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THE

ENTOMOLOGIST

An Illustrated Journal

OF

GENERAL ENTOMOLOGY.

EDITED BY RICHARD SOUTH, F.E.S.

WITH THE ASSISTANCE OF

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

VOLUME THE TWENTY-FIFTH.

LONDON:

WEST, NEWMAN & CO., 54, HATTON GARDEN;
SIMPKIN, MARSHALL, HAMILTON, KENT & CO., LIMITED.

1892,

“ Sometimes I let a sunbeam slip
To light her shaded eye ;
A second fluttered round her lip
Like a golden butterfly.”

TENNYSON.

“ Through the sunny summer sky,
Came a sailing butterfly.
* * * * *
* Dancing through the sweet sunshine,
* Glad with clover’s ruddy wine !

Stopping just to gaily sip
The wild pansy’s purple lip,
Or to softly swing and rest
On an apple-blossom’s breast,

Or to steal the fluffy gold
That the buttercups do hold,
Or to watch the blossoming grass
Ripple, when the light winds pass !

But still sailing on and on,
Till she found the sunshine gone ;
Frightened then by fading light,
And the softly gathering night,

She would chase the flying day,
So she stops to ask the way—
Lights upon a swinging nest :
‘ Right or left ? which way is West ? ’

And a young bird answers low,—
‘ On towards the summer’s glow ! ’
* * * * *
* So she fluttered from the nest,
* Seeking still the yellow West ! ”

MARGARET DELAND.

“ A flight of yellow butterflies,
In slow and airy quiver,
Winged downwards.”

HARRIET ELEANOR KING.

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THE ENTOMOLOGIST.

Vol. XXV.]

JANUARY, 1892.

[No. 344.

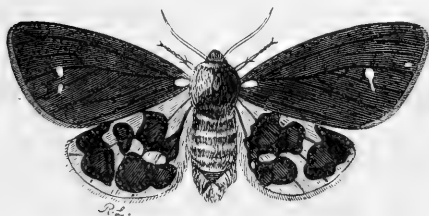
CHANGE OF PROPRIETORSHIP.

I HAVE very great pleasure in announcing that I have acquired proprietorship of the 'Entomologist.'

Under the liberal management of the late proprietor, Mr. J. H. Leech, this Journal has made a considerable advance, not only as regards the improved quantity and quality of the literary matter, but in its circulation, which at the present time is a very extensive one. I need hardly say that I shall endeavour to maintain this improvement, and I venture to ask readers and contributors to kindly support me in keeping up the present popularity of the 'Entomologist.'

RICHARD SOUTH.

VARIETY OF *ARCTIA CAIA*.



VARIETY OF *ARCTIA CAIA*.

THE above rather striking variety of *Arctia caia*, a female, came out in my breeding-cage on the 20th July last. The fore wings are entirely brown, with the exception of a white comma-shaped mark half-way between the costal margin and the anal angle, that on the left wing being rather smaller, with the tail portion of the comma separated from the upper portion. On the right wing there is an additional very minute white spot between

the comma-shaped mark and the hind margin; this spot is absent from the left wing. There is also a small oval white spot at the base of both wings adjoining the thorax. A network of rather a darker shade of brown, only visible in a strong light, stretches over both wings. The hind wings do not present any striking variation from the type, but the right wing is a little crumpled. The left side of the thorax is creamy, the remaining and larger portion brown. It is rather a small specimen, being only $2\frac{1}{8}$ inches in expanse. The larva was collected in a small state, with about sixty others, from various localities, and fed on dead nettle and virginian creeper.

R. LADDIMAN.

25, Hellesdon Road, Norwich, Nov. 5, 1891.

[A similar variety of *Arctia (Chelonia) villica* is figured, Entom. xi. p. 73 (1878).—ED.]

MR. BUTLER'S NOTES ON SYNONYMY OF NORTH AMERICAN NOCTUIDÆ.

BY JOHN B. SMITH, Sc. D.

IN the 'Entomologist' for October, 1891 (vol. xxiv. p. 238), Mr. Butler has some remarks on the synonymy of certain species of *Agrotis*, and incidentally on my criticism of his previous paper. Since I wrote, and since Mr. Butler wrote, I have had the pleasure of making Mr. Butler's personal acquaintance, and also of spending two weeks in studying the magnificent collections in the South Kensington Museum. I have, therefore, seen the very specimens spoken of by Mr. Butler, and have had the advantage of a previous thorough acquaintance with long series of the various forms considered identical by him.

A regrettable attack of illness confined Mr. Butler to his home during most part of the time spent in the museum, and prevented my demonstrating to him the distinctness of the species he united.

Mr. Butler unites in one series:—*Mythimna subporphyrea*, Wlk., = *Agrotis phyllophora*, Zet., = *A. alternata*, Zet., = *varix*, Zet., = *variata*, Zet.

As a matter of fact, all these are good and valid, save that *varix* and *variata* are forms of one species. My identification of all these forms, save *subporphyrea*, which I had not known, was accurate; and I am willing to stand by every word contained in my monograph of *Agrotis*.

Mr. Butler also referred *Agrotis turris*, Zet., to *Peridroma saucia*, Hbn.; and my criticism of this reference is also just. Mr. Butler did not know the range of variation in *turris*, therefore he associated one specimen with *saucia*, while other specimens of the same species stand under two other names, their identity not

recognized. Mr. Butler uses very largely, as a basis of classification, antennal structures, and usually ignores frontal modifications, armature of tibiæ, and clothing of eyes. I have no present quarrel with his system, though I believe it is radically and completely wrong; but if he had examined the front of *turris*, he would have found it structurally different from that of *saucia*, and would not have made the reference. Had he seen a male, he would have recognized its distinctness by the difference in antennal structure.

Mr. Butler's notes are unquestionably of value, and in the majority of instances his synonymy is correct; but where a student of a local fauna finds references which he *knows* cannot be accurate, it makes it simply impossible for him to accept any of the references implicitly or unquestioned. I must re-affirm my position that synonymical references should only be made after critical study and comparison, and less damage and confusion result from having the same species under two names than from having two species erroneously combined. In the latter case, one who relies on the correctness of the synonymy is apt to re-describe old species, and thus to confuse matters still more. I hold, also, that critical remarks should be based either on a thorough knowledge of the fauna to which the insect belongs, or on a monographic study.

Mr. Butler is correct, of course, when he calls attention to the fact that he has the Noctuidæ of the world under his charge; but that is not a reason, surely, why he should be privileged to make synonymical references without sufficient study.

The British Museum Catalogues, by Walker, have been stumbling-blocks in the way of American Entomology since their publication, and many species of Lepidoptera described therein are unknown to us to-day. Some of the groups have been satisfactorily and well straightened out by subsequent British workers, and it is surely not too much to ask that the Museum workers of the present day should not still further confuse matters by hasty notes based on insufficient study. The result would be simply that the latter notes would be considered as unreliable as the first, and the synonymy would be just as unsatisfactory as before. Nor would the reputation of the British Museum and of its workers be enhanced by such papers.

My notes on the American species in the British Museum collections will be ready for publication, I hope, before the end of the year. I have nothing but words of gratitude for the reception accorded me there. Every facility was afforded me; all kindness was shown.

For Mr. Butler personally, and for his works in general, I have the highest regard, and naturally therefore no personal motive for my criticism of his notes.

THE ENTOMOLOGICAL CLUB OF LONDON.

BY RICHARD SOUTH.

ALTHOUGH it is the oldest association of entomologists extant, the Entomological Club of London does not appear to be as widely known as it certainly deserves to be. Before, however, we consider the origin, progress, and present state of this Club, we will briefly review the history of kindred institutions in this country.

Not only does England hold the honourable position of being the first country in Europe to establish a purely Entomological Society, but, as a matter of fact, no less than five of such societies were founded in London between 1745 and 1831, all of which preceded any continental society devoted to Entomology.

I understand that attempts were made on one or two occasions during the latter half of the eighteenth century to start an entomological association, but with what measure of success I am unable to say. I have endeavoured to ascertain something definite about these reputed societies, but I can find no circumstantial account of them, and must therefore pass on to those about which something is known.

The "Societas Aureliana" started into life in 1745; but very little is known to us of this society beyond the fact that it did exist, and that a disastrous fire destroyed its library and collections, and also put an end to its career in the year 1748.

In 1806 the "Societas Entomologica" was founded in London, and seems to have been the earliest entomological society that published its 'Transactions,' the first volume of which was edited by Haworth, and was completed between the years 1807 and 1812. This society was broken up in 1813, and London had to wait until 1826 for the re-establishment of a centre around which her entomologists might gather. In the year last mentioned the "Entomological Club" was formed for the purpose of holding social meetings at the residence of each of its members in turn. Although the membership was limited to eight, the Club seems to have enjoyed an exceedingly good time, for we find that in 1836 the property of the association, in the shape of insects, cabinets, books, &c., was of such considerable value that it was deemed advisable to frame a Constitution, and adopt a Code of Laws. It is perhaps worthy of remark that for ten years this little band of entomologists had conducted the affairs of the Club solely by certain understood, but for the most part unwritten, regulations mutually agreed on between themselves.

The "Entomological Society of London" was inaugurated at the 'Thatched House,' St. James's Street, on the 22nd of May, 1834, when the following officers were appointed:—Honorary

President, R. W. Kirby; President, J. G. Children; Vice-Presidents, N. A. Vigors, J. F. Stephens, Dr. Horsfield; Treasurer, Rev. F. W. Hope; Secretary, G. R. Gray; Curator of Coll. and Libr., G. R. Waterhouse. The first sitting for the transaction of ordinary business was held at the Society's Rooms, 17, Old Bond Street, November, 1835. The prosperity of this long-established Society seems assured, as it is well and favourably known both at home and abroad. Its rooms are now at Chandos Street, Cavendish Square. *En passant*, it may be mentioned that the French Entomological Society was established in 1832, "Entomologischen Vereins zu Stettin" in 1840, and "Société Entomologique Belge" in 1857.

There are now local Natural History Societies scattered throughout the length and breadth of the British Islands, and, as Entomology holds a leading position in most of these, the collectors residing in most of our large towns have facilities for the interchange of ideas and experiences. In London this is especially the case, and one of the metropolitan locals, *viz.*, the South London Entomological and Natural History Society, established in 1872, has earned for itself a large measure of popularity; and its annual exhibitions have, without doubt, done much towards developing a taste for Entomology in many who had perhaps simply been attracted by curiosity to look at whatever this Society had to show them.

Returning to the history of the Entomological Club, we find that at a meeting held at Mr. Bennett's, 48, Cannon Street, on Tuesday evening, June 9th, 1836, a committee, previously appointed for the purpose, brought in a Preamble and Code of Laws, which, after sundry alterations had been suggested, adopted, and incorporated, were unanimously agreed to. Immediately after the re-construction of the Club, donations began to pour in at a great rate; several entomologists gave their entire collections, both British and exotic. Among many other presents to the Club in 1836 were the following:—Mr. Davis, the whole of his exotic insects and numerous rare British ones; Mr. William Christy, Jun., of London, the whole of his collection of British and exotic insects, with the exception of the British Lepidoptera,* and several books; Mr. J. F. Christy, a handsome mahogany cabinet of 40 drawers, together with his whole collection of insects; Mr. Bennett, a splendid collection of Brazilian insects of all orders, comprising nearly 1000 specimens, purchased by him expressly for the Club; Mr. Henry Doubleday, 250 specimens of British Lepidoptera collected in his district expressly for the Club.

So far as we can trace them, donations to the Club seem to have been on a liberal scale up to the end of 1837; after that date there is a hiatus, owing to the loss of a minute-book. In

* These also were given to the Club on a subsequent occasion.

1852, however, we find Mr. Doubleday, Mr. Stevens, and Mr. Wallcott, among others, doing much to enrich the collections. On Dec. 22nd, 1855, it was announced that a large number of British insects had been presented to the Club since May, and at the April meeting, 1856, Mr. E. Newman, as Curator, reported the collection in a good state of preservation, and that numerous additions had been made thereto both by captures and donations. The Curator's report, at the end of the year 1856, shows that there were large donations of insects, and that all duplicates sent in for distribution were offered unconditionally to be selected from by every visitor to the collection. One gentleman, Mr. Edleston, had sent over 500 specimens for distribution in this way. At almost every meeting from 1856 to 1859 donations were announced. Very few presents appear on the minutes after 1868, but in 1876 we find that Mr. W. Machin gave the Club a box of Lepidoptera.

Although the Club has long borne a name, it does not appear ever to have had a local habitation. Its collection of insects and its library are deposited in the house of one or other of its members who happens to hold the office of Curator. At a meeting of the Club, held on the 16th October, 1852, at Mr. Bowerbank's, a letter from Mr. Walker, the then Curator, was read, in which he tendered his resignation of the curatorship, as he was about to remove from London, and requesting that the collection of the Club be removed from his residence in Bedford Square. This announcement gave rise to considerable discussion, and there seems to have been some little difficulty in fixing on a new location for the cabinets, &c. However, the matter was referred to Mr. Bowerbank and Mr. Newman to consider and report on at a future meeting, and on the 18th of December, 1852, it was decided that the entomological property of the Club be entrusted to Mr. Newman, who had, to oblige Mr. Walker, already removed the cabinets to his own residence. It was further resolved that the said collection should be open to entomologists generally one evening in each week, as had formerly been the custom when under the charge of Mr. Stephens and Mr. Curtis respectively. At this meeting Messrs. S. Stevens, T. Ingall, and E. Newman were appointed a committee to examine and report on the collections of the Club, and on the 15th of January, 1853, the following report was presented at a meeting held at Mr. Marshall's residence in the Bank of England:—

“Your Committee have carefully examined the collection of British insects belonging to the Entomological Club, and find it to be contained in three mahogany cabinets, one of which has 19 drawers, and a vacancy for a 20th, and the others 40 drawers each, making a total of 99 drawers. The glass of one drawer is broken, and we recommend its being mended forthwith. The insects generally are free from dust, mould, or mites.

“There appears to be no general system of arrangement, and the whole of the parasitic Hymenoptera, a large portion of the Diptera, *viz.*, the Muscidae, the whole of the Hemiptera, and a drawer containing a rich and almost perfect series of a large portion of the Curculionidae, which had been examined and named by Mr. Walton are altogether missing; on referring to the minutes of the Club it appears that the drawer in question was missing when Mr. Walker received the cabinets, and that the Hemiptera have been lent to Mr. Dallas for description in his forthcoming volume of the ‘*Insecta Britannica.*’

“We are unitedly of opinion that the collection in its present confused state of arrangement and impoverished condition cannot be usefully thrown open as a collection for reference, but we trust that by degrees portions of the missing property will be returned by those to whom it has been lent, and that entomologists generally, seeing the utility of public collections, will assist with contributions in endeavouring to restore this to its pristine state; and we are clearly and very decidedly of the opinion that in future no insect whatever should be removed from the cabinets without the express sanction of the Club, or of a committee acting on its behalf, and we consider it indispensable that the borrower should in every instance sign an acknowledgment of the loan.”

It will be noticed that no mention is made in this report of exotic insects so liberally presented to the Club in its earlier days; perhaps the lost minute-book would inform us about these.

After the death of Mr. Newman, which event occurred in June, 1876, three members of the Club, *viz.*, Messrs. Power, Lowne, and Grut, met at the residence of Dr. Power to appoint a new Curator, and, at a meeting held at Dr. Power's on the 25th July, 1876, it was agreed that the kind offer of Mr. Lowne to take charge of the collection be accepted; and the chairman, at a subsequent meeting, announced that the collection had been removed to Mr. Lowne's residence, 49, Colville Gardens, Bayswater,* and arrangements had been made that he would act as Curator. Mr. Lowne stated at this meeting that he proposed to have the collection in readiness, and to receive visitors who might wish to see it, on the first Monday in each month. The cost of removing the cabinets and other incidental expenses amounted on this occasion to a sum of £4 15s., and to defray this a whip was agreed to, which resulted in the collection of £10.

The foregoing is a good illustration of the way in which the expenses of the Club are met. As members do not pay entrance fee or subscription, the Club has no funds resulting from this

* In 1878 Mr. Lowne removed to 65, Cambridge Gardens, Notting Hill, W., his present residence, and was authorised to take the collection with him.

very usual source of income ; so when the Treasurer finds himself in need of the wherewith to satisfy any claim against the Club, he simply brings the matter forward at a meeting, and a whip, say, of 2s. 6d., or something about that sum, according to the amount required, is suggested and cheerfully agreed to.

Turning to the membership of the Club, we find that at the present moment it has fallen to about half its proper strength. According to the original Laws of the Club the number of members was fixed at eight, but in January, 1865, the number was raised to nine. On the 17th of November, 1869, Law 3 was altered, and now reads as follows :—“ That any vacancy occurring in the Club be filled up by election from the Honorary Corresponding Members resident in or near London.” This alteration seems to have been necessary, because there was a difficulty in keeping the roll full when it was a *sine qua non* that ordinary members should have a residence in London. Strange as it may seem that nine entomologists resident within the metropolitan area could not be found to keep together this venerable institution, the fact remains that if Law 3 had been adhered to the Club would this day have had only three ordinary members, to wit, Mr. S. Stevens, Mr. Lowne, and Dr. Thudichum. The concession to Honorary Members *resident in or near London* has been wisely extended to Honorary Members who live at some distance from town, but who can make it convenient to visit London occasionally, and this has resulted in the election of Mr. Verrall and Dr. Mason as ordinary members.

The particular feature of this association of entomologists which distinguishes it from other entomological societies is the social character of its meetings. The members meet at the residence of one of their number, and the member in whose house the meeting takes place is chairman of the evening, and he is also host. In the latter capacity it is incumbent on him to provide a supper for the party, and this, according to the taste of the entertainer, may be one of the champagne kind, or a frugal meal of bread and cheese and glass of homely beer. In addition to the ordinary members, the chairman of the evening enjoys the privilege of inviting any number of honorary members.

Possibly it is not always in convenient accord with a member's domestic arrangements to entertain a party of entomologists at particular periods, or even at any time, and maybe this in a measure explains why it is that the full membership of the Club is not always maintained. Probably some alteration in the Law which bears upon this matter might be an advantage to the Club.

Many entomologists, especially those of the London contingent, are now familiar with a certain phase of the business of the Entomological Club. Mr. Verrall's supper at the Holborn Restaurant has come to be regarded as an annual event; the

réunion is an exceedingly pleasant one, and is quite unique in the way of an entomological gathering on social lines.

For several years past the formal discussion of entomological questions has ceased to find a place in the business of the Club meetings, but conversation is unrestricted, and naturally turns upon entomological matters. It would probably be injudicious for the members to endeavour to re-establish a custom which obtained under a former régime; I refer to the bringing forward at one meeting certain knotty questions to be discussed at the next meeting, as, for example, the set of three proposed by Messrs. Spence and Newman in January, 1852:—1. "What are the economy and natural affinities of the genus *Boreus*?" 2. "Can the species of the genus *Pieris* be distinguished from each other by the scales?" 3. "Is it desirable to adopt a mononymic nomenclature in Natural History as proposed by Mons. Amyot?" This kind of thing may well be left to societies of the profound class to deal with.

As has already been mentioned, the Entomological Club has a large collection of British insects, among which are probably many types, as certain families of different Orders have been borrowed by specialists at various times for descriptive work (Mr. McLachlan, for instance, had a loan of the *Perlidae* in 1869). We have seen that in the past this collection was open to entomologists for the purpose of assisting them in naming their captures, &c., and this is, I believe, still the case, but the fact is not generally known. A private house, however, does not appear to be the best possible location for a reference collection of this kind. Apart from the question of responsibility, its custody entails upon the gentleman in charge certain obligations in the way of receiving visitors, &c., which it may not always be convenient to discharge. Again, many who would be glad to examine such a collection are deterred from making use of it because they fear to tax the courtesy of the Curator.

Now that the Club is again exhibiting signs of activity, and there is evidence of intention to bring up the membership to its normal strength, it would seem to be a convenient time to give this matter of housing the collection serious consideration. Perhaps it might be found practicable to deposit the cabinets, as a loan, with one of the London Entomological Societies having rooms of their own. If this course were adopted the collection would be open to every one desiring to see it at stated periods, which, of course, would be the dates and hour of meeting of the particular Society entrusted with the cabinets.

Before concluding this brief account of the Entomological Club, I should mention that the 'Entomological Magazine,' the first periodical devoted to Entomology published in Britain, was an outcome of the Club. The first number of this interesting journal appeared in September, 1832, and the last, completing the fifth volume, in October, 1838.

NOTES ON THE SYNONYMY OF NOCTUID MOTHS.

By ARTHUR G. BUTLER, F.L.S., F.Z.S., &c.

(Continued from vol. xxiv. p. 295.)

ORTHOSIIDÆ.

LEUCOCOSMIA, *Butl.**Leucocosmia ceres*.*Leucocosmia ceres*, Butler, Trans. Ent. Soc. 1886, p. 394, n. 21, pl. ix. fig. 10.*Caradrina euthusa*, Hampson, Ill. Typ. Lep. Het. viii. p. 79, pl. cxlv. fig. 1.

Fidji and Nilgiris. Coll. B. M.

Mr. Hampson quite agrees with me that the moths from these widely sundered localities are specimens of one and the same species.

ORTHOSIA, *Ochs.**Orthosia reciproca*.*Apamea reciproca*, Walker, Lep. Het. Suppl. 2, p. 672 (1865).*Orthosia breviscula*, Walker, *l. c.*, 3, p. 716 (1865).

Moreton Bay. Coll. B. M.

DASYGASTER, *Guen.**Dasygaster hollandiæ*.*Dasygaster hollandiæ*, Guenée, Noct. i. p. 201, n. 319 (1852).Var. *D. leucanioides*, Guenée, *l. c.*, 1, p. 202, n. 320 (1852).*Graphiphora? facilis*, Walker, Lep. Het. xi. p. 745 (1857).

Australia, Tasmania. Coll. B. M.

Dasygaster epundoides.*Dasygaster epundoides*, Guenée, Noct. i. p. 202, n. 321 (1852).*D. punctivena*, Walker, Lep. Het. ix. p. 242, n. 4 (1856).

Tasmania. Coll. B. M.

Graphiphora? quadrata of Walker appears also to be a *Dasygaster*, but it is in such wretched condition that its natural position cannot be settled with certainty.

DYSCHORISTA, *Led.**Dyschorista prodeuns*.*Cerastis? prodeuns*, Walker, Lep. Het. x. p. 452, n. 11 (1856).*Teniocampa puerilis*, Grote (see Check List, p. 31, n. 670).

United States. Coll. B. M.

Grote's specimens are labelled, *Mamestra* and *Graphiphora puerilis*, but the species agrees more nearly with *Dyschorista* than with any of the genera to which it has hitherto been referred, and I therefore provisionally place it therein.

The genus *Pterætholix* is identical with *Berresa*, Walk. (Cat. Lep. Het. xvi. p. 214, 1858), and is allied to *Ilattia*.

PERIGEA, Guen.

Perigea conducta.

Caradrina consocia, Walker, Lep. Het. x. p. 299, n. 40 (1856).

Hab. —? Coll. B. M.

This is another synonym of this much described species.

The following genera belong to the later group, in which the radial vein of the secondaries is emitted near to or from the same point as the third medial branch.

Grote says (Check List, p. 37), in explanation of his use of the term *Eustrotia* in place of *Erastria*, "I cannot use *Erastria* for this genus, because Hübner uses that term before Treitschke for a genus of Geometridæ. If used only in the 'Tentamen,' the publication of which by Hübner is improbable, I should ignore it. In the 'Verzeichniss' the term is only used in the plural (p. 299) to indicate a Stirps; moreover, I believe that Treitschke has priority over this use of the name."

ERASTRIIDÆ.

NIPISTA, Walk.

Nipista tigris.

Diastema tigris, Guenée, Noct. ii. p. 1127.

Nipista lineata, Walker, Cat. Lep. Het. xii. p. 800, n. 1 (1857).

Venezuela and Sta. Martha. Coll. B. M.

This has little in common with *Diastema virgo*; it is, in fact, much nearer to the *Leptosia concinnimacula* of Guenée, which I would suggest should be, for the present at any rate, associated with it, as it has not the palpi of the European insects placed with it by its describer, nor can I see my way clear to admitting it into *Erastria*.

COSMOPHILIDÆ.

GONITIS, Guen.

Gonitis editrix.

Gonitis editrix, Guenée, Noct. ii. p. 404, pl. 11, fig. 5.

G. fractifera, Walker, Lep. Het. xiii. p. 998, n. 2 (1857).

G. cosmioides, Walker, l. c., p. 1000, n. 5 (1857).

South America, West Indies. Coll. B. M.

Gonitis sabulifera.

Gonitis sabulifera, Guenée, Noct. ii. p. 404, n. 1272.

Var. *G. involuta*, Walker, Lep. Het. xiii. p. 1003, n. 12 (1857).

G. basalis, Walker, l. c., p. 1004, n. 13 (1857).

Tiridata colligata, Walker, l. c., Suppl. 3, p. 870 (1865).

Gonitis propinqua, Butler, Proc. Zool. Soc. 1884, p. 497.

Southern Asia and Africa. Coll. B. M.

Mr. Hampson obtained typical *G. sabulifera* in the Nilghiris; and Mr. Hocking caught one damaged specimen at Dharmasala.

Gonitis fulvida.

♂ ♀ *Anomis fulvida*, Guenée, Noct. 2, p. 97, n. 1259 (1852).

♀ *Gonitis combinans*, Walker, Lep. Het. xiii. p. 1001, n. 7 (1857).

♂ *G. inducens*, Walker, *l. c.*, p. 1004, n. 14 (1857).

♀ *G. privata*, Walker, *l. c.*, Suppl. 3, p. 863 (1865).

G. commoda, Butler, Ill. Typ. Lep. Het. ii. p. 36, pl. xxxii. f. 3 (1878).

Var. ♂ *G. metaxantha*, Walker, *l. c.*, xiii. p. 1005, n. 15 (1857).

Var. ♀ *G. albitibia*, Walker, *l. c.*, p. 1001, n. 8 (1857).

♂ *Rusicada nigritarsus*, Walker, *l. c.*, p. 1006, n. 1 (1857).

♂ *Deremma simulatrix*, Walker, *l. c.*, Suppl. 3, p. 864 (1865).

Java, Ceylon, India, China, Japan, Solomon Islands, Sierra Leone. Type, Coll. B. M.

Guenée made a mistake as to the locality of his type, which was in the Horsfield collection (E. I. Co.), from Java. I have placed the variety *G. metaxantha* in front of *G. albitibia*, as it is an intermediate form linking the rufous to the fuliginous type. *G. revocans* is an Australian representative of *G. fulvida*, of a larger and heavier build; and *G. xanthochroa* is a Fijian representative, larger, and with comparatively longer primaries, but not otherwise differing.

SCÆDISA, Walk.

Scædisa exaggerata.

Anomis exaggerata, Guenée, Noct. ii. p. 398, n. 1261 (1852).

Scædisa designans, Walker, Lep. Het. xiii. p. 1007, n. 1 (1857).

Theresopolis. Coll. B. M.

The type of the species was from New Freiburg.

ANOMIS, Hübn.

This genus would have had to be restricted to its type, *A. exacta*, if *A. luridula* were certainly an *Aletia*. It is, perhaps, only a form of *A. derogata*, a type standing between *A. xyliana* and *A. argillacea*; we have two examples of it from the States. *A. erosa* is a *Cosmophila*, and only differs from *C. xanthimdyma* in its ciliated, instead of serrated, antennæ; pattern, colouring, sexual differences of colour included, are all absolutely the same.

The type of *Aletia* is a *Leucaniid*.

Anomis luridula.

Anomis luridula, Guenée, Noct. ii. p. 401, n. 1268 (1852).

United States. Coll. B. M.

I have no doubt that this is a slight variety of Walker's *A. derogata*, described from St. Domingo and Venezuela, but also common in the States; one of our examples of *A. luridula* answers well to Guenée's description of his *A. impasta*, which, however, was described from Cayenne. The question, therefore, arises whether *A. derogata* and *A. luridula* should not both be regarded as varieties of *A. impasta*; yet the latter may prove distinct when a Cayenne specimen is compared with *A. derogata*. It seems nonsense to call the typical form a variety of *A. luridula*, therefore the better way would be simply to quote Walker's *A. derogata* as a synonym.

Anomis xyлина, Say.

Anomis grandipuncta, Guenée, Noct. ii. p. 400, n. 1266 (1852).

Aletia argillacea, Grote (see Check List, p. 33, n. 812) (1882).

North and South America. Coll. B. M.

I cannot admit this identification of *A. argillacea*. Hübner's figure neither corresponds in outline nor in markings with *A. grandipuncta*, which is the species labelled as *A. argillacea* by Grote. Nevertheless, Hübner's figure is not good.

Anomis argillacea.

Aletia argillacea, Hübner, Samml. Exot. Schmett. Zeitr. figs. 399, 400.

Anomis illita, Guenée, Noct. ii. p. 400, n. 1265 (1852).

A. conducta, Walker, Lep. Het. xiii. p. 990, n. 6 (1857).

Pará, Venezuela, and St. Domingo. Coll. B. M.

Prof. Riley gave us a series of *Anomides* some years ago, amongst which was an example from the United States, of what I take to be only a slightly more dusky form of this species, = *A. hostia*, Harvey.

ACONTIIDÆ.

ACONTIA, Ochs.

Acontia malvæ.

Noctua malvæ, Esper, Schmett. iv. pl. cxcv. fig. 4.

♀ *Xanthodes stramen*, Guenée, Noct. ii. p. 210, n. 976 (1852).

♂ *Xanthia imparata*, Walker, Lep. Het. x. p. 467, n. 19 (1856).

♂ *Xanthodes inefficiens*, Walker, Lep. Het. xv. p. 1752 (1858).

♀ *X. impellens*, Walker, l. c.

Europe and Asia. Coll. B. M.

Noctua flava of Fabricius can hardly belong to this genus. The description, "Parva in hoc genere, tota flavescens alis anticis strigis plurimis, undatis ferrugineis," will not at all do for the *Xanthodes transversa* of Guenée, which is not small, and only has three angular lines across the primaries.

Acontia transversa.

Xanthodes transversa, Guenée, Noct. ii. p. 211, n. 978 (1852).

X. intersepta, Walker (not Guenée), Lep. Het. xii. p. 778, n. 5 (1857).

X. migrator, Walker, l. c., p. 779, n. 6 (1857).

Asia and Australasia. Type in Coll. B. M.

Walker carelessly transposed the two species, *A. transversa* and *A. intersepta* in his Catalogue. Had he examined the type specimens he might easily have discovered this blunder.

Acontia graellsii.

Acontia graellsii, Feisthamel, Ann. Soc. Ent. France, vi. p. 300, pl. 12, fig. 3 (1837).

♂ *Xanthodes innocens*, Walker, Lep. Het. xv. p. 1752 (1858).

♂ ♀ *X. fimbriata*, Walker, l. c., Suppl. 3, p. 777 (1865).

Europe, Asia, and Africa. Coll. B. M.

Acontia amata.

Xanthodes amata, Walker, Lep. Het. Suppl. 3, p. 778 (1865).

X. adunca, Felder, Reise der Nov. Lep. iv. pl. cviii. fig. 39.

Australia. Coll. B. M.

TARACHE, *Hübner*.

Mr. Moore has pointed out that *T. solaris* = *lucida*, Hufn., is the type of this genus.

Tarache lucida.

Noctua lucida, Hufnagel, Berl. Mon. iii. p. 302, n. 424 (1767).

N. solaris, Schiffermüller, Wein. Verz. p. 90; Esper, Eur.

Schmett. iv. pl. 88, fig. 2 (1786).

♀ *Acontia triradiata*, Walker, Lep. Het. xii. p. 791, n. 33 (1857).

Var. *Noctua albicollis*, Fabricius, Sp. Ins. ii. p. 218, n. 48.

Europe and Asia. Coll. B. M.

The females of the variety *T. albicollis* resemble the males of the typical form. Most of the species of this genus differ considerably in the sexes, so that many synonyms have necessarily been made.

Tarache caffraria.

♂ *Phalena caffraria*, Cramer, Pap. Exot. ii. p. 82, pl. cxlvii. F. (1779).

Noctua caloris, Hübner, Samml. Eur. Schmett. iii. fig. 372.

♀ *Acontia komaga*, Felder, Reise der Nov. Lep. iv. pl. cviii. fig. 33.

South Africa. Coll. B. M.

(To be continued).

ENTOMOLOGICAL NOTES, CAPTURES, &c.

RHOPALOCERA IN CENTRAL GERMANY.—During the past summer I have been on a visit to my native town, Biedenkopf, in Middle Germany. Although I did not reach there till the latter part of August, I found butterflies still abundant, in spite of the wet and cold weather in the early part of the season. The small town of Biedenkopf (about 4000 inhabitants), which is situated in 51° N. lat., and 6° E. long., lies by the river Lahn in a nest of mountains, spurs of the Westerwald, and can be reached from London in twenty-four hours. The new railway, opened a few years ago, connects the valleys of the rivers Sieg and Lahn, and passes first through the mining district by the town of Siegen, thence by a most romantic journey over the mountains down into the valley of the Lahn, where Biedenkopf is situated. Within three or four miles north-west lies the little town of Hatzfeld, on the river Eder, which, flowing northwards, forms a tributary to the Weser, and is noted for good trout and salmon fishing. At this spot stands a pretty villa belonging, I believe, to Colonel Teesdale, where the Prince of Wales is sometimes a guest. The mountains around Biedenkopf are about 500 metres above the sea-level, and the heights are wooded partly with pines and firs, but mostly with beeches and oaks. The formation consists of clay-slate, gray-wacke, and greenstone, although among the mountains are chalk districts intermixed with quartz. On the banks of the Lahn, alders, willows, and poplars grow in profusion. I will now enumerate a few species of Rhopalocera which I captured within ten minutes' walk of the town, mostly on the flowery and heather-grown slopes of the mountains:—*Papilio machaon* (common everywhere in the streets, fields, and mountains), *Colias hyale* (common), *C. edusa*, *Gonopteryx rhamni* (very common), *Argynnis latonia*, *A. dia*, *Vanessa album*, *V. polychloros*, *V. urticae*, *V. antiopa* (common in orchards near town), *V. io*, *Arge galatea*, *Erebia ligea*, *E. athiops* (very common), *E. medusa*, *Satyrus semele*, *S. proserpina*, *Epinephele ianira*, *Pararge megæra*, *Thecla betulæ*, *T. rubi*, *Polyommatus virgaureæ* (common), *Syrichtus malvæ*, *Hesperia comma*. Nearly all the Rhopalocera on the British list, besides many others, occur; but I draw especial attention to the following:—*Papilio podalirius*, *Limenitis populi*, *Apatura iris* (common in mountain paths), *A. ilea* var. *clytie*, *Satyrus circe* [*proserpina*] (taken in fair numbers every season), *S. hermione*, *S. briseis*, *Colias palæmon*, *Lycæna arion* (on sunny slopes), resorts to bramble blossom, flies quickly, similar to *hyale*, and is soon lost to view. The Heterocera met with will be more fully referred to on a future occasion. For the present I will only say that *Catocala fraxini* occurs frequently on the Italian poplars planted in avenues along the main roads. Incidentally I may mention that in a wood close to the town I discovered the plant *Impatiens noli-mi-tangere*, and drew my nephew's attention to it. He has since collected a number of larvæ from it, which, from the description, I believe to be *Cidaria reticulata*.—J. JÄGER; 180, Kensington Park Road, Notting Hill, W., Nov. 1891.

RARE MICRO-LEPIDOPTERA.—Among my duplicates I found a very fine specimen of *Catoptria nimbana*. Also a third specimen of *Bryotropha obscurella*; this species is very easy to distinguish from any other. My second specimen of *Retinia margarotana* was discovered among the legions of duplicates I possess.—J. B. HODGKINSON; Ashton-on-Ribble, Nov. 1891.

SECOND BROOD OF *MIMÆSEOPTILUS BIPUNCTIDACTYLUS*.—I have been breeding evidently the second brood of *Mimæseoptilus bipunctidactylus*. The larvæ were feeding exposed on the flowers of the garden scabious, and the moths emerged at the end of October. The first brood I have bred from the young shoots of *Scabiosa succisa*, feeding internally, and as the plant grows they move from one shoot to another, and can easily be traced. The markings of the respective larvæ of the two broods are identical, but the second brood of moths are a trifle darker.—W. PURDEY; Sea View Terrace, 129, Dover Street, Folkestone, Nov. 12, 1891.

HADENA SATURA, &c.—Some time ago I saw it stated very mysteriously that the above rarity had been taken far North. Probably the specimens recently sent me may be the examples referred to, or others from the same source. The party from whom I received them had purchased these insects, with other species, as British. They are all on black pins, and set in our fashion. *Satura*'s box-mates comprised the following:—1 *purpurea*, 1 *sacraria*, 2 *conformis*, 2 *zinckenii*, 1 *conspicillaris*, 1 *alchymista*, 1 *armigera*. I returned them at once, although the price was left to me. They all looked as if bred and new. It certainly was a treat to see *satura*. The *conformis* were of the leaden hue, not as dark as Welsh specimens.—J. B. HODGKINSON; Ashton-on Ribble, Nov. 2, 1891.

VARIETIES OF *LYCENA BELLARGUS* (ADONIS) AT FOLKESTONE.—I have taken three very fine varieties of *L. adonis* this year, two males and one female. The female is very blue, and has a row of black spots on the fore wings just inside the white fringes. The males are very dark slate colour, with almost black fringes.—W. J. AUSTEN; Radnor Street, Folkestone.

