John Barleycorn's" being of far more interest to general readers than those of the Hessian Fly in the barley corn *fields:* in one, the *Homo* species is apt to get injured and unable to bear his weight, and when found suffering from weakness at the joints, he is looked after and taken care of; but in the case of the species *destructor* injuring the crops and causing them to bow their bearded heads low on the ground, none but the farmers feel any the worse for this pest; and even they, though quite aware that "summat has got their crops," do

* That is, if Staudinger is right in associating *H. proboscidalis* with *H rostralis*.

not know what it is which has caused their crops to present such weakness. It is of no use relying upon the farmers to notice these crop pests, for not one out of fifty knows the appearance of the Hessian Fly; and we must not imagine it to be exterminated simply because the farmers have not reported it. So far from being exterminated, this special pest has been having a fine time of it during 1893 in South Devon, where, during a fortnight's holiday in August and September, I found it in the greatest profusion, principally in the puparium state, though many larvæ were also found, and since covering in the infested stubble collected, many of the flies have emerged, besides a few parasites.

The immunity from all interference which the Hessian Fly and other crop pests enjoy in "our right little, *tight* little island," does not tend to decrease their number, so that we must not be surprised to find many wheat and barley fields held in possession by this most persevering enemy. Many of the fields examined in South Devon were "eaten up with maggots," the typical bent straws indicating the presence of the pest were to be seen on every side in wheat and barley fields alike. Their backward state in May and June rendered the plants particularly favourable for the reception of eggs from the main brood, no doubt every female doing her best to be fruitful and multiply by laying the full complement of some one hundred and fifty eggs, distributing them over some dozen or twenty plants, in many cases at both first and second joints of one stem. Only to-day (Sept. 21st) on one, but two inches long, I found eight at the first knot and four at one above. I paid my last visit to a wheat field, Sept. 4th, when I found the crop cut, so was enabled the better to examine the stubble; on pulling up a number of plants, I found puparia on *every* one, without exception. Six of them yielded sixty-three, while from one alone I took no less than twenty-seven, most of which were close down at the base of the stems, below the ground-line. The owner told me he did not reckon he should get more than three bushels per acre, while others "were not worth cutting." By far the greater number of these "flax-seeds" are left in the stubble, protected from all harm and chance of being destroyed, the clover or grass, with which most of the fields are laid, forming an additional protection later on, so that a vast number of flies will emerge next year, ready to spread through neighbouring fields. The only remedy which can be applied is to plough the field, run the scuffler through, collect the stubble into heaps and *burn* them.

There is an old saying about "a little learning being a dangerous thing," but I do not think it would be in the case of the Hessian Fly, as it might prevent the farmers from ignorantly putting in a crop of puparia each year, by spreading the screenings from the threshing machine with the rough manure. This I found to be the habit of every farmer to whom I spoke. *Nothing*

but *burning* these screenings will destroy the innumerable host of "flax-seeds," which are shaken out of the straw when threshing. Farmers appeared most desirous of learning all they could about this pest, and I would most respectfully suggest to Her Majesty's Board of Agriculture, the advisability of having printed a large number of illustrated sheets of the Hessian Fly, &c., sending them to the various County Councils for FREE distribution to the farmers.

I am continuing my experiments with the parasites, and have, with the kindly co-operation of Dr. C. V. Riley, introduced our *Semiotellus nigripes* into the United States, and hope to do the same for other countries now infected with the Hessian Fly, as no doubt these parasites are the best friends the farmer could have for keeping in check this pest.

11, Parolles Road, Upper Holloway, London, N.

DEILEPHILA EUPHORBIÆ IN ENGLAND.

By Rev. J. Seymour St. John, F.E.S.

In the interests of entomology as well as of truth, it is, I think, necessary to lay before your readers the testimony of Mr. F. J. Hanbury and Mr. J. Fry (the captor), as to the finding of larvæ of *D. euphorbiæ* in 1889, which I recorded in the 'Entomologist.' My reason for doing so is this:—Seeing in the July (last) number of the 'Entomologist's Record' that Mr. Tutt stated that the species had not been taken in this country for some "three-quarters of a century," "with the exception of an occasional immigrant," I wrote to his magazine reminding him of the above capture. Neither my letter nor even an acknowledgment of it appeared in the August number. I wrote to Mr. Tutt on the subject, and in the September number appeared my letter with a long note appended by Mr. Tutt, in which he impugns, with exceedingly bad taste, the veracity of Mr. Fry. That your readers may judge for themselves, I give in full what is written in the September number of the 'Entomologist's Record' together with letters written by Messrs. Hanbury and Fry.

From the 'Entomologist's Record,' vol. iv., pp. 248—249:—

"Deilephila euphorbiæ.—I read in the 'Current Notes' of this magazine for July, 1893, the following statement:—'*D. euphorbiæ*, with the exception of an occasional immigrant, has not been British for some three-quarters of a century.' Is this quite correct? I believe the 'perfect insect' has *not* been taken in this country, but larvæ have been found. A young friend of mine found, in the autumn of 1889, thirteen nearly full-fed larvæ on the West of Cornwall, feeding on

Euphorbia paralias. He brought them home and entrusted the pupæ to my care, for they turned very soon after capture. Three died in pupating, one died during the winter, and nine came out perfect specimens, three of which are now in my cabinet. For fuller information I refer your readers to the 'Entomologist,' vol. xxiii., pages 18 and 319.—J. Seymour St. John, 42, Castlewood Road, Stamford Hill. *July 21st*, 1893. [We were fully aware of the reports referred to by our correspondent, but at the same time venture to suggest that the statement in the 'Current Note' referred to is substantially correct. In the face of what is known of this species in Britain, the statement 'this very rare insect in Britain has this year re-appeared. A young friend this autumn came upon thirteen nearly full-fed larvæ,' &c. ('Entomologist,' xxiii. p. 18) wants considerable amplification. Who is 'the young friend'? What has he to say about the coming upon 'thirteen nearly full-fed larvæ'? Mr. St. John has to rely on the statement of a 'young friend,' and this makes all the difference. If he had taken the species himself it would have been another matter. Mr. St. John further states that 'the ten pupæ' (which successfully changed from these larvæ) 'were entrusted to my care,' so that he evidently never had the larvæ, an important item, considering how easy pupæ are to obtain. Mr. St. John exhibited three of the nine specimens reared, at the meeting of the Ent. Soc. of London, as 'bred from larvæ found feeding on *Euphorbia paralias* on the Cornish coast, in September, 1889' (Trans. Ent. Soc. of Lon., 1891, p. xxxi.) He records having searched for the larvæ himself in July, 1890, 'on the spot where they were found the previous autumn' but 'failed to discover any trace whatever of larvæ, young or middle aged.' Mr. St. John must forgive our scepticism, but until we know something of the captor of these larvæ, we shall, in common with most British lepidopterists look on Mr. St. John as a probable victim in the matter. It would be interesting, however, to know the present whereabouts of these nine specimens which have been recorded, so that at any rate they may be distinguished from those that were sent on their wanderings last winter. We notice that Mr. St. John mentions nine specimens as being reared, in the paragraph above, but in September, 1890, he only mentions eight as having been reared, and one that looked like passing a second winter in the pupal stage.—Ed.]"

Copy of Mr. Fry's letter :—

"51, Stamford Hill, N., 2nd October, 1893.

"Dear Mr. Hanbury,—I am surprised to hear that a doubt has been thrown on the genuineness of the specimens of *D. euphorbiæ* that were bred by Mr. St. John from the larvæ that I found in 1889. The details of my capture are as follows:—I was staying at New Quay, Cornwall, with my parents in August of that year. In a little sandy bay at the foot of the cliff, about two miles away, I found eighteen or nineteen of these caterpillars feeding on the Sea-spurge, which grew in one spot plentifully. Most of the specimens were full fed, but a few were only half fed. Five or six of my larvæ died, the remaining thirteen, as you know, pupated, forming loose cocoons with the sand. You will doubtless remember that in the first instance I brought them to you, not knowing what I had found, and it was by your advice that

I took them (all save one pupa, which I gave to a school-fellow named Price, and which was also successfully reared) to Mr. St. John to ask him to rear them. He had twelve specimens in all, three of which died, but nine emerged. Of these nine, I gave one to you, and three to Mr. St. John for the trouble he took. The other five specimens remain in my own possession. My father was with me when I found the caterpillars.

"Trusting these details will silence the doubts so unjustly cast upon Mr. St. John's statements,

Believe me, yours very faithfully,

JOHN FRY."

Copy of Mr. Hanbury's letter :—

"37, Lombard Street, E.C., October 16th, 1893.

"My dear St. John,—Through your recent holiday and absence from town, you have probably not yet seen the way in which the correction you sent to the 'Entomologist's Record' on the subject of the capture of *D. euphorbiæ* has been treated. As to the good taste of the remarks which are appended to your note, I need say nothing; they are evidently written with a view to 'drawing' you on the subject. Under the circumstances, however, I think it is a case in which there can be no possible reason for maintaining secrecy any longer. I wrote to Mr. Fry on the subject, and enclose his reply, and have since seen him personally. He quite agrees with me that there is nothing to be gained by withholding information which he at first asked us not to divulge. I hope, therefore, you will see your way to sending a note to the 'Entomologist' on the subject, quoting Mr. Fry's letter, and, if you like to do so, my own also. You will doubtless remember that in the first instance Mr. Fry brought the *euphorbiæ to me, not knowing what they were*, and it was by my advice that he took them on to you to rear for him; I can therefore substantiate your statements in every particular.

Believe me, yours faithfully,

FREDERICK J. HANBURY."

A word as to the apparent discrepancy between Mr. Fry's letter and my account as to the number of the larvæ he found. I was under the impression that the thirteen *euphorbiæ* he brought back to town represented the total number he found. But the discrepancy in no way tells against the facts. I have some of the sandy cocoons in which the larvæ spun up now in my possession. I may add that Mr. Barrett has had no hesitation in admitting the capture of these larvæ as genuine in his book. It is a matter of no moment to me whatever whether Mr. Tutt believes in the genuineness of these *D. euphorbiæ* as British or not, but I *do* wish entomologists to know that Mr. Fry is not the inventor of a fraud, and that I should hardly be so foolish or wrong as to publish the capture, and exhibit specimens publicly before a meeting of the Ent. Soc. of London without first of all being quite sure of my ground.

42, Castlewood Road, Stamford Hill, N.

A CATALOGUE OF THE LEPIDOPTERA OF IRELAND.

By W. F. de Vismes Kane, M.A., M.R.I.A., F.E.S.

(Continued from p. 273.)

ZYGÆNIDÆ.

Ino statices, *L.*—Widely distributed throughout Ireland, and locally common in some places. Westmeath, Cromlyn (*Mrs. B.*), and very abundant at Killynon; also at Drumreaske, Monaghan; at Galway and Woodlawn (*A.*); Markree Castle, Sligo; Bandon, Cork (*L.*), &c.

Zygæna pilosellæ, *Esp.*, v. *nubigena*.—This was first recorded by Mr. A. G. More, formerly Curator of the Museum of Science and Art, Dublin, from Castle Taylor demesne, Co. Galway. Mr. Birchall was of opinion that the type as well as the variety were found by him; the former at Sir J. Redington's demesne at Claring Bridge, and the latter at Kilcolgan and Ardrahan; but I believe it is now generally agreed that the Galway burnet as well as the Scottish insect should all be classed as the variety *nubigena*. It seems to be widely spread, but very local in the west of Co. Galway from Salthill, where it is abundant (*R. E. D.*) through the Barony of Dunkellin to the Co. Clare. The type is described by Zeller in the 'Isis' as frequenting open places among birch and fir woods. Guenée states that the v. *nubigena* frequents open fields among mountains, and not shady places as *minos*, from which it differs by the border of the hind wings, and especially by the internal angles, which are tipped with dark grey; by the red spots on the fore wing, which extend as far as the cellular bifurcation; and by the body being dark brownish black instead of blue. The following memoranda on the distribution of the insect in Great Britain may be of interest:—Cornwall ('Science Gossip,' xvii. p. 41, &c.); Abersoch on the north shore of Cardigan Bay (Entom. xxiii. p. 366). Two dark forms from Carnarvonshire were exhibited, by Mr. Jenner Weir, at a meeting of the Entomological Society. Dr. Buchanan White records it from Forfarshire and at Oban (Entom. ix. p. 142).

Zygæna trifolii, *Esp.*—Local and rare. Castle Taylor, Galway (*A. G. M.*); Armagh, one specimen (*J.*); Inishowen Head, Co. Donegal (*W. E. H.*); in some numbers in a meadow in Monaghan near Favour Royal, Tyrone.

Zygæna loniceræ, *Esp.*—Local and rare, but more abundant where found than the preceding. It was first captured by the Rev. W. F. Johnson at The Mullinures, near Armagh, in abundance, where was also taken one *Z. trifolii*. I also took a single specimen at Ballinskelligs Bay, Kerry, in 1888.

Zygæna filipendulæ, *L.*—"Everywhere, but most common on the eastern side of the island. It occurs on the same ground

as the v. *nubigena* of *pilosellæ*, but in comparatively small numbers" (*B.*). The Rev. W. F. Johnson has a remarkable aberration with both fore and hind wings very much rounded, and one of the central spots of right fore wing absent. A small race occurs at Belleisle, L. Erne, with small spots, often confluent as in vars. of *trifolii*.

SYNTOMIDÆ.

Naclia ancilla, *L.*—I possess one of two specimens taken in flight in an old oak woodland in Galway (*R. E. D.*). Its occurrence inland in such a locality is of the greatest interest as an addition to our indigenous fauna, especially in a portion of the ancient forest lands of a county which seems to have preserved more rare species, both of southern and northern origin, than any other in Ireland. There can be no doubt of the bona fides of the captor, who has been extraordinarily successful in working for five years in unexplored and little known localities.

(To be continued.)

NOTES AND OBSERVATIONS.

Epinephele hyperanthes.—I have in my cabinet a specimen of the lanceolate aberration of *E. hyperanthes*, described and figured from Mr. Frohawk's specimen in the 'Entomologist' for October (*ante*, p. 281). It is a female, and I netted it at Mullion in Cornwall, in August, 1889, having noticed its variation when settled. To show this I set the under side. The only difference from that figured is, that on the under surface of the fore wing there are three white-centred black spots in tawny rings instead of two; and on the upper surface, the tawny rings are almost obsolete, and the upper ocellus of the hind wing has no white centre.—W. S. Riding; Buckerell Lodge, near Honiton.

Additional Localities for Irish Lepidoptera.—The following localities have been overlooked by Mr. W. F. de V. Kane in his list of Irish Lepidoptera, now in course of publication in the 'Entomologist':—*Argynnis aglaia*, Castlerock, Co. Derry; *A. paphia*, Benburb, Co. Tyrone; Armagh; and recently (July) at Brown Hall, Ballintra, Co. Donegal. *Vanessa atalanta*, Armagh; *V. cardui*, Armagh. *Epinephele hyperanthus*, Armagh, not uncommon. *Cœnonympha typhon*, Churchill, Co. Armagh, and Ardara, Co. Donegal. *Thecla rubi*, Churchill, Co. Armagh. *Chœrocampa elpenor*, Armagh. *Smerinthus ocellatus*, Armagh. *Macroglossa stellatarum*, Armagh; and I received one last month from near Ballyshannon, Co. Donegal. *Trochilium crabroniformis* is mentioned as occurring at Armagh; I only took it at Castledermot. — W. F. Johnson; Armagh, Oct. 11, 1893.

The Butterflies of Corsica.—I am rejoiced to learn from Mr. Coleby's notes (*ante*, p. 298) that the families I believed to be unrepresented in Corsica *do*, nevertheless, put in a very limited claim for existence in the early part of the year. It awakened in my breast a strong desire to be there in March, April, and May, my own observations having been limited to the

month of June. But here I pause, because there is one circumstance which detracts seriously from the value of this gentleman's testimony, and which makes me hesitate before accepting him as an absolutely trustworthy guide. He is—to put it mildly—slightly inaccurate in his authorities. He states, for instance, that "Lang, in his 'Rhopalocera Europæ' (of which there is only one edition), gives *Erebia manto*, *Melanargia ines*, *Thais rumina*, *T. polyxena*, &c., as being found in Corsica." It will scarcely be credited, but Lang does not mention Corsica as a locality in connection with any one of the four insects named. He states, again, that Mr. W. F. Kirby, in his 'Manual of European Butterflies' (only one edition), names Corsica for *Doritis apollinus*, *Thais cerisyi*, *Syrichthus therapne*, *Hesperia nostrodamus*, *Erebia melas*, *Cœnonympha corinna*, &c. This statement is equally inaccurate, as far as *T. cerisyi* and *E. melas* are concerned; *S. sao* var. *therapne* and *C. corinna* are included in the list of my own captures. Mr. Kirby's authority for *D. apollinus* is Ochsenheimer, who puts it under the head of Sardinia, which country Mr. Kirby, for the sake of convenience, includes with Corsica. Mr. Coleby says:—"I have found two specimens of *E. melas*, but of these two I will not be certain"; as though one should say—"here is a peach for you, but perhaps it is only a gooseberry." His *Thais rumina* was not only "a battered specimen," but it was also "in very bad condition," as indeed battered specimens are wont to be. There is a downright honesty about these two avowals which commands my utmost respect. Is Mr. Coleby sure that he took *Lycæna bœtica* in Corsica? because Kirby gives *L. telicanus*, but not *bœtica;* and I took two undoubted specimens of the former. *Pieris chloridice*—a South Russian July insect—is not a very likely species to be taken in Corsica in March. If Mr. Coleby can establish this, it will be an interesting fact. As to "over eighty different sorts," I confess I am sceptical, even when such vars. as *aristeus* of *Satyrus semele*, *tigelius* of *Pararge megæra*, and *therapne* of *S. sao*, are thrown in as "sorts." At the same time, I am free to allow that my own estimate was under the mark; but then it did not pretend to be more than a guess, and I was not fortunate enough to have Mr. Kirby's excellent little 'Manual' at hand to refer to. Since my return, I have looked up the two doubtful *Lycænas*, mentioned in my paper. I have seen the coloured figure of Boisduval's *L. argus* var. *calliopis*, and it does not at all agree with the Blue that was so common at Tattone, which seems more likely to be the *L. ægon* var. *corsica* of Bellier de la Chavignerie, whose description exactly fits it; and what we took for a peculiar form of the female of *L. icarus*, is probably the *L. astrarche* var. *æstiva*, or southern summer form, of Staudinger.—R. S. Standen; 67, Earl's Court Square, S.W.

Boarmia repandata partially Double-brooded.—At the end of May last some ova of *Boarmia repandata* were sent to me from the South of Ireland. They began to hatch on 3rd of June, and for about a month the larvæ from them fed up without showing any material difference in relative size. Early in July some few of them began to exhibit a disposition to grow much faster than the others, and on 22nd two were preparing to pupate. At this time about one-half of the brood had developed this tendency of feeding up rapidly, and these all pupated about the middle of August, the moths from them emerging between the 10th of that month and 17th September. The other half of the brood showed no increase in size, and are now hybernating in, to all appearances, the same condition as they were in at the end of July. Mr. McArthur informs me that larvæ

from the same batch of ova, that have been under his care, behaved in a similar way.—Robt. Adkin; Lewisham, October, 1893.

Cannibalism in Cucullia verbasci Larvæ.—Rickmansworth, June 5th. *Verbascum lychnitis* here appears to have been used as an experiment by *Cucullia verbasci*. On the above date I collected some fifty larvæ, the majority being small. Notwithstanding the various substitutes, all London entomologists know the difficulty in procuring food for these larvæ. It so happened in my case through scarcity of food, the larger larvæ fell upon the smaller and devoured them, the head being the only portion left. I believe there are other larvæ which indulge in this apparently inexcusable practice. This is the first occurrence in my recollection of *C. verbasci* larvæ having evinced themselves cannibals.—H. W. Bell-Marley; Hammersmith, W.

[The larvæ of several species of Lepidoptera are known to be cannibals, and possibly many others become so in confinement, when the supply of vegetable food is inadequate in quantity or unsuitable in kind.—Ed.]

Sugar and Indoor-light.—I have tried sugaring, up to date, on three nights, *viz.*, September 3rd, 4th, and 15th. On the first occasion, I got no results; on the 4th, I took three moths, which I have not yet made out. One of these last was found on a stone, and the other two on the trunk of a pear tree near our house. They were all Noctuæ. On the 15th inst., I visited the sugar several times during the night; for the last time, at 12.50 a.m., and there were no moths. Here, in the mountains, at nearly 4000 feet elevation, sugaring is sometimes attended with difficulties, as there is often a strong wind blowing, which makes it difficult to carry the lantern or lamp from place to place, when visiting the patches. The recipe for my mixture, taken from a German work, which may be of interest, is as follows:—Beer and honey, in the proportion of two-thirds of the former to one-third of the latter, add a few drops of rum, and bottle the whole. The day before using, shake the mixture well and warm before the fire. I should add, that the honey used for my composition was of the best native kind, corresponding to the "Californian honey," as it is called; whereas the coarsest quality is always preferable, being of a thicker consistency, and less liable to waste through soaking into the trees and stones (the latter if porous or limestone) on which it is spread. Trees having a smooth, tough bark seem preferable to those having soft ones. Indoor-light, in this wholly unexplored locality, on the other hand, has been fairly productive up to the present. I have "mothed" in a room facing south, and overlooking a rocky, fertile plain of great extent, on five occasions, *viz.*:—August 8th (when I captured 33 specimens); on 16th, up to 1 a.m. (28 moths); September 2nd, there was a half-moon up to about 10.30 p.m. (17 examples); 4th (30 moths); 15th, staying up to 2.45 a.m. (21 moths, including a specimen of the beautiful and rare *Agrotis constanti*, Mill.). On this last occasion the night was warm and still, the thermometer registering 69° Fahr. As regards the rest of my captures (among which I anticipate some rarities), which have not yet been identified, I hope perhaps to send an account later.—F. Bromilow; Caussols, Alpes-Maritimes, France, Sept. 19, 1893.

Autumnal emergence of Argynnis paphia.—The excessively dry and hot weather of the past season has brought about some remarkable incidents in the emergence of certain species of Diurni which have come under my

notice. I think one of the most exceptional cases is that of a second emergence of *A. paphia* which I have succeeded in rearing this autumn. This species was fully a month earlier on the wing this year in the New Forest, and I obtained a number of ova from the var. *valezina* which were deposited during the last week of June; they hatched about the end of the first week in July; the majority of the larvæ entered into hybernation immediately after their exit from the egg, which is the usual habit of the species. Upon examining the plants of *Viola canina* in the middle of August, I was very surprised to find four *paphia* larvæ in three different stages, *viz.*, after the second, third and fourth moults; and on the 27th Aug. I found another in the third moult. The first one pupated on the 1st September, and produced a fine female on the 18th Sept.; the last of the five pupated on the 13th Sept., producing a male on the 15th of this month, the other three emerging as follows: a male 21st Sept., another male on the 24th, and a rich specimen of the var. *valezina* on the 8th October. On Sept. 20th I noticed two more larvæ feeding, which were then after their second moult and are now fully grown.—F. W. Frohawk; Balham, S.W., Oct. 18.

Noctuæ and Flowering Grass.—With reference to Mr. G. O. Day's note (Entom. 229), I can endorse his remarks as to the remarkable attractiveness to insects of the species of grass referred to. In the past two seasons, on Wimbledon Common, I have regularly worked this grass while it is in flower, which is during the latter part of August and the whole of September, and have always found it more profitable than sugar. I do not think the attractive power is due to honeydew; insects are only attracted to it during the period of inflorescence, and cease coming directly that is over. They are quite as stupified as at the sallow or ivy blossoms. The genus *Xanthia* seems especially fond of it; I have sometimes seen hundreds of *fulvago* and *flavago*, and have also taken, more or less commonly, *Tapinostola fulva*, *Hydræcia micacea*, *Noctua glareosa*, the genus *Anchocelis*, and most of the usual autumnal Noctuæ and some Geometræ. The grass is also extremely attractive to gnats: I have frequently seen dozens on every flowering spike.—E. H. Taylor; 52, Mimosa Street, Fulham, Oct. 18, 1892.

Variety of Polyommatus phlœas.—At Eastbourne, during the third week in September, I captured a variety of this butterfly, which has the left fore wing almost quite white.—W. Harcourt Bath; 195, Ladywood Road, Birmingham.

CAPTURES AND FIELD REPORTS.

Colias in Britain, 1893:—

Berkshire.—One *C. hyale*, May 7th (*ante*, p. 200).

Cambridgeshire.—One example of *C. edusa*, Aug. 18th (*ante*, p. 276).

My friend, Mr. J. English, captured a female specimen of *C. hyale* on August 13th, which deposited a number of ova, but these proved infertile. I saw a male *C. edusa* on September 3rd, but was unable to capture it.—H. Fleet; 15, Halifax Road, Cambridge, Sept. 14, 1893.

Cornwall.—One example of *C. edusa* seen on April 5th, and another on 8th of the same month (*ante*, p. 162).

About 4.30 p.m. on Sept. 1st I took three males of *C. edusa*, in fresh condition, at rest on a hedge near Penzance. The day was beautifully

sunny, but though I had passed along the same road about 11 a.m., and had been working for insects during the day, I had seen no others of the same species. The next day, however, on my journey to London, I saw three or four while passing through Cornwall.—B. W. Adkin; Morden Hill, Lewisham, S.E., Sept. 16, 1893.

On Aug. 1st, near Penzance, not far from the coast, I took a rather large male *C. edusa* in very fair condition.—W. J. Lucas; Cumberland Villa, Gordon Road, Kingston-on-Thames, October 9, 1893.

Devonshire.—At Budleigh Salterton, S. Devon, during the last week in July, I saw two *C. edusa*, the first on the 24th, and the other on the 30th. No more were observed from that time until August 14th, from which day, until my departure on the 19th, several (nearly a score) *C. edusa* occurred, but only on an extensive piece of marsh-land adjoining the town, whereas last year they were distributed throughout the whole neighbourhood. *Vanessa atalanta* I found very common, *V. io* and *V. urticæ* being rather scarce, whilst a single specimen each of *V. polychloros* and *V. cardui* was also taken.—Herbert F. Hunt; 14, Thistlewaite Road, Sept. 11, 1893.

Though I have been unable to do much practical work this season, yet I have had time to notice the abundance here of *C. edusa*, and a short comparison between the seasons 1892 and 1893 may be interesting to your readers. They are almost, if not quite, as plentiful as last year, and seem to be everywhere, in gardens, lanes, clover-fields, and especially along the sea coast. Last year, out of over 400 specimens I netted, there was a considerable majority of females in this district, but this year males are by far the more abundant. I have only noticed one variety *helice* this season, in contrast with over a dozen I took last year and more than a dozen missed. Up to the time of writing (October 12th) they are still abundant, and most are in beautiful condition. Last year the last one I saw was on Nov. 10th. As regards their first appearance, both in '92 and '93 I saw the first newly emerged ones during the third week in July. I have also noticed less variety among them this year, though this may be partly accounted for by the fact that I have not had so much time for observation. —(Rev.) W. R. S. Majendie; Sid House, Sidmouth.

Dorsetshire.—*C. edusa* abundant during last two weeks of August (*ante*, p. 302).

On August 28th, at Swanage, *C. edusa* swarmed in one place, and I saw one specimen of *C. hyale*, but failed to capture it.—F. W. Freir; Elm House, Walthamstow, Essex, Oct. 4, 1893.

I left Weymouth at the end of August, and at that time *C. edusa* was just beginning to appear, with indications that it was likely to be fairly plentiful. Last year it was in full swing in the same place by the end of July.—(Rev.) W. Claxton; Hartley Wintney, Winchfield.

C. edusa common here this year; I took my first specimen on June 29th.—E. G. Wanhill; Poole, Dorset, Oct. 11, 1893.

On June 30th *C. edusa* was on the wing in profusion upon the downs at Swanage.—J. A. Mackonochie; The Hirsel, Coldstream, N.B., Oct. 20.

On the 16th Aug. we saw several *C. edusa* at Swanage, of which we secured one, a fine male, measuring just over two inches across. We also secured some fine specimens of *H. actæon* on the same day.—George E. Bergman; 29, Priory Road, Kilburn, N.W., Sept. 3, 1893.

[Other captures of *C. edusa* in Dorsetshire will be found on p. 323].

Gloucestershire. — One example of *C. edusa* seen April 28th (*ante*, p. 222).

Hants.—I saw a very fine male *C. edusa* yesterday in a clover-field near this house, the only specimen I have seen up to the present date. — Capt. S. G. Reid; Froyle House, Alton, Hants, Sept. 6, 1893.

On Aug. 8th we saw a *C. edusa* on the cliff at Hordle, near Milford-on-Sea. On the 17th we saw another near Yarmouth, Isle of Wight.—George E. Bergman; 29, Priory Road, Kilburn, N.W., Sept. 3, 1893.

Hants and Dorset.—During a fortnight (Aug. 22nd to Sept. 5th) spent on the borders of Dorset and Hampshire, I observed six specimens of *C. edusa*. As far as I can judge of the locality, three of these were observed in Dorset (Wimborne district), and three in Hampshire (Bournemouth district). Lepidoptera generally seemed to be remarkably scarce, with the exception of *Chrysophanus phlœas*.—Harold Hodge; 2, Essex Court, Temple, Oct. 16, 1893.

Isle of Wight.—Several specimens of *C. edusa* seen May 11th (*ante*, p. 198).

Kent.—One *C. hyale* captured May 22nd (*ante*, p. 223); several *C. edusa* seen near Dover between April 18th and 23rd (*ante*, p. 198).

On Wednesday, Sept. 6th, I captured a male *C. edusa*, and saw another near Folkestone; and on the 9th my friend Mr. Hills, of that town, caught a fine female of the same species. We only saw these three examples during the fortnight I was there. I also took one *V. cardui* in splendid condition, and this was the only specimen I saw, neither could I hear of any other having been seen.—W. E. Butler; Hayling House, Reading, Sept. 15, 1893.

I captured a specimen of *C. hyale* on the downs at Dover on Aug. 13th, but I did not see even one example of *C. edusa* during the fortnight I spent at Dover.—W. J. Kaye; Worcester Court, Worcester Park, Surrey, Oct. 21.

Middlesex.—Three specimens of *C. edusa* captured on April 2nd (*ante*, p. 252).

Somersetshire.—On the 16th of August last, when in the train, riding from Crewkerne to Chard, I saw thirteen *C. edusa* on the railway bank; but although I several times looked for the same species next day, when on my way to Plymouth, I did not catch sight of any. I may mention that near Worthing, in Sussex, where hundreds could have readily been caught last year, not one put in an appearance, at least all through August.—Hugh E. Hopkins; 153, Camden Grove North, Peckham, S.E., Oct. 19.

During a three weeks' stay at Shepton Montague, near Castle Cary, Somerset, I caught twenty-five male specimens of *C. edusa*. As to females, I believe there were none, though I saw many more butterflies than I captured. Except two, all were caught close to the railway, between August 25th and September 14th, inclusive. One specimen slightly varied; the spot is very small, and has the *edusa* yellow in the middle of it. Does this spot ever disappear altogether? *Vanessa atalanta* and *Macroglossa stellatarum* were common. I caught two hybernated specimens of *V. io* at St. Bee's, Cumberland (not Lancashire) The days on which *C. edusa* were captured were:—August 25th, 1; 29th, 2. September 3rd, 1; 4th, 3; 5th, 2; 6th, 3; 9th, 2; 11th, 2; 12th, 5; 13th, 3; 14th, 1. Total, 25.—John Webster; Barony House, St. Bees, Carnforth, August 20, 1893.

South Wales.—In reply to Mr. Anderson's note (Entom. 276), I am pleased to say that *C. edusa* turned up here again this year in fair numbers. I have taken between thirty and forty specimens, and seen three or four times as many more, but hitherto have taken only one var. *helice*. In the

spring but one or two hybernated specimens were to be seen. On June 29th I took the first freshly emerged insects, two females and six males (one with the wings not yet fully expanded); after that they were by no means scarce up to the first week in August, when they seemed to vanish for a time, but within the last fortnight or so are again putting in an appearance in fine condition. No *C. hyale* have been seen here this year. —Spotswood Graves; 29, Victoria Street, Tenby, Sept. 17th.

I noticed four specimens of *C. edusa* near the sea coast on Aug. 29th last.—T. B. Jefferys; Laugharne, Carmarthenshire.

C. edusa, chiefly males, was fairly abundant during September at Tenby. I did not take the var. *helice*, but was told that two or three had been taken.—Edgar J. Meyrule; Durham.

Sussex.—Two examples of *C. hyale* captured and one missed on Aug. 4th, and one taken on Aug. 16th. No *C. edusa* observed up to last date (*ante*, p. 276).

On Sept. 5th I took a male *C. edusa* on the downs near Brighton, and on the 9th saw two more at Falmer, on the Lewes road.—H. F. Hunt; 14, Thistlewaite Road, Clapton, N.E., Sept. 11, 1893.

On the 5th of this month, when I was on the downs near Brighton, a butterfly flew over my head as I was approaching the top of a hill; on looking back I saw it was *C. edusa* and chased it, but without success. When sitting in Steyne Gardens, Brighton, on the 13th, I was told by a friend that a yellow butterfly had just settled on a flower-bed opposite; I watched the spot, and soon a *C. edusa* rose and continued flying about the geraniums and lobelias. I went quite close to it, but did not attempt to catch it; it was a male.—D. P. Turner; 14, Havelock Road, Tonbridge, Sept. 15, 1893.

I saw a fine specimen of *C. edusa* on Beechy Head, Aug. 29th last, but it flew over the cliff before I could catch it.—H. W. Shepheard-Walwyn; Bidborough, near Tunbridge Wells, Sept. 15, 1893.

I saw a male specimen of *C. edusa* on Aug. 30th, the first I have seen this summer; yet last year, this time, they were swarming here.—L. S. Giles; 72, North Street, Chichester, Sept. 2, 1893.

Random Notes.—*Hesperia actæon* was, I suppose, like everything else, a month earlier than usual, for when I got to Weymouth, at the end of July, there were only a few worn males to be seen. I left at the end of August. I took nothing worth mentioning at Weymouth, except a beautiful form of *Bryophila glandifera*, of a uniform olive-green tint on the fore wings, markings faintly indicated by white lines, with hardly a trace of black; hind wings normal. But as I took this in a railway carriage, while journeying between Upwey and Weymouth, the locality is a little uncertain. Is it possible that *Cerura furcula* is double-brooded? Newman gives July for the larva; Stainton gives September; whilst last year a larva in process of moulting for the first time was sent me by Miss Chasoner from the New Forest in October, which pupated late in November, and, kept indoors, produced the moth on May 22nd; and this year a nearly full-grown larva arrived from the same place on October 3rd. The season here, Hartley Wintney, has been very poor, so far as sugaring goes. I got two *Dipterygia pinastri* on May 22nd and 24th, but no more afterwards, though this is a common insect with us; and one black *Apamea oculea*. Usually, however, there was nothing on the trees at all. By day, I can never do much; but I noted that *Vanessa polychloros* began to emerge on June 18th, and there-

after was rather abundant; whilst *Sphinx ligustri* also was unusually plentiful, the first specimen occurring on May 26th. *Argynnis paphia*, *A. adippe*, and *A. selene* were all much worn, and practically over, by the end of June. —(Rev.) W. Claxton; Hartley Wintney, Winchfield.

Rhopalocera in 1893.—Third broods of the following butterflies have appeared this season in the midlands, namely, *Pieris brassicæ*, *P. rapæ*, *P. napi*, *Polyommatus phlœas*, and *Cœnonympha pamphilus* (partial); and in the South of England I may add, *Lycæna astrarche* (partial), *L. icarus* (partial), and *Pararge megæra*, all of which usually only possess two flights in this country. Possibly *P. egeria* and a few others may also have been three-brooded during the past season, but I can only personally answer for those named.—W. Harcourt Bath; 195, Ladywood Road, Birmingham.

Lepidoptera in London.—During the summer I observed the following species in a garden at Highbury:—*Vanessa atalanta*, *V. urticæ*, *Chrysophanus phlœas*, *Pieris brassicæ*, *P. rapæ*, *Macroglossa stellatarum*, *Catocala nupta*, *Uropteryx sambucata*, and many of the commoner Noctuæ. —Harold Hodge; 2, Essex Court, Temple, Oct. 16, 1893.

Lepidoptera at Tenby.—I was at Tenby during the first three weeks of September. *Vanessa atalanta* was very common; I did not observe many *V. urticæ*, and not a single *V. cardui* or *V. io*. *Polyommatus phlœas* swarmed. There were a considerable number of *Macroglossa stellatarum;* and I heard of several *Sphinx convolvuli* having been captured.—Edgar J. Meynell; Durham.

Notes from Dorsetshire.—*Macroglossa stellatarum* very numerous on geranium beds (have taken about 30). Sugaring rather disappointing. Ivy good, so far; amongst others I have taken two *Epunda nigra* on it. *Vanessa io* and *V. cardui* very scarce.—E. G. Wanhill; Poole, Dorset, Oct. 11, 1893.

Notes from North Staffordshire.—A female *Vanessa c-album* was taken in the Vicarage orchard on September 17th; I heard also of one or two being taken at Market Drayton by Mr. Woodforde, and one or two at Haughton Rectory near Stafford. *V. atalanta* has been very plentiful this autumn in the whole district, as also has *Polyommatus phlœas; V. io* has been fairly abundant, but *V. cardui* has again been altogether wanting; nor have I heard of any appearance of *Colias edusa* this year. *Macroglossa stellatarum* has been recorded from Cheadle, but I have not observed it myself at Madeley.—(Rev.) Thos. W. Daltry; Madeley Vicarage, Staffs.