DASYCAMPA RUBIGINEA AND DASYPOLIA TEMPLI AT POOLE.—I took two perfect specimens of *D. rubiginea* at ivv during the evening of October 23rd. On November 2nd a male *D. templi*, which had been captured in a house here, was given to me.—J. H. D. BEALES; Beech Hurst, Poole.

ABUNDANCE OF CERTAIN LEPIDOPTERA AT WILLESDEN.—I visited again my favourite field this year in May and June, finding some species unusually plentiful, which looked as if the season was going to be a better one. For instance, *Heliaca tenebrata* was the first to appear, of which I took a very large number in fine condition. As soon as this was over, *Ino stitices* came out in equal force, so I likewise obtained an extensive series. My last visit to this particular spot was on June 20th, when by that time *I. stitices* was quite a pest, for not unfrequently three or four would be seen upon a single clover blossom; the females on that day were more plentiful than the male. *Euclidia mi* was out in abundance at the same time, but I did not go in so extravagantly for this insect. Last year *Tanagra atrata* swarmed, but this year it was only just coming out when I left, being later than last year. Amongst others that occurred in the same field was *Emmelesia albulata*, which was very common on one side only; and a good specimen of *Drepana binuria* fell to my net.—J. M. ADYE; Christchurch, Nov. 21, 1891.

CUCULLIA CHAMOMILLÆ.—On the 5th inst. I bred an example of this species from larvæ found in Chatham Dockyard in July last. The pupæ had been a voyage to Bermuda and Halifax during August and September,

and to Malta and back in October, but I do not think this would affect them.—GERVASE F. MATHEW; Lee House, Dovercourt, Nov. 17, 1891.

HESPERIA LINEOLA AT HARWICH.—In July, 1886, I took several specimens of, as I thought, *H. thaumas* in this neighbourhood, and at the time felt rather puzzled about them as most of them were smaller and much darker than the *thaumas* I had been accustomed to take in Devonshire, and with which I compared them, as also with some *lineola* I had purchased from a dealer, and they did not agree satisfactorily with either. I then put them aside as a probable East country variety of *thaumas*, and did not think anything more about them until the beginning of last year, when I saw Mr. Hawes' account of *H. lineola* as an addition to the list of British butterflies (Entom. xxiii. 3). I then remembered my 1886 captures, and examined them again with my series of *thaumas* and the butterflies I had purchased from a dealer as *lineola*, and which, as far as I could see, did not differ in any way from my *thaumas*, and again I could make nothing of them. Unfortunately I was then very busy, and had no time to read up descriptions, and so the butterflies were put away. Last July I took several more of these small dark Hesperids, and bred one from a pupa, which I found spun up between some blades of coarse grass. Well, a few days ago, I was transferring some of this year's captures from a store-box to my cabinets, when I came to these butterflies, and, as they were very fine and very fresh, I proceeded to replace some of my old ones, but directly I saw them alongside of my Devon *thaumas* I was again struck with the evident difference between them, and noticed that these specimens were exactly the same in appearance as those captured in July, 1886. I then determined to go carefully into the matter, and so placed all the small dark-coloured Harwich butterflies in a row, and the Devon ones beside them, together with the so-called *lineola* from the dealer, and then there seemed to be no mistake whatever that the Harwich species were abundantly distinct from the others; so then I got several books, and read up descriptions, and looked at figures, and satisfied myself that they were without doubt *lineola*, and that my purchased types of *lineola* were only *thaumas*. If I had been supplied with true *lineola* I should have made this discovery in 1886, though of course it is to a great extent my own fault that I did not, for if I had carefully read the various descriptions I could not have failed to have determined what I had captured. However, the only figures I had to refer to were rather misleading. Praun gives hardly any black streak to his male of *thaumas*, and the black margins of both species are figured about the same breadth, and the neuration of *thaumas* is shown as more distinct than in *lineola*, whereas the opposite is the case. In Lang's figure the colour is much too light, and the black margins to the wings are not broad enough, and the inner edge is too well defined instead of being gradually "shaded off into the ground colour," as Kane so well describes it. All my specimens are decidedly smaller than *thaumas*, and the males have the black streak on the fore wings very indistinct. I am glad that I was so fortunate as to breed a specimen this year, and hope, should I be here at the end of next June or beginning of July, that I may find the larvæ.—GERVASE F. MATHEW; Lee House, Dovercourt, Nov. 17, 1891.

NEW FOREST NOTES.—From the 18th of July until the end of the month I found the collecting in Brockenhurst district better than I had

expected. During the first week I had the pleasure of the company of Mr. H. Robson. Our captures were almost identical as regards the number of species, if not quite so in numbers. We found *Limenitis sibylla* commonly, and much less local than I had hitherto observed it, but only a small proportion of those taken were in good order. *Argynnis paphia* was of course abundant, but very few of the variety *valesina* were met with, although I have reason to believe that it occurred in about its usual numbers. *A. adippe* and *A. aglaia* were taken sparingly. *Apatura iris* was only seen. Larvæ of *Gonopteryx rhamnii* were still common on the buckthorns, and, judging from the condition of the bushes, I should say that this species was unusually abundant in August. Heath-working produced a long series of *Gnophos obscuraria* (including one black form), and some *Hyria auroraria* in lovely condition; also two *Heliothis dipsaceus*, which gave a little trouble before they were secured. Among other species taken were *Psilura monacha*, *Calligenia miniata*, *Lithosia deplana*, *L. mesomella*, and one *L. quadra* (which species I have not taken in the Forest since 1887), *Epione apiciaria*, *Ellopija prosapiaria*, *Boarmia roboraria*, *B. repandata* (one banded form), *Geometra papilionaria*, *Iodis vernaria*, *Acidalia imitaria*, *A. emutaria*, *A. emarginata*, *Melanthia albicillata*, *Cidaria dotata*, *Gnophora derasa*, *Leucania turca*, *Triphæna interjecta*, and *Anarta myrtilli*. Sugar was an absolute failure in the Forest, but in the village *Mania maura* and a few other common species were attracted. Larvæ of the following species were either thrashed out or found by searching:—*Smerinthus ocellatus*, *Macroglossa fuciformis*, *Nola strigula*, *Psilura monacha*, *Dasychira pudibunda*, *Bombyx rubi*, *Odontopera bidentata*, *Eugonia erosaria*, *Ennomos angularia*, *Amphidasys strataria*, *A. betularia*, *Ephyra punctaria*, *Cidaria siderata*, *Drepana lacertinaria*, *D. falcataria*, *D. binaria*, *Dicranura furcula*, *Stauropus fagi*, *Pterostoma palpina*, *Notodonta camelina*, *N. dromedarius*, *N. ziczac*, *N. trepida*, *N. chaonia*, *N. trimacula*, *Acronycta alni*, *Parolis piniperda*, and *Gonoptera libatrix*. We were pleased with the result of our exertions with the beating-stick; but, owing to the failure of sugar to attract and the scarcity of Geometers at dusk, the night-work had certainly lost its charm — ALFRED T. MITCHELL; 5, Clayton Terrace, Gunnersbury, W., Nov. 16, 1891.

NOTES ON LEPIDOPTERA BRED OR CAPTURED IN 1891:—

Protracted larval stage of Cleora glabraria.—On July 9th I took a few larvæ of *Cleora glabraria* in the New Forest. It was late for them, and only two came to the perfect state at the beginning of August. The rest were ichneumonated, and gradually died off; but two of them are still alive, December 13th.

Erratic emergences of Notodonta trepida.—Moths continue to come out, and did so on October 1st, 22nd, 26th, November 15th, and December 12th. The pupæ are, and have been, in the open air since June. They underwent some forcing last December and January, and again from the beginning of March till the end of June.

Dasychira pudibunda.—A freshly-emerged male was found in one of our hot-houses on December 2nd. I suppose it has been accidentally forced.

Gonopteryx rhamnii flying in December.—I saw a specimen on December 8th flying in the sun in a large wood.

Vanessa urticæ feeding on wild hop.—A brood was found on this plant last July, and I reared some of them on the hop. They emerged in September, and were ordinary in appearance.

Sphinx convolvuli was taken at Rannoch this season by a non-entomological friend of mine. He says it has been taken there before.

Double-broodedness of Eupithecia coronata.—I took a specimen on May 14th, and on July 22nd I took another. On July 15th, 17th, and 18th I bred specimens of *E. coronata* from some larvæ which had been beaten off hawthorn in June.—W. M. CHRISTY; Watergate, Emsworth, Hants, December 13, 1891.

CAPTURES IN LANCASHIRE AND CORNWALL.—By the kindness of friends residing at Grange I was able to again visit Witherslack in the second week of July last. My object was to secure a series of *Typhon*, and in this I was successful, the butterfly being on the wing in large numbers; but what may perhaps be of more interest is that I found *Hyria auroraria* in abundance. In the following week my friends visited the moss again, but the insect had vanished. In September I spent a short holiday at Cornwall, staying at New Quay. I did not meet with much success in hunting, however, as my best captures were only three specimens of *Anaitis plagiata*, two measuring just under, and one just over, an inch and a half across the wings. The specimens were thus smaller than those figured by Newman, and than the size indicated by Stainton; but as they belonged to the second brood this accords with Newman's note.—W. HOWARD GOULTY; Wysefield, Romiley, Nov. 14, 1891.

"SUGAR" versus FRUIT AS A BAIT FOR LEPIDOPTERA.—The relative merits of "sugar" and fruit as a bait for Lepidoptera have many times been discussed in the pages of the 'Entomologist,' but as I have seldom come across a greater contrast than is mentioned in a letter recently received from my friend Mr. Lachlan Gibb, now resident in Montreal, Canada, I think it desirable to put his experience on record, in the hope that some of our entomologists residing in fruit-growing districts may find a trial of his method of collecting to their advantage. He says:—"I have done very well in Entomology. In ——— orchard, round the crab-trees, where the fruit is rotting on the branches, I have made a tremendous haul; by day nearly all the Graptas and Vanessidæ, and at night just as many Noctuæ as I liked to take, only requiring a light and several bottles (cyanide). Sugaring earlier in the season I found very bad, there being so much blossom over here."—ROBT. ADKIN; Lewisham, December, 1891.

SUGARING A FAILURE IN HAMPSHIRE.—Having noticed from time to time the different reports on sugaring this year, I might add that my experience coincides with several. I made two or three attempts at the end of June and beginning of July, but as the bait did not attract a single insect I did not repeat the experiment until near the middle of September, when there seemed some improvement, which induced me to renew operations. On the 20th of that month the weather was very stormy, rain falling in torrents the whole day more or less, and, if anything, was rather worse in the evening; so always having had good luck on such nights, I did not fail to sugar extra trees. On approaching the last one with my brush, I observed a considerable number of specimens, which were attracted by the sugar of the previous evening, evidently revived by the rain. I was very careful not to disturb them, and lit my lantern almost immediately, when I counted between twenty and thirty specimens on the tree, most of them being *Phlogophora meticulosa*, one or two *Anchocelis lunosa*, *Xanthia flavago*, *Orthosia macilenta*, &c., and two fine *Xylina socia*; the other

trees, strange to say, had very few moths upon them; among them was another *X. socia*. I took four more of the last-named species in the best condition on succeeding nights. I believe sugaring has again been bad in the New Forest.—J. M. ADYE; Christchurch, Nov. 21, 1891.

LEUCANIA EXTRANEA AND DASYCAMPA RUBIGINEA IN THE ISLE OF PURBECK.—On the evening of October 12th I had the good fortune to take a beautiful specimen of the very rare *Leucania extranea* at sugar in our shrubbery; and by working ivy bloom in the same place I met with and secured four fine *Dasycampa rubiginea* on November 13th, and another on the following night. The latter species is decidedly rare here, as, in spite of the fact that I have worked for it pretty regularly, I can only boast of having taken one specimen previously, and that one occurred eight years ago.—EUSTACE R. BANKES; The Rectory, Corfe Castle, Dec. 15, 1891.

MACROGLOSSA VOX, Newman.—Under the name *Macroglossa splendens*, many years since, I labelled a *Macroglossa*, in the National Collection, from Australia; but, so far as I can discover, I have hitherto not published the fact that it is the insect described by myself, in P. Z. S. 1875, p. 5, n. 7, pl. 1, fig. 6, as *M. vox*, Newman. The true *Macroglossa vox* of Newman, as Miskin has recently pointed out, is evidently Walker's *M. micacea*.—A. G. BUTLER; British Museum (Natural History), Cromwell Road, London, S.W., Nov. 18, 1891.

BREEDING NOTODONTA DICTEOIDES.—I have been rather successful in obtaining this season a number of larvæ of the above species, but owing to my inability to rear them I have been much disappointed. I do not know if this insect is generally considered difficult to breed, but I found that when the larvæ were about half-grown they became very restless, leaving the birch stems and roaming about the cage. I had a large flower-pot, also a glass cylinder, whilst allowing plenty of space and air. Notwithstanding these precautions they nearly all developed a form of diarrhœa, after which the food was refused. Three reached the final stage, but only one pupated. I had one larva which lived nearly a week without food, and then it was killed for preserving. If the larva of this species is not delicate I cannot account for my failure, for they were not in any way neglected.—ALFRED T. MITCHELL; 5, Clayton Terrace, Gunnersbury, W., Nov. 10, 1891.

SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON.—December 2nd, 1891.—The Rt. Hon. Lord Walsingham, M.A., LL.D., F.R.S., Vice-President, in the chair. Mr. Henry A. Hill, of 132, Haverstock Hill, Hampstead, N.W.; Mr. Frank Nelson Pierce, of 143, Smithdown Lane, Liverpool; and Mr. Carleton F. Tufnell, of Greenlands, Border Crescent, Sydenham, S.E., were elected Fellows of the Society; and Mr. Martin Stanger Higgs was admitted into the Society. Dr. D. Sharp exhibited and commented on a number of photographs of various species of Lucanidæ belonging to Mons. René Oberthür. Mr. C. G. Barrett exhibited specimens of local forms and varieties of Lepidoptera, taken by Mr. Percy Russ near Sligo, including *Pieris napi*, var. near *bryonia*; *Anthocharis cardamines*

(male), with the orange blotch edged with yellow, and yellowish forms of the female of the same species; very blue forms of *Polyommatus alsus*; males of *P. alexis*, with the hind margin of the under wings spotted with black, and very handsome forms of the female; also varied series of *Agrotis cursoria*, *A. tritici*, *A. valligera*, *Hydræcia micacea*, *H. nictitans*, *Epunda lutulenta*, *Hadena protea*, *Odontoptera bidentata*, *Cidaria immanata*, *C. testata*, *C. pyraliata*, and *Boarmia repandata*. The Rev. S. St. John exhibited two specimens of *Lycæna argiades*, taken in Somersetshire by Dr. Marsh in 1884; three specimens of *Deilephila euphorbiæ*, bred from larvæ found feeding on *Euphorbia paralias* on the Cornish coast in September, 1889; and a series of various forms of *Anchocelis pistacina*, all taken in a garden at Arundel. Lord Walsingham, Mr. Barrett, and Mr. McLachlan took part in the discussion which ensued. Mr. Jenner Weir exhibited two dark specimens of *Zygæna minos*, which had been caught by Mr. Blagg in Carnarvonshire. He remarked that the specimens were not representatives of complete melanism, and suggested that the word "phæism"—from φαῖός, dusky—would be a correct word to apply to this and similar departures from the normal coloration of a species. Mr. C. J. Gahan exhibited specimens of the common "book-louse," *Atropos pulsatoria*, Fabr., which he heard making a ticking noise similar to that made by the "death-watch" (*Anobium*). Mr. B. A. Bower exhibited the following rare species of Micro-Lepidoptera:—*Spilonota pauperana*, Fröl.; *Gelechia osseella*, Stn.; *Chrysoclysta bimaculella*, Haw.; and *Elachista cingilella*, Fisch. Lord Walsingham and Mr. Tutt made some remarks on the specimens. Mr. R. Adkin exhibited a variety of *Anthocharis cardamines*, and one specimen of *Sesia scoliaformis* bred from a larva found at Rannoch. Mr. G. T. Baker read a paper entitled "Notes on *Lycæna* (recte *Thecla*), *rhyminus*, *tengstræmii*, and *pretiosa*." A discussion followed, in which Lord Walsingham, Capt. Elwes, and Mr. Baker took part. Mr. F. Merrifield read a paper entitled "The effects of artificial temperature on the colouring of *Vanessa urticæ* and certain other species of Lepidoptera." The author stated that both broods of all three species of *Selenia*, *Platypteryx falcataria*, *Vanessa urticæ*, *Bombyx quercus* and var. *callunæ*, and *Chelonia caia* were affected by temperature in the pupal stage, the lower temperature generally producing the greater intensity and darkness of colour; some of the *Vanessa urticæ* made a near approach to the var. *polaris* of Northern Europe. A long discussion ensued, in which Mr. E. B. Poulton, Mr. McLachlan, Prof. Meldola, Mr. Barrett, Mr. Jenner Weir, and Lord Walsingham took part. Mr. W. Bateson read a paper entitled "On the variation in the colour of the cocoons of *Eriogaster lanestris* and *Saturnia carpini*," and exhibited a large number of specimens in illustration of the paper. Lord Walsingham congratulated Mr. Bateson on his paper, and on the intelligent care and method shown in his experiments, and said that he was glad to see that at Cambridge there was an entomologist ready to enter this interesting field of investigation, and perhaps at some future day to contest the palm with Mr. Poulton as representing the sister University of Oxford. He had noticed that the larvæ of *S. carpini*, if left in a box with dead food, and probably partially starved, made a light cocoon; but that when the cocoon was made under natural conditions, on living food-plants on the moors, it was of a dark colour. Mr. Poulton, Mr. Bateson, and others continued the discussion. — H. GOSS and W. W. FOWLER, Hon. Secs.

SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—
 November 26th, 1891.—W. H. Tugwell, President, in the chair. Mr. J. A. Cooper exhibited five specimens of *Arctia caia*, L., the red colour of the inferior wings being replaced by yellow. He remarked that from some thousand larvæ collected near Wanstead Flats, all of which had been fed under normal conditions, he had reared seven of this form, and that all emerged on the same day. As far as he could say, there were no atmospheric conditions which would account for the variation. It would be noticed that one of the specimens had a blackish fringe to the inferior wings. Messrs. Tugwell, Carrington and Tutt made some observations on specimens of this insect occasionally having the fringes and antennæ of a blackish colour. Mr. R. Adkin exhibited a specimen of *Sesia scoliæformis*, Bork., bred at Rannoch from a larva found there, and he remarked on the difficulties attending the rearing of the species. Mr. Tugwell thought the specimen was smaller than those that were obtained from Llangollen, and he suggested "assembling" as a method of obtaining males of the species, as *S. sphegiformis* and *S. culiciformis* were taken in this way. Mr. Carrington described the method Mr. Nicholas Cooke adopted to take his species, and also the plan Mr. Salvage followed. He also said the Rannoch specimens were always smaller than the Welsh ones. Mr. R. Adkin also exhibited a specimen of *Euchloë cardamines*, L., taken at Hayward's Heath, having a distinct V-shaped mark below the discoidal spot on the under side of the primaries. Mr. C. G. Barrett remarked on this form of variation as occurring in so many species, particularly the genus *Oporabia* and in *Selina irrorella*, Clerck; the V mark was caused by the union of the black scales on the two divisions of the median nervure. Mr. C. Fenn pointed out that in the specimen of *E. cardamines* shown, the black scales were not on the divisions of the nervure. Mr. Short exhibited *Acronycta pisi*, L.; dark forms of *Spilosoma lubricipeda*; and several varieties of *Melanippe fluctuata*, L. Mr. Hawes, a living example of *Polyommatus phlæas*, L., bred from ovum deposited 28th August, the larva pupating October 2nd, and, after being kept in a high temperature, emerging on the 25th inst. Mr. Hawes also stated that he had been endeavouring to obtain ova from various species of butterflies by lamp-light, and had succeeded with *Pararge megæra*, L., and *Pieris napi*, L. Mr. Edwards, a saw-fly, *Albia fasciata*, from Oxted, and various species of Exotic Lepidoptera from India, Java, Brazil, and made remarks thereon. Mr. R. South, a series of *Liparis monacha* var. *eremita*, Ochs., bred from French larvæ, and remarked that it would be interesting to ascertain the distribution of this form; he had never taken it in England, although he was told it occurred in the New Forest. Mr. C. G. Barrett was of opinion that this suffused form did not occur in the New Forest, but it was found in the Midlands. Mr. Tutt said Miss Kimber had bred an exceedingly dark one from the New Forest, and Mr. Dobson had got a fine series of banded forms from the same locality. Mr. Tugwell thought that in Mr. South's specimens the darkening arose from the ground colour being darker, whereas in English specimens it was a thickening of the black scales that caused the variation. Mr. Billups stated that the ichneumon bred from the cocoon of *Attacus cecropia*, which was exhibited at a previous meeting, was *Eryptus extrematis*. Mr. R. Adkin exhibited a collection of Lepidoptera from Eastbourne, and read notes relative thereto. Observations were made by members on collecting butterflies on dull days at rest; the Lycænidæ, Hesperidæ, and *Papilio machaon* and *Melitæa athalia* were

specially alluded to. Some remarks were made as to obtaining all the information possible with regard to the reported capture of *Polyommatus virgaurea* near Seaford.

December 19th.—The President in the chair. Mr. C. G. Barrett exhibited and remarked on a number of species collected by Mr. Russ in the west of Ireland, in particular referring to the prevalence of pale and dark forms of so many species occurring together in a locality where the climate was an exceedingly wet and stormy one; among others he instanced several species of *Agrotis*, *Cidaria immanata*, Haw., *Hydræcia micacea*, Bork., &c.; there were also specimens of *Lycæna icarus*, Rott., having black spots in the hind margin, and examples of *Pieris napi*, L., approaching *bryonia*. Mr. South said that the particular form of *L. icarus* occurred in the Isle of Wight and in Perthshire. Mr. Jenner Weir referred to *P. napi*, and said he had received the same form from Cavan. Mr. Fenn, in reference to the light and dark forms of certain species occurring together, said he thought wherever a variable species occurred the extremes would be found. Mr. Tutt said this was well known, but in his opinion there was generally a particular characteristic for each locality; although the whitest and palest forms of *A. tritici* occurred at Deal, yet some that were almost black were found; the majority of the specimens showed a tendency to run of a bluish tint, while those taken by Mr. Russ showed a tendency to run brown; other instances occurred with *Tæniocampa incerta*, Hufn., *Noctua castanea* var. *neglecta*, Hb., and *Xylophasia monoglypha*, Hufn. Mr. R. Adkin exhibited a variety of *Pieris napi*, L., a female, in which the usual spots and apical patch of the fore wings were united to form an almost continuous submarginal band; also a series of *Asteroscopus nubeculosa*, Esp. Mr. S. Edwards, among others, exhibited *Ornithoptera brookiana*, from Borneo; and Mr. Weir remarked that until lately the species had alone represented a section of the genus, but recently an allied species had been discovered in Palawan, thus affording a further contribution to the probability that the fauna and flora of that island would prove to be more Bornean than Phillipine. Mr. J. H. Carpenter, a series of *Plusia festuæ*, L. Mr. Tugwell, a box of Lepidoptera received from Mr. Reid, and remarked that there was nothing of any importance among them; he, however, had heard that Mr. Reid had taken *Retinia duplana*, Hb., and one of the Pterophori, which he could not identify; the larvæ were found feeding on the under side of leaves of ragwort. Mr. Barrett said that the first specimens taken were referable to *turionana*; that *duplana* occurred earlier in the year; and since this had been pointed out Mr. Salvage and Mr. Reid had taken them. Mr. Tugwell also exhibited specimens of a dark *Eupithecia* from Paisley, with typical form of *Eupithecia satyrata*, to which species he thought they were referable; many members differed from this opinion. The meeting closed with a discussion on the effects of heat and cold producing variation.

—H. W. BARKER, *Hon. Sec.*

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY.—December 14th, 1891.—S. J. Capper, F.L.S., F.E.S., President, in the chair. Mr. Willoughby Gardner, F.R.G.S., read a paper entitled "A Preliminary List of the Aculeate Hymenoptera of Lancashire and Cheshire, with notes on the habits of the genera." The author remarked that although but little had been done in the district in the order Hymenoptera, compared with the more favoured Lepidoptera and Coleoptera (of which very full local faunas had been compiled and published by members of the Lancashire and Cheshire Entomological Society), still much quiet work

had been done during a series of years by several observers; it was now very desirable, he said, that these scattered records should be brought together, so that they might be permanently preserved in a form that would serve as a basis upon which future information on the subject might be conveniently built up. The writer acknowledged the valuable assistance of the following local workers, from whose notes, along with his own, he was enabled to compile his paper, *viz.*, Miss E. C. Tomlin, Mr. J. T. Green, the Rev. H. H. Higgins, Mr. J. R. Hardy, Mr. R. Newstead, F.E.S., and the late Mr. B. Cooke. The paper included a list of 161 species hitherto recorded in the counties of Lancashire and Cheshire, giving full particulars of localities, &c.; this out of 373 species at present described as indigenous to Great Britain. The records included notes of the occurrence of such interesting and local insects as *Astata stigma*, *Oxybelus mucronatus*, *Colletes cunicularia*, *Halictus atricornis*, and *Osmia xanthomelana*. In order to afford some information to members of the Society who had not studied the order Hymenoptera, Mr. Gardner gave a running *résumé* of the general habits of the insects of each genus, seriatim, throughout the paper, illustrating his remarks by specimens of the various species, cases containing nests, and "life histories," &c. The President exhibited a type collection of Hymenoptera. Miss Tomlin, of Chester, a collection of Hymenoptera, and specimens of *Hylastes opacus*, Er., *Trypodendron domesticum*, L., and *Melophilus piniperda*, L. Mr. Newstead, nests and specimens of *Bombus pratorum*, *Megachile circumcincta*, *Andrena nigro-anea*, *Colletes cunicularia*; genitalia and leg of *Crabo paluripes*. Mr. Stott, a specimen of *Cherocampa celerio*, on behalf of Mr. H. S. Clark, of Douglas, where it was captured this summer. Dr. Ellis, a collection of Coleoptera, made in the Spanish Pyrenees. The Library and Museum Committee, nests and specimens of British and Foreign Hymenoptera; and by Mr. J. T. Green, a collection of Hymenoptera.—F. N. PIERCE, *Hon. Sec.*

BIRMINGHAM ENTOMOLOGICAL SOCIETY.—November 16th, 1891.—The President, Mr. W. G. Blatch, in the chair. Rev. C. F. Thornehill showed a specimen of *Sphinx convolvuli*, taken on September 30th at Burton-on-Trent. Mr. G. T. Baker, *Callimorpha hera* from Jersey and the Continent; also *Nemeophila plantaginis* var. *hospiton* from various localities. Mr. P. W. Abbott, *Nonagria geminipuncta* and *Toxocampa pastinum*, series of each from the Isle of Wight. Mr. R. C. Bradley, series of the genus *Calliphora*, including *grænländica*, *azurea*, *cognata*, &c. Rev. C. F. Thornehill said that he had found in a cellar at Stretton, near Ashley, forty or fifty specimens of *Gonoptera libatrix*; also specimens of *Triphosa dubitata*. Rev. G. J. Nurse read a paper on "Wicken Fen and its Moths," mainly dealing with a holiday spent there this year, and including much information gathered during some years' residence there.

November 7th.—Mr. R. C. Bradley in the chair. Mr. R. C. Bradley showed a box of Lepidoptera, taken during the year at Sutton. Mr. C. J. Wainwright, *Asteroscopus sphinx* (*cassinea*) from Hanbury Park; and *Calymnia affinis* from Arley. Mr. E. C. Tye, a boxful of captures made this year, including *Cherocampa porcellus* from Sutton, *Lithosia mesomella* from Wye Forest, *Noctua glareosa* from Sutton, &c. Mr. P. W. Abbott, a boxful of this year's captures, including *Phibalapteryx lignata* from Sutton, *Noctua dahlia* from Sutton, &c. Mr. G. T. Baker, a boxful of Scotch insects, collected at various times in the Shetlands and Hebrides, at Rannoch, and Forres by the Messrs. Salvage.—COLBRAN J. WAINWRIGHT, *Hon. Sec.*

THE ENTOMOLOGIST.

VOL. XXV.]

FEBRUARY, 1892.

[No. 345.

THE PAST WET SUMMER AND ITS PROBABLE EFFECT UPON THE DEVELOPMENT OF LEPIDOPTERA.

BY ROBERT ADKIN, F.E.S.

THE year 1891 will be long remembered by entomologists on account of its cold, wet summer. It is probable that such abnormal meteorological conditions would have an effect upon the development of Lepidoptera, and any note relative thereto should be of interest. I therefore venture to record a few cases, taken from my note-book, in which the emergence of a species from pupa appears to have been spread over an unduly long period, or the growth of larvæ unusually prolonged, presumably, by reason of the conditions referred to.

From some twenty pupæ of *Sesia ichneumoniformis* obtained at the end of June, the first imago emerged on 12th July; others followed at intervals until 22nd August. Rather more than half the total number produced perfect insects, the remainder dying when fully formed. The species appears to emerge on hot sunny mornings, between 7 and 10 o'clock, and it is probable that the large percentage of losses may have been due to the comparatively small number of suitable occasions for emergence.

Dianthæcia carpophaga var. *capsophila*: from a number of larvæ taken in the previous autumn the imagines commenced to emerge on 3rd July, and continued to appear until 24th August.

A larva of *Plusia gamma*, taken 12th September, produced an imago in the middle of November.

A brood of *Eugonia erosaria* fed up from ova on a growing oak tree. The ova commenced to hatch on 2nd July, and the larvæ fed up very irregularly, some reaching the pupal stage, while others were still quite small. The first moth appeared 8th August, and the last 30th September. Some few larvæ that had fed on until within a few days of the latter date, assumed the pupal state, but did not produce moths.

From some sixty larvæ of *Gnophos obscuraria*, collected at

the end of May, the first imago emerged on 5th August, and the last on 30th September.

Larvæ of *Conchylis francillana*, taken in January, produced the first moth on 27th July, and the last on 11th September.

A fine young larva of *Smerinthus populi*, found on a poplar in my garden in September, fed up well until the leaves began to turn, being then but little more than half its full size; from this time it appeared to become sickly, but lingered on until November, when the trees having lost their leaves, it died, not having attained anything like its full growth.

Larvæ of *Phalera bucephala* were exceedingly common during the autumn months; the more forward fed up and took the earth in due course, but numbers of the later larvæ were not full-fed when the leaves fell.

Acronycta psi was also common in the larval stage; and from several collected and supplied with leaves from the later varieties of garden rose-trees, one continued to feed until the first week in December, when it retired among some pieces of rotten wood for pupation; but I am at present unable to say whether that operation was successfully performed.

The sequel appears to be that the comparatively cold, wet weather of the summer and autumn months was unfavourable alike for the emergence of the imago or the growth of the larva. The larvæ resulting from the earlier moths may have obtained necessary sustenance from the vegetation while it was in a suitable state, but those resulting from the later emergences were impoverished by the advanced state of the only food obtainable, and fell victims to disease, or died of sheer starvation.

Larvæ of many of the common species were undoubtedly more abundant than usual last autumn, but the state of things referred to in the foregoing notes, appears to indicate that a corresponding abundance of moths in the coming spring is improbable.

Lewisham, January, 1892.

SYNONYMY OF AMERICAN NOCTUID MOTHS.

I AM very glad that Prof. Smith has had the opportunity of personally going over our collection of Noctuidæ, and that his verdict—"in the majority of instances his synonymy is correct"—is so satisfactory.

It is well known that *Agrotis* is a most difficult group, and therefore it is not surprising that I should make some mistakes in the case of very variable and closely assimilated species. In the case of the variety of *A. turris* placed with *saucia*, Prof. Smith admitted that the mistake was a very natural one. I admit that it is better to keep species separate than to unite them without

sufficient evidence; but most entomologists will agree with me that a comparison of original types is generally sufficient. As regards structure, surely pectination or serration of the antennæ is more strictly structural than the hairy clothing of the front or eyes.

A. G. BUTLER.

EVOLUTION OF COLOURS IN THE VANESSÆ.

BY W. W. SMITH.

THE results of Mr. F. H. Perry Coste's patient researches embodied in his "Contributions to the Chemistry of Insect Colours," which concluded in the September number of the 'Entomologist,' will doubtless give a great stimulus to the study of the enchanting subject. Having studied that gentleman's series of papers with care and interest, they seem to me to greatly advance our knowledge of the evolution of insect colours, at least in the Lepidoptera. With our present knowledge of the genealogy of species in some genera, it would be difficult to give their descent with accuracy. The New Zealand *Vanessæ*, however, seems to me to afford a good example of the evolution of colour in the order advanced by Mr. Coste. In *Pyrameis itea* (probably the oldest living ancestor of the *Vanessæ*), the broad oblique central band, with the large trifid spot outside the cell, are yellow; the secondaries are chestnut-red, becoming pale brown at base, and margined with black; two of the four minute discal black spots (or extremely rudimentary ocelli) are faintly pupilled with lilac. In our form of *cardui* (var. *kershawi*), three of the four discal spots are pupilled with pale blue; the whole four are larger, and are in a stage of development in advance of *itea*; the oblique band on the primaries and discal area of secondaries, although "broken up," occupy an intermediate stage in tone and arrangement of colours between *itea* and *gonerilla*. In *kershawi* there are two additional white spots on the primaries; in *gonerilla* there are four, all more or less suffused with blue. The four discal black spots on secondaries of *gonerilla* exhibit a further stage of development in *kershawi*, and their position is slightly altered; the oblique belt on primaries and discal area of secondaries are scarlet, on a black ground.

These crude remarks are only intended to apply to the New Zealand species mentioned; but there are many other species occurring in different countries which appear to occupy an intermediate position. I, however, think that *itea* is one of the oldest living representatives of the *Vanessæ* known to entomologists. The same may be said of *Erebiola butleri*, Fereday, in the Satyridæ. The latter is found only in New Zealand at Alpine heights. The former occurs also in Australia. The question of

the geographical distribution and development of both groups from these apparently primitive, or, at least, oldest-known types, presents an open field to entomologists who devote their time to the study of the subject. Perhaps I should add that the white spots on the primaries of *cardui* are opposed to this order of development in the *Vanessæ*; but the greater absorption power of the ground colour of the species will explain this apparent anomaly. I, however, have seen one specimen with one of the large spots near the cell pale yellow.

Ashburton, N. Z., November 9, 1891.

EVOLUTION OF INSECT COLOURS.

BY F. H. PERRY COSTE, B.Sc., F.C.S., F.L.S.

I AM glad to learn from Mr. Cockerell's remarks (Entom. xxiv. 278) that he now agrees with me as to the evolutionary relations of red, yellow, white. Mr. Cockerell charges me with crediting him with a theory which he never adopted, *viz.*, that the order was yellow, white, red; but he overlooks the fact that in attributing this theory to him I did so only very doubtfully, and marked my uncertainty as to his position by a query (Entom. xxiv. 209); and, furthermore, that in a footnote I stated that since writing the passage in the text, I had found in my notes a reference to some remarks by Mr. Cockerell, from which I inferred that he did not advocate the yellow, white, red, order. Nevertheless, it seemed desirable to retain the arguments as they stood, since even if Mr. Cockerell did not advocate the yellow, white, red, order of evolution, I could not know but that somebody else might; and, therefore, to make my own position logically secure, it was necessary to meet and dispose of any objections that might possibly—even if improbably—be made.

As a matter of fact, the arguments in the concluding passages of my articles were formulated at an early stage of my experiments, when it appeared of vital importance to disprove the theory that yellow preceded white. I did not then know where Mr. Cockerell would put red; but only two suppositions seemed possible,—either that he would adopt the lineal order, yellow, white, red; or the bifurcate order, yellow-white and yellow-red. I gave a good deal of thought to the subject, and my reasoning was given in the concluding passages referred to. Originally it had been intended to state these arguments at an early stage in my articles, but for various reasons they were adjourned. By the time that my articles were nearly finished I had come to consider the dispute as of but minor importance, feeling that I had tolerably well demonstrated my own theory; but having twice promised to argue out the question with Mr. Cockerell, I felt in honour bound to fulfil

my promise, and to meet any objection that he either did or might raise. This will satisfy Mr. Cockerell, I hope; and I am glad to see that he admits my discussion of his non-existent objection to be of service.

Finally, I may add that the varieties which Mr. Cockerell mentions of *Sphinx* and *Tortrix* are of the very greatest interest to me, since they are exact fulfilments of the predictions which I made whilst in ignorance that such varieties existed.

December 22, 1891.

NOTES ON BRITISH LEPIDOPTERA.

By RICHARD SOUTH.

UNDER the above title I propose to make a few remarks on the variation of certain species of Lepidoptera occurring in Britain. At the same time the most trustworthy points of distinction between closely-allied species will be mentioned, and, in some instances, the perplexing matter of synonymy referred to. The subjects of the present paper are *Noctua brunnea* and *N. festiva*. The next will deal with a Geometrid genus.

NOCTUA BRUNNEA.

In 1886 and 1887 I obtained large numbers of larvæ of this species from North Devon. They were found feeding on bilberry (*Vaccinium myrtillus*), and a species of wood-rush (*Luzula*), both plants growing in luxuriant masses in the small woody glen where the larvæ were collected.

Although there was considerable variation as regards the coloration of the larvæ, the markings were not subject to any material modification, except so far as concerns the transverse line or patch on the dorsal area of the 12th segment. This was always some shade of yellow, but sometimes so pale as to appear almost white; the width, too, of this marking was also variable, often broad and conspicuous, but in some few individuals represented by an exceedingly thin and very short line.

From the specimens bred I selected an extensive and most variable series, and it is to these that my remarks will more especially apply; but I shall also have occasion to refer to series of the species from Aberdeen, Perth, and Rotherham, kindly sent to me by Messrs. Reid, Ellison, and Young.

The following is a general description of *Noctua brunnea*:—Fore wings brown, with a glossy purplish reflection, traversed by three usually distinct, double, wavy, darker brown lines; the first of these (basal) is straight and extends only to the median nervure, the second (inner) is slightly oblique, and the third (outer) curves to the first median nervule, and from thence descends straight to the inner margin; *the pale, narrow, wavy, submarginal*

band is inwardly bordered with dark brown, especially towards the costa, and this colour not unfrequently fills up the space between the submarginal band and outer line; on the costa there are three yellowish dots between submarginal band and outer line, and two dark spots at the commencement of each of the double lines; the reniform stigma is distinctly outlined, and often filled up with ochreous, except at its lower end, which is dark grey or even blackish; the orbicular is not always well defined; the claviform is represented by a round black spot immediately below the orbicular; there is a conspicuous black or blackish quadrate spot between the reniform and orbicular, a round or triangular one before the orbicular, and sometimes a minute one edged with white between the inner and basal lines; generally there is a brown transverse shade from the quadrate spot to the inner margin. Hind wings pale fuscous brown, with an inconspicuous central lunule; fringes pinkish.

Colour variation.—From the normal brown with purplish reflection the colour of *N. brunnea* varies in two principal directions; one of these leads to a pale reddish brown, tinged with faint violet-grey, very like some forms of *N. festiva*; and the other to a fuliginous brown, suffused with ashy grey. Examples of the last are in the Rotherham and Aberdeen series, whilst the paler forms are among the specimens from N. Devon. There are, however, N. Devon examples which are quite as dark in colour as any of the specimens in either of the northern series. The ashy grey and the violet-grey suffusion varies greatly in intensity; in some specimens the former is very strong, giving the insect a grey-brown coloration. In a few specimens from N. Devon the discal area is tinged with ochreous.

Variation of the stigmata.—Reniform outlined in ochreous, the centre occupied by a curved ochreous line, which in many examples is thread-like, in others only to be traced with a lens, whilst in others again it is broad or very broad. It appears therefore that the typical character of the reniform stigma depends on the dilation of the central ochreous line. In one example from N. Devon there are some pale ochreous longitudinal streaks just beyond the reniform. The orbicular stigma, usually ill-defined and only partially outlined in ochreous, is in some specimens well formed and even conspicuous. The reniform and orbicular stigmata sometimes exhibit a tendency to amalgamate at their lower extremities, as in *Dianthæcia cucubali*. In other specimens the outer edge of orbicular and inner edge of reniform are united by a continuance of the ochreous outline along the median nerve from one to the other; in these cases the stigmata are aberrant in contour. The claviform stigma, most frequently represented by a black dot just below the orbicular, is in some specimens fairly well-defined, and its outline can be traced right up to the inner transverse line.

Variation of the discoidal markings.—Occupying the discoidal cell, the space between the subcostal and median nervures closed by the reniform, is a black wedge-shaped dash, generally extending from the inner edge of the reniform to inner transverse line, and its continuity broken by the orbicular. In some of the specimens in each series this is represented by a quadrate spot, very little darker than the ground colour, between the stigmata, and there is no trace of it before the orbicular.

Variation of the transverse markings.—The basal and inner lines are sometimes very indistinct, and in a specimen from N. Devon the submarginal pale band is not clearly defined; the outer line is invariably present, but in a few instances its duplicate character is not apparent. In one specimen from N. Devon the inner line is less oblique than usual, and the space between it and the basal is filled in with dark brown, thus forming a basal band from costa to inner margin; two of the Aberdeen specimens also have this band, but, as their general tone of colour is darker, the aberration is less striking.

Variation of the costal markings.—The yellowish spots, although sometimes very minute, are almost always to be traced, but in a few specimens one or more of the dark spots are absent or obscured. In a few specimens from each locality the edge of the costa is yellowish from outer line to the base, interrupted by the dark spots, and a dark dash before the basal line. Hübner's figure 121 represents a specimen with a yellowish streak along the apical portion of costa, and I have a N. Devon specimen marked in this way, but it does not agree in other respects with the figure.

Except that they are larger, some of the pale specimens from N. Devon are exceedingly like some English *N. festiva*. There is, however, a difference between the two species, which is at once perceived by anyone acquainted with the various forms of *brunnea* and *festiva*, but this is not easily expressed in a few words. Fortunately it is unnecessary to go into minute points of difference, as we have a valuable differential character in the submarginal band, which is wavy in *brunnea*, but only indented below costa and towards inner margin in *festiva*.

Some examples of *N. brunnea* bear a strong superficial resemblance to *N. dahlii*. In the latter species the submarginal band is somewhat similar to that of *N. festiva*, but the area beyond this band is always as dark as the darkest colour on the rest of the wing. In *brunnea* the marginal area is invariably of the same tint as the palest colour on the other portion of the wing.

NOCTUA FESTIVA.

Fore wings ochreous, ornamented with brown of various shades; orbicular usually of the ground colour; reniform usually only outlined in ochreous, but sometimes filled up with the same

colour, and with a dark spot at its lower extremity; the claviform is usually represented by a blackish dot below orbicular, but in some examples it is completely outlined and filled up with ochreous. There is often a blackish quadrate, sometimes roundish, blotch or spot between the stigmata, and a triangular one before the orbicular one; sometimes there is also a black dot, edged externally with whitish, between the inner and basal lines; these marks are the exposed sections of a black wedge-shaped streak in the discoidal cell. Three sinuate, double, dark lines traverse the wings, the basal terminates just below the median nerve, the inner is sharply angulated near the costa and above inner margin, and the outer is curved below costa, and then runs parallel with outer margin; *the submarginal band is pale, indented below costa and before inner margin.* All these lines originate in dark spots on the costa, and there are often three pale spots between outer line and submarginal band. Space between the outer line and submarginal band is often filled up with brownish. A series of black spots on outer margin, and there is also frequently a series of white dots just beyond the outer line. Hind wings grey-brown, with a darker central lunule, and, sometimes, transverse line, the latter, when present, being often bordered externally with paler. Fringes ochreous, with a rosy tinge.

The foregoing is not a description of an individual specimen of *N. festiva*, but is drawn up for the purpose of conveying a general idea of the species. Although I have a large number of specimens of the species, I am only able to select examples which nearly agree, but are not exactly identical with Hübner's five figures of this species.

The colour of *N. festiva* ranges from pale ochreous to chestnut-brown, and from grey to fuliginous grey-brown; so far as I know, the greyish coloration is confined to northern *festiva*. The ornamentation is subject to modification of a comprehensive and most interesting character, and to a large extent the variation exhibited in my series is analogous to that of *N. brunnea*. The transverse lines are strongly defined in some specimens, whilst in others they are mostly obsolete; the discoidal cell between the stigmata is often no darker than the rest of the fore wing, but sometimes there is a reddish quadrate spot in place of the usual black one; the stigmata may be only faintly outlined, and sometimes the orbicular is completely lost. The brownish shade between outer line and submarginal band is frequently only represented by a short transverse dash from costa, and even this in one or two examples in my series is eliminated. Sometimes there is no trace of a claviform stigma. This is what may be termed the ordinary variation of *N. festiva*; but there are a few aberrations of the species which deserve special consideration, and I therefore venture to briefly describe them as follows:—

A. Fore wings pale greyish ochreous; stigmata and transverse lines very indistinct; a purple-brown dash from costa passes between the stigmata, and unites with a purple-brown band extending from lower end of reniform to inner margin. Hind wings grey-brown, the lunule is reduced to an indistinct spot, and there is an indistinct pale central transverse band, but no dark line. Fringes pale grey, tinged with pinkish. A male. This specimen was bred from larvæ found in North Devon; two other specimens bred from the same lot of larvæ are modifications of this form.

B. Basal half and outer margin of fore wings light ochreous; other portions pale reddish brown, limited inwardly by a purplish-brown dash from costa, which passes between stigmata and unites below the reniform with a band of the same colour running to the inner margin. The stigmata are very faintly outlined; transverse lines obsolete. Hind wings grey-brown, with darker lunule, central and submarginal lines, the latter followed by a pale interrupted band. Fringes of fore wings pale brown, preceded by a row of black dots; of hind wings ochreous grey, with a faint rosy tinge. A female example. Received from Carlisle, but I have no information as to exact locality. I have a somewhat similar specimen from N. Devon.

C. Similar in character of marking to B, but the basal half and outer margin of fore wings are violet-grey, and the brown of other portions has a purple tint; the transverse lines are traceable, and the reniform is outlined in violet-grey; fringes rosy. Hind wings grey-brown, with central and submarginal transverse lines; fringes ochreous, tinged with rosy. A small male. This very pretty form, which was received from Forres, appears to be a modification of Hübner's 114.

D. Fore wings violet-grey, with some vinous-red hairs at the base above inner margin; transverse lines distinct; stigmata paler, with a vinous-red quadrate blotch between them; there are some pale dots beyond outer line, each dot followed by short longitudinal black streaks; the outer margin is darker than rest of the wing; fringes rosy, preceded by a row of black dots. Hind wings grey-brown, with darker outer border; fringes ochreous, tinged with rosy. A male specimen. Mr. Reid, of Pitcaple, Aberdeenshire, was good enough to send me this very handsome form, together with other varieties of *N. festiva* from his district. There is another specimen, also a male, of this form in the series, but it lacks the vinous-red hairs at the base of fore wing.

E. Fore wings reddish brown, basal half very slightly paler; orbicular indistinctly outlined in blackish, with an inner edging of pale ochreous; reniform outlined in blackish, with a brownish centre, and filled up with pale ochreous; transverse lines ill-defined, central shade and band beyond outer line darker brown. A female specimen. This is also in the Pitcaple series.

In the above remarks on the variation of *N. festiva*, I have included the small moorland and mountain form, usually, and as I think, correctly, referred to *conflua*, Treits. It has been stated that the fore wings of true *conflua* are narrower and more pointed than those of *festiva*; but, as I read Treitschke's description of this insect, I cannot find that the shape of the wings is mentioned by him, and I consider that his description of *conflua* applies very well to certain small forms of *festiva* in my own collection. There is much diversity in the length of the fore wings as compared with their width, both in Scotch and English specimens of *N. festiva*. The fore wing of some examples is in length barely twice the width, whilst in other specimens it is more than twice the width. Again, the apices are much rounder in some specimens than others, and in a few they may be termed pointed; but these examples are not all of the small *conflua* form. Southern specimens vary in size from $1\frac{1}{4}$ in. to $1\frac{1}{2}$ in. Scotch mainland specimens range from 1 in. 2 lines to 1 in. 5 lines, and Shetland from 1 in. 3 lines to 1 in. 5 lines; but only one of my eighteen Shetland specimens is less than 1 in. 4 lines. It would seem therefore that this local form is fairly uniform in the matter of expanse.

With reference to *conflua*, Treitschke himself says that his type was taken on the Reisingebirge; these mountains are in the north of Bohemia, separating that country from Silesia. Duponchel, in the seventh volume of the 'Histoire Naturelle des Lepidoptères,' &c., published in 1827 (the same year that Treitschke published his description of *conflua* in 'Schmetterlinge von Europa,' vol. vi. pt. 1), says that the insect in question was originally taken in Hungary in 1824, and that Treitschke sent it to Boisduval under the MS. name of *Apamea conflua*. At the time this insect came under his notice, no description or figure of it had been given to the entomological public; so Duponchel figured and described it under the name of *Noctua (Apamea) conflua*, Treits. I have this figure before me, and some specimens from Aberdeen, which are certainly the same form, although not exactly identical in every particular. The following is a description of the figure:—

Fore wings pale ochreous brown, the basal area limited by a transverse curved reddish-brown band; submarginal band, a spot before the orbicular, a larger one between the orbicular and reniform, also reddish brown; the reniform is of the ground colour, the orbicular is rather paler. Hind wings fuscous grey, with a broad darker hind marginal border.

Duponchel says the insect is reddish grey; the stigmata almost effaced, and the space between them rust-colour; and this description fits the Aberdeen specimens referred to almost exactly.

There is no great difficulty in separating typical *conflua* from

typical *festiva*, but when an extensive series of *festiva*, comprising specimens from all parts of Britain, is examined, the impossibility of specifically separating *conflua* will be admitted. An attempt has recently been made to establish the Shetland form of *festiva* as the true British representative of Treitschke's *conflua*. Although it might possibly be a present convenience to adopt a name for an insect which does not properly belong to it, the expedient would certainly lead to future confusion. The Shetland form of *festiva* is as distinct from *conflua* of Treitschke as it is from Hübner's type of *festiva*; therefore, we must retain for it the varietal name of *thulei*, which has already been given to it by Dr. Staudinger, I believe, but I am not quite certain of the author. *Thulei* undoubtedly appears to be specifically distinct from *festiva*, and if it were not for the fact that it is clearly connected by intermediate forms with that species, I should be inclined to consider it distinct. As I have mentioned above, this form is fairly uniform in wing-expansion, but it varies considerably in colour and ornamentation, some of the specimens being almost fuliginous brown, with pale greyish brown transverse lines, with or without black spots between stigmata; others are pale reddish brown, with indistinct paler transverse lines, but the space between outer line and submarginal band filled up with dark brown, and the three sections of black discoidal streak exposed. One specimen is pale greyish, with paler transverse bands in place of the usual lines, the discal area is clouded with brownish, and the space between the outer and submarginal bands conspicuously darker; the hind wings have a darker lunule and pale central line. The majority of the specimens are grey-brown or dark reddish brown, with the space enclosed by each of the double transverse lines paler; the space between outer line and submarginal band always, and that between basal and first lines sometimes, filled up with darker; the reniform and orbicular stigmata, with usual black spots, are generally well-defined, and the claviform is sometimes bar-shaped. The hind wings are always fuscous grey-brown; the fringes are ochreous, frequently, but not invariably, tinged with pinkish; a distinct central lunule is rather the exception than the rule.

Subrufa (Haworth=*festiva*, Hübner, 467 and 468) is the form without black spots between the stigmata or before the orbicular. Godart's figure (pl. 62, fig. 1, *dahlia*) may represent a modification of this form, but certainly is not *dahlia*.

Congener (Hübner, 617=*festiva* ♀ Godart, pl. 61, fig. 5) is reddish in tint, especially on the median area; all the markings well-defined. Neither of these forms are uncommon.

In some specimens of *N. festiva* from Germany, in Mr. Leech's collection, the discoidal cell is occupied by an intensely black cuneiform streak, which extends from the inner edge of

reniform almost to the base of the nervures; the orbicular is somewhat smaller than usual, and entirely surrounded by the black. In these specimens the claviform is also unusually well developed, but curiously formed; it consists of a pale spot, of the same size and shape as the orbicular, encircled with black, and with a black wedge-shaped dash from its outer edge. It would be very interesting to hear that a form similar to the above was known to occur in Britain. *Noctua descripta*, Bremer, which occurs in the Amur and Japan, is not unlike some varieties of *N. festiva*, but the submarginal band is differently formed. Prof. Smith's description of *Noctua hospitalis*, Grote,* seems to agree with some British forms of *N. festiva*.

LEPIDOPTERA IN THE NEIGHBOURHOOD OF ROLDAL, NORWAY.

BY THE REV. F. A. WALKER, D.D., F.E.S.

BREIFOND HOTEL is most charmingly situate on a steep grassy slope overlooking the centre of the lake and valley of Roldal, with craggy heights and rugged scaurs in the immediate background. On the opposite shore of the lake other hills, of similar aspect and elevation, are not wanting. These are still more abundantly clothed with pine-wood and copses of birch, and are reproduced, along with their snow-streaked summits, in the glassy waters of the lake, as in a mirror, to the delight of the beholder, as he gazes towards one end of the lake where, nearly three miles off, the church, hotel and hamlet of Roldal may be seen; or else directs his eyes four miles in the other direction, where the lake terminates on that side also, and the upward ascent is commenced in quest of the picturesque surroundings of Naes, along the road which up to that point has skirted the water-side. To the rear of Roldal village rises the mighty Sæter, over 4000 ft. in height, with its deep snow drifts, mountain tarns, lengthy Alpine pass, innumerable patches of snow, and, in some spots, even plateaux of the same, waterfalls, and torrents. As some misconception has prevailed respecting the nomenclature of this district, it may tend to make matters clear if I observe that Breifond is the name of the hotel; also of the glacier on the other side of the lake, nearly opposite but six miles away among the hills, and only to be reached after a steep climb. Haarre (or Horre), the title given to the new chaplaincy to which I am the first appointed, is the designation of the steep mountain slopes that stretch upward to the rear of the Breifond Hotel. Roldal is the most comprehensive term, and includes the whole of the valley and lake.

* 'Revision of the Species of the Genus *Agrotis*,' Bull. U. S. Nat. Mus. No. 38,

With regard to the Flora of the neighbourhood, there is an abundant undergrowth of such plants as *Campanula latifolia*, *Viola tricolor*, *Matricaria inodora*, *Geranium sylvaticum*. two or three species of *Hieracium*, *Rhinanthus crista-galli*, *Galeopsis versicolor*, one or two kinds of *Stachys*, *Ranunculus acris*, and the bilberry and dwarf juniper everywhere. Other plants that may be enumerated are the wild strawberry, *Orchis maculata*, *Eriophorum*, *Saxifraga pyramidalis* (locally known as the bride's flower here), *S. stellaris*, *S. nivalis*, *Rubus chamæmorus*, *Melampyrum*, and *Aconitum napellus*. Certain of these last only occur, or at least are met with more abundantly, at a considerable elevation on the mountain side, and close to the snow range.

As regards Entomology, diurnal Lepidoptera are by no means numerous. Pieridæ are only represented by *Pieris brassicæ*, not, however, plentiful, and one or two specimens of *P. rapæ*. Vanesidæ by one solitary specimen of *V. cardui*, and only two or three specimens of *V. urticæ*. There are, however, numbers of the larvæ of the latter kind feeding. There are three species of *Erebia*; of these by far the commonest is *E. ligea*, found from an elevation of about 1400 to 2000 ft., and especially in the neighbourhood of the birch copses, the buttercup and hawkweed being the flowers that it chiefly affected. Quite the best locality for this kind proved to be a succession of two or three meadows situate about five miles from Roldal, at the foot of the ascent to Haukalid Sæter, and boggy in places; and the same remark applies to the occurrence of *Argynnis pales* and var. *lapponica*. The second species of *Erebia*, but occurring very sparingly in comparison of *E. ligea*, is *E. medusa* var.; and the third kind, *E. lappona*, alias *manto*, with grey under side of lower wings and smaller ocelli on upper wings, only found close to the snow range at an elevation of nearly 4000 ft. on the Sæter, and at 3000 ft. on Haarre Mountain, but never lower than the last-named elevation. Twelve specimens of this last butterfly were captured. Its scarcity (alluded to in Mr. Norris's "Notes on Butterflies from the Apennines" [Entom. 277]) is in part to be accounted for owing to the storms of wind and rain so frequently prevailing on the cloud-capped heights where, alone, it is to be found; while for other butterflies all was sunshine in the vicinity of Roldal Lake beneath. One or two specimens of *Argynnis aglaia* were seen daily, and occasionally more, and this species apparently increased in frequency towards the close of July. Three other species of *Argynnis* were also captured, namely, *A. pales* var. *lapponica*, *ino*, and *euphrosyne*; *pales* and *lapponica* proving very abundant, and far outnumbering the two latter kinds. *Melitæa cinxia* was fairly common at the beginning of July, but faded and worn, in this respect furnishing a marked contrast to the specimens of the same butterfly that I took at Granada in May. To all appearance it had quite disappeared before the end of July. Of *S. mæra* I suc-

ceeded in taking about a dozen specimens; it was noticed almost daily, flitting up and down the high boulders by the side of the road bordering the lake, but was nowhere very plentiful. *Cœonympha pamphilus* was represented by two worn specimens taken at Naes. Of *Chrysophanes phlœas* I only captured one specimen, and only saw, so far as I recollect, one more. *C. chryseis* and *C. virgaureæ* proved about equally common. I captured a long series of both sexes of each of these two species. *C. chryseis* is represented by more females, and *C. virgaureæ* by more males. The latter species is, I think, rather more local, as well as later in time of appearance. Genus *Polyommatus* was represented by *P. alexis* and *P. ægon*, both fairly common. Hesperidæ by one solitary specimen of *Pamphila sylvanus* taken at Buar-Brae, near Odde. Lepidoptera-Heterocera were not numerously represented, so far as my captures are concerned. Noctuidæ: *Charœas graminis*, *Caradrina cubicularis*, *Agrotis segetum*, *A. candelisequa*, *Apamea fibrosa*? Geometridæ: *Eubolia mensuraria*, *Fidonia atomaria*, *F. brunneata*, *Anaitis plagiata*; also a species of *Eupithecia*. Of Crambidæ, *Crambus pascuellus*. All the above-named moths were taken at Roldal. Another specimen of *Anaitis plagiata* was captured at Bratlandsdal, as well as *Boarmia repandata*.

As regards Neuroptera, I took one specimen of *Æschna juncea* in the outskirts of Bergen, and one of *Æ. pratensis* on my return drive from the Bratlandsdal, where there was a wall of rock immediately to the right of the road, and a foaming torrent close beneath on the left. The pony drawing my carriage was advancing at a fast trot, and the dragon-fly came tilting in an opposite direction between the vehicle and the cliff. At the moment of my catching it I made certain that I had lost it, as the hoop of the net sprang out of the ferrule. Great quickness of eye and hand on this particular occasion alone enabled me to secure a species which was previously unrepresented in my collection, and I am convinced that I might make many attempts without meeting with like success. Of *Æschna juncea*, also new to my collection, I only saw and took the one specimen above recorded. Of *Æ. pratensis*, possibly six or eight in all were noticed, some darting above the beds of the boulder stream and foaming mountain torrents, and one or two flying over boggy ground in the vicinity of the snow-fed tarns and runlets at a much higher elevation. Phryganidæ are represented by three specimens from Roldal Lake. One may possibly be *Limnephilus griseus*; the other two belong to a larger species. Among the Coleoptera may be enumerated *Geotrupes stercorarius*, *G. sylvaticus*, *Cetonia ænea*, *Aphodius fossor*, *A. depressus*, *Calathus melanocephalus*, *Nebria olivieri*, *Coccinella septempunctata*, *Philonthus æneus*?, *Agriotes aterrimus*, *Chrysomela marginata*, *Carabus violaceus*, *Pterostichus* sp.? All the above from Roldal. *Silpha rugosa* was obtained from a reindeer's skull on the peat moss at

Haukalid. *Necrophorus mortuorum*, *Lina ænea*, and *Trichius fasciatus* occurred at Buar Brae. Of these species, *Lina ænea* infested the hazels in thousands along the road to the glacier, and its larvæ in particular were speedily reducing the bushes to a skeleton condition. The handsomely-barred *Trichius fasciatus* was found exclusively on the blossoms of the scabious, where it bore a close superficial resemblance to a humble bee. Among Hymenoptera may be enumerated, from Roldal, *Bombus lapponicus*, *B. agrorum*, *B. subterraneus*; from road to Sæter, *B. lucorum*, *B. subterraneus*; from Bratlandsdal, *B. lucorum*, *B. agrorum*; from Buar Brae, *B. lucorum*, *B. agrorum*, *B. lapponicus*; from Bergen, *B. agrorum*. Also from Buar Brae a single specimen of *Vespa media*, and of *Tenthredo chloros*; from Roldal, *T. mesomela*, *Formica nigra*, *Allantus arcuatus*, *Odynerus pictus*, *O. (Lionotus) tristis*, *Megachile centuncularis*, *Lyda histrio*, *Ophion luteum*, and two or three unnamed species of Ichneumonidæ. The Diptera of Roldal include *Calliphora vomitoria*, *C. grœnlandica*, *Sarcophaga mortuorum*, *Scatophaga stercoraria*, *Musca cæsar*, *Eristalis tenax*, *E. similis*, *E. nemorum?*, *Mesembrina meridiana*, *Oliviera lateralis*, *Sarcophaga hæmorrhoidalis*, *Helophilus tumulatus*, *H. frutetorum*, *Chrysotoxum fasciolatum*, *Polietes lardaria*, *Hæmatopota pluvialis*, *Scatophaga* sp.?, *Theriopectes auripilus* (*tabanus*), *Volucella bombylans*, *Eristalis arbustorum*, *Scyphus ribesii*, *S.* sp. allied to *corollæ*, *Platychirus manicatus*, *Syritta pipiens*. On the road to Sæter, *Theriopectes auripilus*, and *Hæmatopota pluvialis* once more; and from Buar Brae, *Volucella bombylans* and *Empis tessellata*. Orthoptera conclude the list with a single specimen of a common species of *Pezotettix*.

USE OF THE HAIRS OF *ACRONYCTA ALNI*.

BY MAURICE FITZ-GIBBON.

THE larva of this insect is unique, among those which have come under my notice, as having two perfectly distinct forms in the course of its larval existence. Into these forms I have made some examination. The first form, which it assumes for the purpose of escaping the notice of birds and other enemies,—the entomologist no doubt included,—I shall call the *Cryptic** (*κρύπτω*, I hide) or “concealing” form. In this form, which the larva wears until the last moult, a bird’s dropping is most successfully imitated; and as the larva lies on the upper side of an alder leaf, with its half-curved body gradually shading from white to grey and from grey to brownish black, the whole presenting a half shiny, half greasy appearance, not one in a hundred of non-entomologists would believe that the somewhat unpleasant-

* This designation is borrowed.

looking object was alive. When the time comes for the larva to moult for the last time, it is then too large to any longer hope to deceive the eyes of its enemies under its previous disguise, and accordingly a complete change takes place. All this time it has possessed on the second segment four indistinct hairs—two on each side; and on the remaining segments two—one on each side.

Now, on assuming its final coat, the hairs on the second, third, fourth, fifth, sixth, seventh, eighth, *tenth*, and eleventh segments are magnified considerably, being now about the thickness of a horse-hair, and at the tip of each, presenting the appearance of having been hammered flat, the hairs on the other segments remaining rudimentary. These hairs, and especially the double number on the second segment, give the larva the most formidable appearance imaginable.

In other respects the body changes in a very remarkable way to a ground colour all over of the most intense metallic green, identical with that so familiar to all of us on the wings of *Z. filipendulæ*; while on each segment after the head there extends laterally a broad rectangular streak of bright yellow. This combination of colour,—the dark green and bright yellow,—together with the flat-tipped bristles, unites to give one that uncomfortable sensation we all experience on seeing a wasp in too close proximity. To this form I give the name *Sematic** (σημα, a warning).

But the bristles have not yet done all their work. When the time comes at which the larva intends to undergo its change to a pupa, it descends the tree, and singles out some nice rotten stick lying on the ground, and this it excavates with its powerful mandibles. In this process of excavation,—and in the case of one larva I watched the process for four hours on end,—much sawdust is formed; and as the work advances, and the larva gets farther and farther into the wood, he finds it necessary to retract his body, every now and then, to sweep out this obstruction, and in this action the flat-tipped bristles are of the utmost service, for each bristle as it comes out brings along with it one, two, or three fragments of wood, and, of course, “every little helps.” It is extremely interesting to watch this process of excavation going on. When the larva considers he has dug in far enough, he sets himself to widen his domicile; and when he has made it roomy enough to turn completely round in,—a work in which the bristles come in useful again,—he enters it finally, and, after a thorough sweep out, reserves the last few fragments of wood, and with them spins a slight web in the aperture of his retreat, and then resigns himself to internal and external metamorphosis, after which he lies quiet till the ensuing June brings him out a perfect insect.

* This designation is borrowed.

I have dwelt more particularly on the subject of the bristles, because it has occurred to me,—what I have never seen or heard suggested before,—that these very pronounced bristles, in the case of several of the genus *Acronycta*, are specially intended for this sweeping-out process during excavation of the pupa's winter quarters. This is yet more apparent in the case of *Acronycta leporina*, which when, after the last moult, it enters on this excavating process is nothing more than one great silky brush. Another instance is *A. megacephala*, in whose case I have observed the same use of the hairs, though the tips are not flattened in either of these insects. Of course I only refer to those larvæ in which the bristles become pronounced *in the last moult*, many other larvæ possessing more or less defined bristles, varying in proportion to their size throughout their larval existence.

Mr. Newman, in his work, makes no mention whatsoever of the first form of the larva, and in stating that the hairs are pronounced on every segment he is scarcely correct. *A. alni* seems to have occurred pretty generally this year; upwards of a hundred were taken in the New Forest this season by one collector.

Dublin, Dec. 18, 1891.

THE PAISLEY "PUG" (*EUPITHECIA CASTIGATA*, VAR.).

BY W. H. TUGWELL.

For several years past our Paisley friends have sent us a melanic form of some undetermined *Eupithecia*. This insect has been a puzzle to many lepidopterists, and has been named in turn *E. albipunctata*, *E. satyrata*, *E. trisignata*, and *E. virgaureata*; but evidently all these are errors of differentiation, as, when placed with these species, they are clearly not at home.

During the past autumn my friend Mr. A. M. Stewart, of Paisley, most generously sent me several imagines of this insect, both bred and caught examples; he, too, kindly sent me three pupæ, part of a brood he had reared to that stage from ova deposited by a captured female. The young larvæ, on hatching, were supplied with a selection of all likely plants growing in the locality in which they are found. Heather (*Calluna vulgaris*) was the food they attached themselves to, and fed up on it entirely. Mr Stewart also sent me a description of the larvæ, which, like many of the *Eupithecia*, differed so much *inter se* that it was almost a hopeless task to follow.

With all this material to hand, it appeared to me that it should be fairly easy to decide what it really was, as I possessed all the British species, save *innotata*, *pernotata*, and *egenaria*; but in practice it was not so facile, the markings being so

obscured by its melanism. I was disposed to hold it a var. of *satyrata*, to which species it came very near to some of our southern forms; but when I showed my series at the South London, this idea did not find favour, and it occurred to me that the northern forms of *satyrata* varied in another direction. I was convinced of my error. One gentleman (Mr. Tutt) boldly stated it was only *virgaureata*, and that when they were first sent out by the Paisley collectors they were sent with typical *virgaureata*; but, finding they were wanted in the south, they now sent out only the selected melanic form. After this statement I wrote to Mr. Stewart for information. Asking him if they did get *virgaureata*, and if the insects sent to me were selected, Mr. Stewart replied as follows:—"I never heard of or took *Eupithecia virgaureata* here, and its food-plant, the golden-rod, I have only found once, and that many miles from where we take the "pug." I know the plant well, as I am tolerably well up in Botany, having a much finer collection of plants than insects. The specimens sent you were not selected, but just our usual form; when taken freshly emerged they are a beautiful glossy grey-black, some a trifle darker than others, but as a rule they vary very little. I doubt Mr. Tutt is making a mistake when he says he got typical *virgaureata* from Paisley; I have only five *virgaureata*, and they came from your side of the border."

Feeling perfectly convinced that it was in no way allied to *virgaureata*, I again most closely examined them, and at last got a key-note; and that is the hind marginal whitish line apparent in some of the specimens, and tolerably clear, but in others much obscured. When this line was contrasted to the same line in *E. castigata*, it was evident it was to this species that the Paisley "pug" belonged. I reset all to same model, for convenience of examination, and with a series of each, arranged in parallel columns of *satyrata*, the Paisley "pug," and *virgaureata*, it was clear that the puzzle was unravelled. The discoidal spot and the hind marginal very zigzag whitish line, when present, is distinctly shown on all the wings, both above and beneath; the neurulation and contour of *castigata* and the Paisley insect are identical. That being so, I had no hesitation to re-exhibit them under their proper name at the South London Entomological Society on the 14th inst.

My friend Mr. C. G. Barrett was disposed to accept my determination, but wished an opportunity of a daylight examination, and to that end he had my series to take home; and I may now say that Mr. Barrett agrees with me absolutely that the Paisley insect is *Eupithecia castigata* var. I will not give it a varietal name, as, to my way of thinking, we have far too many named varieties already.

ENTOMOLOGICAL NOTES, CAPTURES, &c.

RED MARKINGS ON *PAPILIO MACHAON* AND *P. XUTHUS*.—With reference to Mr. Jenner Weir and Mr. Bowles' articles on the above subject (*vide* Entom. xxiv. pp. 105 and 130), I may mention that amongst 22 *P. machaon* and 16 *P. xuthus* in my Japanese collection, only one, *viz.*, a female of *P. machaon*, has any trace of red in the first submarginal lunule of the lower wing (upper side). Two of *P. xuthus* are without any traces of red, even in the seventh lunule at the anal angle; eleven show it but slightly, whereas in the remaining three almost the whole lunule is orange-red. Nine males of *P. machaon* show no trace of red in the sixth lunule, nine males and two females show it slightly, one female shows it very strongly, while in the remaining female the sixth lunule is almost entirely suffused with black. The less red there is in the anal angle lunule of the above-mentioned specimens of *P. xuthus*, the more the yellow in the fifth lunule is prolonged into the tail.—T. E. SANSOM; Yokohama.

PHEISM OF JAVA BUTTERFLIES.—Mr. Jenner Weir (Entom. xxiv. 226) suggests that there may be some connection between the murkiness of the atmosphere in Java and the duskiness of butterflies from there compared with the same species from elsewhere. That, however, cannot be the reason, as, for climate and scenery, the mountainous interior of Java is probably unequalled in the tropical world. I believe, however, the dampness of the air may be the reason, and it would be interesting to see series of the same species taken on the coast plains, and at various elevations and distances from mountain summits. Near high mountains a heavy thunderstorm takes place almost every afternoon, whereas a few miles away there may not be a storm for several days, and of course the plains have regular dry seasons and (as this year) may be almost rainless for months. Doubtless most collections from Java have been made amongst the mountains, as far more species occur there than are found on the plains; but although the atmosphere up there is excessively damp, the greater part of the day is usually very bright and clear.—T. E. SANSOM; Yokohama.

ABERRATIONS OF *VANESSA ANTIOPA*.—Mr. South (Entom. xxii. 219) quotes Maynard's observations from 'Butterflies of New England' on *Vanessa antiopa* var. *hygiea*, Heyd. Having in my possession two specimens of aberrations bred in 1888, by my nephew William Werner, of Biedenkopf, Germany, which differ from the above, it may be of interest if I give descriptions of them. In specimen No. 1 the yellow border on the primaries broadens out and extends near the tip to the second costal spot, which it absorbs, as well as the usual submarginal dark band and blue spots, with the exception of one, which is, however, absent on the left wing. The secondaries are normal. In specimen No. 2 the first costal spot on the primaries is entirely missing; but the border expands considerably at the tip, and includes the second costal spot; thence it descends, completely obliterating the dark band and blue spots on both wings, of which not a trace is visible. The yellow border in both specimens is thickly sprinkled with black dots, which form a smoky blackish patch on the angular extremity at the tip. The measurement in the centre of the border on either wings is fully three-eighths of an inch. The ground colour in both specimens is the ordinary rich brown. On the under side

the border of specimen No. 2 is decidedly narrower, white, and strongly suffused with black, a smoky streak passing through the middle, whilst the margin towards the inner side is very indistinctly defined.—J. JÄGER; 180, Kensington-park Road, Notting Hill, January, 1892.

GREEN AND BROWN-COLOURED PUPÆ OF *PAPILIO PODALIRIUS*.—I was sent last June a dozen eggs of *P. podalirius*, which I fed up during June and July on sloe. In July eight successfully turned into pupæ, four of which were of a light green colour, and four the ordinary light brown. The green ones all produced perfect specimens in August, but I still have the brown in pupæ. Is this always the case, or is it only a coincidence that the green should emerge and not the brown? — J. LEWIS BONHOTE; C/o Rev. W. D. Bushell, Harrow.

CURE FOR THE RAVAGES OF THE LARVA OF *N. RIBESII*. — Whilst paying a visit to a friend in Somerset last week, he informed me that he never remembered the larvæ of the sawfly, *N. ribesii*, so numerous as they were last season. In his garden they swarmed on both gooseberry and currant, completely stripping some of the bushes of their leaves. He found the following remedy so instantaneously effectual, that perhaps some of your readers may be glad to know of it:—1 tablespoonful of fir-tree oil in 1 gallon of water (same proportion as for aphids); syringe; the larva, on being touched with the liquid, falls, and almost instantly dies. — JOHN N. STILL; Seaton, Devon.

LARVÆ-BEATING IN EPPING FOREST.—During the past season of 1891, many kinds of larvæ were abundant throughout the Forest. Several species which are generally very scarce were fairly plentiful. On 4th July I beat out a larva of *Thecla betulae* near High Beach, from which I bred a fine female specimen on 11th August. This species has been taken freely in various parts of the Forest on sloe. The great feature of the year was the occurrence of *Stauropus fagi* in Monk Wood. On Sept. 5th I beat one from oak, and on the 12th of the same month I obtained two more, one from oak and the other from beech; at least a dozen other larvæ of this species were found in the same locality; and the fine beech trees in Monk Wood also yielded an unusually large number of *H. prasinana*, *D. coryli*, *D. pudibunda*, *E. linearia*, &c. Other kinds, such as *N. ziczac*, *N. camelina*, *D. furcula*, &c., were also freely distributed. Thus it is evident that the severe weather has in no way diminished the number of larvæ, but has probably destroyed many of the deadly parasites that prey upon them. Also it would appear that the entomological resources of Epping Forest are far from exhausted yet.—C. B. SMITH; 24, Rectory Road, Stoke Newington, N., January 1, 1892.