Captures of Lepidoptera during 1893.—My season practically commenced on February 19th, when a visit to Richmond Park produced *Nyssia hispidaria* in sparing numbers, with *Phigalia pilosaria* in fair plenty, and *Hybernia leucophœaria* in large numbers; two *Cheimatobia brumata* in good condition were also taken. The weather was very fine and warm, and I noticed the first *Bombus* of the season. On March 4th, in Epping Forest, the take included *P. pilosaria*, *H. æscularia*, and *H. leucophœaria*. On March 6th, *H. progemmaria* emerged, and was afterwards very plentiful. On March 21st, one *Tæniocampa instabilis* was taken on a lamp-post at Buckhurst Hill. On Easter Sunday I was in Paris, and caught *Hipparchia* [*Pararge*] *egeria* in the Bois de Boulogne. On April 6th, I captured *Biston hirtaria* on a fence in Walthamstow. The 16th of April was fine and warm, and I observed hybernated specimens of *V. polychloros* and

V. urticæ in Epping Forest, whilst the "whites" occurred in abundance; one *G. rhamni* was seen. On April 22nd, I saw *Polyommatus phlæas* flying in the afternoon at Leppitts Hill, High Beech. A week later, in the northern parts of Epping Forest, *Hesperia tages* and *H. malvæ* occurred in plenty; whilst one *M. euphrosyne* was seen, but not captured. *Eupithecia abbreviata* appeared on April 30th. After this date captures came thick and fast, and consequently only the best can be recorded here. On May 7th, I obtained seventy larvæ of *Cidaria dotata* feeding on *red* currant, and can confirm the late Mr. Doubleday's statement, that in this district they are not found on black currant. This insect I breed in plenty every season, and it is extremely easily reared, every caterpillar turning in time to the imago. On May 8th, I took one *Eucosmia certata*, last year having obtained twelve in one evening. On May 20th, at Brockenhurst, my captures included a number of *Argynnis selene*, *P. egeria* (in splendid condition), *Nemeobius lucina*, *Bapta temerata*, *Dasychira pudibunda*, &c. On May 21st, *Thecla rubi* were taken, but proved to be very battered specimens; *Gonopteryx rhamni* was extremely common, but much damaged. Other captures were *Tanagra chærophyllata*, in great numbers and perfect condition; *Iodis lactearia*, some of them beautifully green coloured; *Euclidia mi*, &c. Larvæ of *V. polychloros* were common, and in all stages of growth, from just hatched to full-fed. On May 22nd, still at Brockenhurst, I captured two more *N. lucina*; *Euchelia jacobææ* were just emerging in the prime of condition; countless *Fidonia* [*Bupalus*] *piniaria* roamed in the pine woods, all males so far as my captures were concerned. Larva-beating produced many *Cymatophora* [*Asphalia*] *ridens*; and countless thousands of *Tæniocampa instabilis* and *T. stabilis*. Treacling was said to be a failure, although I did not try it personally. On May 27th, in Epping Forest, my captures included *Ephyra punctaria*, *Selenia lunaria*, and *Euclidia glyphica*. A friend took *Eurymene dolobraria* on the trunk of a beech tree. On June 1st, at Symonds Yat in Monmouthshire, *Abraxas ulmata* was very common. On June 9th, my father took a dozen *Lycæna alsus* at Swanage. On June 11th, in company with my father, we proceeded to Brockenhurst, and even at that early date our captures included six dozen *Limenitis sibylla* in the most perfect condition; *Argynnis paphia* swarmed in myriads in grand condition; *A. adippe* was in very good condition, and fairly numerous. I never remember to have seen such swarms of butterflies before as on this day; every step sent hosts of insects flying, and it was difficult to follow any one insect, owing to its becoming lost amidst the general swarm. On June 18th I captured *A. aglaia* on the slopes of Cadir Idris, N. Wales; and on the actual top of the mountain I observed this insect and *Vanessa urticæ*, the former species being on the stone cairns at the summit. The heat was very intense, with a calm air, and shade temperature above 90°. Our party suffered severely from the heat, and several narrowly escaped sunstroke. This was the hottest day of the whole year in that part of Wales. On June 30th, I treacled in Epping Forest, and found insects more attracted than they have been for years past; *G.* [*Thyatira*] *derasa* and *G.* [*T.*] *batis* swarmed. On July 9th, *Sesia myopiformis* was captured at Chapel End, Walthamstow. On August 6th, I went to Brockenhurst, and found everything over, and a remarkable scarcity of insects of any kind, save hornets and wasps, which were a perfect nuisance. The treacle at night attracted more hornets than moths, and only a very few ragged *C. sponsa* and *A. pyramidea* came to the bait. In the daytime scarcely any butterflies about, and none worth taking. On August 26th, I obtained chrysalides of *Papilio machaon* in Norfolk.

On August 28th, at Swanage, *P. phlœas* was extremely plentiful, and very red in colour. On August 31st, at Yarmouth, I.W., *V. atalanta* was more plentiful than I have ever observed before, and I secured a dozen magnificent specimens. They were very fond of settling in the midst of a dense jungle of brambles, an almost inaccessible place. On September 2nd, I took *Ennomos tiliaria* at Bournemouth, on the gas-lamps. On September 10th, there were still some dozens of *P. phlœas* in our garden, they having been there for some months. Not for the last eight years has there been so many of this interesting insect in this district as during this last tropical summer. On the whole, the past season has been the best by a long way since 1884. Whenever I tried treacle, the Noctuæ came in large numbers; and although quality was never allotted to my patches, I am more satisfied than ever with its attractive powers. My best evening occurred with a warm torrential downpour of rain, which damped my skin, but not my ardour.—F. W. Freir; Elm House, Walthamstow, Essex, Oct. 4, 1893.

Polyommatus (Lampides) bœtica at Hastings.—A beautiful specimen of this rare butterfly was captured at Hastings, during the third week in September, by a boy about ten years of age.—W. Harcourt Bath.

Catocala sponsa in S.W. London.—On the 18th September, a friend of my brother took a specimen of *Catocala sponsa* in the Earl's Court Road. He saw it flying past, and struck at it with his hat. The insect, which I now have, was rather spoilt by the blow it received, otherwise it appears to be in fairly good condition.—A. H. Locock; 26, Courtfield Gardens, S.W.

[Probably an escape; but the 18th of September is a very late date for *C. sponsa*.—Ed.]

Cosmia paleacea (Euperia fulvago) in Sherwood Forest.—This year, again, has been a good one for the above species. I began on the 29th of August, rather later than last year, my companion, as last year, being the Rev. W. Beecher, of Wellow. Putting up at Edwinstowe, we sugared over the old track, also trying a fresh ground, and were agreeably surprised to see *C. paleacea* in considerable numbers, two and three being on one tree, and all were in excellent condition, evidently just out. We also took *Epunda nigra*, and many others.—W. Ferris; St. Matthew's Vicarage, Nottingham.

Macroglossa stellatarum at Bournemouth.—This species has been unusually abundant here during the last two months, and is in fair condition at present date.—W. McRae; The Devonshire, Bournemouth.—October 23, 1893.

Leucania extranea and L. vitellina.—During a somewhat prolonged visit to the Isles of Scilly this year, I had the good fortune to take two specimens of *L. vitellina* and one of *L. extranea* in good condition. They were all taken at sugar during the first week of September.—B. W. Adkin; Morden Hill, Lewisham, S.E.

Vanessidæ in Lancashire, 1893.—*Vanessa atalanta* and *V. urticæ* have been exceedingly abundant this year in Lancashire, especially the first named. *V. cardui*, on the other hand, has been very scarce, as I have only seen one specimen, whereas last year it was common.—Lionel Stones; Northwood, Seymour Grove, Old Trafford, near Manchester.

SOCIETIES.

Entomological Society of London.—*October 4th*, 1893.—Henry John Elwes, Esq., F.L.S., F.Z.S., President, in the chair. Mr. Arthur Ernest Gibbs, F.L.S., of The Hollies, St. Albans, was elected a Fellow of the Society. Mr. F. Merrifield exhibited specimens showing the effects of temperature in the pupal stage on several species of Lepidoptera. *Vanessa polychloros* was much darkened, especially towards the hinder margin, by a low temperature. *Vanessa c-album* showed effects on both sides, especially in the female; they were striking on the under side. Several examples of the striking effect produced by temperature on the summer emergence (*prorsa*) of *Araschnia levana* were exhibited. Some *Vanessa io* showed the gradual disintegration, by exposure to a low temperature, of the ocellus on the fore wing, which in the extreme specimens ceased to be an ocellus, and was a remarkable confirmation of Dr. Dixey's views of the origin of that ocellus, as exemplified in the plate attached to his paper in the Entomological Society's Transactions for 1890. Mr. Goss stated that in his experience of *V. c-album* in Northamptonshire, Gloucestershire, Herefordshire, and Monmouthshire, the form with the pale under side was the first brood, occurring in June and July; and that the second brood, occurring from the end of July to October, was invariably dark on the under side. Mr. Jacoby, Mr. Merrifield, and the President continued the discussion. Mr. A. H. Jones exhibited Lepidoptera collected in Corsica in June last, including forms of *Polyommatus phlœas* (Vizzavona); *Lycæna astrarche*, in which the orange marginal band is very brilliant on upper and under sides of both wings (Vizzavona); *Lycæna argus*, the females of which are much suffused with blue, probably var. *calliopis;* a series of *Vanessa urticæ* var. *ichnusa*, bred from larvæ found at Vizzavona (4000 feet); *Argynnis elisa*, *Satyrus semele* var. *aristæus*, *Satyrus neomyris*, *Cœnonympha corinna*, both spring and summer brood (Vizzavona); *Syrichthus sao* var. *therapne*, and many others. Mr. G. C. Champion exhibited, for Mr. G. A. J. Rothney, a number of *Methoca ichneumonoides*, Latr. (female), taken at Bexhill, Sussex, showing great variation from the usual large black and red form to a small and nearly black one. Dr. D. Sharp exhibited a pupa of *Galleria melonella*, on which the eggs of a parasitic Hymenopteron, as he believed, had been deposited while the insect was in the cocoon. He also exhibited, from the collection of Alexander Fry, Esq., the hitherto unique *Aprostoma planifrons*, Westw. The genus was correctly assigned by Westwood to the *Colydiidæ*, though described as a Brenthid. Mr. J. J. Walker exhibited the following species of *Halobates*, viz.:—*H. sericeus*, Esch., from the Pacific; *H. sobrinus*, B. White, from Marquesas Islands; *H. wüllerstorffi*, Esch., from Marquesas Islands; *H. princeps*, White, from the China Sea; and a female of *H. wüllerstorffi*, with ova attached. Mr. W. H. B. Fletcher showed a variable series of seventy-five *Cymatophora or*, bred in 1893 from larvæ from Sutherland, a series of about forty *C. ocularis* bred-in from stock from Oundle. Also a series of thirty-three moths, all females, supposed to be hybrids between *C. ocularis* male and *C. or* female, from the above stock in each case, bred as a second brood in August and September, 1893. He stated that he placed the reputed parents in a muslin sleeve on a branch of *Populus nigra*, and did not open the sleeve until the resulting larvæ required fresh food. To the best of his belief the female parent had

no chance of pairing with a male of her own species. The supposed hybrids resembled the female parent, except that both orbicular and reniform stigmata were very conspicuous, being pure white filled up slightly with black, whereas in *C. or* they are usually inconspicuous and the orbicular are sometimes wanting. None of the *C. or* bred had the stigmata developed so fully as had the hybrids, which were most uniform in this respect. Mr. F. J. Hanbury exhibited a specimen of *Leucania vitellina*, taken at Brockenhurst on August 24th, 1893, by Mrs. Hanbury, and another taken by himself at Freshwater, Isle of Wight, on September 7th; also an extraordinary *Gonepteryx rhamni*, showing red blotches at the tips of the fore wings, taken by a gardener at Walthamstow, Essex. Mr. C. G. Barrett exhibited a gynandrous *Argynnis paphia* recently taken in the New Forest by Mr. Cardew. Mr. J. M. Adye exhibited a specimen of *Deilophila livornica* recently caught at Christchurch, Hants. Mr. Elwes exhibited and described two species of the genus *Œneis* (*Chionobas*, Bdv.), *Œ. beani* and *Œ. alberta*, from North America, which had not been previously described, and stated that he had prepared, with Mr. Edwards's assistance, a revision of this very difficult genus, which would be read at the November meeting. Mr. Osbert Salvin communicated a paper entitled "Description of a new genus and species (*Baronia brevicornis*) of *Papilionidæ* from Mexico," and exhibited both sexes. Dr. Sharp read a paper entitled "On the Cost and Value of Insect Collections." Mr. W. F. H. Blandford, Mr. McLachlan, Mr. Jacoby, Mr. Waterhouse, and the President took part in the discussion which ensued. Professor Auguste Forel communicated a paper entitled "Formicides de l'Antille St. Vincent, récoltées par Mons. H. H. Smith." Mr. W. F. H. Blandford read a paper entitled "Description of a New Subfamily of the *Scolytidæ*." The President, Mr. Jacoby, and Mr. Waterhouse took part in the discussion which ensued.

October 18th.—Henry John Elwes, Esq., F.L.S., F.Z.S., President, in the chair. Professor C. H. Tyler Townsend, of the Institute of Jamaica, Kingston, Jamaica, was elected a Fellow of the Society. Mr. R. Adkin exhibited two *Leucania vitellina* and one *L. extranea*, taken by Mr. B. W. Adkin in the Scilly Islands, in August, 1893. Mr. R. South exhibited a specimen of *Polyommatus bœticus*, and a number of varieties of *Chrysophanus phlæas*, captured in Kent, in September last, by Mr. Sabine; also a curious variety of *Argynnis euphrosyne*, taken in Lancashire in May, 1893, by Mr. T. Baynes; a pallid variety of *Vanessa urticæ*, taken by Mr. W. E. Cox in Monmouthshire, in July, 1893; and a *Triphæna pronuba*, the right wings of which were typical, and the left wings resembled the variety *innuba*, caught at sugar, in Dovedale, Derbyshire, by Mr. Blagg, in July, 1893. Mr. G. H. Verrall exhibited a specimen of the Tsetse (*Glossina morsitans*), and also one of the common European allied species (*Stomoxys calcitrans*). He also exhibited a specimen of *Hæmatobia serrata*, Dsv., which he stated was not uncommon on cattle in England, but believed to be harmless; while in North America the dreaded "horn-fly" is said to be the same species. Mr. Elwes exhibited a larva which he had found three days previously under stones on a moraine, apparently quite destitute of vegetation, in the Austrian Tyrol, at an elevation of about 7000 ft. He remarked on the number of Alpine butterflies, some of them in fresh

condition, which he had seen whilst chamois-hunting in the Tyrol during the last week, and he suggested that in such a fine autumn as the present one collectors might find more novelties among the larvæ of Alpine species than in the summer. Colonel Swinhoe read a paper entitled "A list of the Lepidoptera of the Khasia Hills" (Pt. 2). Mr. Elwes said he thought all entomologists would be grateful to Colonel Swinhoe, Mr. Hampson, Mr. Meyrick and others, for the work they had recently been doing in describing the moths of India; but as the district of the Khasia Hills was probably richer in species than any other part of India, except Sikkim, and new species were being received almost daily, it was impossible to make any list complete. Mr. Jacoby, Mr. McLachlan, Mr. Jenner Weir, and Colonel Swinhoe continued the discussion. Mr. E. Meyrick communicated a paper entitled "On a Collection of Lepidoptera from Upper Burma." The author stated that the species enumerated in the paper were collected by Surgeon-Captain Manders whilst on active service in the Shan States and their neighbourhood, shortly after the British annexation of the territory. A discussion followed, in which the President, Surgeon-Captain Manders, and Colonel Swinhoe took part.—H. Goss, *Hon. Secretary.*

South London Entomological and Natural History Society.—*September 28th*, 1893.—Mr. J. Jenner Weir, F.L.S., President, in the chair. Mr. South exhibited, on behalf of Mr. Sabine, an example of *Lycæna bœtica*, L.; some fine varieties of *Polyommatus phlœas*, L., from Dartford, one being intermediate between the type and the var. *schmidtii*, some of the others being rather curiously marked on the under surface. Mr. Frohawk exhibited two boxes of *Polyommatus phlœas*, L., from Balham, &c., showing great variation in size and markings, two approaching the var. *schmidtii*, and two without copper bands on the secondaries; also a living pupa of *Argynnis paphia*, L., and a nearly full-grown larva of *Argynnis adippe*, L., these two latter exhibits being a result of the phenomenally fine and hot weather. Mr. Jäger showed six specimens of *Lycæna arion*, L., captured by Mr. Bignell in Cornwall last June. Mr. Fenn exhibited a series of *Dasycampa rubiginea*, Fb., bred Sept. 1893, from Devonshire; also long and variable series of *Acidalia aversata*, L., *Acronycta rumicis*, L., and interesting varieties of other species. Mr. J. H. Carpenter exhibited a second brood of *Argynnis euphrosyne*, L., the larvæ, after apparently commencing to hybernate, having rapidly fed up during August. Mr. R. Adkin exhibited a series of *Cymatophora duplaris*, L., taken in Sutherlandshire, they being very dark compared to the southern forms. A paper by Mr. Hawes was then read, "On the unusual abundance of *Polyommatus phlœas* in 1893," in which he reviewed the early appearance of this species in April, and its gradual numerical increase during the succeeding months, also noting some interesting points in its life-history, the paper being illustrated by the exhibition of two plants of *Rumex acetosa*, having thereon a number of ova laid in a state of nature, and a few recently-hatched larvæ.

October 12th.—The President in the chair. Mr. J. H. Carpenter exhibited long series of the white-spotted forms of *Argynnis paphia*, L., and a small form of the same species, all from the New Forest, Mr. Tutt remarking that this white-spotted form was frequently tinted with green, as in var. *valezina*, more especially the females. Mr. Frohawk exhibited

examples of *Vanessa cardui*, L., *V. atalanta*, L., *V. polychloros*, L., &c., being the largest he had bred and the smallest captured, the difference being very considerable. Mr. Barrett exhibited a gynandrous specimen of *Argynnis paphia*, L., taken in the New Forest, the left fore wing and about one-third of the left hind wing male, the remainder female; also, amongst others, the two broods of *Vanessa levana*, L., and *V. c-album*, L., lent by Mr. Merrifield, of Brighton, showing the seasonal dimorphism produced from the same batch of ova by means of artificial warmth and cold. Mr. South exhibited a specimen of *Orthotænia antiquana*, Hb., taken on 28th June, 1893, on a shop window in St. John's Wood; also long series of *Pyrausta purpuralis*, L., and *P. ostrinalis*, Hb., which he considered to be phytophagous forms of one species, many that he showed being intermediate and referable to either; a long discussion followed. Mr. B. W. Adkin, *Leucania vitellina*, Hb., and *L. extranea*, from the Scilly Isles. Mr. Auld, a specimen of *Vanessa atalanta*, L., having an orange band on one hind wing, and red on the other. Mr. Briggs, a bright blue female *Lycæna bellargus*, Rott. Mr. Dennis exhibited examples of a partial third brood of *Pararge megæra*, L. Mr. Turner showed three specimens of the Scotch form of *Arctia menthastri*, Esp. Mr. Adye, a specimen of *Deilephila livornica*, Esp., captured at Christchurch, 25th May, 1893. Mr. McArthur, a second brood of *Boarmia repandata*, L., from the South of Ireland. Mr. Jenner Weir exhibited specimens of the Tsetse Fly (*Glossina morsitans*), received from Dr. Percy Rendall, in the Transvaal; also a specimen of a *Depressaria*, taken by him more than thirty years ago near Lewes, probably *D. aurantiella*, Tutt, which differed from *D. badiella*, Hb., in possessing bright orange coloured palpi, these in the latter species being dark brown. Mr. Robert Adkin exhibited a series of *Cymatophora or*, Hb., bred from larvæ found feeding between united leaves of aspen in Sutherlandshire, together with representatives of the South English, Shetland, and Rannoch forms for comparison, calling attention to the variation existing between them. Mr. T. R. Billups exhibited a number of species of rare Diptera, taken at Oxshott and Dulwich, including, amongst others, *Helomyza pallida*, Fb., *Sciomyza dubia*, Mg., &c. Mr. C. Oldham exhibited *Xanthia circellaris*, Hufn., *X. gilvago*, Esp., *Anchocelis lunosa*, Haw., *A. litura*, &c., from Essex, Cambridgeshire, and Norfolk.—H. Williams, *Hon. Sec.*

Lancashire and Cheshire Entomological Society.—*October 9th.*—Mr. S. J. Capper, F.L.S., F.E.S., President, in the chair. The Rev. R. Freeman, 6, Station Road, Prescott, was elected a member of the Society. Dr. J. W. Ellis read an interesting letter from a correspondent in Grahamstown, South Africa, giving descriptions of the habits of some species of Coleoptera from that district, and an exciting account of a fight between two large specimens of *Circellium bacchus*. Dr. Ellis showed a large number of species illustrative of the letter he had received. Mr. Crabtree, *Hydrelia unca* from Ulverston; and *Arctia lubricipeda*, var. *radiata*. Mr. Scott, on behalf of Mr. H. S. Clark, of Douglas, a number of Lepidoptera from the Isle of Man. Mr. Gregson, fine series of *Abraxas grossulariata*, and banded forms of *Vanessa urticæ*, bred by him this year. The President, a grand series of *Boarmia roboraria*, including a pair of black forms from Coventry. Mr. Jones, a variable series of *Bombyx trifolii*. Mr. Sharp, examples of melanic Coleoptera, which he stated had been unusually plentiful this year, and that this fact went against the theory of damp

producing melanism. Mr. Harker, a specimen of *Dasypolia templi*, captured in the heart of Liverpool.—F. N. Pierce, *Hon. Sec.*

Birmingham Entomological Society.—*September 18th*, 1893.—Mr. R. C. Bradley in the chair. The following were exhibited:—By Mr. W. Harrison, a nest of *Bombus lapidarius*, from which he had bred males, females, and workers. By Mr. G. W. Wynn, a specimen of *Vanessa urticæ*, in which the usual yellow markings were replaced by white ones; the space between the black markings on the costa, and other parts of the ground colour, were also replaced by white. By Mr. R. C. Bradley, a small collection of Lepidoptera made at Weymouth this year, and including *Sesia ichneumoniformis*. By Mr. P. W. Abbott, a number of Noctuæ, taken at Sutton this year, including *Agrotis obelisca* and *Xanthia gilvago*, both new to the district. Mr. C. J. Wainwright read a paper on the local list of Lepidoptera, which he had written mainly in order to attract attention to those groups least represented in the list, in order that blanks might be filled up.