COLEOPHORA METALLICELLA, n.s.—For twenty years I have had a species of *Coleophora* under the name of *metallicella* in my cabinet, and have felt convinced all the time that it was quite distinct from either *C. nigricella* or *C. fuscedinella*. From both these species it differs in the following respects:—Firstly, it is of a bronzy lightish green colour; the scales are larger and more raised, and the insect has a more muscular appearance. In one sex the antennæ are white nearly half way down, and the tips are white in both sexes; but this is not a trustworthy character, as it is subject to variation. The larva occurs in May, and is nearly a month earlier than that of *C. fuscedinella*, which is not found till June. How I happened to

breed *C. metallicella* came about in this way. For a number of years I had noticed certain white blotches on the leaves of young birches, and these I considered to be merely the work of *C. fuscedinella* larvæ, and did not pay any attention to them until about two years ago, when I was beating for *Micropteryx, salopiella* and noticed a lot of *Coleophora* cases, which I did not know, sticking about my umbrella. I then examined the white blotches which I had formerly despised, and found a number of these strange cases, all full grown. I took a lot of these home and kept them, apart from everything else, and have bred from them thirteen fine specimens of *C. metallicella*. I sent these and the cases, also my series of *C. fuscedinella* bred from cases on alder, and all my *C. nigricella*, to Dr. Wood. *C. nigricella* was soon disposed of, but Dr. Wood wishes to make some anatomical examinations before he expresses a definite opinion with regard to the distinctness of the insect I call *C. metallicella* from *C. fuscedinella*.—J. B. HODGKINSON; Ashton-on-Ribble.

SUGARING IN OCTOBER.—During the greater portion of October last, two of us “sugared” each night in a large garden three miles from Arundel. Insects were plentiful, and on some evenings they swarmed at the “sugar,” which consisted solely of treacle and rum. *Phlogophora meticulosa*, *Anchocelis pistacina*, and *Xanthia circellaris* were very abundant; I took a fine and variable series of *pistacina*. The rest of our captures consisted of *Leucania pallens* (4), *Orthosia macilenta* (25), *O. lota* (13), *Anchocelis litura* (9), *A. rufina* (4), *Cerastis vaccinii* and *spadicea* (many more of the former than the latter), *Scopelosoma satellitia* (30), *Xanthia fulvago* (3), *Xylina socia* (12), and *X. ornithopus* (a good series in fine condition), *Agriopsis aprilina* (2), *Plusia festucae* (1 in excellent condition), and *P. gamma* (several), *Caradrina quadripunctata* (2), *Cidaria siterata* (1), and *C. immanata* (4), *Thera variata* (2), and *Eubolia cervinaria* (2 caught on the wing). We also managed to secure about 400 pupæ by digging during the day, among which are nearly 40 *Smerinthus tiliæ*. One pupa has produced the finest female *Asteroscopus sphinx* I ever saw. My experience is that “sugar” in October is nearly always a success, and ivy when out doubles the bag!—(Rev.) T. SKYMOUR ST. JOHN; Jan. 18, 1892.

NOTES FROM PLYMOUTH.—Though the weather during the past year has, on the whole, been most unfavourable to entomological pursuits, yet I think I have never found a better season for larvæ, which have been the chief objects of my search. The improvement on last year I imagine to be due to the severity of the winter; the frosts of the end of November, December, January, and the terrible blizzard of March 9th and 10th, serving the double purpose of securing the pupæ for the time being and killing off their enemies, the insectivorous birds. To pass from theory to fact: January I devoted to pupæ-hunting, taking eleven *Acronycta ligustri*, one *Eurymene dolobraria*, and three larvæ of *Arctia fuliginosa* hybernating among moss. February was remarkably fine, scarcely any rain falling throughout the month; I took a few more pupæ of *A. ligustri*, and found *Cheimatobia brumata* still on the wing on the 18th; *Larentia multistrigata* was common at the end of the month, and I took one or two *Xylocampa lithorhiza* at flowers of the red and white mezereon. I took *Hybernina progemmaria* on the 17th Feb., and again on May 12th; its emergence would seem to have been interrupted by the intervening snow-storm. Towards the end of March I again took *H. progemmaria*, and at the willows *Tenio-campa stabilis*. In April, at the willows, I took *T. stabilis*, *T. gothica* (very

common), *T. cruda* and *T. rubricosa* (fairly so), *Cerastis vaccinii* (one or two), *Xylina petrificata* (2), *Selenia illunaria* (a few), *T. gracilis* and *T. instabilis* (one of each), and last, but not least remarkable, *Pieris rapæ* (1). From sallow catkins and shoots collected about this time I bred one *Xanthia cerago* and numbers of *X. silago*; also some *Orthosia lota* from spun-up sallow leaves. On May 6th a full-fed larva of *Cossus ligniperda* was brought me, which had been dug up in a garden; it spun a cocoon of earth and bits of cork, and changed to a chrysalis. The same day *Notodonta chaonia* (pupa kept in cool porch) emerged; its hind wings had in them little distended sacs, which I opened with pin and blotting-paper. On the 9th I took *Tephrosia punctulata* in Bickleigh Vale, and the next day *Selenia illustraria* came to light. *Tephrosia crepuscularia*, *Cidaria suffumata*, *Anticlea badiata*, and other common Geometers occurred. On May 20th I beat two very young larvæ of *Pæcilocampa populi* (they are very dark when young), and on the 30th a larva of *Trichiura cratægi* from blackthorn. At the beginning of June I took seven *Euclidia glyphica* and one *E. mi* in a field with *Hesperia malvæ*; two larvæ of *P. populi* and of *T. cratægi* (one of them the variety with golden rings), and one of *P. cassinea*, were beaten on the 10th; and on the 12th another larva of *T. cratægi*, one of *Pericallia syringaria*, and two of *Diloba cæruleocephala* (a species rare with us). I found *Y. impluviata*, *T. crepuscularia*, and *T. punctulata* at rest. During the month I beat another larva each of *T. cratægi* and *P. populi*, one *Asphalia ridens* (?), and one *Thecla quercus*; the resemblance of this larva to an unexpanded oak-bud is most striking. I took two *Lithosia mesomella* among bracken fern, one *Numeria pulveraria*, and found the variable *Fidonia atomaria* common on the 20th. On the 27th I thrashed out a male *E. dolobraria* from a hedge. During July larvæ of *Dianthæcia carpophaga* were common locally, *D. cucubali* much scarcer, on the seeds of *Silene inflata*. On the 10th July *Triphæna fimbria* was brought me. I took also *Plusia chrysitis*, *Aplecta tincta* (1) by mothing in the evening, *Ellopiæ fasciaria* (at gas-lamp), and three or four larvæ of *Cucullia chamomillæ* on *Matricaria* about the middle of July. On Aug. 2nd I took a young larva of *Acronycta leporina* on birch, and single specimens on Aug. 10th, 14th, 27th, Sept. 2nd, 18th; out of these, I regret to say, only one survived, the others dying (perhaps from overcrowding). On Aug. 6th I beat a fine larva of *Notodonta trepida* (which went down a day or two later), and took a fine *Geometra papilionaria* in Bickleigh Vale. The same day I beat *Notodonta dodonea* (?) larva, and obtained others on Aug. 13th, 15th, Sept. 1st, 10th and 12th. On Aug. 7th I found *Plusia pulchrina* at rest on a birch-leaf, and *Cilix spinula* on seed-vessel of *Lychnis dioica*; on the 8th a fine larva of *Ennomos tiliaria* on birch; on the 6th, 8th, 29th, larvæ of *Platypteryx falcata* (the last on alder); on Sept. 7th and 8th, larvæ of *P. lacertula*. On Aug. 15th I took two *N. dictæa* larvæ, and one of *Diphthera orion*, and obtained others on the 22nd (two very young), Sept. 8th (2), 10th (4), 14th (1), 16th, 1); all were beaten except the last, which was found resting on the upper surface of an oak-leaf, with its head tucked in after the manner of *Acronycta rumicis*. The larvæ corresponded well with Newman's description, which seems to have been taken from a larva immediately after its last moult. On Aug. 21st I beat *Acronycta alni* in "bird-dirt" skin, and on Aug. 24th two more were taken; I beat another from alder on the 28th, and one from oak on Sept. 14th. On Aug. 26th I beat a young spider-like *Stauropus fagi* larva, and obtained two others on Aug. 28th,

Sept. 1st (3), 4th (1), 5th (1), 8th (1), 14th (4), 15th (1). On Sept. 1st I took *Agrotis suffusa*. and again on Oct. 19th and Nov. 7th. Half-a-dozen larvæ of *Thyatira batis* and three *T. derasa* were obtained from bramble; one of the latter I found resting in a slight web at the base of the three leaflets of a bramble-leaf; the rest were beaten. The following insects occurred at ivv:—*Agrotis suffusa* (2), *Noctua c-nigrum* (1), *Orthosia lota* (a few), *O. macilenta* (abundant), *Anchocelis rufina* (4), *A. pistacina* (common), *A. lunosa* (2), *Cerastis vaccinii* and *C. spadicea* (very common), *Scopelosoma satellitia* and *Oporina croceago* (a few of each), *Xanthia ferruginea* (fairly common), *Epunda nigra* (1 female), *Miselia oxyacanthæ* (not uncommon), *P. meticulosa* (abundant), *Xylina rhizolitha* (a few), *X. petrificata* (not uncommon), *Plusia chrysitis* (1), *P. gamma* (one or two). I took my first insects at ivv on Sept. 29th, my last about Nov. 21st. At gas-lamps I took one *Dasytoplia templi* on Nov. 4th; two *Pæcilocampa populi* on Dec. 5th; four *Himera pennaria* on Nov. 16th, 17th and 30th; and one *Hybernia defoliaria* on Nov. 30th.—F. J. BRIGGS; Fursdon, Egg Buckland, December 28.

BRITISH ORTHOPTERA.—As I contemplate writing a popular handbook on the above, as a companion volume to my 'Illustrated Handbook of British Dragonflies,' I shall be very pleased to receive any information from those who are interested in them. Local lists and specimens for figuring would be very acceptable.—W. HARCOURT BATH; Ladywood, Birmingham.

EUPITHECIA PYGMEATA.—Can any of your numerous readers give me any information as to the larva of this species, its food-plants (if more than one), the best time and best method of working for it, &c.?—A. E. HALL; Norbury, Sheffield, Dec., 1891.

THE NEW FOREST BILL, 1892.—In connection with the petitions in favour of this Bill, to which the signatures of persons interested in the New Forest are being obtained, I am frequently asked, "What is the necessity for the Bill, and what is its object?" The facts of the case may be shortly stated as follows;—The "Woods and Wastes" of the Forest comprise about 63,000 acres of land, the whole of which were, prior to 1698, open and unenclosed; but under the authority of the Acts 9 & 10 William III. c. 36 (1698), and 48 George III. c. 72 (1808), the Crown was empowered to enclose, and keep enclosed, freed and discharged from all rights of Common, such quantity of land in the Forest as would amount to 6000 acres, for the growth of timber. By the Act of 14 & 15 Vict. c. 76 (the Deer Removal Act of 1851) the Crown was authorized to enclose and plant with trees any quantity of land, not exceeding 10,000 acres, in addition to the 6000 acres already in enclosure under the authority of the Acts before mentioned. The powers conferred by these Acts are not repealed by 40 & 41 Vict. c. 121 (the "New Forest Act, 1877"); but the rights of enclosure are by Sec. 5 of the last cited Act limited to "Such lands as are at the date of the passing of this Act enclosed, or as have, previously to such date, been enclosed by virtue of commissions issued in pursuance of the said Acts or some of them." The New Forest Act of 1877 practically secured the New Forest to the public; but the Act is virtually repealed by the 10th Section of the Ranges Act, 1891 (and other Acts therein referred to), under the authority of which the War Department, with the consent of the Commissioners of Woods and Forests, can take

possession of any part of the Forest for military purposes, and exclude the public from the enjoyment of any tract so taken. Already it is proposed to take 800 acres for a rifle range and the site of a camp, and there is nothing to prevent the exercise of such rights throughout the district, and the conversion of the Forest into a second Aldershot. Wherever a portion of the Forest is taken, the rights of the commoners, if they complain, will be bought up and extinguished; and thus by taking different areas at different times the Commissioners may, before very long, extinguish the common rights and reduce the Forest into private ownership. It is clear that the proposed enclosure of 800 acres and the user of the Forest generally in the way described, is in direct violation of the spirit and intention, as well as of the express provisions, of the New Forest Act of 1877. The object, therefore, of the New Forest Bill, is to make it clear that the Forest shall not be deemed to be within the provisions of the 10th Section of the Ranges Act, 1891, and that the provisions of the New Forest Act, 1877, shall remain in force. The rights secured by the Act of 1877, and the preservation of the Forest as an open space, are of the greatest importance to naturalists, artists, and the general public, and every possible effort should be made to secure the passing of the Bill, by signing petitions in support of it.—H. Goss; Surbiton Hill.

ERRATUM. — Page 20, for *Macroglossa vox* read *Macroglossa nox* throughout the note.

SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON.—*January 27th, 1892.*—Fifty-ninth Annual Meeting (adjourned from the 20th inst. on account of the death of H.R.H. the Duke of Clarence), Mr. F. DuCane Godman, F.R.S., President, in the chair. An abstract of the Treasurer's accounts, showing a good balance in the Society's favour, having been read by one of the Auditors, the Secretary, Mr. H. Goss, read the Report of the Council. It was then announced that the following gentlemen had been elected as Officers and Council for 1892:—President, Mr. Frederick DuCane Godman, F.R.S.; Treasurer, Mr. Robert McLachlan, F.R.S.; Secretaries, Mr. Herbert Goss, F.L.S., and the Rev. Canon Fowler, M.A., F.L.S.; Librarian, Mr. George C. Champion, F.Z.S.; and as other Members of the Council, Mr. C. G. Barrett, Mr. Herbert Druce, F.L.S., Captain Henry J. Elwes, F.L.S., Prof. Raphael Meldola, F.R.S., Mr. Edward B. Poulton, M.A., F.R.S., Dr. David Sharp, M.A., F.R.S., Colonel Charles Swinhoe, F.L.S., and the Right Hon. Lord Walsingham, LL.D., F.R.S. It was also announced that the President would appoint Captain Elwes, Dr. Sharp, and Lord Walsingham, Vice-Presidents for the Session 1892—3. The President then delivered an Address. After alluding to the vast number of species of insects and to the recent calculations of Dr. Sharp and Lord Walsingham as to the probable number of them as yet undescribed, he referred to the difficulty experienced in preparing a monograph of the fauna of even a comparatively small part of the world, *e.g.*, Mexico and Central America, and certain small islands in the West Indian Archipelago, upon which he, with a large number of competent assistants, had been engaged for many years. The examination of the collections recently

made in St. Vincent, alone, had obliged him to search the whole of Europe and North America for specialists; and similar collections from Grenada were still untouched in consequence of the number of workers being unequal to the demands upon their time. He observed that the extent of the subject of Entomology was so vast that nothing but a systematic and continuous effort to amass collections, work them out, and preserve them, could place us in a position to proceed safely with the larger questions which followed the initial step of naming species; and it would only be by the steady effort of our Museum officials, not only to work at the subject themselves, but to enlist the aid of every available outside worker, that substantial progress could be made. The President concluded by referring to the losses by death during the year of several Fellows of the Society and other Entomologists, special mention being made of Mons. Edmond André, the Duke of Devonshire, Mr. F. Grut, Mr. E. W. Janson, Prof. Felipe Poey, Sir William Macleay, Mr. W. H. Edwards, Mr. Robert Gillo, and Dr. J. M. J. Af Tengström. A vote of thanks to the President and other Officers of the Society having been passed, Mr. Godman, Mr. McLachlan, Mr. H. Goss, and Mr. Champion replied, and the proceedings terminated.—H. Goss, *Hon. Secretary*.

SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—*Jan. 14, 1892.* Mr. W. H. Tugwell, President, in the chair. Mr. A. Harrison, F.C.S., F.R.M.S., was elected a member. Mr. R. Adkin exhibited *Sesia ichneumoniformis*, Fb. Mr. Tugwell remarked that the larvæ were supposed to feed on *Lotus corniculatus*. Mr. Weir said it used to occur at Charlton, and he thought there was no *L. corniculatus* in that particular locality. Mr. Jäger exhibited two examples of *Vanessa antiopa*, L., bred by Mr. Werner, of Biedenkopf, Germany: in one the dark band and the blue spots on the primaries were obliterated; in the other the yellow border was considerably widened, and entirely absorbed the dark band and blue spots, as well as the two costal spots; the border was also much diffused with black. Mr. Weir remarked on this species occurring so far north as Hudson's Bay. Mr. C. Fenn showed *Agrotis tritici*, L., grey and dark forms from Deal, and dark forms from the North of Scotland and Sligo. Mr. Tugwell again exhibited the black specimens of the *Eupithecia* from Paisley, with typical examples of *E. virgaureata*, Dbl., and *E. castigata*, Hb., and remarked that he had been in communication with a correspondent at Paisley who informed him that *virgaureata* did not occur in that district, and the food-plant was exceedingly rare; he had had the pupæ sent him, and it did not accord with Harpur Crewe's description of the pupæ of *virgaureata*; and on carefully comparing the black specimens with the *Eupitheciæ* in his collection, Mr. Tugwell said he was quite sure that it was not, as he first supposed, a black form of *E. satyrata*, nor, as Mr. Tutt suggested, of *E. virgaureata*, but was undoubtedly referable to *E. castigata*. Mr. Tutt said he was still of opinion that the species was *virgaureata*, which he had on many occasions received from Paisley; he exhibited typical, intermediate, and black forms of *virgaureata* from Paisley; also *E. albipunctata*, Haw., and var. *angelicata*, Bar. Mr. C. G. Barrett said that, on first seeing these black specimens, he thought they were *tresignaria*, H.-S., but he was inclined to think that Mr. Tugwell was right in referring them to *castigata*. Mr. Barrett added that at Cannock Chase he had taken specimens of *castigata* quite as black as those

under discussion. Mr. Tugwell said he thought Mr. Tutt's specimens were *castigata*, and not *virgaureata*, but Mr. Barrett said four of them were certainly the latter species. On Thursday, Feb. 11th, Mr. H. Wallis Kew, will deliver a lecture entitled "The Dawn of Memory in the Animal Kingdom."—H. W. BARKER, *Hon. Sec.*

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY.—The annual meeting of this Society was held in the class-room of the Free Public Library, William Brown Street, where, although the weather militated against a large attendance, a most enjoyable evening was spent. The President, Mr. S. J. Capper, occupied the chair, and in the course of his annual address referred to the entomological records of the past year, and also gave a series of most interesting personal reminiscences of his experience as an entomologist for over fifty years. This began at an Epping school, where Henry Doubleday did so much work, and helped the school-boys by naming and describing their captures. The President spoke of the progress of the Science since his first acquaintance with it, and the improvements in the mode of capturing and preserving specimens. He referred also to the inauguration of the Lancashire and Cheshire Society, the first meeting of which was held at his house at Huyton, in March, 1877. He further enumerated the principal achievements of the past Session, which, he said, had been at least equal in good work to any previous Session. In conclusion, he remarked that it was to the younger members that they now looked for the further progress of the Society. Mr. Capper was re-elected President; and the Rev. H. H. Higgins, Vice-President. Mr. F. N. Pierce (Hon. Secretary) and Mr. C. H. Walker (Hon. Librarian) were re-elected; the new members of the Committee being Mr. George Harker and Mr. C. E. Stott. During the evening the following specimens were exhibited by the members named:—Varieties of British Lepidoptera, the President; varieties of *Eupithecia venosata*, Mr. C. S. Gregson; life history of the bot fly, *Gastrophilus equi*, Mr. R. Newstead; *Phycis splendidella*, captured at Wallasey, July, 1891, Mr. H. B. Jones; a fine web formed by the larvæ of *Ephestia elutella*, Dr. J. W. Ellis; and Scotch *Dasydia ohfuscaria*, *Noctua sobrina*, &c., Mr. C. E. Stott.—F. N. PIERCE, *Hon. Sec.*; 143, Smithdown Lane, Liverpool.

BIRMINGHAM ENTOMOLOGICAL SOCIETY.—Dec. 21, 1891.—Rev. C. F. Thornewill, V.P., in the chair. Mr. P. W. Abbott showed *Agrotis obelisca*, taken by Mr. A. J. Hodges in the Isle of Wight; also a specimen of *Noctua c-nigrum*, with which species Mr. Hodges says *obelisca* is often confounded on the sugar. Mr. R. C. Bradley showed *Pyrellia lasiophthalmia* from Sutton. Mr. Abbott read a paper on "A Holiday, collecting in the Isle of Wight." He worked specially for *Agrotis lunigera*, with considerable success; but such was the danger of collecting on the cliff, where alone they are to be taken, that he advised others to leave it alone. He took many other good things, the method of capture of which he described, and the paper was illustrated by the specimens themselves.

Jan. 11, 1892.—Mr. W. G. Blatch, President, in the chair. Mr. R. C. Bradley showed some Diptera, which had been shown at a former meeting as *Pteropæcila lamed*, with the note that they had been confirmed as that species by Mr. Verrall. They had since, at his request, been again submitted to Mr. Verrall, and he names them as *Toxoneura muliebris*, with the remark that *lamed* is not yet recorded as British satisfactorily. A letter was read from Mr. C. J. Fryer recording *Stenanma westwoodii* from

Warwick. Mr. C. J. Wainwright read a paper on "A Holiday spent in North Cornwall last year," in which he described the results of a fortnight's collecting on the North Coast, during which he took *Plusia orichalcea* and many good Diptera. The paper was illustrated by photographs and the collections made.—COLBRAN J. WAINWRIGHT, *Hon. Sec.*

ENTOMOLOGICAL CLUB.—A meeting was held at the Holborn Restaurant, Dec. 11th, 1891. Mr. G. H. Verrall, F.E.S., in the chair. Dr. Philip Brook Mason, F.L.S., was elected an Ordinary Member. Mr. Richard South was elected an Honorary Member, and subsequently Secretary, in place of the late Mr. F. Grut. Among the exhibits were a fine series of *Lycana arion*, by Mr. E. A. Waterhouse, who observed that the species appeared to be common in Cornwall, where he captured the specimens exhibited; also some interesting Diptera, by Rev. E. N. Bloomfield, Mr. Wainwright, and others. After the meeting the members, and some thirty-four visitors, adjourned to the supper-room, where they were most hospitably entertained by the Chairman.—RICHARD SOUTH, *Hon. Sec.*

REVIEWS.

Delagoa Bay: its Natives and Natural History. By ROSE MONTEIRO. Pp. 274; 20 illustrations, 8vo. London: George Philip & Son, 32, Fleet Street. 1891.

THE authoress introduces her book as a medley of "everything in general and nothing in particular"; but we find that very many matters of considerable interest are treated of; and we are sure that the public in general, and entomologists in particular, will be delighted to read this charming volume. The chapters devoted to a consideration of the Natural History of Delagoa Bay, not only show that the writer is an ardent lover of nature, but that she is also an observant student of the habits and transformations of insects. Referring to the rearing of caterpillars, the writer says (p. 194), "I must confess I get quite fond of some of my prettiest ones, and miss them when they have retired to the pupa stage, especially when I have had them under my care for some time. They vary so much, too, in their habits, and even their tempers, that they are most interesting and amusing." The larvæ of many species of Lepidoptera, some new to science, are briefly described, and several butterflies new to the African fauna are figured.

Journal of the Institute of Jamaica. Vol. I., No. 1. Kingston, Jamaica. November, 1891.

A Quarterly Journal devoted to Literature, Science and Art; its object being to further extend the influence of the Institute of which it is the official organ. The present number contains, among other papers, one by Mr. T. D. A. Cockerell, Curator of the Museum, entitled "Notes on the Transformations of some Jamaica Lepidoptera."

A List of the Macro-Lepidoptera of Balerno, Midlothian. By E. W. CARLIER, M.D., B.Sc.

This is a reprint from 'The Annals of Scottish Natural History,' January, 1892. The list is not a long one, as only 109 species are enumerated, but this is due to the limited area worked, and that usually Saturday afternoons only were available for collecting.

Diptera of West Cornwall. By C. W. DALE, F.E.S.

About 400 species are enumerated in this list, which commences with the too familiar *Pulex irritans* and ends with a member of the Hippoboscidæ, *Melophagus ovinus*. Reprinted from the 'Transactions of the Penzance Natural History and Antiquarian Society,' 1890-91.

Catalogue Raisonné of Silk-producing Lepidoptera. By ALFRED WAILLY. Pp. 35, 8vo.

In his opening remarks the author refers to those species of exotic silkworms which can be most successfully reared in the open air in Europe; he then refers to the various contagious diseases to which the larvæ are subject; and concludes by pointing out how silkworms can, for commercial purposes, be best reared in their native country. In the Catalogue itself the species of silk-producing Bombyces are considered under the heading of the particular Continent to which they respectively belong. This little book should be useful to all who are interested in sericulture.

An Elementary Manual of New Zealand Entomology. By G. V. HUDSON, F.E.S. Demy 8vo, pp. 128, and 21 col. plates. London: West, Newman & Co. 1892.

A popular introduction to the study of the Insect Fauna of New Zealand; the author's chief purpose being to induce his readers to take an active interest in the investigation of insect life in the country of which he treats. With this object in view, remarks of an elementary character are made on classification, and the best methods of collecting insects considered. Certain species in most of the families of each Order are referred to, and the habits of the perfect insects and their earlier stages discussed in a manner that should arrest the attention of those for whose especial instruction and guidance the work has been undertaken. No scientific descriptions are given, but the insects, and in most cases their respective larvæ and pupæ, are figured. The chromo plates by West, Newman & Co. are excellent reproductions of the original drawings by the author, and these largely add to the general value of the book. To everyone interested in the Entomology of New Zealand we can heartily commend this useful book.

Transactions of the City of London Entomological and Natural History Society. 1891. 8vo, pp. 38. Published by the Society, 33, Finsbury Square, E.C.

Under the above title, this Society has issued a reprint of the reports of its bi-monthly meetings previously published in the 'Record,' &c. A figure of an interesting aberration of *A. aglaia* is given, but this also has been published before. There is a paper on "The Genus *Donacia*," by Mr. G. A. Lewcock. No information as to the present condition and financial position of the Society appears, but possibly it was not considered "the thing" to mix up such matters with the 'Transactions.' We wish this modest little volume every success, and hope that it will be the means of attracting more workers to the Society from which it emanates.

THE ENTOMOLOGIST.

VOL. XXV.]

MARCH, 1892.

[No. 346.

EPHESTIA KUHNIELLA.

BY R. ADKIN, F.E.S.

SINCE this species was first recorded as occurring in this country, now just five years ago, and its subsequent detection in large numbers in imported flour in one of the East London warehouses, it appears to have received but little attention, so far as published records are concerned; it has nevertheless been steadily establishing itself, and, although we have no case of damage caused by its agency to parallel one recently reported from America, where the larvæ are said to have appeared in such multitudes as to necessitate the stoppage of a large mill for several days in order to clear the machinery of the tangled mass of webs from their workings, it is of sufficiently frequent occurrence in granaries, mills, bakehouses, &c., to warrant its being classed among our established insect-pests. Probably there are few such places that are altogether free from its attacks, and even samples in a London merchant's office have fallen victims to its ravages. The larvæ have been found most commonly on beams, window-ledges, and similar situations, where the dust from flour, rice, grain, &c., is allowed to accumulate, and probably find their way thence into the bulk of the flour, their presence being detected by the improved cleaning machines now in use in the larger bakeries, and the imagines are to be seen only too often resting on walls, &c. For some years past I have had sundry broods under observation, and have been much struck by the privations through which the larva will pass without any apparent detrimental effect. In the early months of last year I started a fresh colony by placing a number of well-grown larvæ in a large glass jar, with some wheat-flour for food, and pieces of rag for them to pupate in. They soon fed up; imagines appeared and deposited ova, from which larvæ resulted in large numbers; brood succeeded brood, and for many months past there has been a liberal supply of larvæ in all stages, together with pupæ, and imagines always present. Fresh flour was added from time to time, until August

last, when, on leaving home, the jar was put aside and overlooked for some three months. When it again came under observation the whole of the flour had been passed through the larvæ; no fresh flour has since been added, but the larvæ have thriven on the frass and dead bodies of their progenitors, which they consume with avidity. Imagines still continue to emerge, and the larvæ now feeding appear to be quite healthy, but the quantity of frass remaining is greatly reduced in bulk, and darkened in colour.

In another case, wishing to examine the egg microscopically, I placed a moth in a small glass-topped pill-box, with a few grains of rice; after a few days a careful search revealed three most uninteresting looking ova attached to one of the grains. After examination they were allowed to remain in the box, and shortly a larva was found to be feeding. After a time the second egg hatched, and ultimately the third. Two of the larvæ have already fed up in this small box, and produced imagines, which, on dying, were promptly devoured by the remaining larva, which, despite its imprisonment for so long a time, is now quite healthy and growing steadily.

The larvæ that I have had under observation have throughout fed, by preference, in confined spaces,—for instance, between the pieces of rag before mentioned and the sides of the jar,—rather than in the midst of the food, which habit suggests that, under natural conditions, the spaces between floor-boards, disused sacks, round skirtings, and similar situations in flour mills, &c., as well as the beams, &c., already referred to, would form suitable breeding grounds for the species, and in such it would be likely to multiply to a dangerous extent without being noticed; but, except under such conditions, I am not apprehensive of its occurrence in such numbers as to do any great amount of mischief. Although it is improbable that a pest of this description, once established, is likely to be altogether exterminated, there can be little doubt that if places likely to afford harbour are frequently cleansed of accumulated dust, the chief source of danger of any large outbreak will be removed.

Lewisham, February, 1892.

ENTOMOLOGICAL PINS.

BY DR. D. SHARP, F.R.S., &c.

In his note on this subject in the September number of the 'Entomologist' (xxiv. 215), Mr. South has called attention to a matter of great practical importance. Everyone who has been for many years, or even a few years, much occupied in dealing with entomological specimens must have had frequent occasion to regret the loss of valuable examples due to the corrosion of

pins. Entomological pins are, in fact, extremely unsettled in their characters. I have had insects, nearly a hundred years old, that have been transferred again and again, and yet the pins they are transfixed with appear to be in perfectly good condition, and capable of standing wear and tear for another century or two. On the other hand, specimens only a few years old are frequently lost either by the insect splitting asunder from the development of verdigris, or from the pin breaking in two from corrosion.

This uncertainty arises, I believe, from two different sources, *viz.*, differences in the pin-metal, and differences in the substances in which the pin is placed. This last source of evil is also of a double nature, the corrosion being sometimes due to the nature of the substances in the interior of the insect, and sometimes to the articles with which the box is lined, *viz.*, the paper, the matter with which the paper is fastened to the bottom, and the substance, cork or other material, forming the bottom of the box. To these various sources of deterioration of pins must be added the atmosphere of the apartments in which collections are kept; it being according to my experience an undoubted fact that in a damp atmosphere pins decay much more rapidly than in a dry one.

My attention was attracted to this subject twenty years or more ago. I have since then made some observations and experiments bearing on the subject, and I have come to the conclusion that all insects of small size intended for permanent preservation should either be enclosed in cells, or fastened by a gum to card, or pierced with a silver-wire instead of a pin, the silver-wire being afterwards placed on a block carried by a thick strong pin.

I have been in the habit of making my silver-wire pins myself; but this was always difficult and unsatisfactory, and cost me a great deal of time. And I am accordingly glad to announce that Messrs. Watkins & Doncaster have succeeded in getting made a series of wire pins, of suitable sizes for small insects, from pure silver-wire, and that can be retailed at the moderate price of 6/- or 7/- per 1000. The sizes and thicknesses I suggested to them are: 1, 10 mm. long, and as fine as the *minutien-nadeln* made in Vienna, that is, much finer than Kirby & Beard's No. 19 pin; 2, 12 mm. long, thickness of Kirby & Beard's No. 19 pin; 3, 14 mm. long, the thickness of Kirby & Beard's No. 15 pin; 4, 15 mm. long, thickness of Kirby & Beard's No. 10 pin. These silver-wire pins, as supplied by Messrs. Watkins & Doncaster, are quite satisfactory, and from my experience of fifteen years or more I strongly recommend entomologists to use them, though a guarantee as to the pins being made of pure silver-wire must be understood to be necessary.

The pin recommended by Mr. South is, I understand, made

of iron or steel,* but I cannot myself advise the use, for *pinning through an insect*, of a pin made of this metal; it being my experience that this metal is subject to decay in the interior of the insect, so that the pin frequently, though looking perfectly sound, breaks in two in the interior of the insect.

In connection with this it must be recollected that the interior of an insect is liable to contain various acids according to the nature of the species, the maturity of the specimen, and the way in which it has been killed and dried.

As yet I have never lost a specimen pinned with the silver-wires of my own manufacture. The wire soon loses its bright white appearance, tarnishes and becomes even quite black, but I have seen no reason to suppose that this change extends into the interior of the pin, nor have I found that the wire is at all affected by acids in the interior of the insect: certainly there has never been a trace of verdigris.

It is generally supposed that silver-wire is too flexible to be used for such a purpose. This is due to the fact that the wire usually used in arts is annealed. The unannealed wire, on the contrary, is quite rigid enough for entomological purposes. It does not, however, take so perfect a point as steel does, and when insects are pinned at home with it, I recommend that a very minute prick should first be made with the point of a bead-needle at the spot in which the insect is to be pinned with the wire; one of the wires should then be taken between the ends of a pair of delicate pinning forceps and passed through the insect, starting at the minute prick previously made. If the insect to be impaled is large enough to be held between the finger and thumb of the left hand this should be done, and the impaling wire should be put in with a screwing motion; by this means the risk of rupturing or splitting the undersurface as the point of the pin emerges is very much reduced. If the insect be not large enough to be held in the fingers, it should be placed on a piece of velvet or soft cloth, which assists both in steadying it, and in supporting the undersurface when pressed on by the emerging point.

After the insect has been impaled it should be pinned on a block composed of a surface of card with cork or pith underneath the card so that the cork or pith is not seen. The neatness of the appearance of such insects in a collection depends chiefly on these blocks. A system of symmetrical sizes should be used, and after many years' trial I can recommend the following sizes for the blocks as suitable, *viz.*, No. 2, $12\frac{1}{2}$ by $8\frac{3}{4}$ mm.; No. 3, $17\frac{1}{2}$ by $12\frac{1}{2}$ mm.; No. 4, 25 by $17\frac{1}{2}$ mm.; No. 5, 35 by 25 mm. Each of these sizes is double of the one that preceded it, and in each the length is to the breadth as 7 is to 5. The locality and date should be written on the card forming the upper surface of

* Steel, black-enamelled.—R. S.

the block (with liquid Indian ink so as not to be liable to fade), and this should be pinned through with a very strong pin: for this purpose I myself prefer for No. 2 block, Kirby & Beard's No. 2 pin, and for the larger blocks a No. 12 Continental pin 37 mm. long.

If the same sizes of cards be used for gummed specimens, it will be found that a series may be made up partly of gummed and partly of silver-wired specimens and yet retain a symmetrical appearance.

Cambridge, Feb. 9, 1892.

ARCTIA CAIA.

BY J. ARKLE.

IN the summer of 1890 I began a series of experiments in breeding *Arctia caia*, of which, although possessing little, if any, scientific value, it may be interesting to give a detailed account. My chief object was to obtain so-called "varieties" by interbreeding, and although much might be made of some of the forms I bred, still I am bound to confess they are, in my opinion, only slight departures from the usual type,—a small reward for all my trouble.

Discouraging as this preliminary summing-up may be, still as my operations did not end until July, 1891, during the whole of which period the various phases of the insect were under constant and close observation, matters of extreme interest often arose.

The eggs I found laid, in the wild state, upon the leaves of plants and trees,—once upon sallow, and once upon the leaf of a young lime tree. To the naked eye they appear pale, globular, and yellowish, and about the size of an ordinary pin's head. They are laid in straight rows touching each other, and it is curious to observe how the parent moth will proceed for an inch in a straight line, and then turn off at an obtuse angle. The whole of the eggs form, as a rule, a closely laid batch. Under a strong magnifying glass, and viewed separately, the egg appears to be smooth, of a greenish colour, with a bronze-yellow lustre, changing first to chocolate and then to dark plum-colour before hatching. A powerful microscope shows a minute, apical zone, from which radiate lozenge-shaped "scales" pointed at each end, and resembling miniature Zulu shields. This radiation is regular, after which the "scales"—minute, but very equal in size—are irregularly distributed over the whole of the shell as if marked out by a finely pointed needle. They reflect the most beautiful mother-of-pearl tints,—rose-pink, purple, green and blue.

The caterpillar I pass over, and for two reasons.—First, it is so thoroughly well known as to need no description;

secondly, the closest observation, on my part, failed to detect the slightest difference among the hundreds of larvæ which, at one time or other, have passed through my hands, with this single exception, that in frequent specimens, the silvery tubercles along the sides were much whiter than in others.

Kirby says *A. caia* is "common throughout Europe in July and August, except in the extreme south;" and that "the North American *A. americana* does not appear to differ from *A. caia* by any constant characters." He also adds, "Many varieties may be obtained by rearing larvæ on plants placed in salt water; and specimens reared from larvæ which have been fed on walnut leaves are unusually dark." According to Stainton, Kirby, Morris, Newman, and Wood, the upper wings are brown, or rich velvety brown with cream markings. Newman says, "It is impossible to describe them." If, however, cream be taken as the ground colour, it will be seen that the brown marks or blotches are symmetrical, and that the wing is, therefore, by no means difficult to describe. First, there is a minute, narrow, basal mark close to the thorax. Secondly, seated on the costal margin are three blotches; the first, counting from the base, is small and rectangular; the second, which is by far the most prominent mark on the insect, spans the central portion of the margin by three irregular lobes, and stretches beyond the middle of the wing; the third blotch is a single but conspicuous lobe, stretching nearly halfway across the wing and deeply indented on the side nearest the outer margin. Thirdly, on the outer margin a blotch is seated on nearly its entire length. It consists of two broad, irregular lobes, the uppermost of which occupies the tip of the wing. We have now reached the inner angle, at which there is a small, wedge-shaped blotch or dot. Fourthly, on the inner margin are three blotches, stretching into the wing and nearly meeting the corresponding blotches on the costal margin; the third is the largest, and, like the costal blotch above it, is deeply indented on the side nearest the outer margin; the second is smaller and rectangular; the first is narrow and inconspicuous. Two small, pear-shaped, basal marks, complete the ornamentation of the upper wing.

The lower wings are "reddish orange," with two parallel rows of blue-black, circular, lustrous spots, each surrounded by a band of velvety black. The first row (nearest the base) consists of two spots of unequal size, the largest being nearest the anterior margin. The second row has four spots; the fourth, which is inconspicuous, is seated on the anterior margin and frequently joined to the third spot. Between these rows, and near the anterior margin, is an irregular and smaller black spot.

The antennæ are smoky white; the thorax brown; the body red, on the segments of which are six black bars.

The insect with the central blotch on the costal margin *three-*

lobed, appears to be the accepted type of Kirby. Morris, Newman, and Wood figure this blotch with two lobes, Stainton does not figure the moth. Which, then, is the type or commonest form of the insect? Is it the *tri-lobed*, the *bi-lobed*, or the *mono-lobed*? In both wild and bred examples I have found the three forms to occur, in abundance, according to the order I place them; and, in large series, an arrangement on this principle appears to be very satisfactory. It would be interesting if entomologists from different localities would record in the columns of the 'Entomologist' the results of their observation on these three commoner forms. For instance, I find out of twelve specimens (six males and six females) in a local collection before me, eleven have the mid-costal blotch tri-lobed, while, in the remaining example (a female) the blotch is bi-lobed. I also find, as a rule, that where this blotch is three-lobed, the specimens are light in coloration; that is, there is a greater area of cream-colour and less of the black; that the two-lobed specimens are darker; and that, where the blotch is a single lobe, or filled up as it were, the specimens are darkest of all, the cream-colour being all but obliterated, and the black spots on the lower wings so completely joined as to form two irregular, parallel bars. In this form of the insect, the spot near the anterior margin is often joined to the second bar. To these three recurring forms there will be, of course, occasional "varieties" and from the same batch of eggs; but the only example I recollect, is one in which the mid-costal blotch on the right wing is two-lobed (a female), while that on the left wing is three-lobed.

In June and July, 1890, I collected a number of larvæ in the Chester district which were nearly full-fed. These appeared as perfect insects about the middle of July. A few had the mid-costal blotch bi-lobed, but the majority were what I am disposed to regard as the type, or tri-lobed. These I will designate the *First brood*. After selecting a pair of fine, typical specimens, I obtained eggs July 18th. The eggs hatched August 4th, giving me a *Second brood*. This second brood began to appear as imagines, Sept. 21st, from which I obtained a *Third brood* of caterpillars on the 2nd of October. Generally speaking, I shall note the fortunes, or misfortunes, of the second and third broods separately, using the letter B as a reference to *both* broods. I kept the larvæ in flower-pots, placed on a warm kitchen shelf, with plenty of light from an adjacent window, and used dock and stinging nettle, as long as they were obtainable, as food.

Second brood.—Aug. 4th: hatched. Aug. 29th: cold, rainy, moonlight, since the 20th; eleven nearly fit for pupating; the rest nearly all moulting for the second time. Sept. 5th: five larvæ began to spin up; the backward ones have just moulted for the second time; about a dozen are in their third skins and

more advanced. Sept. 6th: temperature on shelf, 10 p.m., 78° Fah. (76° = summer heat, 55° = temperate); breeze, N.W. Sept. 8th: morning—previous to a fire being made—thermometer 72°. Sept. 9th: six or seven larvæ had pupated; hot, last three days. Sept. 21st: the first moth appeared, a typical male. Sept. 24th: another, a female type. Sept. 25th: another ordinary female. Eggs laid by first female placed, half of them in the kitchen, the rest out of doors. Sept. 30th: nine had emerged up to date, all ordinary types. These were let go out of doors, and many were brought back to me from various parts of the city as curiosities of the season! Nov. 3rd: another ordinary insect appeared. Nov. 13th: pupæ coming out slowly; put a dozen into the forcing-glass, and left the apparatus inside the kitchen fender. Nov. 15th: A fine, dark, two-lobed “variety” appeared. Nov. 19th: thermometer on shelf 76°. A few days ago, in late October and beginning of November, it stood at 70°; and a few times, in cold weather, at 68°. Nov. 21st: another ordinary moth. The larvæ show two or three deaths per day, while others are pupating. Still feeding on nettle. Some are yet in their second skins. Nov. 23rd: Another type; cold; rain; wind N.W. Nov. 24th: larvæ I find dying,—some when ready to spin up, some in earlier stages, others after making their cocoons and without changing into the chrysalis; cold weather; wind N.W., with showers of rain and hail. Nov. 25th: (B) first winter day; N.E.; hard frost at night; therm. 72° on shelf; many larvæ dying, especially of the second brood. Nov. 26th: intense frost; ther. 7 a.m., 55° for the larvæ; 11 p.m. 70°. Nov. 27th: (B) intense frost; larvæ dying in half-dozens; food (nettle) difficult to get—dock gone. Nov. 29th: (B) intense frost. One of the second and one of the third brood spinning up. Dec. 13th: (B) larvæ dying; they refuse to eat, and shrink in size. Dec. 15th: (B) the most severe weather for the last ten years. Larvæ, I am advised by Dr. Chapman, of Hereford, to feed on cabbage, and they eat it. All other food-plants gone. The larvæ shrivel up,—those spinning not forming chrysalids. Dec. 19th: (B) fall of snow, afterwards severe frost. I feed the larvæ now on lettuce from the market, as an experiment, at a cost of a halfpenny per day. They still diminish in numbers. Jan. 3rd, 1891: (B) complete thaw. I have now only about twenty larvæ left. Jan. 6th: (B) intense frost; ther. only 58° at 11.30 p.m.; larvæ dying fast. I gave up lettuce and returned to cabbage—lettuce deficient in nutriment; 15° of frost common. Jan. 8th: intense frost continued. ‘Liverpool Echo’ described it as “The Great Cold,” and reports people frozen to death. According to ‘The Standard,’ there is only one recorded December temperature lower than that of 1890,—that of 1788. In 1788 the mean temperature was 29°; that of 1890, 30°.4. Jan. 12th: a fine, dark female

emerged—two-lobed, a very beautiful and richly marked specimen. On the lower wings the black spots, which are unusually large, are confluent in each line. Jan. 19th: this female, after pairing with an equally fine third-brood male (see Jan. 10th), laid a large batch of eggs. *All proved infertile.* Hard frost again. Feb. 3rd: (B) only eleven larvæ living, Feb. 20th: only two left, in their third skins, and evidently hibernating. Very cold, frosty; S.E.; ther. 62° , 11 p.m. Feb. 27th: one of the two larvæ died. March 15th: (B) the intensely cold N.E. breeze changed to a cold S.W. wind with rain. Larvæ still hibernating, March 18th: the last second-brood larva died!

Third brood.—Oct. 2nd: hatched. Oct. 11th: changed their first skins; beautiful weather; warm. Oct. 15th and 16th: changed their second skins; storms of wind and rain from the N.W.; cold. Oct. 18th: eggs (see Sept. 25th) put out of doors, hatched. Oct. 22nd: indoor larvæ changed their third skins. Nov. 2nd: changed their fourth skins. Nov. 11th: changed their fifth skins; cold weather. Nov. 14th: the larvæ out of doors (see Sept. 25th) are still in their first skins. They eat a little. They all died just before Christmas. (I have frequently tried to bring larvæ of *A. caia*, *A. villica*, and *A. fuliginosa* through the winter, out of doors, and have always failed). Nov. 30th: frost broke up; thaw from the N.W. The third brood are nearly all full grown. They have done well, so far, and look healthy, excepting a few deaths chiefly during the severe weather. Dec. 3rd: they begin to pupate. Jan. 2nd: one pupated; bitterly cold again. Jan. 10th: a mono-lobed male—the darkest “variety” yet—emerged; upper wings almost covered by the chocolate blotches. On the lower wings the two rows of black spots are simply a couple of black but irregular bands. This specimen paired with the second-brood female which appeared Jan. 12th. Ther. 62° at 9 p.m.; frost only 3° last night; skated again to-day. Jan. 20th: complete thaw; rain; S.W.; slight frost at night. An exceedingly small, two-lobed female appeared. Jan. 21st: hard frost. A larva pupated without spinning a cocoon. Jan. 27th: a crippled, two-lobed female. Jan. 28th: another female—a fine type specimen. Feb. 6th: half a dozen cocoons, on being opened, proved that the larvæ had died without pupating. Feb. 12th: a larva pupated. Feb. 20th: only eight larvæ left of the third brood, seven in their third skins evidently hibernating, and one ready to pupate. March 2nd: commenced to “harden off” the remainder by placing the pot at a warm south window. They are, in size and appearance, exactly like hibernated larvæ. They move about a little, but do not eat. Young spring nettles are available, and I use them. March 9th: still hibernating. A hard frost. The specimen referred to on Feb. 12th emerged,—a very commonplace, typical female, except that the fore wings appear as if

dusted with glassy scales. These give the insect a rubbed or worn appearance, and are, I think, evidence of disease. March 18th: I have now six larvæ left of the third brood. They still hybernate. Cold; N.E. Mar. 31st: the coldest, most wintry March I remember. Five larvæ left, hibernating. April 20th: one changed its skin; cold. April 25th: out of doors I came across a larva feeding on dead-nettle. July 16th: the two last died (third brood),—one after spinning up,—the other in its fourth stage!

Such was my experience. I was not very successful with the forcing-glass. Many of the pupæ I put in died just before emergence; probably because they were not kept moist enough. But I easily made out the insects to be typical, except in two instances, where they were bi-lobed. The apparatus consisted of a flowerpot-saucer full of coarse, gritty sand. A layer of moss was next placed on the top. Then came the pupæ on the moss. A twig was stuck through for the moths to climb up and develop their wings. Lastly, a bell-glass, fitting just inside the saucer-rim, concentrated the heat and moisture. The sand should always be kept wet by the addition of warm water when necessary.

It will be seen that all my "varieties" pale before the extraordinary form bred by Mr. Laddiman, and figured in the 'Entomologist' for January last. Still, my experiments were, to me, most interesting. An exceptionally severe winter was dead against them; but, if they save entomologists the trouble of undertaking this kind of work, in the hope of obtaining striking varieties, they will, on that score, have served some useful purpose.

Chester, January 4, 1892.

NOTES ON THE SYNONYMY OF NOCTUID MOTHS.

BY ARTHUR G. BUTLER, F.L.S., F.Z.S., &c.

(Continued from p. 14.)

Tarache monilifera.

♂ *Acontia monilifera*, Walker, Lep. Het. xii. p. 798, n. 42 (1857).

♀ *A. includens*, Walker, *l. c.*, p. 799, n. 43 (1857).

♂ *A. unio*, Felder, Reise der Nov. Lep. iv. pl. cviii. fig. 32. Natal. Coll. B. M.

The "*A. unio*" of Felder is a slightly whiter form of the species, answering to the *T. albicollis* of the allied European *T. lucida*.

Tarache abdominalis.

♂ *Tarache abdominalis*, Grote (see Check List, p. 37, n. 1024). United States. Type in Coll. B. M.

Males only were in Grote's collection. A single female in the Zeller collection, from Texas, is erroneously labelled as "*Acontia unocula*" of Freyer. I take the latter to be a poor figure of the female of *T. aprica*. Specimens labelled as "*T. unocula*" were also in Zeller's series.

Tarache aprica.

♂ *Noctua aprica*, Hübner, Samml. Eur. Schmett. iii. fig. 371.

♀ *Acontia biplaga*, Guenée, Noct. ii. p. 218, n. 991.

A. unocula, Freyer, Neuere Beiträge, vi. tab. 534, fig. 3.

United States. Coll. B. M.

Freyer's figure gives the incorrect idea that his insect was a male, the abdomen being badly represented. Hübner, on the other hand, represents the male with a female abdomen.

Tarache tetragona.

♂ ♀ *Acontia tetragona*, Walk. Lep. Het. xii. p. 786, n. 12 (1857).

♂ *A. redita*, Felder, Reise der Nov. Lep. iv. pl. cviii. fig. 30.

St. Domingo and Honduras. Type in Coll. B. M.

Tarache insocia.

♂ *Acontia insocia*, Walker, Lep. Het. xii. p. 788, n. 18 (1857)

♂ *A. concinnula*, Walker, l. c., p. 789, n. 19 (1857).

♀ *A. pyralina*, Walker, l. c., n. 20 (1857).

Sierra Leone and Accra. Types in Coll. B. M.

The type of *A. insocia* is a much rubbed male; the type of *A. coccinula* is in fairly good condition; that of *A. pyralina* is worn. All three are, nevertheless, easily recognizable. The species is allied to *T. tenuicola* of the United States.

Tarache candefacta.

Tarache candefacta, Hübner, Samml. Exot. Schmett. Zutr. figs. 587, 588.

Acontia debilis, Walker, Lep. Het. xii. p. 786, n. 11 (1857).

United States. Coll. B. M.

In Grote's collection a totally dissimilar yellow species is labelled as "*Tarache debilis*, Walk."

Tarache natalis.

Acontia natalis, Guenée, Noct. ii. p. 217, n. 987 (1852).

A. formosa, Butler, Ann. and Mag. Nat. Hist. ser. 4, vol. xvi. p. 404, n. 69 (1875).

Natal. Col. B. M.

This beautiful species is allied to the following.

Tarache olivea.

Acontia olivea, Guenée, Noct. ii. p. 217, n. 986 (1852).

Tarache nivosa, Swinhoe, P. Z. S. 1886, p. 446, pl. 41, fig. 14.

Mhow and Dharmasala. Coll. B. M.

Tarache tropica.

♂ ♀ *Acontia tropica*, Guenée, Noct. ii. p. 217, n. 988 (1852).

♀ *A. maculosa*, Walker, Lep. Het. xii. p. 795, n. 35 (1857).

♂ *A. bipunctata*, Walker, l. c., p. 798, n. 41 (1857).

Java, Formosa, China, Ceylon, India. Coll. B. M.

Singularly enough, in this species the examples from Java are larger than those from India; the latter are, as a rule, a little brighter in colouring.

Tarache meridionalis.

♀ *Acontia signifera*, Walker, Lep. Het. xii. p. 796, n. 37 (1857).

♂ *A. meridionalis*, Walker, l. c., Suppl. 3, p. 785 (1865).

♀ *A. scanda*, Felder, Reise der Nov. Lep. 4, pl. cviii. fig. 27.

North and South India. Type in Coll. B. M.

The name of *A. signifera* had already been employed for an Indian species by Walker (p. 793, n. 31).

Tarache imbuta.

♀ *Erastria imbuta*, Walker, Lep. Het. Suppl. 3, p. 794 (1865).

Acontia acerba, Felder, Reise der Nov. Lep. 4, pl. cviii. fig. 25.

♂ *A. inda*, Felder, l. c., fig. 23.

N. India, Dharmasala, Rangoon, Ceylon. Type in Coll. B. M.

Tarache detrita.

♀ *Acontia detrita*, Butler, Trans. Ent. Soc. 1886, p. 401, n. 32.

♂ *A. clarissa*, Butler, l. c., p. 402, n. 33.

Australia. Types in Coll. B. M.

Tarache binominata.

♂ *Acontia costalis*, Walker, Lep. Het. Suppl. 3, p. 784 (1865).

South India. Type in Coll. B. M.

Walker had already given the name of *Acontia costalis* to a very similar female insect from St. Domingo (see Lep. Het. xii. p. 787, n. 13), so that the Indian species must necessarily be renamed.

Tarache signifera.

Acontia signifera, Walker, Lep. Het. xii. p. 793, n. 31 (1857).

A. subfixa, Walker, l. c., Suppl. 5, p. 1964 (1866).

Japan, China, India. Type in Coll. B. M.

Walker duplicated the name *Acontia signifera* on p. 796. The latter, however, as already shown, falls to *A. meridionalis*.

Acontia biplaga, Walk. (Lep. Het. xii. p. 795, n. 34), altered to *A. biplagiata*, as having been previously used (Suppl. 3, p. 781), but unnecessarily, as it was already redescribed on the previous page as *Euphasia subapicalis*; also *Acontia pulchra* (Lep. Het. xii. p. 797, n. 39) and *A. bimacula* (Lep. Het. xii. p. 796, n. 38) are none of them Acontiidæ, but Heliothidæ, and belong to the genus *Leocyma*.

CHOBATA, Walk.

Chobata discalis.

Chobata discalis, Walker, Lep. Het. xii. p. 838, n. 1 (1857).

Erastria concludens, Walker, l. c., Suppl. 3, p. 791 (1865).

St. Domingo. Types in Col. B. M.

LITHACODIA, Hübn.

Lithacodia bellicula.

Lithacodia bellicula, Hübner, Samml. Exot. Schmett. Zutr. figs. 85, 86.

Hydrelia semichalcea, Walker, Lep. Het. Suppl. 3, p. 797 (1865).

United States. Coll. B. M.

Hübner's figures of this species are so bad that it is no wonder Walker failed to recognize the insect intended by them.

(To be continued.)

ENTOMOLOGICAL NOTES, CAPTURES, &c.

NOTES ON THE SEASON OF 1891. — In spite of the very bad weather we have had, I found the season of 1891 very productive of insects everywhere I have collected, and perhaps the following notes from various localities may be of interest. Unless otherwise mentioned Crouch End is the locality. The season commenced with *Phigalia pilosaria*, one male on a fence at Mill Hill. *Anisopteryx æscularia* appeared on the fences on March 15th, but *Hybernia progemmaria* not until April 4th. Towards the end of March and early April *Saturnia carpini* emerged in my breeding-cages from Scotch larvæ, and, though the females were the normal size, the males seemed very small. Two visits to Hampstead Heath, on April 17th and 21st, resulted in *Larentia multistrigata* in any numbers, flying round the furze-bushes at dusk, and later on at rest on the same bushes. In Hampstead Lane, on the same nights, I found *Hybernia progemmaria* in plenty, and a single *Scotosia certata* on the gas-lamps. Three visits early in May to the same place turned up *Tæniocampa gothica*, *T. rubricosa*, *T. stabilis* and *T. instabilis* fairly plentifully on the shallows. The first and last-named species also occurred sparingly on the Highgate lamps, in company with *Selenia illunaria*. On these same visits we found larvæ of *Boarmia repandata*, *Noctua xanthographa*, *N. baja*, *N. augur*, *N. rubi*, *N. brunnea*, and *N. triangulum*, very plentiful on the dwarf shallows, which all emerged in due course. On a visit, early in April, to the Wake Arms, Epping Forest, we took *Asphalia flavicornis*; and a second visit in May, by night, for *Triphæna fimbria*, resulted in one larva only. By searching at night for larvæ at Stamford Hill, we obtained much the same as at Hampstead, but in addition *Leucania pallens* and *L. lithargyria*. From Waldringfield, near Woodbridge, Suffolk, we obtained pupæ of *Dicranura vinula*, *D. bifida* and *D. furcula*, also most of the larvæ already mentioned, and in addition *Triphæna orbona*, *T. ianthina*, *T. interjecta*, and *Orthostia*

upsilon. By this time *Abraxas ulmata* commenced to emerge, and continued on right into August. The larvæ came from the Lake District in September, 1890. On May 21st the first *Odontopera bidentata* appeared, and the species continued on the gas-lamps sparingly until the middle of June. From May 30th to June 6th I was staying at Brockenhurst with my cousin, Mr. Ogden, and the results of our visit appeared in the December No. of this magazine. The larvæ we took there by beating—viz. *Catocala promissa*, *Liparis monacha*, *Haliastur quercana*, *Boarmia roboraria*, *Cleora lichenaria*, *Himera pennaria*, *Agriopis aprilina*, *Hemiteia thymiaris*, &c.—produced imagines in the course of the season. We also took four or five larvæ which died, and which I have since discovered to be *Lithosia quadra*. From some of the *Platypteryx falcata* we took we obtained eggs, the larvæ from which fed up well, half of them emerging in July and early August, one on Oct. 12th and another on Nov. 23rd, and the remainder I have still in perfectly healthy condition. *Ptilodontis palpina* turned up at Finchley on June 19th, and *Hadena pisi* at the same place on the 24th. The lamp which produced *H. pisi* accommodated at the same time six *Eupithecia*, five *Miana*, one *Agrotis corticea*, one *Arctia menthastri*, three *Hadena oleracea*, and two *Melanippe fluctuata*. One insect this year I have never before seen in such abundance, viz., *Arctia lubricipeda*. The imagines literally swarmed everywhere, and in the autumn every low-growing plant in the garden was almost eaten bare by the larvæ. I found them feeding on every plant, shrub, or tree that I know of, one even devouring a pear in a shed. Throughout June and July common things came to treacle in abundance at Stamford Hill, but nothing of any consequence among them. At dusk *Plusia pulchrina* was taken at Crouch End; and *Plusia chrysis*, *Hecatera serena* and *Apamea ophiogramma* at Stamford Hill. The evening of June 30th we spent at Chingford, and found the males of *Angerona prunaria* plentiful. We also took several *Thyatira batis* (flying over the brambles), *Odontopera bidentata*, *Aplecta nebulosa*, *Miana arcuosa*, and many commoner things. From some friends staying at Waldringfield we received larvæ of *Bombyx quercus* and *Odonestis potatoria*, the latter in any quantity; also imagines of *Triphæna interjecta*, *Thyatira derasa*, *Habrostola tripartita*, *Plusia pulchrina*, *P. chrysis*, and others. July 6th I went to Clacton for the day only, but had no apparatus with me. Finding *Zygana filipendule* cocoons abundant, I collected about 160, in the hope of getting some varieties, but they all emerged quite typical. Among them I found fourteen cocoons of *Odonestis potatoria*, all spun up on some reed-stems which were growing among the grass. On the 9th these commenced to emerge, and all came out well except two that were ichneumonised. At Theydon Bois (Epping Forest), on July 11th, I found a fine female *Bombyx quercus* drying its wings. *Metrocampa margaritaria*, *Lomaspilis marginata*, *Ephyra trilinearia* and *Timandra amataria*, all fell frequently to the beating-stick, but nothing at all out of the common occurred. On July 12th *Bombyx quercus* and *Lasiocampa quercifolia* (larvæ from Wicken Fen in the early spring) commenced to emerge, and came out very well. One *B. quercus* is still in pupa, and appears to be quite healthy. Two more, which seemed unable to break the cocoon, we assisted. The male did not expand at all, but the female developed to its full size. On July 17th the first *Apamea ophiogramma* was taken at Stamford Hill, flying at dusk over a flower-bed; another was taken two evenings later, and two more on the 24th; they were all more or less worn, though none of them very bad. On the afternoon of July 25th I paid a

visit to Darenth Wood. Only having about three hours' beating, I turned up *Acidalia rusticata*, *Scotosia rhamnata*, *S. vetulata*, *Phibalapteryx tersata*, *Melanippe procellata*, *Eupithecia isogrammata*, and *Iodis vernaria*. *Pseudoterpna cytisaria* occurred on Dartford Common, and *Thecla quercus* sparingly in the Wood. The first week in August I spent at Lowestoft, but did not do much collecting: a very noticeable feature was the great abundance of *Liparis auriflua*. I have never seen them before nearly so abundant. The next visit produced *Hydræcia nictitans*, *Hepialus hectus* and *Leucania pullens* in abundance, and *Strenia clathrata* sparingly. Treacling at Waldringfield on one or two nights, between August 16th and 31st, proved very successful as regards numbers, moths coming to the pitches in great abundance. *Noctua umbrosa*, *N. dahlii*, *Agrotis puta*, *Amphipyra tragopogonis*, and many commoner things, were very plentiful; whilst *N. c-nigrum*, *A. pyramidea* and *Catocala nupta* occurred sparingly. Two *Notodonta dictæa* (one quite fresh) were found at rest on willows, and a few larvæ of *Ptilodontis palpina* and *N. camelina* were obtained by searching. *Triphæna ianthina* was abundant, and *Cidaria picata* was not at all uncommon, but *Acidalia emarginata* was scarce and local. Single specimens were obtained of *Habrostola tripartita*, *Dianthæcia cucubali*, *Ennomos tiliaria*, *Cleora lichenaria*, and *Melanippe unangulata*; larvæ of *Dianthæcia cucubali*, *D. capsincola*, *Eupithecia venosata*, *Amphidasys betularia*, and *Cidaria miata*. The afternoon of Sept. 12th was spent at Benfleet, where we obtained fifty-three *Geometra smaragdaria* larvæ. *Euclidia mi* larvæ were plentiful in the coarse grass, and *Agrotis tritici* imagines very abundant. Through September *Catocala nupta* occurred sparingly on the fences, and *Luperina testacea* and *Hydræcia micacea* (one only) on the gas-lamps. One very dark *Ennomos angularia* was taken, and several of the usual type at light. *Phlogophora meticulosa* turned up on Oct. 3rd, and *Miselia oxyacantha* (several). *Scopelosoma satellitia* (one), *Oporabia dilutata*, *Cheimatobia brunata* (common), and *Hinera pennaria* (a few), occurred on the lamps throughout the month. Two days' pupa-digging at Waldringfield, Oct. 1st and 2nd, produced *Notodonta dictæa* (six), *N. camelina* (two), *P. palpina* (two), *Tæniocampa* (?) abundant, *Smerinthus populi* and *S. tilia*, *Pæcilocampa populi* (three), *Acronycta ligustri* (one), *A. tridens* (one), *Agriopsis aprilina*, and *Amphidasys betularia* (six). A nice *Heliophobus popularis* was found at rest. An afternoon's pupa-digging at Chingford in November resulted in *Tæniocampa gothica* (abundant), *T. cruda* (common), *Smerinthus tilia* (several), and many commoner things. A nice bred series of *Hybernia defoliaria* concludes the list for 1891, which I think has been the best season for some years. The above notes are the joint result of my cousin Mr. Ogden's captures and my own, as we have collected together for the most part. — RUSSELL E. JAMES; Chesterville, Hornsey Lane, Highgate, N., January, 1892.

Since writing the above I have bred, from some thirty or forty pupæ from Chingford, a dozen fine *Phigalia pilosaria* and six *Nyssia hispidaria*, and have still some more to emerge. Until they emerged I had thought the pupæ were those of *H. progemmaria*.—R. E. J., Feb. 9, 1892.

A MONTH'S COLLECTING AT SIDMOUTH, SOUTH DEVON.—I was collecting at Sidmouth with two of my brothers, from August 7th to September 5th, but found most imagines in that district very scarce. Of the *Rhopalocera*, *Argynnis paphia* was abundant in Harpford Woods. *Thecla quercus* was rare and battered, and we only captured one specimen of *T. betulæ*. *Lycæna argiolus* was seldom to be seen, but early in September we came

across a dense colony of *Lycæna adonis*, some of the females being very prettily marked. *Satyryx semele* seemed almost to have abandoned the moss on which it swarmed during the two previous years. We did not see a single *Argynnis adippe* or *A. aqlaia*, but perhaps we were too late for them, although in other years they have always proved very numerous in August. On one bright, sunny day we captured between us twenty-one specimens, in fine condition, of that delicate little insect, *Leucophasia sinapis*, which, strange to say, were taken on the grassy slopes of the cliff, and, contrary, I think, to their usual custom, kept fluttering from flower to flower. On the same cliffs *Hesperia actæon* disported itself in great numbers for a short time, but a storm of rain, which continued for several days, completely swept them away. I should like to mention that *Colias edusa* caused us the same disappointment as last year, and failed to put in an appearance. Turning now to the Geometers, *Acidalia subsericeata* and *Gnophos obscurata* were exceptionally abundant, while *Emmelesia affinitata*, *E. decolorata*, *Cidaria russata*, *Selenia illunaria*, *Coremia ferrugata*, *C. propugnata*, *Melanthia ocellata*, *Ypsipetes elutata* (a few black varieties), could always be beaten from the hedges. We also took single specimens of *Ellopiæ fasciaria*, *Geometra papilionaria*, *Metrocampa margaritaria*, *Uropteryx sambucaria*, *Melanippe procellata*, *Eupisteria heparata*, *Acidalia scutulata*, and *Epione apiciaria*. During the daytime *Phytometra ænea*, *Bombyx quercus*, and *Triphæna interjecta* were fairly common, but the last-named was in shocking condition. Sugaring proved quite futile until the last week, when the bait suddenly turned attractive, despite the rain and high wind, and brought a host of visitors, including *Gonoptera libatrix*, *Cosmia affinis*, *C. diffinis*, *Noctua c-nigrum*, *N. plecta*, *N. rubi*, *Triphæna orbona*, *T. interjecta*, *T. pronuba*, *T. ianthina*, *Amphipyra pyramidea*, *A. tragopogonis*, *Acronycta rumicis*, *Miana furuncula*, *Caradrina cubicularis*, *Agrotis puta*, *Oxyilia putris*, *Luperina testacea*, *Cidaria russata*, *Eupithecia castigata*, *Camptogramma bilineata*, *Ypsipetes elutata*. Of course *Noctua xanthographa*, *Xylophasia polyodon*, and *Apamea oclea* were very plentiful. The paucity of imagines was counterbalanced, however, by the quantity of various larvæ, especially of the common Cuspidates. *Notodonta ziczac* occurred in every stage of growth, both egg and full-grown larva appearing on the same tree; *Ptilodontis palpina* and *Notodonta dictæa* were fairly abundant; *Dicranura bifida* (egg and two larvæ), *Smerinthus ocellatus* and *S. populi*, with a sprinkling of *Lobophora sexualisata* and *Amphidasys betularia*, were also found on the poplars; *Saturnia carpinii*, *Thyatira batis*, and *Bombyx rubi* frequented the low-lying brambles on the hills, while *Melanippe galiata* was tolerably common on the *Galium mollugo*.—C. M. WELLS; Hurstfield, The Avenue, Gipsy Hill.

PROTECTIVE COLOUR OF LOPHOPTERYX CAMELINA.—The following is, I think, a rather remarkable instance of the instinctive power possessed by Lepidoptera of taking advantage of their surroundings for the sake of protection. On August 10th, last year, when on my way trout-fishing in South Wales, I had occasion to traverse a long lane bounded on one side principally by large willow bushes. Interspersed amongst the foliage were many blighted or withered leaves of a deep red-brown colour. Noticing as I thought a slight peculiarity in one of them, on an overhanging branch, I found, on close examination, that it was a beautiful specimen of *Lophopteryx camelina*. So closely did it resemble the withered leaves in colour and form at a little distance off, that it must have been by the greatest chance it did not escape notice.—T. B. JEFFERYS; Bath, Feb. 5, 1892.

LARVA OF APAMEA OPHIOGRAMMA IN NOTTS.—When I identified the larvæ sent to me by Mr. Pearson, of Chilwell, Nottingham, as that of *A. ophiogramma* (Entom. xxiv. 299), I had not the least doubt in my own mind but that the caterpillar was correctly determined. It seemed to agree with a continental description of the larva of the species, and also reminded me of a larva I found on ribbon grass in my garden some years ago, from which I bred a crippled specimen of *ophiogramma*. Mr. W. H. Harwood, of Colchester, has been good enough to enter into correspondence with me upon this matter, and his remarks, cited below, cause me to think that possibly my determination of Mr. Pearson's larva may have been erroneous. Referring to *Apamea unanimitis* and *A. ophiogramma*, Mr. Harwood says:—"Both species feed on ribbon grass; but I expect that, while *unanimitis* feeds up in the autumn and hibernates full-fed, *ophiogramma* is to be found feeding in the spring. I have bred the former species repeatedly, and have larvæ hibernating now; I shall find others about April if all goes well, but they do not feed after hibernation. I have dug them out of the ground when pupa-digging, and frequently found them under loose bark and in flood refuse, &c., when searching for beetles. No doubt the principal food of both species is *Phalaris arundinacea*, of which the ribbon grass is a cultivated variety. The larva of *unanimitis* lives in a sort of case formed by drawing a blade of grass together at its edges, and as these cases are heavy when the larvæ grow large they can easily be found hanging on the plants. When quite full-fed the larvæ sometimes go under ground during the daytime I fancy. They also feed on sedges, and can easily be found by parting the leaves." I do not now remember whether I found the larva of *ophiogramma* in the autumn or spring; but I distinctly recollect that in the spring or early summer of the year following that in which I bred *ophiogramma* I was away from home, and on my return I found the patch of ribbon grass had been dug up and destroyed because it appeared to be unhealthy. I may add that I am acquainted with the larva of *A. unanimitis*, as I frequently found it under bark of willow trees in the Mill Hill district. Curiously enough the Nottingham caterpillar did not suggest this species, but probably the ribbon grass may have misled me if my identification should ultimately prove to be wrong.—RICHARD SOUTH; 12, Abbey Gardens, St. John's Wood, N.W., Jan. 4, 1892.

LEPIDOPTERA OF BOGNOR.—Mr. Alfred Lloyd, of the Dome, Bognor, has prepared a list of the Lepidoptera taken by himself in his district. In fact the 291 species enumerated by him appear to have been captured, with one or two exceptions, in his own grounds. The list comprises—20 Rhopalocera; 8 Sphingæ; 26 Bombycæ; 98 Noctuæ, including *Heliothis armigera* and *Aventia flexula*; 83 Geometræ, among which are *Eurymene dolobraria* and *Eupithecia fraxinata*; 20 Pyralidæ; 5 Pterophori; 8 Crambi, the best species being *Crambus verellus*; 23 Tortricæ. It may be mentioned that this list, which was originally published in the 'Proceedings of the West Sussex Nat. Hist. Soc.' for 1889, has been issued as a reprint, and also appears, together with lists of other natural-history objects of the neighbourhood, as an appendix to Webster and Webb's 'Bognor Guide.'

CATOCALA NUPTA RESTING ON CONCRETE WALLS.—I have noticed a peculiar habit of *Catocala nupta* which I do not remember having seen recorded before. The habit in question is the fondness which this moth

has for settling on the rough concrete with which the sides of some houses are coated. In this position the marbled greyish colour of the anterior wings corresponds very closely with the dull grey of the concrete, and the insect, especially if a considerable height above the ground, is comparatively difficult to detect, and might readily be passed by unnoticed. I used to consider *C. nupta* a rarity in Enfield, but last September—from the 8th to the 29th of the month—I took six specimens on our house alone, and another on a house not far from here which I happened to be passing. The best days were the 28th and 29th of September, as I saw three specimens on each morning. I never took a specimen in wet weather, and, I may also remark, all the moths seen were on the N.E. side of the house. The moths of this genus are well known to be shy and difficult to capture, and it was only by taking great caution not to frighten them by approaching the ladder too near that I managed to secure seven specimens of this insect out of nine seen altogether. I found the best method of capturing them was to creep slowly up the ladder till within range, then to clap the net quickly over them; they almost invariably dart off in a direction at right angles to the wall, usually before even the net touches the wall. I sugared throughout September and October at intervals, but only took one *C. nupta* in this way; so from this circumstance I am disposed to think that, by searching similar houses and buildings, more specimens of this species could be taken than in any other way. To show how thoroughly the moth harmonizes with its surroundings in this position, and what a good instance of “protective resemblance” this is, I may mention that on one occasion I pointed out one of these moths, which had settled near the top of the house, to a friend; but even when he saw it he could not believe that it was a moth, and was not convinced till he saw it fluttering in my net.—HENRY D. SYKES; The Cedars, Enfield, Feb. 11, 1892.

DANAIS (ANOSIA) PLEXIPPUS AT ASHBURTON, N. Z. — On the 17th of the present month I observed a perfect and apparently newly-emerged specimen of this beautiful butterfly flying in a garden here. It flew rapidly about the garden for several minutes, and ultimately disappeared over a small plantation of young pine trees. It was the only specimen I have seen on the wing during the last fourteen years. The day was intensely hot, and I am of opinion that it had not long emerged. On the same day I observed the first fresh specimens of the season of *Pyrameis gonerilla*. — W. W. SMITH; Ashburton, N.Z., December 29, 1891.