October 16th.—Mr. R. C. Bradley in the chair. Mr. G. W. Wynn showed some large Bombycidæ from N. America; also a few other insects, including *Hadena genistæ*, from Wyre Forest. Mr. R. C. Bradley read a paper describing the Society's excursion to the Cotswolds last Whitsuntide; he showed a number of his captures; and Messrs. A. H. Martineau, H. J. Sands, and C. J. Wainwright also showed theirs. The Diptera, Hymenoptera, and Lepidoptera were all well represented, the best captures being among the Diptera.—Colbran J. Wainwright, *Hon. Sec.*

Nottingham Entomological Society.—The annual meeting of this Society was held on October 2nd, in the Society's rooms, Morley House. The President, Mr. Pike, gave a short account of the past year's progress, and the business of the night began. Some few trifling alterations were made in the rules, and it was decided to ask some of the local entomologists to give the dates on which they could deliver papers. The election of officers for the ensuing year was then proceeded with, Mr. W. Allen kindly consenting to act as President; Vice-President, Mr. Pike; Treasurer, Mr. W. F. Smith; Secretary, Mr. Whitehall; Committee, Messrs. Richards, Harrison, Clarke and Marshall. A hearty vote of thanks was accorded to the retiring officers.—C. Whitehall, *Hon. Sec.*

Entomological Club.—*June 2nd*, 1893.—A meeting was held at Loanda, Beulah Hill, Norwood. Mr. S. Stevens in the chair. *October 5th.*—A meeting was held at Wellfield, Lingard's Road, Lewisham. Mr. R. Adkin in the chair. Among the exhibits were *Epinephele ianira*, *Leucania vitellina* and *L. extranea* from the Scilly Isles; *Acidalia humulata* from the Isle of Wight; *Boarmia repandata* bred August, 1893, from ova received from Glengarriff, Ireland, in the spring; also a collection of Lepidoptera from the last-named locality.—Richard South, *Hon. Sec.*

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THE COLOURING OF *CHRYSOPHANUS PHLŒAS* AS AFFECTED BY TEMPERATURE.

By F. Merrifield, F.E.S.

I have read with the interest that always attaches to Mr. Frohawk's contributions to entomological knowledge, his notes on this subject in the 'Entomologist' (*ante*, p. 294). I do not doubt that his personal observations are accurate, but think I can show that his notes, which he regards as "to a great extent adverse to Mr. Merrifield's views on the effects of temperature on the colouring of *C. phlœas* (Trans. Ent. Soc. 1893, Pt. I., p. 62)," are in fact entirely consistent with my recorded experimental results. It would be extraordinary to me if they were not so, for temperature *per se* must produce the same effects in a field as in a room, though in the open country it may often be difficult, and sometimes impossible, to prove or trace those results, because the means of observation there are necessarily so inferior in precision. My experimental results are not, in my opinion, capable of any other explanation than that an average temperature of from 80° to 90° during the pupal period, or the sensitive part of it, caused those appearances in the general colouring of *C. phlœas* which Mr. Frohawk correctly summarises in the words, "the copper-colouring dull and the black markings pale." Mr. Frohawk describes his specimens, captured on the 5th and 6th of September last, as of bright copper-colour with the black deep, and, as he assumes that their pupal period was passed while a high temperature prevailed, he infers that, if my views were correct, his captures ought to have corresponded with my high temperature forms. To establish the conclusion thus arrived at, it would be necessary to show that the "high temperature" to which the pupæ of Mr. Frohawk's captures were exposed was *as* high a

temperature as that which I found necessary to produce my high temperature forms, that is, 80° or upwards; and it is here that the argument fails. Mr. Frohawk says, "Considering the vast numbers I saw on the same piece of ground at the same time, all having evidently been bred close by, they must necessarily all have been subjected to high temperatures during their various stages, and especially while in the pupa, as the temperature, both day and night, remained so high for weeks previous to and at the time of emergence; many were in rich condition, having evidently only just emerged." As it is a question of "my views," I need not concern myself about the stages anterior to the pupal stage, because my views, as recorded, are that it is in the pupal stage, and more especially in a rather late portion of it, that the general colouring of *C. phlæas* is affected by temperature, It is quite true that the summer was a remarkably hot one, but a conclusion that therefore the summer pupæ of 1893 were exposed for all or even the greater part of their pupal existence to a temperature averaging 80° to 90° would be quite an erroneous one, as I proceed to show. It is to be inferred, from the passage I have quoted, that the specimens captured on the 5th and 6th September,—at all events those of such quality that they were preserved—were mostly fresh specimens, *i. e.*, had but recently emerged. According to my recorded experiments, the temperature from the 5th September, back for about twenty-two days, would cover the whole period that the captures were in pupa. I reject the 4th and 5th September, because I have found the general colouring practically fixed before the last day or two of the pupal period; this leaves twenty days, counting back from the 3rd September, of which about the last twelve would, according to experiment, cover the most sensitive period It may surprise those who are not in the habit of comparing their general impressions of a warm period with a thermometric record to learn that, during the twenty days referred to, the average of the mean daily temperature in the south-east of England was *less than* 65°; and that during the critical twelve days it was *only about* 60°. I do not know exactly where the captures were made, but assume they were in North Surrey, near suburban London. I have therefore not limited myself to the sea-coast temperature of my own residence, Brighton, but have also obtained that of the Kew Observatory, and through the kindness of friends have been supplied with other local records of the periods in question, from the 15th to the 22nd August, and from the 23rd August to the 3rd September. They work out as follows (see opposite).

Mr. G. von U. Searle, who kindly supplied me with the West Kensington figures, explained that for local reasons his figures would be rather higher than those for the open country; and Mr. Oswald Latter, who kindly furnished me with the

Godalming figures, mentioned that for local reasons his figures would be somewhat lower than the average. Allowing for these explanations, we may safely take the average temperature of Mr. Frohawk's captures at about 64° for their whole pupal period, and 60° for the more critical period of twelve days.

	(1.) Own.	(2.) Brighton municipal (Dr. Newsholme).	(3.) Kew Observatory.	(4.) West Kensington.	(5.) Godalming, N.W. Surrey.
The 8 days	(not kept)	68.10	70.21	72.23	67.4
The 12 days	59.8	62.2	59.85	60.60	58.7
The 20 days		64.55	64.00	65.25	62.19

Here I might perhaps have let the matter rest had my object been merely a controversial one, instead of being, as it is, that of throwing as much light as possible upon the question. I go on therefore to invite attention to the fact that the mean daily temperature may be several degrees less than the average of the actual temperature to which an object is exposed when there is much sunshine. It is, I believe, quite impossible to say, with any approach to accuracy, *how* much should be added for sunshine, as this would depend on the amount of sunshine, aspect, soil, wind, humidity, surroundings of the object, and perhaps other considerations. But from enquiry made of competent authority I believe meteorologists would not put it, for either of the periods in question, and certainly not for the latter period of twelve days, and for objects circumstanced as the pupæ of *C. phlœas* are, at so much as five degrees. Few pupæ are exposed to full sunshine, and I believe that the pupa of *C phlœas* is to be found attached to the stems and under sides of the leaves, near the ground, of sorrel and other field-plants. In captivity, though a few of mine pupated close to the muslin cover of the glass cylinder in which the larvæ were kept, the great majority crept to the bottom. As to sunshine I have made enquiry, and find the important period was not a remarkably sunny one. At Brighton, which being on the south coast is particularly sunny, the daily average was, for the 20 days, 8.01 hours; for the last 12 days, 7.10 hours. At Kew it was, for the 20 days, 6.94 hours; for the last 12 days, 5.5 hours. Allowing even as much as 5 degrees for sunshine, we should have :—

For the whole 20 days, a temperature of 69°
For the last 12 days „ „ 65°

neither figure approaching my "high temperature" of 80° and upwards.

At these temperatures it was therefore to be expected that the captures of the 5th and 6th September would *not* correspond with my "high temperature forms at 80° to 90°, but *would* correspond more nearly with some of my lower temperature forms, those, for example, of the class at about 70°, or those "at about 56° to 58°." And this I gather from Mr. Frohawk's description of them is what they do. His description is as follows:—"All that I examined were of brilliant colouring, the copper being rich and bright, and the black deep; in most cases they resembled Mr. Merrifield's low temperature forms." For comparison with this, I will give my description of the general colouring of some of my "low temperature" forms. Of those at a temperature averaging about 70° I say (p. 63), "these are *noticeably different* [*i. e.*, from the duskier ones at 80° or upwards], the colours are more intense, the dark parts blacker, the coppery parts more vivid." The other classes (at about 58° and 56° respectively), are described by me as showing but "a slight further increase [*i. e.*, as compared with those at 70°] in the brightness of the coppery parts." Mr. Frohawk does not say which of my lower temperature forms his captures most resembled; nor indeed do I gather that they have been compared side by side with mine, which are at present deposited at the British (Natural History) Museum, a comparison which should certainly be made to ensure accuracy; and even then it should be borne in mind that out of the hundreds captured it is probably the brightest of their sort that would have been preserved, whereas the whole of mine were preserved and exhibited. But I think I shall be right in assuming that Mr. Frohawk does not mean that his resembled my *lowest* temperature forms (*i. e.*, 47° and under), for these are especially remarkable for (1) the breadth of the copper band on the hind wings, and (2) the fact that the coppery scales are often prolonged along the nervures from the band towards the bases of the wings, whereas Mr. Frohawk does not mention a broad band as any characteristic feature, and speaks of the second feature as having been found on only one of his hundreds of captures.

I have admitted, and do most fully contend for, the impossibility of saying, with any near approach to accuracy, to what temperature the pupæ of the captured *C. phlœas* were exposed. But that is a reason for *not* assuming that their appearance is contradictory to my conclusions from experiments where the exact temperature can be ascertained. And before accepting the view that they are thus contradictory,—a view grounded on observations in the open field, where the conditions for exactness do not exist,—I think it would have to be shown how the results obtained by me under circumstances admitting of exact observation are to be explained.

Besides, there is in this case another formidable fact to be

explained; and that is that one of the most distinguished of living biologists has simultaneously arrived at results similar to mine, with the same insect. His experiments indeed have been more comprehensive than mine, for he has tried them both on the dark form of Southern Europe and on the ordinary form of Central Europe. I refer to Prof. Weismann who, in his work, 'The Germ Plasm,' published in May last, describes the results of his experiments as follows:—"Caterpillars were raised from the eggs of the German form of *C. phlæas*, and the pupæ were then exposed to a much higher temperature till the emergence of the butterfly. The result was that many of the butterflies were slightly dusted with black, but none of them resembled the darkest forms of the southern variety *eleus*. I then made the contrary experiment, by subjecting caterpillars which had just entered the pupal stage, and had been raised from the spring generation of the Neapolitan form, to a very low temperature. Many butterflies were thus obtained which were not so black as those which had emerged from pupæ kept at a higher temperature." Prof. Weismann adds that "both experiments prove the correctness of the old assumption of lepidopterists, that the action of heat on a single generation is capable of giving the German form a blackish tint"; so that the results now established by experiment appear to be in accordance with the previous opinion among Continental lepidopterists. I mention this, not as attaching cardinal importance to prevailing impressions where means exist, but have not been taken, to subject them to exact investigation, but as perhaps not without interest to English lepidopterists, some of whom are, I believe, under a different impression, perhaps accounted for by the fact that in England the summer temperature, being considerably below that of Central Europe, is not high enough to bring out the duskier colouring. I think I may say, in conclusion, that unless something admitting of greater accuracy than field observations do, is brought to bear on this matter, the conclusions arrived at by actual experiment, in Germany and England, must be considered as established. I have gone into the matter rather more fully than was necessary for the immediate purpose of my communication, because it seemed to me that it might be made an opportunity for directing attention and observation to a subject of much wider interest, *viz.*, the means for correlating the results of observation in the laboratory with those of observation under natural conditions. The chief interest of the former is perhaps their bearing on the latter; but to compare them effectually, the essential limitations proper to each of the two kinds of observation have to be recognised.

Brighton, 5th November, 1893.

OBSERVATIONS ON *VANESSA C-ALBUM*.

By W. Harcourt Bath.

In reading up the bibliography of this interesting insect, one cannot help being much struck with the diversity of ideas which appears to prevail among entomologists concerning its economy.

Having personally acquired a considerable acquaintance with it in its west-midland haunts, I will therefore venture to vent my own views respecting several points about which there is apparently a great variety of opinion. The most important is that relating to its dimorphic tendencies, concerning which I will first of all give, in a condensed form, what has already been written:—

1st. Edward Newman, in his 'British Butterflies,' pp. 48–49, observes: "There are three very constant varieties observable in the colouring of the under side . . . . . the characteristics of which may be described as repletion, variety, and depletion: in the first, the brown is dark, dull, and uniform; in the second, it is richly varied with different shades of brown and metallic green; in the third, the colour seems partially bleached, and assumes a tinge of fulvous yellow. Mr. Dale . . . . regards the first and third of these as a first and second brood. . . . . Mrs. Hutchinson, of Leominster, who is perhaps better acquainted with this butterfly than any other entomologist in the United Kingdom, considers the uniformly dark brown specimens to be females, and the rich varied specimens to be males. Accepting these views as correct, there still remains a little difficulty in the extreme uniformity of colouring in all the fulvous or vernal specimens; these are certainly not all of one sex."

2ndly. Mr. Robt. Adkin, in the 'Entomologist' for November, 1892 (vol. xxv., p. 318), related his experiences in rearing this butterfly under the heading of the "Autumn form of *Vanessa c-album* bred from spring larvæ," wherein he remarks: "Cases of one brood of a seasonal dimorphic species assuming the form of the other brood under artificial conditions, are of by no means uncommon occurrence; but obviously similar cases occurring under natural conditions are not so easily traceable. . . . . *Vanessa c-album* affords a good example of such a species, the two emergences being easily separable, the chief point of difference being in the coloration of the under side, which in the earlier brood is of a pale ochreous tint, while that of the latter brood is dark greyish brown."

3rdly. Humphreys, in his 'British Butterflies,' p. 50, says:—"There are two broods in the year; the first appearing in June, and the second in August and September. The latter brood are said to be of a paler colour than the summer ones."

4thly. Dr. H. C. Lang, in his grand work on the 'European Rhopalocera,' p. 170, writes about its dimorphic tendencies as

follows: "This species exhibits seasonal dimorphism, the vernal form having the under side light brown, almost as pale as *Vanessa egea*, while the æstival form is richly variegated on the under side of the male, and very dark brown in the female." In the work in question, upon plate xxxix. are given two good figures of the under sides of the males of the "spring and summer broods," showing the difference in the colouring.

Now, in the preceding accounts it will be observed that great diversity of opinion prevails upon many important details; but, first of all, lest it may lead to a little confusion, it may be well to point out that what is meant for the æstival or summer emergence is often expressed as the vernal or spring brood, while the autumnal emergence is sometimes erroneously denominated the æstival brood. The terms summer and autumn should undoubtedly be employed (in the case of this butterfly) in preference to those of spring and summer, whenever the first and second emergences are expressed in that manner, as nothing but hybernated specimens are ever to be met with in the vernal months, the first brood appearing, according to my own observations, never before the middle of June, while the second one always occurs in the months of September and October; at least this is the case in the midlands. Well, as far as my experience goes, the types of the first and second broods occurring in this country do not exhibit any appreciable difference, either in the shape of the wings or in the colour of the upper or under sides. The only feature worth noticing is that the ground colour of the upper surface of the wings of the first brood is of a slightly lighter hue than that of the second emergence; it is thus somewhat intermediate in this respect between the type of the autumnal brood and the form about to be dealt with, namely, the "depletion" variety of Newman. This latter is a very distinctive one, and occurs only with the summer or first brood. It is of a very pale colour on the upper surface of the wings, the under sides also being fulvous yellow. This form is very faithfully depicted in Dr. Lang's work previously referred to, and is inferred by that author to be the type of the first generation on the Continent. My own experiences of collecting on the other side of the English Channel have, hitherto, been too limited to permit of my arriving at any conclusion, either in confirmation or otherwise, of what that author states to be the case in the larger area.* I should think, however, it was highly probable that the fulvous form was the type of the first brood in Southern and Central Europe only, and that the one occurring as the types of the first and second broods in this country as the typical form of the same brood found in the more northern parts of its area of distribution, that is in similar latitudes to our own. The fulvous form I therefore consider

* I have taken this fulvous form in Switzerland in July and August, but none of the other form with which it occurs as the type of the first brood in England.

occurs in this country, only as an aberration of the first brood. I have bred it with typical forms of the first brood, and several times have also taken it upon the wing with the type in the months of July and August; but, according to my experience, it is by no means plentiful, only appearing in the proportion of about one to ten of the type. I have never known it to occur with the later emergence, so that Humphreys and Dale (quoted by Newman) are both evidently incorrect, when they assert that it is the form of the second brood; and so also is Mr. Adkin, in assuming that it is the type of the first emergence in this country. This form can be readily distinguished from the typical one with which it occurs, not only by the distinctive colouring of the under side, but by a mere glance at the upper surface as well, for it is slightly larger in size, much less angular in shape, and a good deal lighter, both in the ground colour and in the markings.

A very similar form occurs, under somewhat parallel conditions, in the case of *Pararge egeria* upon the Continent, besides many other species too numerous to mention; but I do not think it is generally known that *Vanessa urticæ* possesses a similar lighter coloured form (as far as the upper surfaces of the wings are concerned) in this country with the first brood. If Weismann's theory is correct, namely, that the great majority of the European Rhopalocera owe their origin to more northern latitudes, the dark form constituting the type would probably be the original stirps from which the fulvous form, as well as the closely-allied *Vanessa egea*, originated in more southern climes, and the fulvous form would possibly be the connecting-link between the two species. The sexes, in the case of both broods, may be easily distinguished from each other, concerning which I can endorse the opinion of Mrs. Hutchinson (quoted by Newman). The female is also, on the average, larger than the male, and the shape of its wings is less angular than the latter sex.

Having fully discussed the dimorphic tendencies of this species, I will now deal with a few other points concerning its economy, about which there still lingers a little doubt. I believe it is now generally understood to be double-brooded in this country every year, although Newman considers, in his well-known work, that this is a "mistake," as he had "been able to obtain no satisfactory evidence of any caterpillar prior to those so abundant in the autumn months about the season of hop-picking." Now it seems rather strange that he should have written thus, considering that he had such abundant opportunities for observing the habits of this butterfly in Herefordshire, where he resided for a number of years; for I have myself found the larvæ as early as the end of June. The larvæ of the second brood occur in September, and I have reared the imagos from them so late as the last week in October.

The first brood is, however, I consider, always less numerous than the second one. This season the autumn flight has been exceedingly plentiful in the west midlands; and in one of its south Shropshire haunts I have captured as many as twenty specimens in the course of a couple of hours, though as a rule not more than from two to four specimens are upon the average seen in a single day. It has likewise been very abundant in several Worcestershire localities, visited by myself this autumn.

Now for a word or two respecting the larva, concerning which my experiences differ from those of Humphreys, who says, on p. 50 of his valuable work, that "the larva is not gregarious"; for wherever I have found the caterpillar I may always expect to obtain some more within a foot or two of the spot. It feeds in small companies of from three to a dozen individuals, about half a dozen being the average number, and I have always found them upon the stinging-nettle in the localities where I usually look for them; never upon hop or any other plant; so that it seems strange why the butterfly should be so circumscribed in its distribution.