SUGARING IN NORTH STAFFORDSHIRE.—Although in the New Forest and at Sherwood sugaring last year appears to have been a failure, yet in North Staffordshire it was more successful than it has been for several years past. In a large tract of heathy woodland, not far from the Shropshire border, my friend Mr. F. C. Woodforde had a very good time of it in August and September. *O. suspecta** was as abundant as it was in 1875, the only year in which I met with it in this district, and as varied in colour—from dark red suffused with a purple gloss to brown marbled with ochreous markings. *N. neglecta* was also common: the usual colours are brick-red and grey, with many intermediate shades; but some specimens taken were of a pale yellow, and one in particular deserves special notice. It is a deep

* Mr. Hewett also records this species as having been unusually common in the York district last year. *Vide* Entom. xxiv. p. 269.—ED.

yellow, as decided as a male *Russula* or as *Euperia fulvago*. I am not sure that these yellow varieties are not peculiar to North Staffordshire, and perhaps also to the past season; at any rate, with a long experience of this species, I do not remember to have observed this variety before; nor does Newman mention it. Another species that came to sugar in profusion was *N. dahlii*, varying in hue from dark brown with ochreous stigmata to the darker shades of *N. festiva*. *T. fimbria* was also in fair numbers, in all its well-known varieties. And, lastly, *C. solidaginis* was a drug in the market: this is a moth which appears to have become much more abundant of late years; in the daytime it may readily be found hiding in the crevices of the trunks of pine trees and on the stems of the heather; at night it comes freely to sugar. I may also say that in June *A. tinctoria* swarmed at sugar.—(Rev.) T. W. DALTRY; Madeley Vicarage, Staffordshire.

MICROPTERYX SANGII AND M. CALEDONIELLA.—Last Good Friday I had an hour or so on new ground near Carlisle, and found *Micropteryx* in swarms. I sent them on to my friend Mr. C. G. Barrett to overhaul, and he returns them as *semipurpurella* (25), *sangii* (7), *purpurella* (18), *caledoniella* (1), *sparmarella* (1),—not a bad catch.—J. B. HODGKINSON; Ashton-on-Ribble.

BLACK PHIGALIA PEDARIA (= PILOSARIA).—I have been fortunate again in taking a black specimen of the above, on Feb. 12th. During the week ending 13th inst. we had a few fine days with plenty of sunshine, when I took a short stroll (by way of a beginning) to a small plantation near here, where I noted about a dozen specimens of *pilosaria* at rest on the tree-trunks, apparently fresh out; and low down, nearly at the foot of one oak here, I saw this black specimen. This is the second specimen (the first I took Feb. 27th, 1886) I have taken in this neighbourhood.—J. HARRISON; 7, Gawber Road, Barnsley.

BREEDING NOTODONTA DICTEOIDES.—I was very much interested in Mr. A. T. Mitchell's report of his experience with the larvæ of above (*ante*, p. 20). I have attempted to breed it for years, in many different ways, without success. I am generally able to obtain two or three wild females. The area on which they are found is very small, being only a row of birches bordering a fir wood. I have found them more or less for about eighteen years, and, by very diligent searching, have never found more than about two dozen larvæ (more often only five or six) in the season (October). I think this is a proof that they must be difficult to rear, as it is a most prolific depositor of ova, having had repeatedly above three hundred eggs from one female. Last year I had over a thousand young larvæ; only three lived to pupate, and they have since dried up. I have never before been able to keep any after about half-grown. In 'The Entomologist,' of I think 1890 (I cannot find it just now), a correspondent says the Notodontidæ are apt to develop cannibalistic propensities* in confinement. They certainly leave their food from the first and congregate together, and lose a great deal of time and energy in spinning and fighting; but I have never been able to discover any bites under the microscope, and the nearly full-grown larva always lives, no matter how closely confined. I have never seen one ichneumoned. They must be subject to some disease in a wild

* The Rev. Bernard Smith makes some remarks to this effect (*Entom.* xxii. p. 102).—ED.

state. As the fact of the trees I mention being in a line almost makes a private preserve of the locality, so they really ought to be there in numbers. I might mention another thing—the species is decidedly not double-brooded; but occasionally a specimen from the autumn brood (not forced) will make its appearance about the end of May, and twice I have found larvæ at the end of July and first week in August, when the moth emerges here. If I am as fortunate as usual in securing a female this year, I shall try once more (for the last time if a failure) with a number of very small seedling birches.—EDWARD MEAD; 22, Monks Road, Lincoln, Feb. 13, 1892.

THE LEPIDOPTERA OF THE SHETLAND ISLANDS.—I understand that Mr. McArthur is about to proceed to the Shetlands, in quest of the many curious and interesting forms of Lepidoptera occurring in those islands. Already about 94 species of the Order are catalogued from this, the most northern, part of Britain; but probably there are still several others awaiting discovery. It is to be hoped that in return for the trouble attending an expedition of this kind Mr. McArthur will be rewarded by meeting with some additions to the fauna list, as well as by being successful with those species he knows so well how to obtain.—RICHARD SOUTH.

CAPTURES OF DIPTERA IN 1891.—*Anthomyia pluvialis*, bred from oak-apple on May 4th; *Exorista chelonix* and *Tipula vittata*, on May 20th; *Cheilisia maculata* and *Pachyrrhina annulicornis*, on June 9th; *Tipula gigantea*, more common than I have ever seen it; *T. flavolineata* and *fascipennis*, on June 19th; *Erioptera flavescens* and *Molobrus ruficauda*, on June 21st; *Erioptera macrothalma* and *lutea*, on June 24th; *Lipsothrix errans* and *Limnobia ocellaris*, on June 22nd; *Pachyrrhina cornicina* and *Nephrotoma dorsalis*, on July 24th; *Limnobia senilis*, *Pachyrrhina imperialis*, and *Platyura discoloris*, on July 28th; *Callomyia amœna* and *Oxycera pardalina* and *longicornis*, on August 6th; *Leptomorphus walkeri* and *Sargus bipunctatus*, on Sept. 1st; all at Glanvilles Wootton. *Calobata ephippium* and *Platychirius immarginatus*, at Abbotsbury, on June 15th; *Beris morrissii* and *Chrysotus molliculus*, at Hook Park, on July 15th; *Leucopis puncticornis*, on Chesil Beach, on July 18th; and last, but not least, one of *Thalassomyia frauenfeldi*, in the Isle of Man, on Oct. 8th.—C. W. DALE; Glanvilles Wootton, Jan. 4, 1892.

SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON.—*February 10th, 1892.*—Mr. Frederick DuCane Godman, F.R.S., President, in the chair. The President nominated Lord Walsingham, LL.D., F.R.S., Mr. Henry John Elwes, F.L.S., and Dr. D. Sharp, M.A., F.R.S., Vice-Presidents for the session 1892-93. Mr. Thomas W. Cowan, F.L.S., F.G.S., of 31, Belsize Park Gardens, Hampstead, N.W.; Mr. Wm. Farren, of Union Road, Cambridge; Mr. Philip de la Garde, R.N., of H.M.S. 'Pembroke,' Chatham; the Rev. J. A. Mackonochie, B.A., of 76, Grant Street, Glasgow; and the Rev. A. Thornley, M.A., of South Leverton Vicarage, Lincolnshire, were elected Fellows of the Society; and Mr. Henry A. Hill and Major H. Murray were admitted into the Society. Mr. E. Meyrick exhibited a number of specimens of *Euproctis fulviceps*, Walk., taken by Dr. Barnard, showing the extraordinary variation of this Tasmanian species, all the males of

which had been "sembled" by one female. The males were represented by various forms ranging from black to white, which had all been described as distinct species. Dr. Sharp, Mr. Hampson, Mr. McLachlan, Colonel Swinhoe, Mr. Elwes, Mr. Tutt, Mr. Poulton, and Mr. Jacoby took part in the discussion which ensued. Dr. Sharp exhibited samples of pins which he had tried for preventing verdigris, and stated that silver wire was the best material to use, as insects on silver pins remained intact, whilst those on gilt pins were destroyed by verdigris. Mr. G. T. Porritt exhibited a series of specimens representing Huddersfield forms of *Polia chi*, including nearly melanic specimens, found there during the last two seasons. He said these forms had not hitherto been observed elsewhere. Mr. Tutt exhibited a series of *Hadena pisi*, comprising specimens very grey in tint, others of an almost unicolorous red with but faint markings, and others well marked with ochreous transverse lines. Three distinct forms of *Hadena dissimilis*; red and grey forms of *Panolis piniperda*, and a dark form of *Eupithecia fraxinata*; also a specimen of *Sciaphila penziana*. With the exception of the last-named, which was taken in Anglesey, all the specimens were taken or bred by Mr. Tunstall in the neighbourhood of Warrington. The Rev. Dr. Walker exhibited specimens of *Arge titea*, *A. lachesis*, *A. psyche*, *A. thetis*, and other species of the genus from the neighbourhood of Athens; also specimens of *Argynnis phæbe*, taken in Grenada in May, 1891. Mr. W. Farren exhibited a series of specimens of *Peronea variegana* var. *cirrana*, and *P. schalleriana* var. *latifasciana*, from Scarborough; *Eupacilia vectisana*, from Wicken Fen; and *Elachista subocellea*, from Cambridge. Mr. G. A. J. Rothney sent for exhibition a number of species of ants collected by himself in Australia, in May and June, 1886, which had recently been named for him by Dr. Forel. The collection included *Iridomyrmex purpurens*, Sm., *I. rufoniger*, Lowne, *I. gracilis*, Lowne, *I. itinerans*, Lowne, *Ectatomma metallicum*, Sm., *E. nudatum*, *E. mayri*, *Aphænogaster longiceps*, Sm., *Polyrhachis ammon*, Fab., *Myrmecia nigriventris*, Mayr, and *M. nigrocincta*, Sm.; *Leptomymex erythrocephalus*, Fab., and a variety of *Camponotus rubiginosus*, Mayr, from Brisbane; also a few species from Honolulu, and a species of *Monomorium*, which Dr. Forel had not yet determined, and which he believed to be probably new. Mr. C. O. Waterhouse read a paper entitled "Some Observations on the Mouth Organs of Diptera," which was illustrated by numerous diagrams. A long discussion ensued, in which Mr. Champion, Mr. McLachlan, Mr. Jenner Weir, Mr. Slater, Mr. Poulton, Mr. Distant, Dr. Sharp, Mr. Hampson, Mr. Elwes, and Mr. Barrett took part. Mr. E. Meyrick read a paper entitled "On the Classification of the Geometrina of the European Fauna." Mr. Hampson, Mr. Elwes, Mr. McLachlan, Colonel Swinhoe, Mr. Tutt, and Mr. Distant took part in the discussion which ensued.—H. Goss, *Hon. Secretary*.

SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—
January 28th, 1892. Mr. W. H. Tugwell, Ph.C., President, in the chair. The Treasurer submitted his financial statement, from which it appeared there was a balance of £48 to the Society's credit. The Council's Report was read by the Secretary, and dealt with the work done during 1891. The election of officers was then taken, and resulted in the election of Mr. C. G. Barrett, F.E.S., as President; Messrs. J. Jenner Weir, F.L.S., F.Z.S., F.E.S., and R. South, F.E.S., as Vice-Presidents; Mr. E. Step as Treasurer; Mr. W. West as Curator; Mr. D. J. Rice as Librarian;

Messrs. H. W. Barker and A. Short as Secretaries; and Messrs. T. R. Billups, F.E.S., J. T. Carrington, F.L.S., C. Fenn, F.E.S., F. W. Frowhawk, F.E.S., J. Henderson, W. H. Tugwell, Ph.C., and J. W. Tutt, F.E.S., as Council. Mr. W. H. Tugwell read his Presidential Address, and the meeting closed with votes of thanks to the various officers.

February 11th.—Mr. C. J. Barrett, F.E.S., President, in the chair. The President made some observations on taking the chair. Mr. J. Jenner Weir exhibited several species of the genus *Cymothöe*, viz. *theodota*, *amilius*, *cænis* and *theobene*, and read notes with reference to the extreme sexual difference; the males, in most cases, were an ochreous or creamy colour, more or less clouded with black; while on the other hand, the females rarely had any of the ochreous or cream colour, and their markings were very varied and presented a very spotted appearance. Mr. Weir pointed out the differences in the species exhibited. Mr. Weir also exhibited specimens of *Pieris napi*, L., and allied forms, which by some entomologists were considered distinct or sub-species, and by others mere local varieties, and remarked that the object of the exhibition was rather to show the effect of environment and season of emergence on the intensity of coloration both on the upper and under sides of the wings. Mr. Weir then contributed some interesting notes on his exhibit. Mr. Austin exhibited an extremely rare form of *Lycæna bellargus*, Rott., having the brilliant blue colour entirely suffused with black scales, and another example with beautiful markings on the upper side; both specimens were taken at Folkestone. Mr. Tutt, a bred series of *Hadena pisi*, L., varying from grey to a deep purplish red; three specimens of *H. dissimilis*, Knock., one with longitudinal striations; a small specimen of *Arctia villica*, L., the spots being very much reduced; three specimens of *Cerastis vaccinii*, L., one having the outer margin curved as in *spadicea* or *ligula*; *Amblyptilia acanthodactyla*, Hb., and *A. punctidactyla*, Haw., bred from larvæ, and remarked that it was considered by some that these were distinct species. Messrs. Barrett, Weir, Carrington, Tutt, and Dobson made some remarks relative to this exhibit. Mr. Adkin showed smoky varieties of *Nemeophila plantaginis*, L. Mr. Farren, a long series of *Peronea variegana*, Hb., taken at Scarborough in September, and remarked that there were plenty of the ordinary form of the species, but the black form was as plentiful as the ordinary form. Mr. Billups, a larva found feeding on tomato from Teneriffe; Mr. Tutt expressed an opinion that it was *Prodena littoralis*, Bdv. Mr. Herbert Williams, a dark variety of *Calymnia trapezina*, L. Mr. Billups read notes on shells obtained from drift collected by Mr. C. G. Barrett in Wales. Mr. H. Wallis Kew read a paper "On the Dawn of Memory in the Animal Kingdom," and in the discussion which followed Messrs. Dobson, Tutt, Weir, Barrett, and Wallis Kew took part.—H. W. BARKER, *Hon. Sec.*

The annual dinner of the South London Entomological and Natural History Society took place at the 'Bridge House Hotel,' on the 9th inst., the chair being taken by T. R. Billups, F.E.S., the vice-chair by J. W. Tutt, F.E.S. At the close of the dinner the usual Royal toasts were proposed by the Chairman; and the Vice-Chairman, in proposing the toast of the Society, said the past year had been most successful; although there was a slight falling off in the membership, the financial position was much more healthy, and the position of the Society was much stronger than in previous years, and he concluded by hoping that the year just entered on would far exceed any previous year, both as regards membership

and scientific work; with the toast he wished to couple the officers of the Society, who had contributed largely towards the success of the Society during the year. In the unavoidable absence of the President and Vice-Presidents, the Secretary and Librarian replied. The remaining toasts were introduced and responded to very shortly, owing to the number of gentlemen present who were desirous of making the meeting a success by aid of their musical talent. The musical arrangements were in the capable hands of Mr. S. Scammell, and the following gentlemen assisted:—Messrs. Alf. Atkin, Winkley, Frank Lane, Gurney Russell, G. Crawford, Henry Porch, Chas. Early, Alfred Pearce, Teddy Rogers, and Ganod; Mr. Bryan presiding at the piano, and Mr. Reed reciting several popular pieces.

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY. — *February 8th, 1892.*—Mr. S. J. Capper, F.L.S., F.E.S., President, in the chair. Messrs. Henry Champ and W. H. Holt were elected members. Mr. W. E. Sharp read a paper entitled "Some Remarks on the Hydradephaga of the District," illustrated with specimens and large coloured diagrams. The author referred to the general classification of the Coleoptera, and pointed out that in the genus *Dytiscus* the whole physiology was to adapt them to less resistance in swimming. He then gave a *resumé* of the records of local species, of which 74 species had been recorded out of 129 known to be indigenous to the British Isles, only four genera being unrepresented. The President exhibited fine varieties of *Eunomos angularia*. Dr. Ellis, *Pulvinaria camellicola* (a rare species of *Coccus* from camelia trees). Mr. Collins, four specimens of *Deilephila galii*, bred by him from twenty-two larvæ taken on *Epilobium angustifolium* at Warrington in 1889 (the specimens were very small, and these were the only perfect ones), and a variety of *Noctua festiva* with distinct black transverse lines on a uniform ground colour. Mr. Schill, *Hydrous angustior* from Milan, flying round electric light. Mr. Stott, a collection of local Hydradephaga. Mr. Pierce, *Agrotis candelarum* from Saxony, and its var. *ashworthii*.—F. N. PIERCE, *Hon. Sec.*; 143, Smithdown Lane, Liverpool.

BIRMINGHAM ENTOMOLOGICAL SOCIETY. — *February 1st, 1892, Annual Meeting.*—Mr. W. E. Blatch, President, in the chair. Mr. W. D. Spencer, Regent Place, Birmingham, was elected a member. The Secretary read the Annual Report of the Council, which showed the number of members to be about the same as at the last Annual Meeting; and the Treasurer presented his Annual Statement, showing a balance in hand of £4 18s. 4d. The following officers for the ensuing year were elected:—President, Mr. W. E. Blatch, F.E.S.; Vice-President, Mr. G. H. Kenrick, F.E.S.; Treasurer, Mr. R. C. Bradley; Librarian, Mr. A. Johnson; Auditors, Messrs. Herbert Stone, F.L.S., and A. Stone Wainwright; and Hon. Sec., Colbran J. Wainwright. Messrs. G. T. Bethune-Baker, F.L.S., F.E.S., and G. W. Wynn were elected as remaining members of the Council. Mr. C. Runge showed cocoons of *Trochilium apiformis* containing larvæ, which he had dug out of poplars, near the roots, at Arley.

Feb. 8th, Social Meeting.—By invitation of the Council, the members and a few friends met together at the Grand Hotel, when a very pleasant evening was spent. A number of interesting books and insects were shown and discussed, and the pleasure of the evening was much added to by the music which one or two members and friends kindly provided.—COLBRAN J. WAINWRIGHT, *Hon. Sec.*

HENRY WALTER BATES.

BORN, 8th FEBRUARY, 1825.

DIED, 16th FEBRUARY, 1892.

Aged 67 years.

LOVED AND RESPECTED.





Trinomicul
H. W. Bates

THE ENTOMOLOGIST.

Vol. XXV.]

APRIL, 1892.

[No. 347.

HENRY WALTER BATES, F.R.S.

(WITH PORTRAIT.)

HENRY WALTER BATES, whose name is known over the wide world as that of the author of the 'Naturalist on the Amazons,' was born in Leicester, 8th February, 1825: he must have developed very early a taste for Entomology, for when only seventeen or eighteen years of age he published notes on Coleoptera in the 'Zoologist.' His natural taste was spurred by the spirit of emulation that so often moves young collectors. Edwin Brown was a neighbour, and somewhat a senior, and Bates was wont in after life to relate the determined efforts he made as a young man to find some of the rarer or more interesting species that his friend had secured.

Bates came of a mercantile family, and was himself destined for a career of this nature; but about the year 1845 he made the acquaintance of Alfred Russel Wallace, who was then an English master in a school at Leicester, and who was interested in Botany. Bates appears to have enlisted the interest of Wallace in the cause of Entomology, and, as we learn from Wallace himself, "the latter at once took up beetle-collecting, and after he left Leicester, the following year, kept up an entomological correspondence with his friend. Two years later, Wallace proposed a joint expedition to Para, in order to collect insects and other natural objects, attracted to this locality by the charming account of the country in Mr. W. H. Edwards's 'Voyage up the Amazon,' a choice confirmed by the late Edward Doubleday, who had just received some new and very beautiful butterflies collected near the city of Para. The two explorers sailed from Liverpool in April, 1848, in a barque of 192 tons burthen, one of the very few vessels then trading to Para, and the results of their journey are well known to naturalists. They made joint collections for nearly a year while staying at or near Para, but afterwards found it more convenient to take separate districts and collect independently."

In 1848, as stated by Mr. Wallace, Bates arrived in the

Amazons Valley, and in 1849 a series of letters from him commenced to appear in the 'Zoologist.' These letters are very interesting reading. In those days steam travelling had not been commenced on the Amazons, and penetration far up the river was a matter of considerable difficulty. Moreover, the means at the disposal of the explorer were very small; he had in fact to support himself as he went on by the sale of specimens in Europe. Hence it is no wonder that he became somewhat disheartened; and we find from the letters in the 'Zoologist' that after he had been two or three years in S. America, he had determined to return to England. He did not do so, however, until the year 1859, fully eleven years after his arrival in S. America. During this period he underwent many hardships, and displayed much self-denial, his expenses, as he tells us in the letters we are drawing from, amounting to only about two pounds per month. Notwithstanding the difficulties he experienced, he persevered resolutely in the formation of collections of zoological specimens, and discovered a very large number of new species. The "exquisite pleasure," as he himself said, "of finding another new species of these lovely creatures supports one against everything." He also wrote several papers while travelling that were published in Europe, one among them being a very important contribution to the Natural History of the White Ants. How many species Bates actually discovered will probably never be known, as some portions of his collections have not yet been worked out. It was, however, stated that in the five years from 1851 to 1856 he met with 5860 species of insects.

On his return to this country, Bates commenced the working out of his collections in an energetic and thorough manner. He published papers on various orders, but his attention was at first chiefly given to the Lepidoptera, especially to the butterflies. Thirty years ago the knowledge of butterflies was much less advanced than it is at present, and Bates contributed greatly to its progress by making a more satisfactory classification of the Rhopalocera than the one then in vogue. The system thus introduced by Bates still forms an important part of rhopalocerous taxonomy. It was, too, at this period that he published his famous paper in the 23rd vol. of the 'Transactions of the Linnean Society' calling attention to the resemblances between different species of Lepidoptera, and in fact founding the theory of Mimicry. When he had completed his work on the Butterflies, he parted with the material he had accumulated, selling it to Messrs. Godman and Salvin, of whose unrivalled collection it still forms an important part.

In 1864, Bates became Assistant-Secretary in the Royal Geographical Society, and continued in this post to the great advantage of the Society till the time of his decease. This position he obtained, not by his own seeking, but on the

suggestions of the prominent men of the Society; and he accepted it, I believe, only after his services had been rejected by the officials or rules of the British Museum.

After his appointment to the Secretaryship, his entomological work was necessarily curtailed. But he occupied himself in his leisure with diligent and detailed work at the Coleoptera, and described a very large number of new species of Cicindelidæ, Carabidæ, Lamellicornia, and Longicornia. During the thirty-three years that elapsed between his return from the Amazons and his decease he became widely known as an entomologist, and his personal acquaintances amongst entomologists of repute were probably more numerous than those of any other individual. He was twice President of the Entomological Society of London.

As may well be expected, Bates was thoroughly appreciated by the Geographers. Lord Aberdare, an ex-President of the Geographical Society, has expressed the following true judgment about him:—"He was one of the rarest characters I had ever known. Considering the vastness and variety of his knowledge, it was astonishing to find a man so gifted, with such entire self-effacement and modesty. You may well believe that the office of President . . . is not merely difficult, but impossible without the assistance of the standing officials; and in Mr. Bates I found not only an ardent follower of knowledge, but one of the most sagacious of men. He knew men as well as he knew the butterflies, to seek which he first made his acquaintance with the Amazons. He was a great reader of human nature, but he was more than that. We all of us in the course of our lives, I hope, have met many men who have commanded our respect, and also our regard: Mr. Bates was something more than that. It was impossible to associate with him without feeling not only regard, but personal affection."

Bates' *magnum opus*, 'The Naturalist on the River Amazons,' is known to all of us; its key-note is a profound love of nature, its mode of expression, simple truthfulness; that it should be permanently popular is a credit to our nation. Some have expressed a regret that, since his paper on Mimicry, he has favoured us with no further wide generalisations or ingenious suggestions. The reason of this is not perhaps far to seek. In one of his Presidential addresses to the Entomological Society he commented on the absence of generalisations from the works of descriptive entomologists, and attributed it in part to their knowing how immense is the work to be accomplished, and what comparatively small progress they have made with it. "Thus," he says, "our best working entomologists are led to abandon general views, both from lack of time to work them out, and the consciousness that general views on the relations of forms

and faunas are liable to become soon obsolete by the rapid growth of knowledge." Thus there can be little doubt that Bates restricted his own work of late years to descriptive Entomology, because he felt that it is at present the form of entomological work that has most permanent utility.

The portion of the vast order of Coleoptera that was most carefully scrutinised by Mr. Bates was doubtless the Carabidæ. After the completion of his volumes of the 'Biologia Centrali-Americana,' he devoted considerable time to the development of an improved classification of his favourite family, and we may be allowed to indulge the hope that, when his entomological papers are examined, this one may be found to be sufficiently far advanced to justify its publication.

Some few months ago he was attacked by an aggravated form of the gastric catarrh from which he had suffered for many years, and when he became the victim of an attack of influenza and bronchitis he speedily succumbed. It will be long before death takes another entomologist who will be so widely and sincerely regretted as Henry Walter Bates.

D. S.

HELLEBORE AS AN INSECTICIDE.

By W. W. SMITH.

REFERRING to the articles by Major Still and Miss Ormerod (Entom. xxiv. 290), on the use of hellebore in destroying the larvæ of *Nematus ribesii* and *Abraxas grossulariata*, I may add the results of experiments with the powder in checking the ravages of injurious insects in New Zealand. Judging from Miss Ormerod's remarks, I was somewhat surprised to learn that so little was known of hellebore used in solution as an insecticide. I have used it successfully for twelve years in the manner advised by Major Still, and it is used annually by many orchardists in the South Island for destroying the larvæ of *Tenthredo* (*Selandria*) *cerasi*. I use it in the proportion of half an ounce to a bucket of water. When I notice the newly-hatched larvæ on the leaves, I carefully and effectually syringe the trees with the solution, choosing a calm day for doing so. The larvæ are equally common on the cherry-, plum-, and pear-trees, and rapidly destroy their foliage if they are not checked or destroyed. One good syringing suffices, and, as Major Still remarks, it entails considerable labour when the orchard to be syringed is a large one; but the owner is well repaid for both time and money spent on the work. By syringing the trees early the imago sawfly is prevented from laying eggs further on the foliage, and by this course much labour is avoided. I do not go over the trees syringing a second time with pure water, as the particles of powder left adhering to

the foliage are invariably washed off by rains before any of the fruit ripens.

Another and cheaper method is to syringe with lime-water strained through "skrim," with a small quantity of hellebore added. The trees look a little unsightly until the lime is washed off by rains, but the expense of either article used is exceedingly trivial compared to the good results following. The lime solution with a teaspoonful of washing soda added to a bucket of water, and applied slightly tepid on calm days, will effectually clear apple-trees of the red spider (*Tetranychus telarius*) in twenty-four hours. This does not imply a sprinkling or mere wetting of the trees, but a thorough drenching in all cases. While the solution is dripping off the trees, we scatter a quantity of dry lime over the ground underneath them. This gives the finishing touch to all insects washed off the trees with the solution.

In perusing Miss Ormerod's latest edition of her 'Manual,' I am convinced that many, or most, of the remedies recommended to be used against injurious insects, &c., would be thoroughly effective if only applied in a practical manner. It often occurs that men and boys are left to prepare and apply insecticides, and on that account we frequently hear of their failure in destroying the pests. But so long as the work is done in an indifferent, slovenly manner, so long will the labours of practical economic entomologists be of little avail.

In addition to several introduced injurious insects, many indigenous species are becoming serious pests, and already we have three distinct Tortrices attacking the apricot, plum, grape-vine, and gooseberry bushes. The two former attack both foliage and fruit, eating through the fine shanks of the bunches of grapes, and causing them to drop on to the floor. A simple method of destroying these larvæ on gooseberry bushes is the solution recommended by Major Still, or the one I use myself. But, to people who may object to use either of them, I may mention that slaked or unslaked lime scattered under the bushes and the latter carefully shaken, and the lime afterwards moistened with a syringe, or fine watering-pot, will clear the bushes of great numbers of larvæ. A careful man applying any of these remedies would do a considerable amount in a day, and the labour and expense would soon be realised in the improved health of the trees, and quality of the fruit.

The whole matter of dealing with garden and agricultural pests requires a vigorous application of the remedies recommended. When such is *soundly* practised the labours of specialists in this the most important branch of Entomology will confer lasting benefits on the community.

Ashburton, N. Z., January, 1892.

NOTES ON LEPIDOPTERA TAKEN IN 1891.

BY REV. O. PICKARD-CAMBRIDGE, M.A., F.R.S., &c.

THESE notes on our captures of last season, although rather late in the day, may perhaps still be acceptable. The following list contains not by any means all, but for the most part only the better species met with; and, unless specially noted otherwise, all were taken at or near Bloxworth. The Macros were almost a dead letter. I have never known a season in which the larger moths and the Diurni were so scarce. Sugar, on the few nights it was used, produced nothing; hardly even a *Triphæna pronuba*. Two *Plusia gamma* only were seen, hardly any *Epinephela ianira* even, and but two or three *Cynthia cardui*. As an exception, however, *Pararge megæra* was unusually abundant, and for the first time for over thirty years I saw two *Hipparchia ægeria*. This butterfly used to be abundant, frequenting most of our wood and coppice rides and shrubberies; but, until this year, it has long been vainly searched for. The two seen were in a lane, far away from any woodland. *Argynnis paphia* was also more abundant here than usual.

Callimorpha dominula. Abundant in a few acres of fen-land, covered with patches of tall reeds, enormous tussocks of bog-grasses, and scattered bushes of birch, buckthorn, and alder. The sight of hundreds of this brilliant moth flying in bright sunshine was worth a day's march to see. I can imagine some spots in a tropical region might be not unlike it.

Drepana hamula. One or two from oak.

Schrankia turfosalis. In great abundance on the heath bogs, and in the fen mentioned above.

Cleora glabraria. One, beat from apple; the first recorded occurrence of this moth in Dorsetshire.

Emmelesia unifasciata. One specimen.

Macaria alternata. One beat from sallow.

Tanagra atrata. Fairly abundant on one evening only. Forty years ago it used to be tolerably common, but I have only seen one or two, until this last season, for many years past.

Asthena luteata. Generally a very scarce insect in this district, but last season not uncommon in one lane.

Cryptoblabes bistriga. One on oak.

Ditula semifasciana. Several, among sallow and alder bushes in a swamp.

Sciaphila sinuana. Two examples only.

Eupécilia rupicola. Frequent.

E. pallidana. Scarce; near Wareham.

E. geyeriana. Much scarcer than last season. On the chance of breeding it, I gathered a quantity of marsh lousewort, *Pedicularia palustris*, growing on the spot where the moth occurs, and from this it was bred by both Mr. Eustace Bankes and Mr. N. M. Richardson, but a portion reserved for myself failed to produce the moth. This was, I believe, the first occasion of its having ever been bred.

Argyrolepis sub-baumanniana. A few, in one small locality only.

Xysmatodoma argentimaculella. One specimen.

Tinea bistrigella. Frequent among birch.

T. albipunctella. Several in widely separated and totally different kinds of locality.

T. arcella. Frequent.

Adela fibulella. Abundant.

Cerostoma vittella. Two examples.

C. sylvella. One example only. Usually this is an abundant species.

C. alpella. Occasional; in some seasons rather frequent.

C. lucella. Four specimens; all beaten from the same oak-bush which has furnished fewer or more for several past years. I have never taken more than three or four away from this bush, and these were at no great distance.

Psoricoptera gibbosella. A few only.

Gelechia albiceps. One specimen.

G. tricolorella. A few in one lane only.

G. maculea. Several, in the same lane.

Cleodora cytisella. A few, among fern.

Cecophora flavifrontella. Two beat from oak.

Glyphipteryx schoenicolella. Bred freely in August from seed-heads of rushes (*Schœnus nigricans*).

Tinagma betulæ. Abundant in June, July, and beginning of August, among birch-bushes. Numerous traces of this moth were found in birch-leaves in the previous autumn. During this last autumn, however, I have, on the same ground, and searching equally closely, not seen more than half-a-dozen leaves with the characteristic oval piece cut out; hence I suspect the perfect insect will be correspondingly scarce next season.

Gracilaria elongella. One from alder.

G. semifascia. One only.

G. phasianipenella, var. *quadruplella*. I captured thirty on the heath near Wareham, and every one was of the above variety.

Coleophora palliatella. Several of the curious larva-cases on oak, and two or three of the perfect insect.

Laverna propinquella. In damp woods and swamps.

L. lacteella. In the same localities as the preceding. Query—Is this really distinct from the preceding?

L. rhamniiella. Several, among buckthorn (*R. frangula*) in a swamp.

Chrysoclista schrankella. Abundant in May. The late summer brood scarce.

Stephensia brunnichella. One, June 29th, just emerged from the pupa, and sitting on the leaf of a low plant. This is the first recorded capture of the perfect insect in Dorsetshire. Mr. N. M. Richardson subsequently met with the mines of this species at Whatcombe, Dorset.

Elachista gleichenella. Frequent.

E. monticola. Frequent. I understand that this is now ascertained to be identical with *E. poæ*!

E. paludum. Pretty frequent from June 18th to September, in a swamp.

Lithocolletis anderidæ. Eight specimens bred in May from birch-mines gathered in November preceding.

L. ulmifoliella. The above 8 *anderidæ*, and 150 of the present species, bred from 630 mines in birch-leaves. Swarms of ichneumons issued from the remainder. There does not appear to be any reliable external character by which to separate the mines of this and the preceding species, notwithstanding the great distinctness of their respective perfect insects.

L. lantanella. From 227 mines in leaves of *Viburnum lantana* I bred 18 moths and 130 ichneumons. The rest were mostly empty mines. No wonder this insect is rare (in my own experience, at least) in the perfect state.

Cemistoma lotella. Bred freely from mines in leaves of *Lotus major* by the road-side, but very local, being confined to a space of less than 100 yards.

Bucculatrix cidariella. One specimen.

B. frangulella. Abundant on buckthorn (*R. frangula*).

Nepticula centifoliella. Bred from mines found on sweet briar at Portland.

N. æneofasciella. Bred freely from mines in leaves of wild strawberry gathered in November preceding.

N. acetosæ. Bred from mines in leaves of *Rumex acetosella* found in Portland.

Bohemannia quadrimaculella. Five specimens brushed from alder.

Trifurcula atrifrontella. One bred from oak, in the same locality as the specimen recorded last year.

Acipitilia paludum. The evenings in August last were so unfavourable in point of weather that it was impossible to work for this little plume; one specimen only was taken.

Bloxworth, Dorset, February, 1892.

“ASSEMBLING” IN LEPIDOPTERA.

By HENRY D. SYKES.

IN the ‘Entomologist’ for 1891 (xxiv. 99), Mr. Perry Coste asks for a complete catalogue of all the species in which “assembling” has been observed. It seems to me that such a catalogue would be very useful for reference, and I think it would be a good idea for the correspondents of this magazine to record such species as have either come under their personal notice or that they have seen recorded occasionally in entomological books or periodicals, more especially as no such list appears to have been hitherto published.

The list of “assembling” species given below is not in any way intended as an exhaustive catalogue, but merely as a basis for the formation, and with a view to the compilation, of such a catalogue. It will be seen that, in my short list of seventeen species, each of the four great groups of the Macro-Lepidoptera

is represented, and so Mr. Perry Coste's query as to whether “assembling” has been observed in any of the Noctuæ or Sphinges can be answered in the affirmative. Indeed, this habit of the “assembling” of male Heterocera round the virgin female (so far from being confined to the *Bombyx* group) is not apparently confined even to the Macro-Lepidoptera; for the Editor recorded some years back (Entom. xxi. 320) a most unmistakable instance of it in *Tortrix podana*.*

A complete catalogue of “assembling” species would, I think, be useful in two ways: *firstly*, when a collector breeds or otherwise obtains a freshly-emerged female of any species, he could refer to the catalogue to see if it was recorded as being attractive in this way; and, *secondly*, it could be used as a sort of guide to go by in trying “assembling” with other species, as it will be seen that in several cases two or more closely allied species can be taken in this way. For instance, the female of *Brephos parthenias* has lately been recorded as attracting males, therefore it is only natural to suppose that females of *B. notha* would be equally attractive. It does not seem, however, that this is always, or even usually, the case, as I can find no record of *Bombyx neustria* having been taken by “assembling,” although so many of its allies are taken in this way; however, it is too early to discuss this question yet, for it will be seen what further species are recorded in the next few numbers of the ‘Entomologist.’

The only list of “assembling” species of any length which I could find in the handbooks on collecting at my disposal was in Knagg's ‘Lepidopterist's Guide.’ The great objection to this list is its extreme vagueness, for it does not enumerate species, but simply alludes to families or genera as if all the species included in them would “assemble,” which remains to be proved. After mentioning such well-known examples as *Endromis versicolor*, *Saturnia pavonia*, and *Bombyx quercus*, the ‘Guide’ goes on to say:—“Most other female Bombyces are attractive in their way; the Swifts, the Liparidæ, *Lasiocampa*, *Limocodes*, as well as the *Smerinthi*, the *Sesiæ*, the Prominents, Hook-tips, several Geometræ, the Psychidæ, &c., are well known.” I do not know whether or not it is because insects belonging to the genera *Notodonta*, *Drepana*, *Psyche*, &c., are so well known as “assemblers,” but I can find no records of their capture by this method in any of the books or magazines I have consulted. Stainton's ‘Manual’ also says:—“This mode of enticing specimens . . . may be satisfactorily tried with many of the Liparidæ and Chelonidæ.”

The following passage from Knagg's ‘Guide,’ which comes immediately after the one above quoted, is perhaps worth noticing:—“Probably all moths of the sex are so [attractive] in some degree, for we notice an indisposition for flight in the unimpregnated female to such an extent that one captured on the

* Also of *Endopisa nigricana*, Entom. xiii. 40.—Ed.

wing is pretty sure to be on the errand of ovipositing; with the exception, of course, of such autumnal species as do not pair till spring."

The following is the list I have compiled. I have given references in all cases where they seemed necessary, but have not troubled to give more than one reference in any case:—

SPHINGES.—*Smerinthus tiliæ*, Entom. xxi. 273; *Sesia sphegiformis*, Entom. xxv. 22; *S. culiciformis*, Entom. xxv. 22.

BOMBYCES.—*Emydia cribrum*, Entom. xxiv. 20; *Heterogenea limacodes* (*Limacodes testudo*), Knagg's 'Guide'; *Dasychira pudibunda*, Knagg's 'Guide'; *Orgyia antiqua*; *Bombyx rubi*; *B. quercus*; *B. trifolii*, Stainton's 'Manual'; *Endromis versicolor*; *Saturnia pavonia* (*carpini*); *Dicranura vinula*, Entom. xxii. 281; *Stauropus fagi*, Entom. xx.

NOCTUÆ.—*Miana furuncula*, Entom. xxi. 232; *Brephos parthenias*, Entom. xxiv. 123.

GEOMETRÆ.—*Amphidasys strataria* (*prodromaria*), Entom. Record, vol. i.

The Cedars, Enfield, March 8, 1892.

NOTES ON BRITISH LEPIDOPTERA.

BY RICHARD SOUTH.

THE GENUS MELANIPPE.

THIS genus was founded by Duponchel in 1830 (Hist. Nat. Lep. Fr. viii. pt. i. p. 277) for the reception of eight species, which he separated into two divisions as follows:—

Without discoidal spot: *Marginata*, *hastata*, *luctuata* [not British], *turbaria*, and *rivulata* [= *alchemillata*].

With discoidal spot: *Tristata*, *alchemillata* [= *sociata*], and *rivata*.

Marginata is now placed in Hübner's genus *Lomaspilis*; *rivulata* in Stephens's *Emmelesia*; and *turbaria*, which is synonymous with *turbata*, Hübn., appears to have some affinities with *Larentia olivata*, but it does not concern us, as it is not British. The *turbaria* of Stephens and Wood is a form of *affinitata*.

Stephens, in 1831 (Ill. Brit. Entom. Haust. iii. p. 220), placed *galiata*, *tristata*, *subtristata* (*sociata*), *sylvaticata* (*rivata*), *unangulata*, with *picata*, *silaceata*, *fulvata*, &c., in his genus *Harpalyce*; whilst *montanata* and *fluctuata*, preceded by *olivata* and followed by *propugnata*, were included by him in *Cidaria*, and *procellata* in *Xerene*; *hastata* being the only representative of *Melanippe* in his arrangement.

Of the five remaining species of the eight originally included

by Duponchel in *Melanippe*, only four are British, and to these Stainton, Doubleday, &c., have added five others, viz., *procellata*, *montanata*, *galiata*, *fluctuata*, and *unangulata*. The last-named was only enumerated by Duponchel in the appendix to his catalogue, where it is placed in Stephens's genus *Harpalyce*, but the other four were included by him in his genus *Melanthia*, together with *albicilata*, *adustata*, *rubiginata*, *ocellata*, and *blandidata*.

The nine species now placed in the genus *Melanippe* of our lists have certain superficial characters in common, which permit of their being grouped together, and the sequence of arrangement originated by others and adopted by me in the 'Entomologist Synonymic List' appears to be a natural one. If, however, we examine the structure of the respective species, we shall find that the group is not homogeneous. The males of *montanata* and *fluctuata* have pectinated antennæ, and these species agree in this respect with those we include in the genus *Coremia*; they would, however, be aberrant members of that group, as they certainly are of *Melanippe*. *Procellata* seems to be out of place, and *galiata* does not agree with either *montanata* or *fluctuata*. It is not my purpose, however, to discuss the generic affinities of the species, but to refer to their variation, &c., which I will now proceed to do.

MELANIPPE HASTATA.

The ground colour is generally pure white, but sometimes cream-coloured; it is, however, in the central and basal black markings of this species that we find the greatest amount of variation.

In the more or less typical form the basal fourth of fore wing is usually black, and equally divided in two sections by a white band or line; both portions are often marked with white, and in some cases the outer one is broken up by white longitudinal streaks. The central band is sometimes continuous from costa to inner margin, with a transverse whitish dash below the middle; in other specimens the costal and inner portions of the band are alone present, and these are much broken by white markings. The white ground colour beyond the central band is sometimes intersected by a line of black spots. The hind wings have the basal third black, and this is, according to the character of the central band on fore wings, either much broken up by white markings, or simply divided into two parts by a transverse white line; the portion nearest the base with a white streak. The black outer marginal border of all the wings is often broad, almost completely divided in the middle by an arrow-shaped projection of the ground colour, and traversed by a white sub-marginal line, which, however, is rarely complete, but generally

represented at the apex and inner angle of the fore wings and anal angle of the hind wings.

A pretty little form of *hastata*, which appears to be referable to var. *hastulata*, Nolk., is found in the Outer Hebrides. Referring to specimens from Lewis, Mr. Weir (Entom. xiv. p. 221) says they "are more strongly marked with black, and in some the upper wings have the ground colour of a very pale yellow." I have several Lewis specimens; one of them is white, the fore wings marked with black as follows:—A patch at the base; central band indicated by two dashes on costa, some spots and dots before the middle, and two dashes on inner margin; these remnants of the band are preceded and followed by a transverse row of black spots; submarginal band narrow, interrupted at the middle; marginal band narrow. Hind wings with some spots and dashes at the base, a central transverse row of dots, submarginal and marginal bands as on fore wings.

Another specimen is black, with the following transverse white markings:—Fore wings: a slender basal line; narrow, subbasal, and broader central bands traversed by black dots; submarginal line interrupted above and below the middle. Hind wings with a central band intersected by a line of black points, a triangular mark on marginal area, connected with central band by a narrow line, and three dots between it and anal angle. A third specimen is black; the fore wings have two slender white lines traversing the basal area; subbasal band ill-defined towards inner margin, and containing two black dots in its upper portion; central band with a deep outward angulation, indistinct towards inner margin, and intersected by an interrupted black line; submarginal line rather broad and serrated before inner margin. Hind wings traversed by four white lines, but the first and fourth do not reach the costa. This specimen is very similar to that figured by Newman; a form said to occur in the North of England and Scotland.

Mr. McArthur informs me that the larva of the Lewis form of *hastata* feeds on *Myrica gale*, and that the moth rests on the rocks.

An interesting aberration of *hastata*, taken near Doncaster, is figured Entom. xiv. p. 1. This specimen is very small, and the central band is quite absent, but the discoidal spot remains.

MELANIPPE TRISTATA, L.

This species usually has the ground colour fuliginous brown, but some specimens I have from Glasgow and Durham are grey-brown, tinged with ochreous; others from Barnsley are decidedly black. The central fascia of fore wings is sometimes contracted below the middle; in two specimens from Durham it is very slender at this point, and in a third example from same

locality the band is completely severed, but the portions are connected by a faint cloud. There is usually a round black spot encircled with white in the upper part of the fascia; this sometimes is considerably enlarged, and then assumes the shape of the reniform stigma seen in the Noctuæ. The dark outer area of the wing is generally intersected by a wavy white line, and sometimes divided longitudinally by a projection from the white band which immediately precedes it.

Although the white transverse bands are, as a rule, intersected by a line of black dots, each dot placed on a nervule, some specimens are entirely without such punctiform markings.

The dark colour of the hind wings is always transversely divided into two portions by a white central band, with line of dots subject to same modification as on fore wings, but the white lines which traverse the basal half are sometimes so diffuse that they almost completely eliminate the dark colour. The white line which traverses the outer marginal area forms a sagittate mark about the middle, and this is often connected with the white band by a projection from the latter.

The foregoing remarks apply to what may be termed the ordinary variation of the species, but I have two other specimens from Durham which are so peculiar that it seemed better to refer to them separately. In these examples the upper portion of the central fascia on fore wings is interrupted as far as the white line by rays from the outer white band, and the basal half of hind wings, which is traversed by broad white bands, is radiated in a similar way.

Luctuata, Hübn., which occurs in Germany, Hungary, Switzerland, and Livonia, is usually considered specifically distinct from *tristata*, Linn., but some specimens of the latter species from the North of England appear to be much nearer to *luctuata* than to typical *tristata*. The only difference that I can find is that in *luctuata* the black central fascia of fore wings is continued across the hind wings, and the white band beyond appears to be more angulated. Perhaps examples of a larger number of northern specimens of *tristata* than I possess might result in the detection of specimens identical with *luctuata*. Newman's figure of *tristata* is far more like *luctuata*. If *luctuata*, Hübn., proves to be a form of *tristata*, Linn., then a very complicated bit of synonymy will be cleared away, and we shall have *luctuata*, Hübn. (No. 2), Btr. ii. 4, 3 T; Geom. pl. 49, fig. 253, for the species now known as *lugubrata*, Staud.; whilst *luctuata*, Hübn. (No. 1), Btr. i. 1, iv. y (= *tristata*, Hübn. Geom. pl. 49, fig. 254), will be merged in *tristata*, Linn.

The fact of Hübner figuring his *luctuata* (No. 1) at a later date under the name of *tristata* seems rather to indicate a desire on his part to sink the former name.

MELANIPPE PROCELLATA.

Except that the ground colour is sometimes slightly tinged with greyish brown, and that the fine wavy dark transverse lines are subject to modification in the direction of evanescence on the one hand, and great prominence on the other, there is no variation that I am aware of in British *procellata*.

Japanese specimens are usually much suffused with greyish or brownish; some examples are uniform fuliginous-brown, whilst others are quite of the typical English form. Mr. Leech has a German specimen in his collection which is very like the common Japanese form.

MELANIPPE UNANGULATA.

Appears to be a fairly constant species. The central fascia varies a little in width, and also in the angulation of its outer edge; the outer edge of the white band following the fascia is not always clearly defined.

This species may be distinguished from either *M. rivata* or *M. sociata*, its closest allies, by the more silky texture of the wings, and by the more angulated external outline of the central fascia. The hind wings are whiter, and the white line which intersects the brownish grey outer marginal area is much more wavy.

(To be continued.)

NOTES ON THE SYNONYMY OF NOCTUID MOTHS.

By ARTHUR G. BUTLER, F.L.S., F.Z.S., &c.

(Continued from p. 65.)

BAGADA, *Walk.*

Bagada plumbata.

Acontia plumbata, Butler, Ill. Typ. Lep. Het. vii. p. 61, pl. cxxix. fig. 4 (1889).

Marimatha freda, Swinhoe, Trans. Ent. Soc. 1891, p. 147, n. 27.

Dharmasala and Nilgiris. Types in Coll. B. M.

Bagada spicea.

Perigea spicea, Guenée, Noct. i. p. 226, n. 358 (1856).

Acontia firina, Swinhoe, Proc. Zool. Soc. 1885, p. 455, pl. 27, fig. 5.

Java, Bombay, Poona, Nilgiris. Types in Coll. B. M.

It is an unusual occurrence for *M.* Guenée to be so wide of the mark as in the present instance, and it is not surprising

that Col. Swinhoe should have overlooked an Acontiid when described as a *Perigea*. As we have both types there can be no question as to the identity of the species united above.

PSEUDOMICRA, gen. nov.

Pseudomicra marginalis.

Anthophila marginalis, Walker, Lep. Het. Suppl. 3, p. 802 (1865).

Rhodaria formosalis, Walker, l. c., 4, p. 1284 (1865).

Australia. Types in Coll. B. M.

Pseudomicra semipurpurea.

Anthophila semipurpurea, Walker, Lep. Het. Suppl. 3, p. 803 (1865).

Marimatha confinisalis, Walker, l. c., 4, p. 1206 (1865).

Xanthoptera rosalba, Grote (see *Prothymia*, Check List, p. 38, n. 1094).

North America. Types in Coll. B. M.

My *Rhodaria amata* from Japan is an allied but quite distinct species. The type of *Prothymia* is certainly not congeneric with these species. It is altogether more robust, with thick curved palpi and coarsely ciliated antennæ.

FRUVA, Grote.

Fruva parvula.

Xanthodes parvula, Walker, Lep. Het. Suppl. 3, p. 779 (1865).

Fruva georgica, Grote (see Check List, p. 38, n. 1086).

United States. Types in Coll. B. M.

AGROPHILA, Guen.

Agrophila sulphuralis.

Phalæna-Pyralis sulphuralis, Bergstrasser, Ins. Suec. i. p. 10.

Erastria pardalina, Walker, Lep. Het. Suppl. 3, p. 794 (1865).

Europe, Asia, and Mauritius. Coll. B. M.

It is a singular thing, seeing how variable this species is, that Walker should have selected a typical example of *A. sulphuralis* for his new species.

EUBLEMMIDÆ.

THE type of *Thalpocharis* is evidently *T. inamæna* = *arcinna*, which is typical *Microphysa*, Boisd.; even the other species subsequently mentioned by Lederer cannot stand under his name. Herrich-Schäffer adopted for them the generic name *Trothisa*, Hübn., and Lederer's argument that the latter genus only contained two species (the near affinity of which, by the way, nobody disputes) only tells against himself, since the addition of species to a genus does not constitute it one's own property. Unfortunately

Hübner himself annihilated *Trothisa* by founding *Eublemma*, *Porphyrinia* and *Eromene* before it. *Eublemma* contains two species, — *E. suava*, which is a *Microthysa*, and *E. amæna* = *respersa*, which becomes the type; the latter is congeneric with *Trothisa paula*, so that *Eublemma* stands for the bulk of Lederer's *Thalpocharides*. Even if *Eublemma*, *Porphyrinia*, *Eromene* and *Trothisa* had all been superseded, there would still remain *Ecthetis*, Hüb., with the sole species (and therefore type) *E. pura*, which must have taken priority over Lederer's genus *Thalpochares*.

If it be asserted that some of Hübner's genera contain heterogeneous material, and therefore that his names should be ignored, I reply that Lederer's are in the same plight; even *Thalpochares* itself contains several structurally distinct groups having entirely different facies. I cannot admit the confusion of such well-marked groups as *Microphysa*, *Eublemma*, *Calymma*, *Glaphyra*, &c.

Acantholipes, Led., is synonymous with *Docela*, Walk., which it supersedes.

Thalpochares innocens, Butl., is apparently a Deltoid allied to *Mestleta*; the somewhat longer palpi indicate this.

Herr Saalmüller, in his 'Lepidoptera von Madagascar,' has described three species as belonging to *Anthophila*, which, in their neuration, are shown to be species of *Tarache*, viz., *A. divisa* (Taf. xiii. f. 234), *A. scapha* (f. 236), and *A. arnulla* (f. 238), which have a very well-defined accessory cell to the primaries — a character which, as my friend Mr. Hampson has proved to me, is entirely wanting in the Eublemmidæ. The singular thing is that Saalmüller, when describing *Anthophila*, observes that the species, which have a very different character from one another, are principally distinguished by the want of the accessory cell and approximated arrangement of veins; either he did not use a sufficiently powerful lens, or his sight must have been defective, since the accessory cell in these species is unusually large.

In the male of *Anchiroe flavofimbria*, Saalm., which has entirely yellow secondaries, I can find nothing in the neuration to justify its separation from *Tarache*; the character of the veins of the secondaries is perfectly normal, the second and third median branches being emitted as usual from a well-defined footstalk; that of the primaries is equally so, the accessory cell being long and well marked, differing in no respect from that of the other Madagascar species referred to above: the slight differences of pattern in the sexes are such as one expects to find in species of *Tarache*.

Erastria elegans, Saalm., is a *Bryophila*: the tufted body and trifold median neuration of secondaries would alone separate it from *Erastria*; the drawing of the veins in his figure is incorrect. *E. muscosa*, Saalm., is also a *Bryophila*.

Erastria latireptana = *Miana semicana*, Walk., from the United States, has the characters of a *Bryophila*.

Erastria punctifera, Walk., described from a headless example, is an *Orgyia*, or a closely allied genus of Liparidæ.

Acantholipes acervalis, Swinh., is one of the "Trifidæ," and must be referred to *Pradatta* (Heliothidæ).

Thalpochares argentifrons, Butl., *T. triangularis*, Warr., *Eustrotia dividua*, Grote, and *Bankia opella*, Swinh., are nearly allied species, and should, in my opinion, form a new genus of Acontiidæ: they do not belong to the Eublemmidæ, though outwardly resembling them, as the primaries have a distinct, though short, accessory cell. All of the species have the basal area of the primaries terminated by a straight transverse line; the genus comes nearest to *Eulocastra*: it may be called *Orthostrophia*.

Thalpochares grisea, Ersch. (also labelled *T. pallidula* and *aruta* by Zeller, though it has nothing in common with Herrich-Schäffer's species), and *T. himmighoffeni*, Mill., are narrow-winged species, having straight porrected palpi with very short terminal joint: they may be called *Leucoblemma*.

(To be continued.)

ENTOMOLOGICAL NOTES, CAPTURES, &c.

BARBAROUS LATINITY.—Why should we entomologists incur the ridicule of classical scholars, not to say average schoolboys, by the astounding names we give to our insects? There is a case in point (for which, however, you are not responsible) in Entom. xxv., page 35, where occurs the word *Thulei*. What in the wide world is *Thulei*? Am I wrong in assuming that it is meant for the genitive case of Thule, since "Ultima Thule" is the accepted Latin for Shetland, and the insect in question comes from there? If this be so, then may not we English entomologists at any rate cease to run the risk of raising the ghost of Cicero by our barbarous Latinity, and, by way of a beginning, adopt for our moth the proper genitive of its locality, which is *Thules*?—W. CLAXTON; Winchfield, Feb. 6, 1892.

[Some months ago this name was referred to at a meeting of the South London Entomological and N. H. Society, and Mr. Jenner Weir then pointed out that the proper genitive was *Thules* and not *Thulei*.—ED.]

GREEN AND BROWN PUPÆ OF PAPILO.—The observations recorded by Mr. J. L. Bonhote (Entom. 44) are decidedly of interest, though the same sort of thing has been reported before (see Entom. xxiii. 226). If it is really a fact that certain species having both green and brown pupæ behave in this way, the green emerging the same year and the brown wintering, it surely throws light on this often discussed form of dimorphism. During the summer both sorts, but especially the green, may be sufficiently protected by the foliage, but in winter the green variety would be very conspicuous. Thus there is obviously some advantage in the early emergence

of the green variety, and natural selection may be brought to bear. Nevertheless, from what we know of the numerous similar dimorphic forms which cannot be thus accounted for, and from the recorded facts about the effect of surroundings on colour, the problem becomes quite complex. The purpose of this note is simply to call attention to an interesting problem, and to ask for further information.—T. D. A. COCKERELL; Institute of Jamaica, Kingston, Jamaica, Feb. 20, 1892.

HADENA SATURA IN THE FAR NORTH.—I can assure Mr. Hodgkinson that he is quite wrong in his deductions regarding this matter (Entom. 16). The whole life-history of the Aberdeenshire *H. satura* is well known to quite a number of English entomologists; but as there seems to be a difficulty in making out whether they are really *H. satura* or a form of *Crymodes exulis*, it was thought best not to publish anything about the insects until it was definitely known what they really were. The party who sent Mr. Hodgkinson a boxful of continental insects is not the party who discovered the insects referred to above.—WM. REID; Pitcaple, Aberdeenshire, March 10, 1892.

CATOCALA NUPTA AT REST.—I venture to doubt whether *Catocala nupta* has the preference for concrete walls Mr. H. D. Sykes ascribes to it (Entom. 69). It is plentiful in this neighbourhood (Beckenham), and in the latter half of August and in September it is commonly found on the oak fences that enclose the gardens, or on any flat surface. I have taken three specimens on the smooth and rather bright red brickwork of my house, on which it appeared very conspicuously. It generally appears about the 10th of August, and becomes worn by the middle of September. I have never seen it here in October. It comes freely to sugar, and last year, when it was unusually plentiful, three or four were attracted on each occasion on which I sugared in my garden. I have not found the difficulty Mr. Sykes mentions in boxing this insect; so long as no shadow falls on it, it will sit quietly enough, but, like the rest of the genus, it is very alert when once aroused.—F. W. BIDDLE; Lanberne, Beckenham.

REARING LARVÆ OF NOTODONTA DICTÆOIDES.—That the larvæ of the genus *Notodonta* are frequently cannibals is certain, and *N. dictæoides* is no exception. Of this anyone may convince himself by leaving one large and several smaller ones together in a sleeve. As they feed at night the process is not so easily witnessed, but the small ones will rapidly disappear. It is probably while changing the skin that most larvæ are thus carried off. Having been more successful than Mr. Meed with this larva, I venture to suggest a few points to be observed. It is desirable to feed on the growing tree, and to allow the larvæ room. I would not place more than twenty ova in one sleeve, for the mischief begins early. As the eggs turn from white to a dark leaden colour before hatching, I would only expose them when they have turned colour. If any larvæ grow larger than the rest, at once remove them to a separate sleeve. They prefer the shady side of the tree. Cannibalism seems developed by sunshine and dry weather. My best trees for rearing larvæ upon are planted in the shade, under a north wall. When full fed the larva will throw itself off its food, and lie upon the muslin, somewhat contracted in length. At once remove these to cages prepared with three inches of light soil, not too dry, and they will bury, forming soft cocoons, if the brood is healthy; or else the pupæ will be naked. I have not found them to dry up, if kept in a tolerably moist

atmosphere and occasionally watered as the weather becomes warm. I once quoted the authority of a friend, in these pages, for saying that the larvæ sometimes fed on aspen; but this was afterwards explained to be spoken of *N. dictæa*, so I here retract the error. Birch, as far as I know, is the only food.—(Rev.) B. SMITH; Marlow, March 1, 1892.

RELAXING EXOTIC LEPIDOPTERA.—I should be much obliged for information as to the best method of relaxing Exotic Lepidoptera. I am supposing that they have been received in papers, and never set at all. Of course if they have been set, and the style is not approved, it is comparatively easy to remedy it. My *modus operandi* hitherto has been this: I fill a vegetable dish with sand, which I damp, and on this place the butterflies, sometimes making little furrows in the sand, in which I squeeze the bodies, with the idea that this damps and relaxes more effectually the muscles at the base of the wings. At other times I simply put the insects flat on the sand. I then cover the dish with the lid, and leave them. But I cannot say the proceeding is satisfactory, as, even after two or three days, such small species as the *Catagrammas* are seldom in a thoroughly relaxed condition, and the setting is a matter of much difficulty, often resulting in slit wings. Necessarily the time taken in relaxing an insect would vary with the size, and with the robustness of wing. What is considered a proper average time for the process? I suppose the specimens can be so entirely relaxed as to be set with no greater trouble than freshly-killed insects. I shall be grateful for a few directions from those experienced, instructing me as to the proper plan of effecting this.—JOSEPH ANDERSON, JUN.; Chichester.

QUERY RESPECTING GNATS.—Can anyone kindly inform me of the best means of protecting oneself in the field against gnats, or the most effectual means of reducing the swelling and irritation resulting from their bites?—W. HEWETT; 12, Howard Street, York.

CLEARWINGS IN NORTH STAFFORDSHIRE.—Mr. Woodforde last year bred three *Sesia sphegiformis* from alder and birch shoots, and many *S. bembeciformis* from willow shoots. The shoots were brought to him by the woodcutters, with the larvæ in them. He also took a second *S. culiciformis*, the first having been taken by him the previous year, when it was a record for this district. The only other Clearwings that we have so far taken in N. Staffordshire are *Macroglossa bombyliformis*, the common *S. tipuliformis* and *S. apiformis*.—(Rev.) T. W. DALTRY; Madeley Vicarage, Staffordshire.

NOTE ON SUGAR.—During the months of September, October and November sugar failed to attract even the commonest species, forming a remarkable contrast to the months of June, July and August, during which Noctuæ were most abundant at sugar.—W. HEWETT.

NOTES ON ITALIAN RHOPALOCERA.—On Sept. 12th, 1891, whilst picking the splendid *Hibiscus roseus* at Lago Massaccincoli, near Viareggio, I found *Polyommatus dispar* var. *rutilus* (Wer.) abundant, and it appeared in good condition until Oct. 1st. *Lycæna telicanus* (Hb.), very common at Bagni di Lucca, in dry torrent-beds, on flowers of *Epilobium dodonæi*; it is common also here. *Satyrus statilinus* (O.), numerous at Bagni di Lucca, Viareggio, and at Massa. *Charaxes jasius* (L.), at the mouth of the River Magra on Oct. 5th. *Lycæna cyllarus* (Rott.), in gorges at Carrara.—FRANK B. NORRIS; Massa, Carrara.

SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON.—*February 24th, 1892.*—Mr. Frederick DuCane Godman, F.R.S., President, in the chair. The Secretary read a letter from General Sir Dighton Probyn, K.C.B., Comptroller to the Prince of Wales, conveying the thanks of the Prince and Princess of Wales for the Address of condolence with their Royal Highnesses in their severe bereavement, which had been forwarded to Sir Dighton Probyn by the Secretary, on behalf of the Society. Mr. Walter Cuthbert Biddell, of 32, The Grove, Bolton Gardens, S.W.; and Mr. Douglas Stuart Stuart, of North Leigh, Prestwich, Lancashire, were elected Fellows; and Mr. Philip de la Garde, R.N., was admitted into the Society. The President referred to the loss the Society had recently sustained by the death of Mr. Henry Walter Bates, F.R.S., who had twice been its President; and he also read a copy of the resolution of sympathy and condolence with Mrs. Bates and her family, in their bereavement, which had been passed by the Council at their meeting that evening. Mr. Frederick C. Adams exhibited a monstrous specimen of *Telephorus rusticus*, taken in the New Forest, in which the left mesothoracic leg consisted of three distinct femora, tibiæ and tarsi, apparently originating from a single coxa; he also exhibited specimens of *Ledra aurita*. Mr. G. A. James Rothney sent for exhibition a series of specimens of two species of Indian ants (*Myrmecaria subcarinata*, Sm., and *Aphanogaster (messor) barbarus*, L., var. *punctatus*, Forel), which had recently been determined for him by Dr. Forel. He also communicated notes on the subject, in which it was stated that *Myrmecaria subcarinata*, Sm., was not uncommon in Bengal, and formed its nests by excavating the earth round trees, and throwing it up in mounds of fine grains. The author also stated that both sexes of this species swarmed early in the "rains," from about July 7th to July 10th. Of the second species—*Aphanogaster barbarus* var. *punctatus*, Forel—Mr. Rothney observed that it, like the bee, *Apis dorsata*, seemed to have a great partiality for the gardens and buildings of the old Mogul Emperors in the North-West Provinces and in the Punjab, the bee disfiguring the arches and roofs with its huge nests, and the ant frequenting the gardens and steps. The Hon. Walter Rothschild communicated a paper entitled "On a little-known species of *Papilio* from the Island of Lifu, Loyalty Group." The paper was illustrated by a beautifully coloured drawing, by Mr. F. W. Frohawk, of the male, variety of the male, female, and under side of the species.

March 9th.—Mr. Frederick DuCane Godman, F.R.S., President, in the chair. Capt. Clement Alfred Rigny Browne, R.E., of Bombay; His Grace the Duke of Devonshire, LL.D., Chancellor of the University of Cambridge, of Devonshire House, 78, Piccadilly, W.; Mr. J. H. Leslie, of 44, Cheriton Square, Upper Tooting, S.W.; Mr. R. M. Lightfoot, of Bree Street, Cape Town, Cape of Good Hope; and Mr. Sidney Robinson, of Goldsmith's Hall, E.C., were elected Fellows of the Society. Professor C. Stewart, President of the Linnean Society, exhibited and made remarks on specimens of *Cystocalia immaculata*, an Orthopterous insect from Namaqualand, in which the female is far more conspicuously coloured than the male, and the stridulating apparatus of the male differs in certain important details from that of other species. A long and interesting discussion ensued, in which Dr. Sharp, Mr. Poulton, Mr. Distant, Mr. H. J. Elwes, Colonel Swinhoe, and Mr. Hampson took part. Mr. Elwes exhibited specimens of *Ribes aureum* which were covered with galls, as to the nature of which the

Scientific Committee of the Horticultural Society desired to have the opinion of the Entomological Society. Mr. Fenn, Mr. Tutt, and Mr. Barrett made some remarks on these galls. Mr. Elwes also exhibited a large number of species of Heterocera recently collected by Mr. Doherty in South-East Borneo and Sambawa. Colonel Swinhoe, Mr. Hampson, and Mr. Distant took part in the discussion which ensued. Mr. Barrett exhibited a series of specimens of *Noctua festiva*, bred by Mr. G. B. Hart, of Dublin, which represented most of the known forms of the species, including the Shetland type, and the variety formerly described as a distinct species under the name of *Noctua conflua*. Mr. Fenn and Mr. Tutt made some remarks on the specimens. Mr. W. C. Boyd exhibited a specimen of *Diantheicia barrettii*, taken at Ilfracombe last summer. It was remarked that Mr. W. F. H. Blandford had recorded the capture of *D. barrettii*—which had until recently been supposed to be confined to Ireland—from Pembrokeshire, and that its capture had also since been recorded from Cornwall. Mr. Tutt exhibited specimens of *Polia xanthomista* from Mr. Gregson's collection, which had recently been sent to him by Mr. Sydney Webb. They included, amongst others, a specimen much suffused with yellow, and resembling Hübner's type and Gregson's type of var. *statices*, which Mr. Tutt stated was practically identical with Treitschke's *nigro-cincta*. He remarked that certain localities appeared to produce different forms of this species, responding largely to their environment as far as colour is concerned, and were thus protected by resemblance to their surroundings. Mr. G. A. James Rothney exhibited and read notes on a large collection of Indian ants which he had made in Bengal between 1872 and 1886, comprising some 90 species. He stated that 18 of these species had been described by Dr. Mayr in his paper entitled "Ameisen Fauna Asiens," 1878: he also said that Dr. Forel had recently identified several other new species in the collection, and that there were about ten species and one new genus which Dr. Forel had not yet determined. Mr. H. Goss exhibited, for Mr. T. D. A. Cockerell, of Kingston, Jamaica, several specimens of palm leaves, from the garden of the Museum in Kingston, covered with *Aspidiotus articulatus*, Morgan. The leaves appeared to have been severely attacked, the scales entirely covering the upper surface in places. Mr. Cockerell had pointed out, in a letter dated 16th February last, that the species is notable for the sharp division between the thorax and abdomen; and that he had formerly distributed it under the name of *Aspidiotus rufescens*, but had since satisfied himself that it was identical with *A. articulatus* from Demerara. He added that the species fed on a variety of plants, and was known from Demerara, Jamaica, and Barbados. Mr. F. D. Godman contributed a paper by the late Mr. Henry Walter Bates, with an Introduction by himself, entitled "Additions to the Longicornia of Mexico and Central America, with remarks on some previously-recorded Species." The Rev. A. E. Eaton communicated a paper entitled "On new Species of Ephemeridæ from the Tenasserim Valley."

March 23rd. — Dr. David Sharp, M.A., F.R.S., Vice-President, in the chair. The Hon. Mrs. W. Carpenter, of Kiplin, Northallerton, Yorkshire; and Mr. S. G. C. Russell, of 19, Lombard Street, E.C., were elected Fellows of the Society. The Secretary read a letter from the City of London Entomological and Natural History Society on the subject of a proposed Catalogue of the Fauna of the London District. The assistance of Fellows of the Society in the compilation of the Catalogue was asked

for. Mr. G. C. Champion exhibited a number of new species of Longicornia from Mexico and Central America, recently described by the late Mr. H. W. Bates, in his paper entitled "Additions to the Longicornia of Mexico and Central America, with remarks on some previously recorded Species," read at the last meeting of the Society. Mr. S. Stevens exhibited three very rare species of Noctuæ, viz., *Noctua flammata*, *Leucania vitellina*, and *Laphygma exigua*, all taken by Mr. H. Rogers at Freshwater, Isle of Wight, in the autumn of 1891. Mr. F. C. Adams again exhibited the specimen of *Telephorus rusticus* in which the left mesothoracic leg consisted of three distinct femora, tibiæ, and tarsi, originating from a single coxa, which he had shown at the meeting on the 24th of February last. The specimen was now reversed, to admit of the better examination of the structural peculiarities, upon which Dr. Sharp, Mr. Champion, and Mr. Jacoby made some remarks. Mr. Osbert Salvin exhibited a series of mounted specimens of the clasping organs in the male of several species of Hesperidæ. Dr. Sharp exhibited, for Mr. F. D. Godman, a collection of Orthoptera recently made in the Island of St. Vincent, West Indies, by Mr. H. H. Smith, the naturalist sent to that Island by Mr. Godman in connection with the operations of the Committee appointed by the British Association and the Royal Society for the investigation of the Fauna and Flora of the Lesser Antilles. It was stated that the collection had recently been referred to, and reported on by, Herr C. Brunner von Wattenwyl and Professor J. Redtenbacher. Mr. J. W. Tutt exhibited and remarked on a series of various forms of *Orrhodia vaccini* and *O. (spadicea) ligula*. Mr. C. G. Barrett exhibited and made remarks on a series of specimens—including some remarkable varieties—of *Bombyx quercus* and *Odonestis potatoaria*. A long discussion ensued as to the probable causes of the variation exemplified, in which Mr. Tutt, Mr. E. B. Poulton, Mr. H. Goss, Mr. Jacoby, Mr. Salvin, Mr. Bethune-Baker, Dr. Sharp, and Mr. Distant took part. Mr. G. A. James Rothney sent for exhibition a number of specimens of *Camponotus compressus*, *C. micans*, *Cecophila smaragdina*, *Sima rufo-nigra*, *Solenopsis geminata* var. *armata*, and other species of ants, from Calcutta; also certain of their enemies and parasites. He also communicated a short paper on the subject, entitled "Notes on certain species of Calcutta Ants and their habits of life."—H. Goss, *Hon. Sec.*

SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—*February 25th, 1892.*—Mr. C. G. Barrett, F.E.S., President, in the chair. Mr. J. W. Larkin, of Streatham, and Mr. A. L. Stephens, of Blackheath, were elected members. Mr. Cooper exhibited some specimens of *Porthesia chrysorrhæa*, L., received some years ago from Whittlesea Mere, Cambridgeshire, and pointed out that there were a number of black dots on the wings. Mr. J. Jenner Weir exhibited examples of several species, showing the wet and dry season forms of the same insect, and remarked that it had now been placed beyond doubt that many species which were looked upon as perfectly distinct were wet season and dry season forms: among the species exhibited were *Junonia astoria*, L., *J. almana*, L., the wet season form of *Melanitis ismene*, Cram., and the dry season form of the same, *M. leda*; and Mr. Weir remarked that the two so-called species of *Melanitis* were seasonal varieties, or, as he termed it, homœomorphic of one species: this question had been set at rest by direct experiment. Mr. Weir contributed notes relative to his exhibit. Mr. R. Adkin exhibited Lepidoptera from the

Scilly Isles, and, in remarking on the variation, called attention to the specimens of *Pieris napi*, L., *Lycæna icarus*, Rott., and *Cidaria truncata*, Hufn., which he said were species known to be liable to somewhat pronounced local variation, and yet those he had received from Scilly were normal. Mr. Adkin also exhibited light and dark cocoons of *Eriogaster lanestris*, L., and contributed notes. Mr. Tugwell exhibited cocoons of *Nola centonalis*, Hb., and *N. albulalis*, Hb., and referred to some remarks recently made by Mr. Tutt, that the coloration of cocoons was caused by anal excreta. Mr. Tugwell stated that he did not agree with this view. A discussion followed relative to these two last exhibits, in which Messrs. Jenner Weir, C. Fenn, W. West, South, C. G. Barrett, Carrington, Tugwell, and Adkin took part. It was pointed out that recent experiments had shown that the coloration was due to renal excreta. Mr. Billups exhibited specimens of minute Mollusca, and read notes thereon.