This circumstance reminds me that I have a few lines to pen relating to its geographical distribution in the British Isles. Its head-quarters in South Britain appear to be the west midland counties of England (especially in Worcestershire and Herefordshire), as well as in the adjoining eastern counties of the little principality. Outside this area it appears to be generally scarce, and very uncertain in its appearance; and it is strange that this should be so in Kent, where hops are very extensively cultivated.

In Scotland it appears to be only a very rare visitor; some authors, indeed, assert that it is unknown there altogether. Dr. Lang, for instance, p. 170, says that it is "altogether absent from Scotland"; while Newman, p. 50, observes that he has "no knowledge of a Scotch specimen." Humphreys, however, p. 50, gives Fifeshire as a locality for it in North Britain. Has any reader any recent record of its occurrence in the Northern Kingdom?

In Ireland this butterfly is also very rarely observed, though possibly it may be more frequent there than is generally supposed to be the case. May I ask why Mr. W. F. de V. Kane does not include this species in his "Catalogue," in the face of what Newman says respecting its occurrence in the sister Isle?

The flight of this elegant species is very swift, and it requires one to be very quick to enable him to secure it.

It is principally to be found in open spots in woods, or sailing along hedgerows. It is very fond of settling upon brown leaves, with its wings open, being perfectly conscious of its close resemblance to them in colour; but whenever it settles upon a tree-trunk or a gate-post, which it also possesses a great predilection for, it immediately closes its organs of locomotion,

knowing full well its wonderful mimetic resemblance to the dark brown bark or wood when in this condition, and it really requires a very practised eye to detect it.

195, Ladywood Road, Birmingham.

A CATALOGUE OF THE LEPIDOPTERA OF IRELAND.

By W. F. de Vismes Kane, M.A., M.R.I.A., F.E.S.

(Continued from p. 318.)

BOMBYCES.

NYCTEOLIDÆ.

Sarrothripus undulanus, *Hb.*—I have taken this insect not unfrequently at Killarney; also near Favour Royal, Tyrone, and at Killynon, Westmeath. Co. Galway (*R. E. D.*); at Caragh L., Kerry (*Dr. B*); Limerick (*S.*). The v. *degenerana* occurs at the first two localities above named.

Hylophila prasinana, *L.*—Occurs in all parts of Ireland that I have visited. Derry (*W. E. H.* and *C.*), where I have seen the larvæ very abundant; Monaghan, Tyrone, Cavan, Westmeath, Galway; and in Cork, Limerick (*N.*), and Kerry. The larvæ suffer much from ichneumons.

NOLIDÆ.

Nola confusalis, *H.-S.*—Very widely spread, but usually occurs singly. One at Derry (*C.*), Do. (*W. E. H.*); numerous at Donard Lodge, Co. Down (*Bw.*); Armagh (*J.*); Favour Royal, Tyrone; Drumreaske, Monaghan; L. Gill, and Knocknarea (*Russ*), Sligo; Banagher, Kings Co.; Killynon (*Miss R.*); one at Kingstown, the Phœnix Park, and Malahide, Co. Dublin; several at Powerscourt, Co. Wicklow, and Wicklow (*C. G. B.*); Howth (*B.*); one at Dunmore, Co. Waterford; Killarney; near Crossmolina, Mayo (*S. R. F.*).

LITHOSIIDÆ.

Nudaria mundana, *L.*—Common, and generally very abundant, but somewhat local. Innishowen (*W. E. H.*) and Ardara (*J.*), Co. Donegal; near Belfast often met with, but not common (*W.*); Carlingford and Bundoran (*J.*); Cromlyn, Westmeath (*Mrs. B.*); near Galway, abundant (*A.*), and Moycullen; Knocknarea (*Russ*) and Lissadell, Co. Sligo; Glandore (*D.*) and Crookhaven, Co. Cork; Mucross, Ballyvourne, and Kenmare, Co. Kerry; &c.

Setina irrorella, *Clerck.*—Common on the coast (*B.*). I have only heard of its occurrence on the coast of Clare (*Br.*), Mayo, and near Galway (*A.*).

Calligenia miniata, *Forst.*—Near Claring Bridge (*B.*), and occasional in East Galway (*R. E. D.*).

Lithosia sororcula, *Hufn.*—"Abundant in Killarney" (*B.*).

Lithosia lurideola, *Zinck.*—Mr. Birchall records having met with it frequently, but it is possible that he may have been in error. Common near Galway (*A.*). I have never seen an Irish specimen, except those of Mr. Allen, who reports the larvæ were found feeding on bramble.

Lithosia complana, *L.*—It is curious that I have found this species widely distributed, and not uncommon where it occurs. It is possible that Mr. Birchall, who only noted its occurrence at Howth in a supplementary list, may have at first mistaken it for the former species. Co. Down (*Bw.*). I have taken it not uncommonly at Howth, on the Wexford and Waterford coasts, Minehead, &c.; and one at Dursey Island, the extreme S.W. point of Kerry.

Lithosia caniola (*Hb.*).—"Discovered by Mr. Barrett, in 1860, on the Hill of Howth. It was abundant, but extremely local" (*B.*). Mr. Birchall, in company with Mr. Cooke, took it plentifully in flight in August at dusk, and attracted it by sugar, and took a long series of males by a bred female. He also found the larvæ feeding on the flowers of *Lotus corniculatus*. The colony flourished at Howth for many years, and Mr. Sinclair once took a considerable number of them at the same spot, but subsequently failed in meeting with either the larvæ or imagines, and came to the conclusion that this rare species perished in the severe winters of 1878 or 1879; and it has been frequently since searched for in vain. Professor G. V. Hart, a year or two ago, took a very worn *Lithosia*, possibly *complana*, but which by the pallor of its hind wings may have belonged to this species. The only other Irish record is its reported capture by Mr. Warren Wright at Tramore, Co. Waterford, Entom., 1866, p. 152.

Gnophria quadra, *L.*—A specimen taken in a spider's web by Mr. W. Talbot at Ashford, Co. Wicklow, July, 1877 (Entom. xi. p. 70). Limerick (*B., in litt.*). A specimen was sent me from New Ross, in the Co. Waterford (*B.-H.*).

Gnophria rubricollis, *L.*—Widely spread throughout the southern half and west; Co. Dublin, Malahide Castle demesne, Dundrum (*Bw.*), and Rathfarnham (*Greene*); near Waterford (*B.-H.*) and Kilsheelan (*J. C. Baker*); Castletown Bere (*Carpenter*), and Kenmare, Co. Kerry (*Miss V.*); Co. Galway (*R. E. D.*), and near the town (*A.*).

EUCHELIIDÆ.

Deiopeia pulchella, *L.*—One specimen taken by Mr. R. J. Ussher, at Ardmore, on the sea-coast of Waterford, Sept. 1880, who presented it to the National Museum. One at Bandon (*D.*).

Euchelia jacobææ, *L.*—Everywhere abundant, and often defoliates the ragwort to the advantage of the farmer.

CHELONIIDÆ.

Nemeophila russula, *L.*—Widely spread, but local. Abundant in the bogs about Dinis, Killarney, and about Castletown Bere (*Carpenter*); Co. Galway, Ballynahinch, abundant, Leenane, Delphi, and Mweelrea Mt. (*H. Hart*); Sligo and Markree Castle; near Carrick, Co. Donegal.

Nemeophila plantaginis, *L.*—Found on all the heaths and bogs that I have visited, and the larvæ very common. Killarney, McGillicuddy's Reeks, in Co. Galway and Connemara, Westmeath and Tyrone; about Derry not common (*C.*); L. Gill, Sligo; Belmore Mt., Fermanagh; Toberdaly, Kings Co. Dark varieties occasionally occur.

Arctia caia, *L.*—Everywhere common. I know of no topomorphic varieties.

Spilosoma fuliginosa, *L.*—Very widely distributed, and occasionally locally common. Innishowen, Co. Donegal (*W. E. H.*); Co. Derry, Magilligan, very abundant (*C.*); Co. Antrim, Ballycastle (*R. C.*); Westmeath, Cromlyn (*Mrs. B.*), and Killynon (*Miss R.*); Sligo, Markree Castle; L. Arrow, Co. Roscommon (*Miss ff.*); Belmore Mt., Co. Fermanagh. Once I found an enormous colony on Keragh Island off the coast of Wexford; and, with a few imagines, there were also present quantities of both pupæ and larvæ at the same time. Bere I., Co. Kerry, &c. I have seen occasional specimens of the v. *borealis*, but not very dark ones. A variety from Galway (*R. E. D.*) has the red of the body, and fringe and inner margin of the hind wings, replaced by olive-yellow; the fore wings are a dingy olive, and the hind wings a smoky grey.

Spilosoma mendica, *Clerck.*—Inserted in Mr. Birchall's catalogue as Irish, on the authority of the Rev. J. Greene, but no localities were given. The first authentic specimen was taken at Finglas, Co. Dublin, by the late Mr. Sinclair. Subsequent captures are as follows:—Clondalkin, Co. Dublin (*Gr.*); Waterford (*J. C. Baker*); Cappagh, same county (*Miss V.*); Carriglas, Co. Cork (*L.*); Co. Galway (*R E. D.*), one dark male. The last locality has furnished the ordinary dark form of the male, but the preceding records are of females, so that their type of male is as yet unascertained.

Var. *rustica*, Hb.—The first discovery of this remarkable dimorphic form in Ireland is attributable to Mr. C. Donovan, of Glandore, Co. Cork, and was identified by me in 1885, and added to my collection by the kindness of the captor. The tone is a pale buff. It was with no little interest, therefore, that the succeeding summer I received a letter from the Rev. James Bristow, of

Belfast, asking me to identify a similar, but almost white, specimen, which, with others, was taken at light by the Rev. J. Gordon Holmes, of Antrim; for these captures proved that the variety occurred as a local form, and was not a casual genetic aberration. In the same year, Mr. H. McDowell, of Passage West, Cork, took a male v. *rustica;* and, at a place thirty miles distant, a female, from the ova of which the results are given below. A varied series, bred from these by Mr. Robert Adkin, President of the South London Entomological and Natural History Society, were exhibited at one of their meetings, accompanied by a valuable paper, which is to be found in their 'Proceedings' of 1887. From another moiety, Mr. McDowell bred six males, three of which were particoloured, with the hind wing and central area of the fore wing of a smoky tint, while the costa and outer margin of the fore wing were cream-coloured. Mr. Johnson, at Armagh, has taken, with the cream-coloured form, another similar to that just described. The males (*supra*), bred by Mr. Adkin and Mrs. Hutchinson, of Leominster, varied from cream-colour to a pale smoky brown, the females generally being characterised by the usual spots being more or less obsolete. Mr. Adkin subsequently paired one of his Irish v. *rustica* with an English typical female, and the two males which resulted from the cross were of a buff colour, intermediate between the two forms, very similar to my Glandore specimen. In my correspondence with Mr. Adkin, to which he refers in the above paper, I was unable to verify the capture of any dark males in Ireland, but am now in a position to supplement my information as before stated. We find, therefore, the v. *rustica*, though occurring in the extreme north and south of Ireland, is not the universal form. It is to be hoped that additional facts may be gleaned as to its distribution. The late Fredk. Bond, of Staines, to whom I first communicated the discovery of the variety, informed me that he believed "a white male *mendica* was preserved in a Liverpool collection, and that Mr. Gregson, of Liverpool, had one of a cream-colour." Also *cf.* Mosley's "Illustrations." Cream-coloured females are preserved in Mr. Barrett's and Mr. Jenner Weir's cabinets; but in Yorkshire are to be found variations in the opposite direction. Mr. G. Rose, of Barnsley, has a dark male with the fore wings traversed by two darker shadings formed of suffused blotches; a central one from mid-costa to the inner margin, and another parallel one between it and the hind margin. Our knowledge of the variety *rustica* occurring on the European continent seems to be scanty. Staudinger, referring to Hübner's figure 150, adds: "♂ colore albido?" and gives as a locality, "? Hung. or." The colour of the Irish form varies greatly in the male, but there seems to be no distinct character in the female, except perhaps a more than ordinary tendency to lose the spots normally present in the type.

(To be continued.)

SPILOSOMA LUBRICIPEDA var. *ZATIMA* IN ENGLAND.

By Richard South.

Since the publication of my remarks on *Spilosoma lubricipeda* var. *zatima* (*ante*, pp. 257–259), I have had considerable correspondence respecting the occurrence of the English equivalent of that form (i.e., var. *radiata*, Haw.) in Yorkshire. Mr. Porritt (*ante*, p. 296) has already shown that the form of *S. lubricipeda* referred to by himself, and probably also by Mr. Carrington, is not true *radiata;* and the general opinion among Yorkshire entomologists of the present day appears to be that the true *zatima* (= *radiata*) form was not known in their county until Mr. Harrison bred a female in 1891, from which he subsequently obtained a large stock of the variety in question. It was inferred that as Mr. Harrison's original female example of the variety was bred from a pupa received either from Grimsby or London, neither she nor her offspring could be considered as having any claim to be regarded otherwise than as aliens in the county of Yorkshire. It therefore became incumbent upon me to obtain more precise information about the early history of the female parent. So I ventured to write to Mr. Harrison, suggesting to him that as a good deal of uncertainty existed among entomologists generally as to the exact locality from which his female *zatima* was received in the pupa state, he might perhaps feel disposed to furnish more definite particulars concerning it than were to be found in the accounts already published. Mr. Harrison's reply was most courteous, but I need only quote such parts of it as directly bear on the point upon which information was sought. He says:—

"My original female *radiata*, and the only one I had emerge, came from a mixed lot of pupæ (*lubricipeda*, *menthastri*, and *persicariæ*) sent me by Mr. J. Riches, 52, Calverley Grove, Hornsey Rise, London. It is small in size, and of a pale *radiata* form.

"The male would be no doubt from those [pupæ] sent me by Mr. Tero, Grimsby, but not of the *radiata* form at all; in fact, all the others came out such ordinary forms that I liberated most of them after trying to pair them with *mendica*.

"I send you the original parents for inspection."

I have examined the specimens so kindly sent by Mr. Harrison, and notice that each of them has lost the apical portion of right fore wing. The female, bred from a pupa received from London, is referable to *zatima;* and the male, bred from a Grimsby pupa, is also a variety of *S. lubricipeda*, but not of the *zatima* form.

With a view of completing the history of this notable female moth, I also wrote to Mr. Riches for any items of information he might be able to contribute, and the substance of his reply runs as follows:—

"I well remember sending Mr. Harrison, of Barnsley, a quantity of pupæ of *Spilosoma lubricipeda* with some of *S. menthastri*, and, may be, other species, as I took many of the pupæ from a wall covered with ivy and other creepers. Larvæ were very abundant that year, and ate up nearly all the flowers in the garden, a private one, where I took them, and where I have been engaged for fifteen years. During that time I bred *S. lubricipeda* most years, but have never bred a variety, or even seen one of the species, in this locality, and I am surprised to hear that Mr. Harrison did [that is, breed a variety from Hornsey pupæ].

"I may say that I have had no correspondence with Mr. Harrison since we made the exchange."

The foregoing comprises all the particulars relative to Mr. Harrison's original female *zatima* that I have been able to obtain, and I have very great pleasure in presenting them to readers of the 'Entomologist.' I had hoped to have learned from Mr. Riches that he also had bred the *zatima* form of *S. lubricipeda* from larvæ or pupæ found at Hornsey, but this it appears he did not do; and further, as will be seen from the extract from his letter, he states that he has not even seen a variety of this species in his locality.

RHOPALOCERA FROM THE ALPES-MARITIMES IN 1893.

By Frank Bromilow, F.E.S.

Perhaps the following list of butterflies, taken by myself during the present year, may be of interest, and will supplement those species already noticed in the 'Entomologist,' *viz.*:—

Papilio podalirius, L. Common everywhere; rare at an elevation of 3300 feet. Ab. *zanclæus*, Z. I caught a female example in the Vallon des Fleurs, Nice, on July 26th, settled on a *Rhamnus* (buckthorn); and a worn male a few days later. *P. machaon*, L. Abundant nearly everywhere; first taken on April 4th, at Vence-Cagnes.

Thaïs polyxena, Schiff. I only took two males at Cagnes, on April 4th.

Aporia cratægi, L. Nearly everywhere; first seen near a place called Vence, department of Var (1100 feet altitude), on May 29th.

Pieris brassicæ, L., and *P. rapæ*, L. Occurred up to nearly 4000 feet. *P. daplidice*, L. Generally distributed; also in the mountains, up to about 3300 feet altitude. Var. *bellidice*, O. Not rare; an example was taken at St. André, near Nice, on April 21st.

Anthocharis belia, Cr. I have bred three imagines from larvæ collected; the first specimen emerged on May 5th; common. Var. *ausonia*, Hüb. Obtained three imagines *ex larvâ;* first bred, May 30th; abundant. *A. cardamines*, L. One seen on an excursion to the Gorges du Loup (Var), by the newly-opened Sud de la Francé line from Nice to Digne, on March 11th; very common in the spring. *A. euphenoides*, Stgr. I took a very small male, measuring only an inch and a quarter in expanse, above Vence, on May 14th last; all the examples I have seen from this locality, this year, seem dwarfed; common at Nice, &c., April–May.

Leucophasia sinapis, L. Abundant on the coast; scarce at Caussols (3960 feet above sea-level).

Colias hyale, L. Common everywhere; first seen on April 24th at Nice, in the Vallon des Fleurs; also at Caussols. *C. edusa*, F. Abundant; it is commoner than the preceding; also at 3960 feet altitude. In some specimens the arrow-shaped spots at the hind margin of the under side of the fore wings are five in number, and in others only three, in which latter instance the dots only occupy half the area of the wing. I beat two larvæ of *edusa* off *Medicago arborea* as late as October 27th, one of which measured seven-twelfths of an inch in length Ab. female *helice*, Hüb. Occurs sparingly with the type; some beautiful female forms, intermediate between the type and *helice*, were to be met with.

Thecla ilicis v. *æsculi*, Hüb. First seen on June 30th, in the Vallon des Fleurs at Nice; also in the Val Obscur (Nice).

Polyommatus alciphron v. *gordius*, Stgr. First noticed at Vence, at a height of 1100 feet above sea-level, on May 29th; occurs sparsely up to nearly 4000 feet altitude. *P. phlæas*, L. Generally distributed. Var. *eleus*, F. First taken this year in our garden at Nice, on *Eupatorium cinnabinum* (eupatory), on June 21st, and almost replacing the type during the summer. I took an exaggerated form of this variety on August 7th, at Caussols, in which the dark brown hind marginal border of the front wings was twice as broad as in the usual *eleus*, and was jet-black. The copper colour of all the wings, too, was of a fiery red. On the hind wings there were no traces of the row of blue spots which are sometimes present near the hind margin. *P. dorilis*, Hufn. This insect was also met with in the mountains.

Lycæna bætica, L. Chiefly in gardens; about a dozen examples have been taken altogether during October; last seen in our garden on October 28th. I have observed the species to visit the flowers of the following plants, viz., *Cassia floribunda*, *Eriobotrya japonica* (loquat tree), and *Mirabilis jalapa* (marvel-of-Peru). *L. telicanus*, Lang. The first example (a male) taken this year was caught in the Vallon des Fleurs, on June 29th, where it is extremely common. In Nice it also occurs in the valley of the Mantéga, at Barthèlemy, the Val Obscur, and in the mountains at St. Martin-Vésubie at 3300 feet altitude. It also frequents gardens. *Telicanus* swarmed on the outskirts of a disused garden at St. Maurice, overgrown by a tall yellow composite (*Inula graveolens*), which it particularly seems to affect. I took fresh specimens up to October 21st. The species is subject to albinism. I have met with a form having some of the white streaks and bands at the hind margin of the under side of the hind wings confluent, thus forming a continuous white band. Another variety has the tails about half the normal size, and with the white tips intact. One example I took had one of the tails of the normal size, while the other was about half the size. *L. ægon*, Schu. Rare at a height of nearly 4000 feet, but common in many spots at a lower elevation. *L. orion*, Pallas. First observed at Vence on May 29th last; also at Levens and the gorge de St. André near Nice. *L. astrarche*, Bgstr. Not uncommon. *L. icarus*, Rott. Abundant everywhere. Ab. *icarinus*, Scriba. Occurs with the type, but is somewhat scarcer; it seemed quite common at Caussols to the north of Grasse, and I got a good series. Ab. *cærulea*, Bon. The true variety appears rather scarce, but individuals passing to the ab. *cærulea* are by no means rare. *L. escheri*, Hüb. Nice, &c., and in the mountains up to 3300 feet elevation; first taken in the Val Obscur (Nice) by my

cousin, on July 4th. *L. bellargus*, Rott. Generally distributed. *L. corydon*, Poda. Common everywhere; first noticed at Vence, on May 14th. *L. hylas*, Esp. Occurred at Vence, Caussols, and other places, but was never abundant; first seen on May 29th last. I took a female example at Caussols, on August 22nd, in which the yellow spots were absent from the fore wings, and almost completely so from the hind wings. On the under side the basal spot on the under side of the hind wings had the white surrounding the black spot greatly enlarged, while the dot itself was quite small. *L. admetus* v. *ripartii*, Ferr. This local species was quite common at Caussols. Donzel says that the insect flies in September; but I never saw any individuals of this brood, though I stayed on all through the month. *L. damon*, Schiff. Quite common at Caussols; the females, too, which seem usually scarce, were not rare; first captured, July 30th. *L. sebrus*, B. One specimen was taken at Vence, on May 29th last. *L. cyllarus*, Rott. Appears to be pretty generally distributed; flies also in the mountains up to an elevation of between 3000 and 4000 feet; common on the coast at Nice. *L. melanops*, B. I only took one specimen at Vence, on May 29th. *L. arion*, L. Nice, in the Val Obscur and Vallon des Fleurs; locally common on the coast in places; met with up to about 6294 feet; first taken this year on June 11th, but it may be captured at a much earlier date.

(To be continued.)

BEMBIDIUM LUNULATUM, Geoffroy, AS A NEW BRITISH SPECIES.

By the Rev. H. S. Gorham, F.Z.S., &c.

In the 'Entomologist's Monthly Magazine' for November there is a very interesting note, by Mr. E. A. Newbery, upon a species of *Bembidium* hitherto unrecognised as a species, either here or on the Continent, except by M. L. Bedel. As the editorial remarks seemed to throw some doubt upon both this insect and the species known to us as *B. riparium*, Ol., I turned at once to my collection, and I can quite corroborate Mr. Newbery's observation; and I fully agree with M. Bedel that there are three species, abundantly distinct, and easy to separate. These insects, together with *B. æneum*, and *B. guttula*, and *B. mannerheimi*, form the section or subgenus *Philochthus;* and the species now noticed as *B. lunulatum* of Fourcroy is, to my mind, as distinct from either, as they are severally from each other. Indeed, I have never mixed them. I do not find *B. æneum* myself; and during the summer of 1892 I took several *Philochthi*, I think generally by the sea-shore, hoping to get *B. æneum*. One of these I had placed doubtfully as that species, the remainder I had kept with undetermined insects; they are the species which M. Bedel identifies with *B. lunulatum*. This species is, however, to be attributed to Geoffroy rather than Fourcroy, who only edited the publication, 'Entomologia Parisiensis,' in which it is found. See

an abstract of the species by Geoffroy, 'Stettiner Ent. Zeitung, xii. p. 132.

I cannot vouch for the identification, but the fact remains,—we have an unrecognised species, for which the name *lunulatum*, Geoff., may be used. I shall myself prefer to use *riparium*, Ol., for the species with pale bases to the antennæ, as it has been so used generally by Schaum and others. Of course it is *B. lunulatum* that is the "New British Species."

B. iricolor, it seems to me, is a mere synonym of *B. riparium*, as it has been recognised for the last thirty-three years; and I do not see that any confusion need arise whatever.

The Chestnuts, Shirley Warren, Southampton.

THREE NEW COCCIDÆ FROM THE ARID REGION OF NORTH AMERICA.

By T. D. A. Cockerell.

Fairmairia (subg. *Ceroplastodes*, nov.) *nivea*, n. sp.

Found at Montezuma R. R. Station, State of Chihuahua, Mexico. On the twigs of a spiny shrub (*Acacia?*) in some abundance; singly, or sometimes two close together, but then not at all coalescing.

Scale.—Length about 4 mm., height about 2½ mm., breadth nearly 3 mm. Rounded, with rather roughened surface, but no indication of plates; snow white, slightly shiny. The scales are very regularly formed; the white substance is thin, and not like the wax of *Ceroplastes*. There is a variable posterior cleft, which has its sides usually contiguous for its outer half, but apart inwardly, forming a distinct more or less oval aperture. The dorsum sometimes presents two very distinct knobs, conical, blunt, with concentric grooves or striæ; these are normal in greater or less degrees of development. The young larvæ are elongate, and look, on the twigs, rather like those of *Tachardia*.

Adult female.—The body (boiled in caustic soda) is brownish yellow, with the legs and antennæ pale brown. The side of the body presents a row of rather short stout spines. Antennæ seven-jointed: 1st very broad, nearly twice as broad as any other; 1st also longest; the other joints subequal, but 5 distinctly shortest; 6 emitting a stout bristle; 4 with a longer and more slender bristle; 7 with several hairs. The last joint is constricted about its middle. Femur short; trochanter with a long hair; tarsal clubbed hairs present, ordinary. Mouth-parts peculiar, in that the rostrum is divided longitudinally into two plates, the truncate or obscurely rounded ends of which each emit three spines, of which the two innermost spines of each plate are nearest to one another.

Larva.—Elongate-oval; legs with digitules and clubbed hairs. Posterior cleft distinct, with a pair of elongated tubercles, each emitting a bristle, which reaches about to the orifice of the cleft. Each side with about fifteen broad low processes, from which proceed short elongate processes, two to four on each. These structures remind one of the tufts of the very young larva of *Ceroplastes*, which afterwards go to form the waxy covering.

Egg.—Oval, dark madder-pink.

There is no known American genus which could contain this insect. It is related to *Fairmairia*, Signoret, founded on a single species from the South of France; and to *Inglisia*, Maskell, a New Zealand genus. I thought it might be referred to *Inglisia*, until I compared it with five species of that genus, kindly sent to me by Mr. Maskell. These species show characters of the scale, —the striation, semitransparency, &c., which do not occur in *F. nivea*. While they differ considerably from one another, they have a facies of their own, and apart from the difficulty of accounting for the presence of an *Inglisia* in Mexico, I do not think the scale now described can be placed in Maskell's genus.

On the other hand, our scale is not altogether like that of *Fairmairia;* but it seems best to leave it in that genus for the present, placing it in a subgenus *Ceroplastodes*, which is characterised by the more or less hemispherical scale with dorsal knobs, the divided rostrum, and the seven-jointed antennæ.

If necessary, this name can be used in a generic sense. An orange-coloured mite was found associated with *F. nivea*.

Ceroplastes irregularis, n. sp.

Found six miles north of Montezuma R. R. Station, State of Chihuahua, Mexico, on stems of *Artemisia*.*

Scale.—About 5 mm. long or less, hemispherical, moderately depressed, but extremely irregular, and in many cases almost shapeless, appearing like a mass of cereous nodules. Colour pale ochreous. No definable plates. Dorsal knob inconspicuous. Adjacent scales often running together. This is by far the most shapeless and nodulose *Ceroplastes* I have seen.

Adult female.—Derm yellow-brown, perforated in most parts by large holes or gland-pores. Legs present; trochanter with a long hair; femur about as long as tibia; tarsus nearly as long as tibia, the long tarsal bristle of larva represented by a short stout spine.

Egg (in soda).—Oval, brown.

Larva.—Elongate, boat-shaped in outline, widely cleft posteriorly, legs long. Caudal filaments moderately long; diverging, but curving inwards towards their ends; each with a small bristle on its inner side (*i. e.*, on the margin caudad of it), and with two small bristles cephalad. Tarsus of hind leg with a very long bristle; knobbed hairs of tarsus slender and remarkably long; digitules of claw also slender and long. Antennæ six-jointed: 3 and 6 longest; 6 variable, sometimes about as long as 3, usually shorter. In some, joint 3 shows a false joint, or tendency to split into two. Last joint with a long hair.

I quite expected that this would prove identical with the undescribed *C. artemisiæ*, Riley MS.; but on sending specimens to Prof. Riley, I was informed that it was distinct. *C. artemisiæ* was found in New Mexico; it is unknown to me.

* Since writing the above, I have had my doubts about the food-plant. It was not in flower, and I think it may have been *Sarcobatus*. Consequently I have changed the specific name which connected the insect with *Artemisia*.

Pseudococcus helianthi, n. sp.

On a young *Helianthus*, on the leaves, attended by ants; afterwards on other sunflowers, and more numerously on a narrow-leaved species of compositæ, not in flower. Las Cruces, New Mexico, U.S.A.; alt. 3800 feet; July 1st—20th, 1893. Young were hatching July 9th.

Female.—Three mm. long or a little over. Grey, covered above and at sides with white mealy secretion; segmentation distinct; legs pale brown; antennæ very slender, pale brown. Caudal appendages thickly clothed with secretion, short, less than half length of body. Lateral appendages well clothed with secretion, short but distinct, more or less pointing backwards, instead of being at right angles to margin. Anterior appendages (= first laterals) rather more conspicuous than the laterals. No bands or marks. The body has three obscure longitudinal ridges, one mid-dorsal, the others sublateral. The general appearance is like Signoret's figure of *Dactylopius citri*. Boiled in caustic soda, it does not stain the liquid. Derm with many gland-dots. Antennæ nine-jointed; 2nd joint longer than 3rd (as in *P. socius*). Specimens examined showed some slight variation in the proportions of the joints, thus:—(1) Specimen from *Helianthus*. Joint 2 longer than 3; 3 longer than 4; 5 longer than 4, but rather shorter than 3; 6 equal to 4; 7 and 8 shortest; 9 about as long as 5. Formula therefore 23 (59) (46) (78). (2) Specimen from Composite plant with narrow leaves: 5 longer than 4; 2 longer than 3; 9 longer than 5, but shorter than 3. Formula 239 (56) (478). Eyes raised on tubercles, concolorous with body (after boiling in soda). Trochanter with a fairly long bristle. Femur stout, with several short bristles. Tibia slender, about as long as femur, bristly. Tarsus about half length of tibia. Digitules hardly discernible; apparently no tarsal clubbed hairs. Anal ring with eight hairs, but one smaller than the rest. Coxa and trochanter with several small bristles. A female found on sunflower was observed on July 7th to have constructed its sac:—Sac cottony, snow-white, about 5 mm. long; the body of the insect, now pale brownish, projects from the sac at one end. Sides of sac parallel, the cottony matter much looser on the back than at the sides. Without the sac, the insect looks like a *Dactylopius;* with it, it might be taken at a superficial glance for *Pulvinaria*. Newly-hatched larva pale yellow.

Las Cruces, New Mexico, U.S.A., July 21, 1893.

NOTES ON THE SYNONYMY OF NOCTUID MOTHS.

By Arthur G. Butler, Ph.D., F.L.S., &c.

(Continued from p. 293).

Spirama martha.

Hypopyra martha, Butler, Ann. & Mag. Nat. Hist. ser. 5, vol. i. p. 292 (1878); Ill. Typ. Lep. Hist. iii. 41, pl. xxxiv. fig. 3.

Spirama ægrota, Butler, Trans. Ent. Soc. 1881, p. 197, n. 86. Japan. Types in Coll. B. M.

Hypopyra feniseca.

Hypopyra feniseca, Guenée, Noct. iii. p. 200, n. 1590 (1852).
Var. *H. ossigera*, Guenée, *l. c.*, p. 201, n. 1600 (1852).
Salanga, Darjiling, and Dharmsala. In Coll. B. M.

Hypopyra vespertilio.

Noctua vespertilio, Fabricius, Mant. Ins. ii. p. 136, n. 16.
Hypopyra shiva, Guenée, Noct. iii. p. 190, n. 1597 (1852).
H. extricans, Walker, Lep. Het. xiv. p. 1328, n. 11 (1857).
H. dulcina, Felder, Reise der Nov. Lep. iv. pl. cxv. fig. 10.
H. pandia, Felder, *l. c.*, fig. 12.
H. pallida, Moore, P. Z. S. 1883, p. 26; Lep. Ceyl. pl. 166, figs. 1, 1*a*.
India, Ceylon, Japan. In Coll. B. M.

This is one variable species, all the forms being completely connected by transitional examples.

Emmonodia, *Walk.*

Emmonodia pudens.

Hypopyra pudens, Walker, Lep. Het. xiv. p. 1329, n. 13 (1857).
Emmonodia hypopyroides, Walker, *l. c.*, p. 1333, n. 1 (1857).
Hypopyra grandæva, Felder, Reise der Nov. Lep. iv. pl. cxv. fig. 11.
Var. *H. persimilis*, Moore, P. Z. S. 1877, p. 608.
Andamans, Borneo, Sumatra, and Nias. Type in Coll. B. M.

It is very doubtful, I think, whether this species occurs in India. Walker's locality, "Hindostan?", is quite unwarranted. Moore's *H. persimilis* is the form in which the dark blotch has wholly disappeared from the primaries; the type of *E. hypopyroides* is an example in which it is reduced to a small interrupted spot.

Hulodes, *Guen.*

Hulodes drylla.

Hulodes drylla, Guenée, Noct. iii. p. 209, n. 1609 (1852).
H. saturnioides, Guenée, *l. c.*, n. 1610 (1852).
Hypopyra restorans, Walker, Lep. Het. xiv. p. 1328, n. 12 (1857).
Dharmsala, Silhet, and Moulmein. In Coll. B. M.

The proper position of this genus is next to *Emmonodia*. Many of Guenée's families, as he left them, were nothing more than arbitrary collections of genera, having but little in common with one another. I suppose it would be difficult to find a more heterogeneous group than Guenée's family Bendidæ.

MAXULA, *Walk.*

Maxula unistrigata.

Hypopyra unistrigata, Walker, Lep. Het. xiv. p. 1327, n. 10 (1857).

Angerona? poensaria, Walker, *l. c.*, xx. p. 243 (1860).

Maxula idonea, Walker, *l. c.*, Suppl. 3, p. 1096 (1865).

Silhet, Darjiling, Moulmien. Type in Coll. B. M.

HAMODES, *Guen.*

Hamodes aurantiaca.

♀ *Hamodes aurantiaca*, Guenée, Noct. iii. p. 203, n. 1603 (1852).

♂ *Aphisma attacicola*, Walker, Lep. Het. xiv. p. 1383, n. 33 (1857).

N. India. In Coll. B. M.

I have very little doubt of the correctness of the above synonymy, and I strongly suspect that *H. discistriga* of Moore is only a variety of the same species.

BLOSYRIS, *Hübn.*

Brujas, Guenée, and *Latebraria* (part), Walk.

M. Guenée himself virtually admits the imperfection of his genus *Brujas*, every character he gives for distinguishing it being comparative, whilst the most closely related forms (possibly no more than varieties of one species) are generically separated by imaginary structural differences.

Blosyris opigena.

Phalæna opigena, Drury, Ill. Exot. Ent. ii. pl. 22, fig. 4 (1773).

P. acron, Cramer, Pap. Exot. iii. pl. 227, fig. B (1782).

Thermesia abadirina, Hübner, Samml. Ex. Schmett. Zeitr. n. 119, figs. 237, 238 (1823).

Cyclopis respiciens, Walker, Lep. Het. xiii. p. 1289, n. 3 (1857).

Lygniodes repellens, Walker, *l. c.*, xv. p. 1816 (1858).

Jamaica, Honduras, and Rio Janeiro. In Coll. B. M.

Hübner gives a reference to "Cramer, Kapell. 227. B. Gootenaria." How he managed thus to blunder it is impossible to say, since *Blosyris gootenaria* was described and figured in a later volume.

Blosyris vates.

Brujas vates, Guenée, Noct. iii. p. 141, n. 1525 (1852).

B. incedens, Walker, Lep. Het. xiv. p. 1256, n. 12 (1857).

B. despecta, Walker, *l. c.*, xv. p. 1819 (1858).

Pará, Amazons, West coast of America. In Coll. B. M.

Blosyris malitiosa.

Blosyris opigena, Hübner, Exot. Schmett. ii. pl. 211, figs. 1–4 (1806).

Brujas malitiosa, Guenée, Noct. iii. p. 140, n. 1521 (1852).

B. infans, Guenée, *l. c.*, p. 141, n. 1523 (1852).

B. includens, Walker, Lep. Het. xiv. p. 1256, n. 13 (1857).

Latebraria contacta, Walker, *l. c.*, p. 1284, n. 5 (1857).

Pará, Brazil, Theresopolis. In Coll. B. M.

A slightly variable species, closely allied to the following, which, however, differs somewhat in the position of the lines across the wings on the under surface, and may, therefore, be distinct.

(To be continued.)

NOTES AND OBSERVATIONS.

"Zygæna meliloti?"—Under this heading, Mr. J. H. Fowler has a note (Entom. 127, 128) to the effect that two examples of a *Zygæna*, which he had taken on a chalk-hill in Dorset, were pronounced by Mr. Charles Gulliver, of Brockenhurst, to be undoubtedly *meliloti*. Subsequently Mr. Fowler very kindly made me a present of these two moths, and on examination I found them to be very small and thinly-scaled specimens of *trifolii*, bearing a superficial resemblance to *meliloti*, but genuine *trifolii* without, to my mind, any shadow of a doubt. The only other record of the occurrence of *meliloti* in this country is to be found in Mr. C. W. Dale's 'Lepidoptera of Dorsetshire' (1886), and runs as follows:—"A single specimen was taken on Parley Heath, by J. C. Dale, years ago." Not having seen the specimen referred to, I can say nothing about it, but, as regards the locality mentioned, Parley "Heath" (or "Common," as it is called on the maps) is situated partly in Dorset and partly in Hants, and about four or five miles from the western boundary of the New Forest (Hants), in which lies the home of *Z. meliloti* in Britain.—Eustace R. Bankes; The Rectory, Corfe Castle, Dorset, Nov. 2, 1893.

The Melanism Controversy.—I was rather surprised by capturing a black variety of the bee, *Melecta punctata*, on the 16th of April last. The species is a fairly common one, and it is a parasite of another bee, *Anthophora retusa*, but it is the only instance of the black variety being found in Dorsetshire. Its appearance in such a bright and warm spring as we have had this year, seems rather opposed to the idea that melanism is caused by cold and sunless climates. Mr. Kane, in his paper on the above subject, says that he does not know that any portion of the Rhopalocera in the British Islands are remarkable for melanochroic tendencies. Perhaps not; but where do we find whitish or brilliant-coloured species of Lepidoptera, such as *Melanargia galatea*, *Lycæna corydon*, *L. adonis*, *Eubolia bipunctaria*, *Melanippe procellata*, the light variety of *Gnophos obscuraria*, &c.? Why, on the white and light-coloured soils of the South of England, *i. e.*, chalk and limestone. On the other hand, we find the dark variety of *G. obscuraria*, and various dark-coloured species, on black peaty soils,

Species the larvæ of which feed on lichens are mostly of a greenish hue, as *Bryophila, Cleora*, &c. Species the larvæ of which feed on reeds are straw-coloured, as *Macrogaster, Nonagria*, &c. Mr. Wollaston, in his 'Variation of Species,' notices the marked tendency which insects peculiar to saline spots would seem in a large measure to possess of converging, more or less obviously, to a lurid-testaceous or pale brassy hue in their colouring. Again, if we ascend to the higher creation, we find that animals and birds frequenting snowy regions are white, as the polar bear, lemming, snowy owl, ptarmigan, &c. I do not bring forward these facts for the sake of starting any dogmatic theory, but I think they are worthy of consideration by those who endeavour to account for the cause of melanism.—C. W. Dale; Glanvilles Wootton, Nov. 3, 1893.

Vanessa atalanta in Florida.—Amongst a large number of insects sent me by a friend from Florida, there is a specimen of *V. atalanta*. My friend tells me the butterfly is common there on the cold lands, that is, lands which were originally the bottom of a lake, and are cold probably on account of the quantity of moisture still about. Cabbages and potatoes, "which will only grow in these places," often get killed by about two degrees of frost. The butterfly forwarded to me is less in expanse by three lines than the British insect, the colours are not so bright, and the red band on the upper wings is centrally crossed by two conspicuous, triangular black blotches inverted to, but at a short distance away from, each other. In many British specimens there is, on the upper wings, on the basal side of the red band and near this band, a parallel, red, and wedge-shaped streak. This streak is seated on the subcostal ray, and stretched almost across the discoidal cell. I netted a specimen, Sept. 16th, at Delamere, in which the point of the streak is curved round and joins the red band. The Florida insect, like many British ones, is entirely without this wedge-shaped mark, which does not appear to be sexual. The male is figured by some authors, but I cannot find it anywhere described.—J. Arkle; Chester.

Sexual mark in Vanessa atalanta.—The female is credited with a small, round, white spot in the lower portion of the red band on the upper wings. I have seen this spot in the female. Sometimes it is very distinct; in other specimens it is almost microscopic, if not entirely absent. Is the mark ever absent in the female; in short, is it really sexual?—J. Arkle; Chester. [Although a white spot is frequently present in the red band on the fore wing of female *V. atalanta*, the mark cannot be regarded as a constant character of this sex. Further, we have conclusive evidence that the white spot is not confined to the female, but is found in the male also (*vide* Entom. xxv. 295).—Ed.]

Great scarcity of Larvæ.—I never remember autumnal larvæ to have been so scarce as this season. At the end of August I was beating for over three hours near Chingford and Loughton, and the result was most disappointing:—*Platypteryx unguicula* (3), *Metrocampa margaritaria*, *Eurymene dolobraria* (1), *Ephyra trilinearia*, *Dasychira pudibunda* (1), and *Halias prasinana* (2), nearly all from beech. I had worked the oaks for quite half an hour before I dislodged one lepidopterous larva. What a contrast to the same localities at the end of May, when larvæ were in numbers quite astonishing. I tried a few hours' birch-beating at the end of September, with the following result:—*Metrocampa margaritaria* (3), *Geometra papilionaria* (2), *Cabera pusaria* (1), *Notodonta camelina* (1), and *N. dictæoides*

(4), so that the last mentioned was apparently the commonest larva on the birches. With regard to the common larvæ, which are usually too plentiful in suburban gardens, I am able to say that I have not noticed either *Spilosoma menthastri* or *S. lubricipeda*, and only one of *Hadena oleracea*. The larvæ of the commonest species of the genus *Acronycta* appear to have been very scarce; and I have not seen *Orgyia antiqua* in any of its stages. Surely the early and prolonged heat of the past summer cannot be alone the cause of this strange dearth of larvæ.—Alfred T. Mitchell; 5, Clayton Terrace, Gunnersbury, N., Oct. 2, 1893.

British Butterflies.—Will readers of the 'Entomologist' kindly inform me what is the largest number of species of Rhopalocera they have met with in this country in any single *day* in each month of the year? Specification of the locality would also be useful. I should likewise be glad of similar information for each month of the present season.—W. Harcourt Bath; 195, Ladywood Road, Birmingham.

Abundance of Chysophanus phlœas in 1893.—This butterfly has been exceedingly plentiful during the present season in every locality visited by myself in South Britain, although it has been scarce for several years previously.—W. Harcourt Bath.

Abundance of Aleurodes brassicæ, *Walk.*—This little snow-white insect has this year appeared in such extraordinary abundance amongst the garden cabbage as to be a perfect pest. My gardener told me that one day, while hoeing amongst the cabbages, he had to run away, as he was beset with a swarm of these little pests, which got into his eyes, nose, and mouth. Even when the cabbages are washed for dinner there are thousands of these little insects floating on the top of the water. The only insect I have ever known to equal them in numbers is a fly, *Sepsis hilaris*. After sweeping grass in woods I have known my net so full of them as to appear like a ball. Whether this little pest has appeared in such extraordinary abundance all over England, or only in Dorset, I do not know. Perhaps some of your other correspondents will enlighten us. It belongs to the Homoptera, and is allied to the Aphidæ.—C. W. Dale; Glanvilles Wootton, Nov. 3, 1893.

The Field Cricket (Gryllus campestris).—Will readers of the 'Entomologist' kindly inform me the names of all the localities where they know this local insect to exist? Any information concerning its habits would also be very acceptable.—W. Harcourt Bath.

Noctuæ and Flowering Grasses.—Anent the communications of your correspondents, Messrs. G. O. Day and H. E. Taylor (*ante*, pp. 229, 321), respecting the attractiveness of the flowers of certain grasses, it may interest your readers to be reminded that, just half a century ago, in the pages of the 'Zoologist,' 1843, p. 64, and also in his charming little book, 'The World of Insects,' p. 86, my old friend Douglas wrote as follows:—"On the evening of the 20th of August last, Mr. Bedell and myself were returning from mothing in the fields between the Kent Road and Greenwich railway, having had but very little success, when a moth was seen to rise from the grass, and, being caught, proved to be *Graphiphora punicea* (now *bella*) [which is to say, *Noctua rubi* of the present day]. We next began to sweep the grass, and were surprised to find moths, not singly or in dozens, but by hundreds. The next night saw us there with lanterns and other necessary apparatus, and if we were surprised the previous night, we were

then much more so. Almost every blade of grass had its insect; in fact, I do not believe that so many moths were ever before seen together. The majority were females, and Mr. Bedell found some eggs, which had apparently been recently deposited on the grass. Several subsequent visits were paid to the spot, and always with the same results; the quantity of moths visible, however, varying greatly on different nights, cold and windy weather having the effect of diminishing the number. The species taken were *G. plecta, G. punicea (bella), G. c-nigrum, L. umbrosa, S. xanthographa, G. micacea, A. fibrosa, L. pallens, O. lunosa, L. spectrana,* and *N. hybridalis.*" —H. G. Knaggs; Camden Road, London, N.W.

Aberrations of Lycæna icarus, *Rott.*—Perhaps the following notes on the aberrations of *Lycæna icarus*, which I have taken this season, may be of interest. Variety (1) is a female example, which I took in Nice on July 4th, having a small supernumerary dot joined to the basal spots on the under side of the fore wings. (2) Also a female, and taken on the coast at Nice, has the hind-marginal row of spots, which almost coalesce, uniform in size, thus forming a band. (3) I caught a very interesting female specimen, on August 30th, at Caussols, Alpes-Maritimes (3795 feet altitude), combining in one individual the forms ab. *icarinus*, Scriba, and v. *cærulea*, Gar.; that is to say, that the under side was of the ab. *icarinus*, with the basal spot on the under surface of the front wings absent, and the upper side was of the ab. *cærulea*, being suffused with blue in the usual manner. (4) I caught a female *icarus* at the last-mentioned place, on August 31st, having the two black spots nearest the inner margin, on the under side of the fore wings, confluent and arched, thus forming a crescent. I took two more subsequently (one male and one female); and my cousin E. C. Casey informs me he has another in his collection, taken prior to my examples; so that it appears not impossible that this last form may be considered as a constant variety, if it is not already recorded. The above are only a selection, and I could describe several more of almost equal interest. From a close examination of some numbers of *icarus*, I found that nearly every one had one or more extra spots on the under side (sometimes so small as to be hardly noticeable), which were not present in the type.—F. Bromilow; Caussols, Alpes-Maritimes, France, Sept. 19, 1893. [Most of the aberrations of *L. icarus* referred to by our correspondent are not uncommon in Britain; but remarks on the variation of this, and also of other species, in places outside our own limited area, are always of interest.—Ed.]

Variation in the size of Argynnis paphia.—While collecting in the New Forest last June, I noticed very considerable variation in size of *A. paphia*. A dwarf form was particularly numerous, some being remarkably small, the males measuring in expanse only 2 in. against 2 and 11-16th in. of the average male, and females 2 and 1-8th in. against 2 and 7-8th in. average female. Undoubtedly this dwarfing is attributable to the great dryness of the season, as *A. paphia* appears to be much influenced by climate, which was especially noticeable this season; for instance, the var. *valesina*, although fairly abundant, was very inferior in colour and size; hardly with exception, all the specimens I have seen of this year's capture were decidedly paler in colour, having a washy appearance, in great contrast to the large, rich and dark specimens of damp or rather wet seasons. The white-spotted form was this year abundant, which may also tend to bear on the subject; my friend Mr. J. H. Carpenter took a very fine series of these

white-spotted forms, including a few finely blotched females exhibiting partial coloration of *valesina*, which, so far as I have observed, is absent in the males, but Mr. J. W. Tutt mentions having seen it in a number of males captured this year in the New Forest.—F. W. Frohawk ; Oct., 1893.

Autumnal emergence of Argynnis adippe.—*Apropos* of my note upon a second emergence of *A. paphia* (Entom. 320), I am now able to record a still more remarkable case, *viz.*, a second emergence of *A. adippe*. On Sept. 2nd last, upon examining some plants of *Viola canina* upon which ova of *A. adippe* had been deposited the end of last June, I was much surprised to find a few of the ova had hatched, as I discovered one larva in its first stage, evidently only a few days old; and another in its third skin, *i. e.*, after the second moult, which remained in that stage until Sept. 27th, on which day it moulted for the fourth and last time; it attached itself for pupation on Oct. 12th, and pupated the following day, which resulted in a perfect male emerging to-day, Nov. 21st. I may mention that, normally, *A. adippe* remains for eight months in the egg state, the eggs generally being deposited at the end of July, and hatching the following spring about the end of March. From the advanced state of the larva when I first noticed it on Sept. 2nd, it had evidently hatched about the middle of August, thereby remaining for only six weeks in the egg state. I purposely avoided forcing the specimen during any stage, by keeping it in a temperature similar to that out of doors as much as possible; and since Nov. 10th the pupa has been placed in a temperature averaging 55°, in company with two *A. paphia*, which produced one fine normal female on the 20th, and a beautiful specimen of the var. *valesina* emerged on the 21st, at the same time as the *A. adippe*. On Sept. 20th I found six more young larvæ of *A. adippe* in first stage. The majority of the ova are still unhatched, therefore will pass the winter as in the usual way of the species.—F. W. Frohawk; Balham, S.W., Nov., 1893.

The Burney Collection.—On November 21st and 22nd the valuable collection of British Macro-lepidoptera, formed by the late Rev. Henry Burney, was sold at Stevens's Auction Rooms. The butterflies were offered in one hundred and seventeen lots. Twelve specimens of *Pieris daplidice* were disposed of at an average of 16s. 9d. each, whilst a single example of this species and a variety of *Euchloë cardamines* were knocked down for £3 15s., the variety evidently ruling the bidding in this case. *Argynnis niobe*, of which there were two examples without data, were not much fancied, as lots 14 and 15, each of which included one specimen of this species, together with vars. of *A. aglaia*, only realised 10s. and 8s. respectively. There were twenty specimens of *A. latona*, and sixteen of these were disposed of in lots of four each, at £1 12s. 6d., £2, £1 10s., and £1 6s. Two specimens of the last species, with some vars. of *A. selene*, fetched 20s.; and two, with a fine suffused marked example of *A. selene*, found a purchaser at £3. Four more or less striking, varieties of *A. euphrosyne* were sold for £3 15s., and two uncommon ones for £5. Twelve specimens each of *Melitæa athalia* and *M. aurinia*, including an almost black example of the former species and one or two unimportant aberrations of the latter, fetched £2 15s. *Vanessa c-album* realised about 1s. per specimen. A variety of *V. urticæ*, comprised in a lot with other specimens of this species, and *V. polychloros*, was bought for £2 15s. The price of *V. antiopa*, of which there were no less

than sixteen examples (one dating as far back as 1806), ranged from 8s. to 20s, according to condition and history. Two nearly black *Limenitis sibylla*, in fair condition, were disposed of at £1 15s. each. The great feature of the sale was the magnificent series of *Chrysophanus* (*Polyommatus*) *dispar*, of which there were thirty-one specimens (16 males and 15 females). These were sold separately; the eighteen examples (male and female), offered on the first day of the sale, realised from £2 10s. (once) to £6 10s. (twice), and the thirteen (male and female) put up on the second day went for from £2 5s. to £5 10s.; the total sum for the entire series being £132 10s., equal to an average of about £4 5s. per specimen. Four lots of *Lycæna semiargus* (*acis*), five pairs in a lot, were sold at £4 5s., £4, and £5, and £4 5s., about an average of eight shillings per specimen. Another pair of *L. semiargus*, together with sixty *L. alsus* and forty *L. argiolus*, produced 25s. A fine series of fifty-three *L. arion* were sold in lots of from five to twelve examples in a lot, and realised about 2s. 6d. a specimen. Space will not admit of reference to the Heterocera, but these will be reported on in the January 'Entomologist.'—R. S.

CAPTURES AND FIELD REPORTS.

Notes from North-east Hampshire.—*Vanessa cardui* seems to have been conspicuous by its absence this summer, though some of the hybernated ones were seen in the spring. Until to-day I had not met with it, but I saw a single specimen in a warm sheltered corner this afternoon; I looked in vain for others. It has been a very curious season altogether, as far as butterflies are concerned especially. The larvæ of *V. io* and *V. urticæ* were in countless numbers in this district, and an unusual quantity of hybernated imagines of *V. polychloros* were noted in the spring. What has become of everything? I believe, with others to whom I have spoken on the subject, that the birds and the swarms of wasps made away with all the larvæ and pupæ in the unusually dry summer. The only butterflies numerous in this locality have been *Vanessa atalanta* and *Polyommatus phlæas;* the latter seems to have been unusually plentiful everywhere. I may note that I saw cole tits hawking among the oak-trees after imagines of *Thecla quercus*. I never observed this before. Evidently the birds had a bad time of it, and devoured anything they could get hold of. Butterflies appear to have suffered chiefly, probably from the exposed habits of the larvæ and pupæ; but many moths also, plentiful here in previous years, were scarce or quite wanting. Notable exceptions were *Calymnia diffinis*, unusually common at sugar, *Catocala nupta*, the inevitable *Apamea didyma* (*A. basilinea*, quite rare), and *Noctua xanthographa;* while later on *Macroglossa stellatarum* appeared in considerable numbers, *Agrotis segetum* in swarms, and *Pterophorus monodactylus* turned up in quantities both at sugar and ivy. Can the hosts of *Agrotis segetum* owe their happy immunity from the bill of their enemy, the rook, to the hard state of the ground, which must have prevented the birds from digging under the turnips? In many ways the season of 1893 has been a very extraordinary one, and insects have appeared at most unexpected times. Among other startling captures, I may mention those of *Acronycta rumicis* on July 26th, and again early in September, and of *Leucania comma* (a fine fresh

specimen) on October 9th. *Xylophasia monoglypha* turned up at sugar this very day!—S. G. Reid; Froyle House, Alton, October 18, 1893.

Polyommatus bœtica.—In July, 1890, I was at Brighton for two or three days, and went on to the downs by the race-course about 6 o'clock in the evening, where they were cutting the corn. I had, as usual, my net with me, and caught what I thought was an ordinary "blue" (i. e. *Polyommatus alexis* of Curtis). Having no entomological pins with me, I pinned the insect with an ordinary black pin. I did not trouble, as it was rather battered. Taking it home, I put it by, and did not look at it for over a year, when I discovered it to be the *Lycæna bœtica* given in Morris's 'British Butterflies.' I should then have written to your valuable Magazine, only I had unfortunately a serious illness. I believe the above *Lycæna bœtica* is the same as *Polyommatus bœtica*. The truth of the above statement and of the capture at Brighton can be corroborated by several of my friends.—J. N. Smith; 30, Shooter's Hill Road, Blackheath, S.E.

Vanessa antiopa in South Devon.—The Rev. W. F. Tiernay, curate of Kingston, near this place, tells me that while his brother, who was staying with him, was walking down to the sea at Mothecombe, on Tuesday, Aug. 15th, he saw a beautiful specimen of the "Camberwell beauty" (*Vanessa antiopa*). He knows the insect well, being an entomologist, and having seen two specimens in his sister's collection which were caught in Yorkshire, and he had a good view of this one quite close to him, both settled and flying, but he did not try to catch it, as he had no butterfly-net with him. I observe that the "clouded yellow" (*Colias edusa*) has been making its appearance again in this neighbourhood this year pretty frequently for the last six weeks.—G. C. Green; Modbury Vicarage, S. Devon, August 23—'*The Field*,' August 26, 1893.

Clostera anachoreta.—It may interest some of your readers to know that we found, on August 23rd last, a cluster of nineteen ova of *Clostera anachoreta* on sallow at Bulverhythe, about three miles from here. They all hatched between the 30th of the month and Sept. 4th, the young larvæ spinning up at once between the leaves of sallow, on which they fed well; when full-grown they were remarkably fine and very handsome. They entered the pupæ state about the middle of October. Out of the above number I have sixteen pupæ, three of the larvæ giving in while going through their third change. Thinking the fact of finding this species in the wild state may be interesting to other collectors, I am hoping you will publish this note in the next number of the 'Entomologist.'—A. D. Edwards; 56, Marina, St. Leonards-on-Sea. [As it does not appear that our correspondent has bred *Clostera anachoreta* from the ova he refers to, we presume that he is well acquainted with this species in all its early stages, and therefore does not consider it necessary to await the emergence of the perfect insect to confirm his identification.—Ed.]

Sterrha sacraria in Hants.—We took a fine specimen of *Sterrha sacraria* on October 20th; it flew into a bed-room, attracted by the lamp. We have also taken a single specimen of *Sphinx convolvuli* at *Nicotiana* flowers. With the exception of the above and the *Plusia moneta* already recorded, the season has been much less productive of good insects than last year. Up to the middle of September I only saw one *Colias edusa*, but after that time they were fairly common on the cliffs.—R. E. Brameld; Ivy Cottage, Mudeford, Christchurch, Nov. 4, 1893.

Notes from Norwich.—In the early part of the summer we had the opportunity of rearing about twenty caterpillars of *Ennomos tiliaria*. Newman, 'British Moths,' p. 57, says:—"I know nothing of the caterpillar of this moth. Mr. Stainton, translating Treitschke, says it is wrinkled, brown, marbled with darker brown, with humps on the 6th and 10th segments," &c. From this it appears that Newman and Stainton were not acquainted with this caterpillar. On July 13th a female specimen of *Arctia caia*, which we had just taken, layed some eggs. The caterpillars emerged on the 24th of the same month. On Sept. 6th some of them were full-fed and commenced spinning; and on the 10th the first one pupated. By Oct. 9th most of them were in the chrysalis, and the perfect moths are now appearing. Is not this a very unusual occurrence? Eight only of them hybernated, at less than an inch in length. We took one example of *Arctia* (*Spilosoma*) *urticæ* at Sprowston, on May 20th, at a lamp; also about thirty specimens of *Heliophobus* (*Neuronia*) *popularis*, of which two only were females, and from these we have been fortunate enough to obtain about sixty eggs, which we hope to rear next summer.—B. C. Tillett; Sprowston Lodge, Norwich. [*Ennomos tiliaria* is now more generally known as *Eugonia alniaria*. The larva was described in 1866 by the late Rev. J. Hellins (Ent. Mo. Mag. iii. p. 162), and by the late Edward Newman in 1870 (Entom. v. p. 196). It is also figured by Wilson in 'Larvæ of British Lepidoptera,' pl. xvii. (1880). The partial second brood of *Arctia caia* referred to is not an altogether exceptional occurrence, but is interesting because it appears to have been the result of the late remarkable summer. In other cases recorded of second broods of this species the conditions were largely artificial.—Ed.]

Noctuæ in Forfarshire.—The following is a list of Noctuæ taken in the neighbourhood of Montrose, N.B., between July 27th and October 3rd, 1893; all captured either at sugar or ragwort flowers:—*Leucania conigera*, *L. lithargyria*, *L. impura*, *L. pallens*, *Hydræcia nictitans*, *H. micacea* (very common), *Xylophasia lithoxylea*, *X. polyodon* (var. *æthiops*, several), *Apamea oculea*, *Miana strigilis*, *M. literosa* (abundant), *Charæas graminis* (var. *rufa*), *Luperina testacea* (var. *x-notata*), *Celæna haworthii*, *Mamestra brassicæ*, *Caradrina cubicularis*, *Rusina tenebrosa*, *Agrotis valligera*, *A. saucia*, *A. nigricans* (var. *fuliginea*), *A. suffusa*, *A. præcox* (fine), *A. cursoria* (vars. *brunnea* and *sagitta*), *A. tritici* (vars. *valligera* and *albilinea*), *Triphæna ianthina*, *T. fimbria*, *T. pronuba*, *T. orbona* (var. *comes*, common), *Noctua castanea* (one only at sugar), *N. baia*, *N. glareosa* (dark grey varieties, and about a dozen var. *suffusa*), *N. c-nigrum* (abundant), *N. augur* (common), *N. brunnea*, *N. festiva*, *N. conflua* (a few), *N. xanthographa*, *N. plecta* (first taken, August 26th), *Orthosia lota* (three at sugar), *Anchocelis pistacina* (a few), *A. litura* (most abundant), *Xanthia silago*, *X. cerago* (var. *flavescens*), *X. ferruginea*, *Cosmia trapezina*, *Polia chi* (rather dark), *Epunda nigra* (fairly common), *Hadena oleracea*, *Calocampa vetusta* (thousands), *Plusia gamma*, *Amphipyra tragopogonis*, *Mania typica*. Mr. Duncan, the curator of our museum, has taken one specimen of *Cloantha solidaginis*, one *Agriopis aprilina*, and one *Thyatira batis*.—Montague S. W. Gunning; The Mall, Montrose.

Colias edusa in Devonshire.—*Colias edusa* appeared rather plentifully during the spring months on the coast near Seaton, the first butterfly on March 29th, and I have either seen or captured it every month since. On June 20th I took a fresh male near Bridestowe; and on July 3rd both

saw and took several. From this time on the insect appeared in considerable numbers. It was abundant near the Start point on July 12th and 13th. During September it could be observed on every fine day, continuing all through October; and I noticed several on November 2nd on the coast here.—John N. Still; Seaton, Devon.

Colias edusa in Kent.—I saw several specimens of *C. edusa* on the wing to-day, along the west cliff towards Sandgate; some were in fair condition; others were worn, and had evidently been on the wing for some considerable time. They have occurred sparingly from time to time the whole of the season through. The date mentioned being late in the season for the species, it is interesting.—W. Purdey; Folkestone, Oct. 29, 1893.

Colias in Jersey.—With regard to the occurrence in Jersey of *Colias edusa* and *C. hyale*, in the seasons of 1892 and 1893, I should like to make the following remarks. In 1892 *C. edusa* was exceedingly common, being found almost everywhere and in vast numbers. Its pale var. *helice* was also far from rare. *C. hyale*, on the contrary, was very scarce; indeed, I only know of one specimen being seen in the whole of the season. In 1893 although *C. edusa* was not rare, yet its numbers fell far short of last season's, while *C. hyale* was much more abundant. A good many of the latter have been seen; almost as many, indeed, as of *C. edusa*.—Stanley Guiton; 31, Bath Street, St. Helliers, Jersey, Oct. 24, 1893.

SOCIETIES.

Entomological Society of London.—*November 8th*, 1893.—Henry John Elwes, Esq., F.L.S., F.Z.S., President, in the chair. Mr. Henry Jerome Turner, of 13, Drakefell Road, Hatcham, S.E.; Mr. F. W. Urich, of Trinidad, West Indies; and Mr. John Cooper Webb, of 32, Henslowe Road, Dulwich, S.E., were elected Fellows of the Society. Mr. F. Merrifield exhibited some low-temperature forms of *Vanessa atalanta*, artificially produced, which showed a great reduction in the area of the scarlet bands on the wings, and a great increase in the area of the white and bluish markings. Professor E. B. Poulton described and illustrated, by means of a map, a simple method for showing the geographical distribution of insects in collections. Below the name-label of the genus, and of each species, were placed coloured slips of such a size as to be distinctly visible at a distance, and the colours, with one exception, corresponded with those made use of in the map at the beginning of vol. i. of Dr. A. R. Wallace's 'Geographical Distribution of Animals.' The exception referred to was the Palæarctic Region, which was coloured blue, instead of pale brown as in the original. Framed maps of the same kind, and coloured in the same way as the one he exhibited, were to be placed in museums, so as to be readily seen from various groups of cabinets. In these maps the names of the Regions, and numbers of the Sub-regions, were distinctly printed, so that they could be read at a considerable distance. Prof. Poulton added that the method he had described was being gradually introduced into the Hope Collections at Oxford. Mr. McLachlan stated that a somewhat similar plan to that described by Prof. Poulton for showing the geographical distribution of insects, had been adopted in the Brussels Museum by Mons. Preudhomme de Borre. Mr. W. F. H. Blandford, Dr. D. Sharp, Mr. C. J. Gahan, Mr. C. O. Waterhouse, Mr. S. Stevens,

Mr. Osbert Salvin, Prof. Poulton, and the President continued the discussion. Dr. Sharp read the following extract from Dr. Livingstone's 'Narrative of an Expedition to the Zambesi,' and stated that he was indebted to Mr. Gahan for calling his attention to it:—"We tried to sleep one rainy night in a native hut, but could not because of attacks by the fighting battalions of a very small species of *Formica*, not more than one-sixteenth of an inch in length. It soon became obvious that they were under regular discipline, and even attempting to carry out the skilful plans and stratagem of some eminent leader. Our hands and necks were the first objects of attack. Large bodies of these little pests were massed in silence round the point to be assaulted. We could hear the sharp, shrill word of command two or three times repeated, though, until then, we had not believed in the vocal power of an ant; the instant after we felt the storming hosts over head and neck, &c." Prof. Poulton read a paper entitled "On the sexes of larvæ emerging from the successively laid eggs of *Smerinthus populi*." Mr. Merrifield, Dr. Sharp, and the President took part in the discussion which ensued. Mr. W. L. Distant communicated a paper entitled "On the Homopterous genus *Pyrops*, with descriptions of two new species." The President read a paper, written by himself and Mr. J. Edwards, entitled "A revision of the genus *Œneis*," which he characterized as the most cold-loving genus of butterflies. He also exhibited his complete collection of species of this genus, which was said to be the finest in the world. A long discussion ensued, in which Prof. Poulton, Mr. McLachlan, Mr. Salvin, Mr. Bethune-Baker, the Rev. Dr. Walker, Mr. Kirby, Mr. Merrifield, Mr. Barrett, Mr. Blandford, Dr. Sharp, and Mr. Jacoby took part.—H. Goss, *Hon. Secretary*.

South London Entomological and Natural History Society.—*Thursday, Oct. 26th*, 1893.—J. Jenner Weir, F.E.S., Prsident, in the chair. Mr. Frohawk exhibited a second brood of *Argynnis paphia* from eggs of var. *valesina* deposited in June, only one of the four specimens being of the female parent form. Mr. Tutt remarked that he had bred second broods of *A. paphia* and *Vanessa urticæ*. Mr. South exhibited Continental specimens of *Lycæna bellargus* with its var. *ceronus*, a female, blue like the male, with fulvous spots on the upper side; *L. corydon* and its var. *syngrapha*, a female, blue like the male, with dusky margins, and a specimen with the fringes perfectly white; also specimens of *L. arion*, some of which were large in size and others dark in colour. Mr. Weir remarked that his many years' attention to the "blues" at Lewes had resulted in the detection of but very little variation. Mr. S. Stevens exhibited a specimen of *Tinea simplicella*. Mr. Hamm, long series of the two broods of *Leucophasia sinapis*, well illustrating both the seasonal and sexual dimorphism of this species; *Colias edusa* with several examples of var. *helice*, among which was a female with only the faintest trace of a spot in the black border; long series of *Melitæa aurinia*, bred from Hampshire larvæ, with captured specimens from Swansea for comparison; also a remarkable scaleless aberration (some of the Hants specimens were comparable to var. *hibernica*); a specimen of *Polyommatus phlœas* with fewer spots on the primaries than members had noticed before; bleached vars. of both *Epinephele ianira* and *E. tithonus*; a most remarkable var. of *E. hyperanthus*, in which one wing only was normal, the other three having the yellow rings on the under side much enlarged, the colour being irregularly spread over a considerable surface, and streaks protruding into the black ground colour; a var. of *Smerinthus tiliæ*;

a long series of *Toxocampa pastinum;* a case containing long and varied series of all the genus *Xanthia*, that of *X. gilvago* from Reading being especially noticeable; some fine *Dasycampa rubiginea* and *Cosmia paleacea*, with many other species. Mr. Carpenter, bred series of *Triphæna comes* from Aberdeen, and of *Aplecta prasina* from Essex. Mr. Enock, a very dark female of the dark April brood of *Lycæna argiolus*, taken at Torquay by Master John Enock. Mr. P. Bright, a gynandrous specimen of *Argynnis paphia*, the left side male, the right female; a specimen of *Ematurga atomaria*, very dark with only a few traces of the yellow markings, and another with three wings normal, the right inferior being uniformly dark; a very dark female *Stilbia anomala;* and a varied series of *Emydia cribrum*, some being banded. Mr. Adkin, the following types of variation in *Polyommatus phlæas*, taken at Eastbourne on Sept. 4th:—(1) showing the submarginal row of black spots on the primaries reduced in some specimens to minute dots; (2) showing spots large, costa and wing-rays thickly dusted with black scales; (3) discoidal spot and no. 3 of the submarginal series connected by a black streak; (4) spots showing a tendency to elongation; also a long variable series of *Boarmia repandata*, bred during August, from South of Ireland ova,—among them were examples of the *conversaria* and *destrigaria* forms. He mentioned that this was only a partial second brood, about half the larvæ being now in hybernation. He considered this remarkable, as his long experience showed this species to be most persistently single-brooded, and he had in this case taken no special care to induce the larvæ to feed up. Mr. McArthur, very dark specimens of *B. repandata* (2nd brood), bred from the same locality as the last. Mr. Carpenter remarked that he had attempted to force the larvæ of this species, but unsuccessfully. Mr. Billups, the Tsetse Fly (*Glossina morsitans*), with *Stomoxys calcitrans*, the nearest akin to it we have in this country; also the rare species of Sarcophagidæ, *Cynomyia mortuorum*, captured at Oxshott in July, 1891. Mr. Weir, *Heliconius rhea* and its mimic *Papilio pausanias*, and remarked that not only the colour of the *Heliconius*, but the shape also, were closely mimicked by the *Papilio*, in which latter respect it departed very much from the usual form of the Papilioninæ of South America. Mr. Frohawk, pupa of *Argynnis adippe*, and a discussion ensued relative to the two types of pupa noticed in the genera *Argynnis* and *Vanessa*.—H. Williams and H. Turner, *Hon. Secs.*

November 9th.—Mr. C. Fenn, F.E.S., Vice-President, in the chair. Mr. R. Adkin exhibited a bred series of *Hypsipetes ruberata* from Sutherlandshire; also *H. sordidata* and *Emmelesia minorata* taken in Inverness. The *H. ruberata* varied from pale grey, with numerous transverse darker striæ, to light chocolate-brown, with slightly darker basal patches; whilst some were light greenish grey, with dark brown lines. Some of the *H. sordidata* were of dark mottled brown, while others were greenish. A discussion ensued concerning the food-plant of *H. ruberata;* it was stated that those bred from sallow were almost invariable and of the red form, while those from willow were most variable. Mr. Carpenter, *Boarmia repandata*, bred from the New Forest, about half the brood being the *conversaria* form, but not so striking as the N. Devon race; one specimen was intermediate in colour. Mr. West, a light var. of *Abraxas grossulariata* taken at Streatham. Mr. Oldham, light forms of *Agrotis segetum* from Woodford, and dark ones from Norfolk; also a piece of ash-bark, channelled by either a *Tomicus* or *Scolytus*. Mr. Perks, several species of

Fungi, including *Agaricus ulmarius*, an edible species, from St. James's Park. Mr. Watson reported a possible second brood of *Apatura iris* in the New Forest, he having taken a full-fed larva on Oct. 7th, which pupated, and he was daily expecting the butterfly to emerge. Mr. Carrington gave a most interesting account of his recent experiences in Manitoba. He stated that the day after leaving Moville a specimen of *Vanessa urticæ* appeared on deck, and continued to be seen until the day before reaching land; and that on the return voyage several species of Lepidoptera were observed, having no doubt been sheltered in hay, which formed part of the cargo. West from Quebec up to the forest region the vegetation seemed but little different from that of Europe. The most striking flower was the chicory (*Cichorium intybus*), while the ox-eye daisy (*Chrysanthemun leucanthemum*) was along the railway banks in profusion. This latter had crept for quite 200 miles into the forest region, but was only seen on the banks. Here on the Umbelliferæ were seen quantities of *Argynnis*, besides many other species; and he considered these banks and the numerous station-clearings to be admirable collecting-grounds. There seemed but little life in the pine forests away from the railway track. *Vanessa antiopa* was seen here and there, and a *Papilio* was common in one place. Insects seemed little disturbed by the passing train, and a few came into the carriages. In the prairie region there was more life; Lepidoptera were less plentiful, but Neuroptera and Orthoptera were in swarms; while some of the Diptera, presumably a *Culex*, were almost intolerable from the persistence of their attacks. Messrs. Fenn, Watson, and others took part in the discussion which ensued; and a hearty vote of thanks to Mr. Carrington was unanimously passed.—Hy. J. Turner, *Hon. Sec.*

Lancashire and Cheshire Entomological Society.—*Nov. 13th.* Mr. S. J. Capper, F.L.S., President, in the chair. The subject for discussion was the Vanessidæ. Owing to the absence of Mr. C. H. Schill, who was to have given a paper on this subject, Mr. F. N. Pierce, F.E.S. (Hon. Secretary), read a few notes on the genus. There were a large number of specimens exhibited, the President showing many fine varieties from his collection, among which were the celebrated specimen of *Cynthia cardui* from the collection of the late Mr. Owen, having the white spots at the apex of the fore wing obliterated by dark scales, and blind specimens of *Vanessa io*. Mr. Harker exhibited a fine *V. atalanta*, the red border being creamy yellow. Mr. Walker exhibited his unique collection of varieties of *V. antiopa*, bred by him from Canadian pupæ. Mr. Watson, *Teniopalpus imperialis*. Mr. Scott, on behalf of Mr. H. S. Clark, a specimen of *Ophion obscurum* and *Paniscus tarsatus*, which had been sent to him as having stung a woman in Douglas, causing blood-poisoning.—F. N. Pierce, *Hon. Sec.*

Lower Mosley Street (Manchester) Natural History Society.—The 33rd Annual Soirée of this Society was held on October 28th, Mr. Thomas Rogers, President of the Society, in the chair. Amongst the exhibits, Mr. John Watson brought his collection of exotic Papilioninæ, consisting of upwards of 200 species. Specially interesting were fine series of *Teinopalpus imperialis*, including a dark variety of the female; bred series of the African *Orpheides demoleus;* and some very fine specimens of the N. American *Jasoniades turnus*, and its black var. *glaucus*, Linn., Other interesting species were *P. alcinous* var., from the interior of Japan (a mountain form); and a black var. of *P. paris*, with androconia on the

2nd submedian nervule of primaries, similar to that found on *P. ganesa* and others in this group. Mr. Watson also showed, on behalf of Mr. J. C. Hudson, who has for years lent rare insects to these soirées, a drawer of both sexes of *P. ascanius*, and a variety of the female; also *P. agavus* in both sexes.—Henry Hyde.

RECENT LITERATURE.

The Life of a Butterfly: a Chapter in Natural History for the General Reader. 16mo, 186 pp., 4 plates. By Samuel H. Scudder. Henry Holt & Co., New York.

This charming little volume is written in a style so untechnical that the general reader, to whom it is addressed, will find no difficulty in understanding it, and will be both interested and instructed. To the British reader, even if he be a scientific entomologist, the book will be very welcome, because it brings together, in a small compass, a vast amount of concentrated information regarding *Anosia plexippus*, which, since the year 1876, has been occasionally taken in England in all of the counties having coasts on the English Channel. It must not, however, be supposed that the work deals only with *Anosia plexippus*, but, to use the author's own words, "By using a single butterfly as a special text, one may discourse at pleasure of many."

Chapter IV is particularly interesting; it treats of the vagrancy of the species. Even in America, there is strong reason to believe that it is a regular migrant north of 40°, or perhaps even further south, on the Atlantic border, and that its real home is in the tropics. Although the arrival of the butterfly in the spring has not been clearly observed, the departure in the autumn of immense flights passing southwards has been often seen.

With regard to this autumnal migration, Dr. John Hamilton, of Alleghany, Pennsylvania, says, writing from New Jersey:—"The multitude of this butterfly that assembled here the first week in September (1885) is almost past belief. Millions is but feebly expressive,—miles of them is no exaggeration." There is very little doubt that this was a genuine migration, because it is stated that "not a stalk of their food-plant (*Asclepias*) grows on the island."

In Chapter VII the subject of "Scent-scales: a question of sexual selection," is treated of. The author arrives at the conclusion that androconia are organs for the production of scent, and that the sense of smell is in the antennæ of Lepidoptera. This chapter is particularly valuable to purely British entomologists, because in works on our indigenous Lepidoptera the existence of these organs is generally ignored.

Chapter IX is a good lesson in classification, dealing with the correlation existing between the abortive legs of the male and the hanging of the chrysalis in the Nymphalidæ.

Chapter X is devoted to nomenclature, a subject in which Mr. Scudder has no superiors, and is therefore highly instructive. It appears that the conservatism of the American entomologists causes

them to persist in naming the species in question *Danais archippus*, notwithstanding the fact that that old generic name was given to a group of quite another family of butterflies, and that the Limnain division of the Euplœinæ has long been divided into some 25 genera, of which the American genus *Anosia* forms one.

Upon the whole the book may be recommended to all who cultivate a taste for philosophical Natural History. The book is most appropriately dedicated "To the foremost-student of the life-histories of American butterflies, William Henry Edwards, of West Virginia."

J. J. W.

Our Household Insects: an Account of the Insect-Pests found in Dwelling-houses. By Edward A. Butler, B.A., B.Sc. (Lond.). Pp. 344. London: Longmans, Green & Co. 1893.

A collection of articles previously published in 'Knowledge.' The book is divided into seventeen chapters, each of which is well written, and bears evidence of much careful investigation into the habits of the objects dealt with. A large amount of information from various trustworthy sources is also incorporated. It would be difficult to mention any insect occurring in dwelling-houses that is not referred to, and all that is useful to know concerning it fully expounded. Many well-executed wood-cuts and seven photographic plates give additional value to the book, which we can heartily commend to the notice not only of the general reader but also of the entomological student.

OBITUARY.

James Batty, of 65, Fawcett Street, Sheffield, died on October 14th, aged 62 years. He was an excellent type of the working-man Lepidopterist, and the last surviving practical worker of the old Sheffield Entomologists' Club, which comprised many excellent naturalists thirty or forty years ago. Batty had an excellent knowledge of larvæ, and was the discoverer of the larva of *Tapinostola elymi* and *Celæna haworthii*. He was a regular correspondent with the late Mr. Wm. Buckler and the late Rev. Joseph Hellins, and used to keep them well supplied with material for description. He was also a good Micro-Lepidopterist, and has left a fairly typical collection of Tortrices behind him. Apart from these he kept no collection, having sold his some years ago, I believe to Mr. J. B. Hodgkinson. He then gave up his hobby till a few years ago, when he recommenced to exchange for species he either had not seen before or was not familiarly acquainted with. Two years ago he started his small collection of Tortrices. He will be much missed by the writer, as they have been hundreds of excursions together.

A. E. H.

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