March 10th. — The President in the chair. — Mr. Jenner Weir exhibited xanthous forms of the following British Rhopalocera, viz., *Satyrus semele* (female), *Epinephela ianira* (female), *E. hyperanthes* (female), *Cænonympha typhon* (male), *C. pamphilus* (female, three specimens), and *Heodes phlæas* (male). These specimens were all of them much paler in colour than usual, and he regretted that he could not suggest a cause for this want of colour, except in the case of *E. ianira*: this insect he had taken in the New Forest, during the very wet and cold season of 1879, in a damp wood; the temperature was then so low that when *Argynnis paphia* was pursued it took refuge in the thick brambles, being too weak to fly far, and *Brenthis euphrosyne* had its emergence delayed through July—in some cases even till so late as the 9th of August. His view was that the development of pigment was due to what might almost be termed surplus energy, and that, if the vitality of either of the larva or chrysalis was lowered by unfavorable environment, then the result might be that the imago might be defective in colour. Applying this argument to the *E. ianira* under consideration, he was of opinion that in the chrysalis its vitality had been impaired, and the energy necessary to produce the normal colour had not been forthcoming. Mr. H. C. Richter then delivered a lecture on Insects, illustrated by original diagrams and coloured drawings, the majority of the latter being enlargements of the objects as seen through the microscope, and Mr. Richter stated that many of them had not hitherto been figured. Owing to this paper the remaining exhibits were not taken, and the discussion on Mr Weir's paper stood over until the next meeting.—H. W. BARKER, *Hon. Sec.*

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY.—March 14th, 1892. — Mr. S. J. Capper, F.L.S., F.E.S., President, in the chair. Messrs. H. Locke, of Birkenhead, and G. Norel Deville, of Crosby, were elected members. The President referred to the loss the Society, and naturalists generally, had sustained by the death of Francis Archer. Mr. William Webster, of St. Helen's, read a paper entitled "Was Shakspeare an Entomologist?" The author stated he had examined the works of the poet, and found 207 references to insects, and, as far as could be ascertained, mention of 30 kinds of insects; and showed, by numerous quotations, that Shakspeare not only possessed a fair knowledge of Entomology, but that he was a philosophical observer of Nature. Mr. Willoughby Gardner, F.R.G.S., read a short note on the "Popular names of Insects about Shakspeare's time," some few of which still existed in country places. Mr. Webster exhibited *Papilio zalmoxis*; the President, Messrs. Stott and

Harker, and the Hon. Secretary, long and variable series of *Noctua festiva* and *N. conflua*; and Messrs. Harker and Jones, British and Continental forms of *Lycæna icarus*.—F. N. PIERCE, *Hon. Sec.*

BIRMINGHAM ENTOMOLOGICAL SOCIETY. — *March 14th, 1892.*—Rev. C. F. Thornehill in the chair. Mr. R. C. Bradley showed several species of *Culex*, taken at Sutton. Mr. G. T. Bethune-Baker, a boxful of *Scopariæ*, from St. Helena, which differed from all other *Scopariæ* in the possession of deeply serrated antennæ, some of the specimens being almost black. Mr. Baker said that, even from the mainland of Africa nearest to St. Helena, he knew of no *Scopariæ* with the same characteristics. Mr. G. H. Kenrick read a paper, "Some considerations on Insects confined to small areas." He touched chiefly upon self-evident causes of localisation, mountain-chains, &c., and then entered more fully into the causes of the presence on our coast-lines, in the fens, woods, &c., of many species only found in those restricted districts in our country, though found in similar ones on the Continent: he remarked that it was strange to find so many species restricted to so small an area as our fens, for example, and showed that those fens represent a very wide extent of country, all fen, extending over the German Sea, to and including Holland, and of which our Lincolnshire and Norfolk fens, and those in Holland, are all that is left: the insects inhabiting this wide extent of country are now, to a considerable extent, crowded into the few surviving spots, and hence we get many peculiar species in a small area: he believed the same applied to coast species, our coast-lines having once formed a part of a very much more extended continental coast-line; and to wood species, our woods being the remains of former extensive forests, &c. He concluded by pointing out many much more complicated questions of distribution and localisation, of which he could offer only slight explanations, and which, he said, opened out a wide and interesting field of study. A discussion followed, in which the Rev. C. F. Thornehill, and Messrs. G. T. Bethune-Baker, R. C. Bradley, and C. J. Wainwright joined.—COLBRAN J. WAINWRIGHT, *Hon. Sec.*

OBITUARY.

With great regret we have to announce the death of FRANCIS ARCHER, who died Feb. 29th, 1892, after a week's illness, of diphtheria, at his residence, 21, Mulgrave Street, Liverpool, aged 52. He was the son of the late Francis Archer, M.R.C.S., a well-known medical practitioner in Liverpool, who was also a naturalist, his speciality being Conchology. Mr. Archer, who held a leading position in his profession, that of a solicitor in Liverpool, was a man of high culture and most genial disposition, an ardent politician, and a born naturalist. He was among the first to appreciate the late Mr. Darwin's views on the 'Origin of Species,' &c. He possessed a very practical knowledge of Conchology and Entomology, and was always ready to assist and encourage young people in their scientific and natural-history investigations. He was one of the original members of the Lancashire and Cheshire Entomological Society, in which he always took a deep interest, and he was elected a Fellow of the London Ent. Soc. in 1886. Those who knew him intimately will mourn a kind congenial friend, whilst Science has one less ardent follower in Liverpool.

THE ENTOMOLOGIST.

VOL. XXV.]

MAY, 1892.

[No. 348.

NOTE ON GENERIC CHARACTERS IN THE NOCTUIDÆ.

By JOHN B. SMITH.

It will be admitted, I think, that there are no characters, structural or otherwise, that are of uniform systematic value in all the orders of insects. It will be further admitted, I think, that characters of the very highest value in one order, family, tribe, or genus, may be of scarcely specific importance in another. The question as to what characters are sufficient to authorize a genus will be decided by each student for himself, and much in accordance with habit and with the surroundings in which he is placed. It is not intended, therefore, to suggest anything like an arbitrary value for characters, but simply to discuss certain of them as to their relative importance and usefulness. A character is useful for large divisions in proportion to the amount of variation it undergoes, and in proportion as the changes are sharply defined. A seemingly unimportant character may by its constancy be of the highest systematic value. I instance, in the Coleoptera, the division of the large sub-family *Harpalinæ*, into unisetosæ and bisetosæ, according as there are one or two supra-orbital setigerous punctures.

In the *Noctuidæ* one of the best characters for generic division is in the eyes—whether they are naked or clothed with short hair; a single hair arising at an angle of each facet. The character is absolute; there is never a doubt as to whether an eye is hairy or naked, and I have seen no intermediate forms. No species is known to me in which this character is variable, and no case is known to me where otherwise nearly-allied species are separated by this character. All *Leucania*, all *Tæniocampa*, and all *Mamestra*, for instance, have hairy eyes. Besides, the possession of hairy eyes seems to carry with it an absence of certain other characters. None of the hairy-eyed genera have the tibiæ spinose, and none have a heavy armature to the fore tibia. In some there is a short terminal spine, and there may be

a development of tarsal spines; but I do not know a case where hairy eyes and spinose tibiæ are combined. The character is a strictly structural one.

In some series of species, the eyes, while they are naked, are furnished at the lateral margins with a series of longer, overhanging hair or "lashes." This character is one that is largely associated with xylinoid forms, and has some value, in certain cases, to emphasize other structures. It is, however, subject to variation, and it sometimes becomes matter of opinion as to whether an eye is or is not lashed. The character is, therefore, a subordinate one. The shape of the eye itself is of considerable importance. Usually they are round and convex, hemispherical in appearance; but in many forms they become narrowed, and sometimes reniform. Examples are found in *Anarta* and in certain heliothid genera. The character is usually associated with a comparatively small, often retracted head, and with a coarse, divergent, sometimes hairy vestiture. The change from round to narrow or reniform is sometimes quite gradual; but the character is often useful for distinguishing genera otherwise ill-defined. The structure of the palpi is subject to great variation, and many of these are of generic importance.

In the Deltoid genera, for instance, the difference between forms like *Hypena* and forms like *Zanclognatha* or *Helia* is sufficiently marked to be made use of. The tongue in Noctuids is usually well developed, but occasional forms are found in which it is obsolete, or so small and weak as to be of no functional importance. This character is of generic value always, since it indicates a change in the entire nutritive system. It is usually accompanied by a reduction in size of head, and by feebly developed palpi. Quite frequently, too, the antennæ will be remarkably well developed or strongly pectinated in the male. In other words, the character indicates a bombyciform habitus. The frontal modifications also afford good characters. Mr. Butler refers to a hairy clothing of the front (Entom. 27), as if I had claimed generic value for such a character; but this is an error. The frontal characters referred to are found in the form of roughenings, protuberances of various forms, and plate-like processes. I am well aware that, in coprophagous Coleoptera for instance, such processes are of not even specific importance; but in the Lepidoptera they have a very high value. Frontal modifications are quite usually associated with endophytes like *Nonagria* and some of the Heliothids, and yet more usually with more or less heavily armed fore tibiæ. In fact, in the very great majority of cases where I find a clypeal modification in a species not an endophyte, I expect to find also an armature of the fore tibia.

In the American fauna our Western States furnish a very great number of forms in which clypeal modifications and armature

of the fore tibia are closely associated. The last of the head structures that are of value in generic separation are the antennæ. Of these, excluding the sexual peculiarities developed in the Deltoids, we have simple, serrate, and pectinate types. If I may be permitted an argument which has been urged against my use of characters variable in other orders, I may cite *Prionus* among the Longicorn Coleoptera as an instance where all three of these types occur in the same genus, and where there is even a large variation in the number of joints within the limits of the same species. I use this argument, however, merely to show that antennal modifications stand in no better position than any others that have been spoken of. Antennal structure is, in my opinion, of very subordinate importance, and, while it may have generic importance in some cases, is yet, as a rule, of specific value merely. The use of the character would often separate insects that are habitually and structurally otherwise very closely allied; how closely, indeed, Mr. Butler himself furnished a pretty illustration. Under *Pachnobia carnea* the British Museum collection contained specimens of three distinct yet closely allied species, in one of which the male antennæ are simple, in the other serrate, and in the third obviously pectinated! Yet they looked so much alike that Mr. Butler unhesitatingly placed them together. We have in our fauna three species closely allied to *Cleoceris viminialis*, looking so much alike that I hesitated at first about considering them distinct. Further material, containing both sexes of each, showed that these three species, in the males, had simple, serrated and pectinated antennæ respectively. To have separated them generically would have destroyed the natural association or relationship of the species. In our American species of *Tæniocampa* all forms, from the simple to the pectinated types, are represented, and so gradual is the change from one to the other that it is almost impossible to draw a dividing line. It would be easy to multiply instances, was there anything to be gained by it; but I will add only that my studies have led me to the conclusion that in the Noctuidæ, antennal characters are of very subordinate value, and rarely of more than specific importance.

Passing to the thoracic structures, we find valuable characters in the appendages. The legs, as a whole, are much of one type. There are always two spurs to the middle and four to the hind tibia, while the fore tibia is always furnished with an epiphysis. Excluding the sexual modifications, the legs are frequently clothed in a characteristic manner, the peculiarity running through a series of allied species. This is of generic value. Beside the usual clothing of hair and scales, there may be an armature of chitinous spinules to the tibiæ. These may be on the middle tibia only, on the middle and hind tibiæ, or all may be so armed. This is a constant character, and of generic importance. I would

not associate species with entirely unarmed tibiæ with those that have any of them spinulose. I have yet to find a species in which this feature varies, either as to the absolute presence or absence of spines, or as to the number of pairs of tibiæ furnished with them. The character separates no closely allied species within my knowledge. Besides this armature of spinules, the fore tibia is very frequently furnished with one or a series of stouter, more claw-like processes, and frequently it is abbreviated or chitinized. This armature or its variations can be used in many cases, but is subject to considerable variation, and is of the same relative importance as antennal structure. The wings afford good generic characters by their shape and proportions, and usually groupings made on marked wing forms will be found to afford other distinctive features. Venation is important of course; but this is of use mainly in divisions higher than generic, and is very constant throughout the family. Mr. Butler has recently insisted strongly, and I am inclined to believe justly, upon the division proposed by Guénee into Trifidæ and Quadrifidæ, based on the position of vein 5 of the secondaries.

In some of the Bombyciform Noctuids there is a tendency to lose the accessory cell of primaries, and this is sometimes a good character. It must be carefully used, however; for I have seen a specimen where the cell was normal on one wing and absent on the other; while in other specimens of one species all forms of development, from no cell at all to one that was complete, have been found. In the Deltoids the neuration of the primaries often becomes aberrant, and furnishes good generic characters. Differences of thoracic vestiture, whether composed of hair alone or scales alone, also furnish good bases for generic division in some cases and in some groups. In others the differences are specific merely. The tuftings of the thoracic vestiture are of considerable value, and peculiar developments, as in *Cucullia* for instance, will run constant through a long series of species. Abdominal structures are few, and the tuftings only have been made use of in generic separation. They are unsatisfactory, and of very unequal value.

I have made no reference to the class of modifications that are called secondary sexual. These may occur on almost any part of the body, and are usually given generic value. The legs and antennæ are most usually the bearers of these peculiarities. The primary sexual structures have thus far furnished specific characters only in the Noctuidæ, and I do not care to venture an opinion upon the question of a greater range for them at present.

The characters are not numerous; but they serve for numerous combinations, and they leave room for a great deal of individual opinion. Mr. Butler has, in his arrangement of the Noctuidæ in the British Museum, placed values on

characters quite different from those here indicated, and has, in some cases, associated *Taniocampæ*, *Mamestræ*, *Hadenæ*, and *Agrotids*, as Lederer defines them, under one term. Our American forms are scattered among genera quite different in structure (according to my views), and I failed utterly to get at Mr. Butler's idea of a genus. The above statement of the characters used by American authors generally, and before them by the Germans, is presented in order to draw from Mr. Butler his ideas on the subject.

ON SOME MACRO-LEPIDOPTERA COLLECTED AT RANNOCH IN 1891.

BY ROBERT ADKIN, F.E.S.

ON 24th March of last year Mr. William Salvage left London for Rannoch, his object being the further investigation of the Lepidopterous fauna of that renowned locality. Collecting in Scotland is at all times a precarious occupation, on account of the uncertainty of meteorological conditions, and Rannoch is no exception to the rule. Mr. Carrington, in an article on this district (Entom. xvii. 145), very aptly says, "Given warm sunshine and fair wind, it is not possible to set all the insects that one may take, so prolific is the locality; but on the other hand, if cold and wet, which is more frequently the case, matters are precisely the reverse." Unfortunately, last year matters were "precisely the reverse." On arriving at his destination Mr. Salvage found it snowing hard with a north-east wind and frosty nights and everything very backward. In the early part of May, when the "Sallows" were out, the east wind still continued, and during the month it was at times very stormy, snow still covering the hill-tops and "the waves on the loch breaking like the sea upon the shore." June was warmer, and the outlook for the rest of the season more encouraging; but unfortunately "sugar" proved to be an utter failure, and "flowers" were hardly more attractive; consequently the means by which the majority of the most-sought-for species are usually obtainable were of no avail. August and September, however, proved but little better than the earlier months; at times it was "blowing great guns," and "as dark as November, so that no respectable insect dare move," and a similar state of things continued until the season was brought to a close at the commencement of October. Despite these most unfavourable conditions, a very fair collection was got together,* and although it includes no new species, some of the series taken are of sufficient interest to warrant a few remarks.

* Some few specimens taken at Rannoch by Mr. W. Reid are, for the purpose of this paper, included by me in this collection.—R. A.

The Pieridæ are represented by *Pieris brassicæ*, *P. rapæ*, and *P. napi*, all of the most ordinary form. *Argynnis selene* and *A. euphrosyne*, a long series of the latter, show no material divergence from southern specimens, but have a somewhat brighter general appearance. *Vanessa urticæ* is also similarly affected, the brightening being in this case attributable chiefly to the richer tone of the brownish coloration, and to the intensification of the blue submarginal crescents, and, in this respect, identical with specimens from the Isle of Man.

Erebia epiphron was taken in considerable numbers; the whole of the specimens are large in size as compared with those from the Lake district of England and are referable to the var. *cassiope*, there being no trace of a white centre to the black spots in any of them; but in the number and size of these spots and the intensity of the fulvous patches on which they are placed they show a wide range of variation; in some individuals the patches are but faintly indicated and the spots absent, in others the patches form a broad band intersected by the wing rays, and the spots are strongly produced, while a number of intermediate forms connect these two extremes. *E. æthiops* is also well represented, and varies greatly in the tone of ground colour, some examples being exceedingly rich and velvety in appearance; as well as in the intensity of the reddish patch and the number and size of the ocelli that it contains.

Cænonympha typhon, including both pale and dark examples, with various phases of the apical ocellus, extending from a well-defined pale spot with black centre, to an almost imperceptible pale dot; indeed in one specimen this mark is altogether wanting. *C. pamphilus*, *Thecla rubi*, and *Lycæna icarus*, are each represented, but call for no special remark.

One of the great prizes to be sought for at Rannoch is *Sesia scoliiformis*. The late Nicholas Cook used to take it there, but Mr. Carrington tells us that he never got nearer than an empty pupa case. The larva feeds in the stems of the large birch trees, and is therefore difficult to take, and is, moreover, exceedingly prone to the attacks of parasites. It was thought that by "sleeving" the stem of some of the infested trees the imago might be entrapped on emergence, for it has the reputation of leaving the pupa at sunrise; but this method proved an utter failure, the "sleeves" requiring an immense amount of attention to protect them from the cattle that are wont to wander among the trees, seeking what they may devour, and the few that escaped their attentions produced nothing better than ichneumons. A frequent search of the other infested trees at daybreak was equally unproductive, and the only two imagines secured were bred from larvæ that had been cut out when nearly full fed. These specimens are somewhat smaller than the Welsh examples, a fact that I believe has been previously noted.

Asteroscopus nubeculosa is another "Rannoch" species; it is one of the earliest to appear, and may be found at rest even while the snow is still upon the ground; a long series was taken, including many very fine examples, some of them being considerably lighter in colour than others.

Owing to the failure of "sugar" throughout the season, the nocturnal species are very poorly represented. *Cymatophora* or calls for no special remark, but *C. duplaris* furnished some exceedingly dark examples, while *Asphalia flavicornis* exhibits the forms of variation peculiar to Scotland. *Acronycta myricæ*, *Tapinostola fulva*, and *Agrotis strigula (porphyrea)*, are all represented. *Noctua glareosa* and *N. augur* exhibit both light and dark forms; *N. festiva* is small in size and variable in ornamentation, but shows no very extreme forms; a few specimens each of *N. baia*, *N. sobrina*, *N. castaneæ* and its variety *neglecta*, complete the list of this genus. *Triphæna comes* is disappointing both in number and variety; while *Pachnobia rubricosa*, of which a long series was taken, is distinctly greyer in tone than the more southern specimens. The *Tæniocampæ* include some fine examples of *T. gothica* var. *gothicina*, pale forms of *T. stabilis*, and a variable series of *T. incerta* ranging in colour from a deep reddish brown to pale grey. *Aplecta occulta* are all of the dark form, the larvæ of which are said to feed on *Myrica gale*, while those feeding on birch are said to produce the "silvery" type. *A. tincta*, a long and very uniform series, is, as compared with Sussex specimens, somewhat brighter in appearance. The *Hadenæ* are represented by very ordinary forms of *H. rectilinea*, *H. adusta*, *H. contigua*, and *H. dentina*, while *H. pisi* is prettily mottled. *Anarta cordigera*, of which there is a large number, shows some amount of variation in the comparative depth of the ground colour and that of the dark central band, as well as in the size and form of the white reniform stigma. *A. melanopa*, on the other hand, was exceedingly scarce; and a few specimens of that constant species *Euplexia lucipara*, and *Brephos notha*, bring the Noctuæ to a conclusion.

The Geometræ form a very interesting part of the collection; many of the species taken are represented by long series that exhibit widely divergent forms, but with one exception they cannot be accounted rare. Perhaps the one most closely associated with Rannoch is *Phibalapteryx lapidata*, of which a considerable number were taken; it appears to be a very constant species, showing no real variation, but the tone of colour of the females is lighter than that of the males. *Halìa brunneata (pinetaria)* was met with in some abundance, and a series secured in better condition than is usual with this species. *Psodos coracina (trepidaria)* exhibits some striking modifications of the central band; in some few this is completely severed beyond the middle, in others much attenuated, while in others, again, it is

broad and distinct from the costa to inner margin; the coloration also is subject to much variation, being in some examples almost uniformly blackish and the central band hardly darker, while in others it is silvery grey with the blackish margins of the central band showing in strong contrast. *Larentia cæsiata*, *L. flavicinctata*, and *Lobophora lobulata*, all show a similar phase of variation in regard to the colour of central band and ground of wing. *Larentia salicata* is less striking in this respect, and *Lobophora halterata* (*hexapterata*) is the *zonata* form, in which the median area is pale. *Emmelesia minorata* (*ericetata*) also has the central band severed in some individuals, but more frequently complete, and in other respects is fairly constant. *Eupitheciæ* captured in the imago state are seldom satisfactory, and beyond a few *E. satyrata* var. *callunaria*, *E. nanata*, and *E. indigata*, there is little to be said for representatives of the genus in this collection, nor does *Ematurga atomaria* or *Thera simulata* call for any special mention; on the other hand, *T. juniperata*, of which a long series was bred, varies very considerably. As compared with south English examples these are smaller, and give the general impression of a brighter insect, as is the case with so many of the Scotch species; the brightness in this case is due chiefly to the more pronounced white margins of the central fascia; this marking is also subject to considerable modification, being sometimes represented by a costal patch extending beyond the middle of the wing; in other specimens there is also a well-defined dark spot on the inner margin, indicating the termination of the fascia, while more frequently it forms a complete band; the apical streak is also strongly produced in some individuals, but in others it is hardly discernible.

Melanthia bicolorata (*rubiginata*) furnishes a good example of geographical variation. The form most frequent in the South of England may be roughly described as:—white; basal patch smoky brown; an irregular patch of the same colour on the centre of the costa, enclosing the discoidal spot and extending hardly to the middle of the wing; between it and the inner margin one or more indistinct bluish grey spots; hind margin clouded with brownish grey. In the Rannoch series, and indeed in Scotch specimens generally, the costal patch is continued to the inner margin and forms a broad fascia, frequently divided beyond the middle; the dark clouding of the hind margin, also, in many specimens, extends over the whole of the wing. Curtis (Guide, Gen. 928; Brit. Entom. Lep. II. pl. 643, pub., 1837) described this form under the name of *Zerene plumbata* in the following words:—“White; head and thorax brown and grey; superior wings inclining to cream colour, with a patch at the base, and a fascia across the middle, generally broadest at the costa; brown variegated with grey and darker brown lines; the margins are sinuated, and there is a black dot on the disc; posterior margin lead-

colour, with a pale crenated striga, and a long patch at the tip much darker: inferior wings with a similar fimbria and striga, a curved fuscous line across the middle, with a black dot towards the base; the abdomen is spotted with brown down the sides, sometimes with two or more spots on the back of the apical joints." He further adds:—"The males frequently have the upper wings of a dark lead-colour, with the usual brown markings, the underwings having a broad plain fimbria of the same colour; in the females the fascia is generally broad throughout, but it is sometimes divided towards the inferior margin in the males. Variable as this species is, it may readily be distinguished from the foregoing (*Z. rubiginata*, Hub., Wood 606) by the perfect fascia of the upper wings." The varietal name *plumbata* appears to be generally accepted as applicable to the suffused forms only, but it will be seen from the foregoing that it applies equally to all the forms having a central fascia, even though the fascia be divided, whether suffused or not.

The *Cidarias* form a particularly interesting group; *C. siderata* and *C. miata* have an unusually mottled appearance, while *C. testata* is smaller and of a somewhat yellower tone of coloration than south English examples. *C. populata* is represented by a long series of extreme forms, which may be divided into two well-defined sets; the one has for its base the more typical examples, in which the usual markings are clearly defined, but varying greatly in intensity of coloration in individuals, some in which they are dark, and consequently in strong contrast with the pale ground colour, being particularly handsome in appearance. The other includes the more obscure forms. Commencing with a unicolorous smoky-brown or sometimes fuscous insect (= var. *musauaria*, Fr.), they extend through various gradations in which the markings become discernible, although but little darker than the ground colour, thus forming a connecting link with the least strongly marked examples of the other set. *C. immanata*, as might be expected, is a remarkably varied series, but the variation appears to be due to a greater or lesser amount of colour, rather than to any obliteration of the normal markings. Thus, taking as the type an insect having its anterior wings ornamented by a dark basal patch, followed by a tawny band edged with white, a broad irregular dark central fascia, also followed by a tawny white-edged band, and the outer margin mottled, we find in one case the dark colour disappearing from the basal patch, and the central fascia becoming filled up with whitish (= var. *marmorata*, Haw.), and the extreme is reached in this direction by the tawny bands also becoming pale, little but the dark outlines of the various markings remaining; in the other case the lighter shades give way to the darker tints, the various modifications providing an unlimited number of intermediate forms. *C. corylata* is generally less prone to variation than the

foregoing, but the long series in this collection is quite exceptional in this respect. The tone of colour varies considerably in different individuals, the usual dark markings being so intensified in some as to give the appearance of an almost black and white insect, while in others the greenish-brown clouding pervades the area of the wing to a considerable extent; but perhaps the most important forms of variation are due to modifications of the central band; this in some specimens is broad and complete, in others but little more than half the proportionate width; it is also sometimes widely divided below the middle; and lastly, it disappears, and is replaced by some more or less distinct grey clouding, this last form being known as var. *albocrenata*, Curtis. It is unnecessary that I should repeat his description here, but his remark with regard to *ruptata*, Hub. (= *corylata*, Thnb.),—"I have a remarkable variety that I took in Scotland, making an approach to the following," *i. e.* *albocrenata*,—applies well to some of the intermediate forms in this series.

The remainder of the collection consists of the following, chiefly odd specimens, that call for little comment: *Selenia bilunaria* (the largest male I ever saw), *Boarmia repandata*, *Dasydia obfuscata*, *Zonosoma pendularia*, *Acidalia aversata* (and the commoner form without band, *spoliata*, Staud.), *A. fumata*, *Fidonia carbonaria*, and *Coremia munitata* (somewhat more silvery in tone than the usual Scotch form).

Among the autumnal larvæ that were obtained are some of an *Eupithecia* that were beaten from juniper, which it is hoped will produce *helveticaria* or its variety *arceuthata*.

Lewisham, April, 1892.

NOTES ON BRITISH LEPIDOPTERA.

BY RICHARD SOUTH.

THE GENUS MELANIPPE.

(Continued from p. 90.)

MELANIPPE SOCIATA.

Subtristata, Haworth, Doubleday, and Newman; *substriata*, Wood; *birivata*, Stainton.

Borkhausen named and described this species as *sociata* in 1794, at least ten years before Haworth gave it the name of *subtristata*. The older name must therefore be adopted for this insect.

Basal third of fore wing grey, frequently tinged with brown, intersected by a slender whitish line, and limited by a white band, which is traversed by a more or less distinct greyish line; the

central fascia is darker grey (sometimes brownish), enclosing a black discoidal spot, the external half intersected by a pale wavy line edged internally with blackish; beyond is a white band traversed by a grey line, which is often interrupted; outer marginal area grey, frequently tinged with brown, intersected by a white sinuous line. Hind wing grey; the basal third contains a black discoidal spot, is traversed by some whitish lines, and limited by a white band, which is intersected by a grey line agreeing with that on the fore wing; white submarginal line wavy. Fringes pale grey, and whitish chequered with darker at ends of nervules, and preceded by an indistinct black line. Thorax dark grey, with inconspicuous black dots.

The white band and line on the basal area of the fore wing vary in width, and consequently this portion of the wing is darker or lighter, according to the width of these markings. The central fascia also varies in breadth, and this to a large extent controls the width of the white band which follows it. In some specimens the central fascia is much contracted below the middle, and in the form known as var. *degenerata*, Haworth, the fascia is separated into two portions, the larger being the costal one.

On the hind wings there is rather more variation, but the outer marginal area always corresponds with that of the fore wings. In some specimens the hind wings are white, with the basal two-thirds sparingly sprinkled with greyish, and limited by a transverse line of blackish dots. In others they are white, faintly dusted with grey, and traversed by four equidistant grey lines, the third dotted with black throughout its course. One specimen, captured by myself in Hertfordshire, has the basal two-thirds paler than usual, and the median nervules are marked with blackish as far as the limiting line, which in this specimen is very indistinct.

Two characters almost invariably present in the next species (*M. rivata*) are sometimes exhibited, in a modified form, in some examples of *M. sociata*. These are the pale oblique dash from apex to submarginal line and the blackish longitudinal bars below. The latter are, however, generally represented in *sociata* by two blackish spots within the submarginal line, and sometimes obscuring it at this point.

Var. *obscurata*, South, Entom. xxi. p. 27, fig. (1888).

Fore wings deep brownish grey, the basal area limited by a fine whitish transverse line, not always clearly defined; the central band, containing a black discoidal spot, is hardly darker than the rest of the wing, edged inwardly by a thin whitish line, and outwardly by a double whitish line, which is acutely angulated about the middle; submarginal line whitish. Hind wings pale brownish grey, outer third much darker, limited inwardly by a double whitish line, and traversed by a submarginal interrupted whitish line.

This interesting form is the only representative of *M. sociata* in the Isle of Lewis, and occurs there in June and August.

MELANIPPE RIVATA.

Sylvaticata, Haworth, Wood.

Generally larger than *M. sociata*, but similar in colour and pattern. On the fore wing the central fascia is usually broader, deeper in colour, and the intersecting black-bordered pale line is nearer the outer edge; the white bands are, as a rule, broader, and the intersecting grey line of the outermost is only distinct towards costa; the outer marginal area of the wing is paler grey, and is sometimes tinged with bluish, in the upper portion there is an oblique pale irregular dash from the apex to submarginal line, and below this there are two blackish longitudinal bars intersected by the white submarginal line, and edged with rusty brown on the outer margin. Hind wing white, with a large black discoidal spot; the base is greyish up to the first of three narrow transverse central grey bands, which do not always reach the costa; the outer marginal area is of the same colour as that of fore wing, but the intersecting line is rather broader; there is sometimes an indistinct greyish line between this area and the third transverse grey band. Fringes as in *M. sociata*, but the black line is more distinctly evident. Thorax pale grey, with several black dots.

Entomologists do not appear to be agreed as to the distinctness of this species from *M. sociata*. Forms of the latter certainly come very close to *rivata*, but they always lack one or more of the characters of that insect.

I can hardly point out any particular feature that will serve to distinguish the one species from the other. Absence of brownish tinge on the outer marginal area will not alone suffice, as some undoubted specimens of *sociata* have this portion of the wings coloured exactly as in *rivata*. The width of the central grey fascia is not worth much by itself, as some examples of *sociata* have a broader fascia than some specimens of *rivata*. The white bands, too, are often as broad in certain examples of *sociata* as in any specimen of *rivata*. On the under surface of the fore wings of *rivata* the submarginal white line is broken up into dots towards the costa, but we shall find that this is also the case in some examples of *sociata*.

The paler thorax, with distinct black dots in conjunction with broad white bands on all the wings, and the abbreviated character of the central lines on hind wings, are of service in the identification of *rivata*.

I have taken *sociata* at various times and places from May to August, but I have only met with *rivata* on the wing in June. Second broods of the last-named have been bred in confinement,

but I am not aware of specimens of a second brood having been captured.

The respective larvæ of these two insects are very similar, and feed on *Galium mollugo*. A comparative description by the late Mr. Hellins will be found in Newman's 'British Moths,' p. 161.

MELANIPPE MONTANATA.

In colour this species varies from chalk-white to creamy white. The markings of fore wings consist of a grey or ochreous grey basal patch (sometimes absent); beyond is a curved line, indicated by a brownish grey spot on the costa, one on the median nervure, and a short upright streak on the inner margin; the central band, which varies in width, is generally continuous from costa to inner margin, and ranges in colour from very pale rusty brown, through grey-brown to dark grey, or almost black; the upper portion of this band usually contains a patch, varying in size, of the ground colour, and in this is placed the black discoidal spot. This central band is almost invariably contracted below the middle, and not infrequently it is completely severed at this point, or sometimes nearer the inner margin.* The outer marginal area is suffused with pale fuliginous grey or pale smoky brown; this area is sometimes limited inwardly by a brown line, bordered by a line of the ground colour, and intersected by a wavy whitish line; all these characters of the outer margin are, however, subject to modification in the direction of complete effacement. The hind wings have the outer marginal border, submarginal and three central lines, greyish and more distinct in the female; but the lines especially are often indistinct towards costa, or altogether absent in both sexes.

Var. *shetlandica*, Weir, Entom. xiii. p. 291, pl. 4, figs. 10, ♂, 11, ♀; xiv. p. 280.

This is the Shetland mainland form of the species. The fore wings are more or less suffused with pale ochreous brown; in the specimens figured only the margins of the central band are clearly defined, the median portions being nearly filled up with the ground colour; the outer marginal area is brownish, and the submarginal line is very conspicuous. Hind wings are paler, but suffused; the outer margin is bordered with greyish, preceded by some greyish lines, which, in the male, do not reach the costa.

Referring to the specimens from Unst, the most northern isle of the Shetland group, Mr. Weir (Entom. xvii. p. 3) says:—"It is singular to find that the specimens of this insect from Unst are finer than those from mainland. They vary considerably in the intensity of the ground colour of the wings, from light to

* A specimen with the band separated into three portions is recorded (Entom. xix. p. 283).

dark grey, but none are white in this respect." I have only three specimens from Unst, and four from the mainland; the former are suffused with brownish grey, and the markings, especially the central band, are clearer and brighter than in the mainland specimens.

M. montanata from the Orkney Islands "are of the normal colour, except one very light variety, but none approach the variety *shetlandica*" (Weir, Entom. xv. p. 4).

Specimens from Arran have a very pale brownish central fascia and basal patch; the space between them, and also the outer marginal area, is suffused with pale greyish brown. Altogether, these examples have a very washed-out appearance, and agree in this respect with some specimens from N. Devonshire.

Of specimens from the Outer Hebrides, Mr. Weir wrote, in 1881 (Entom. xiv. p. 221):—"The whole of the ground colour of those captured is suffused with grey, and the specimens are far below the usual size; but they do not resemble those from the Shetlands in the breaking up of the central band into bandlets." I have a short series from Lewis, taken by Mr. McArthur in 1887. In one of these the central band is as dark and broader than in any specimen of *montanata* in my collection, whilst in another example in the series the band is slender, its upper portion intersected transversely almost to the middle by the ground. In a third specimen the band is represented by an oblong blotch from the costa to median nervure, and a thin upright streak on inner margin. The hind wings seem to be rather more distinctly marked than usual in some of the specimens. A few of the specimens obtained by Mr. McArthur in the year adverted to were silvery white in colour, and there was much aberration in the central band, culminating in the almost total absence of this marking (see Entom. xxi. p. 27).

Mr. McArthur tells me that in the Shetlands *montanata* occurs only on the moorlands. He supposes that the larva must feed on the heather or grass; probably the latter, as that is a known food-plant. In the Isle of Lewis, Outer Hebrides, *montanata* is found commonly in the woods about Stornaway Castle, and has not been met with often, if at all, in any other part of that island.

Var. *fuscomarginata*, Staud., var. A, Guen., is the form in which the outer marginal area is broadly suffused with fuscous.

Var. *lapponica*, Staud., is smaller and paler than the type; the central band nearly obsolete.

A curious aberration is figured, Entom. xiv. pl. 1, fig. 20. All the wings are smoky leaden grey; the central band is pale obscure grey-brown; the black discoidal spot is very distinct on all the wings, and there is a black mark at the angle of the band on fore wings. It was taken by the Rev. H. T. Hutchinson near Longfleet, Wilts, in the summer of 1881.

(To be continued.)

A PRELIMINARY LIST OF THE INSECT-FAUNA OF MIDDLESEX.

COMPILED BY T. D. A. COCKERELL, F.Z.S., F.E.S.

(Continued from vol. xxiv., p. 283.)

THE following fresh lists have been received :—

(29.) Alfred Sich. A MS. list of the Geometræ of Chiswick, Middlesex, numbering 54 species.

(30.) H. Rowland-Brown. A MS. list of 51 species of Geometræ taken in Middlesex.

(31.) Dr. Percy Rendall. A MS. list of Lepidoptera taken within two miles of the small village of Whitton, close to Hounslow. The following are new to the Middlesex list :—

Lithosia sororcula, Hufn. (as *aureola*).

Notodonta trilophus, Fb.

Acronycta alni, L. This was recorded doubtfully on p. 120, vol. xxiv.

Mamestra furva, Hb.

Apamea gemina, Hb. Previously omitted by accident, as it has also been taken at South Hampstead (*Watts*) and Bishop's Wood (*Vaughan*).

Miana literosa, Haw. Already recorded, but only doubtfully (Entom. xxiv. 280).

Mr. A. Bacot writes that the supposed *Plusia festucae* recorded from Clapton was only *P. chrysitis*.

LEPIDOPTERA.

*Geometridæ** subf. *Uropteryginæ*.

Uropteryx sambucaria, L., generally distributed (*Godwin*); Mill Hill (*South*); Isleworth (*Fenn*); Bedford Park (*Fenn*); [St. John's Wood, some years common (*South*)]; Maldon Crescent (*Knaggs*); Kentish Town (*Vaughan*); Harefield, fairly common (*Wall*); Chiswick, common, larva on ivy and white jasmine (*Sich*); South Hampstead, abundant (*Watts*); Tufnell Park, Highgate (*Shepherd*); Ealing (*Adye*); Clapton (*Bacot*); Oxhey Lane, very common (*Rowland-Brown*); Dalston (*Prout*).

Subf. *Ennominae*.

Epione apiciaria, Schiff., Bishop's Wood, Hampstead, Clutterhouse Lane (bred from sawfly), Kingsbury, Old Oak Common (*Godwin*); Mill Hill, local, found only in a hedgerow near Goldbeaters (*South*); Whitton (*Rendall*); Harefield, fairly common (*Wall*); Hammersmith (*Mera*).

Rumia luteolata, L., generally distributed (*Godwin*); Mill

* Geometræ of our lists; but here regarded as a single family, with several subfamilies.

Hill (South); Isleworth (Fenn); Bedford Park (Miss E. Sharpe); Whitton (Rendall); Harefield, abundant (Wall); Chiswick, common, larva on hawthorn, &c. (Sich); South Hampstead, abundant (Watts); Tufnell Park, Highgate (Shepherd); Clapton (Bacot); Oxhey Lane (Rowland-Brown); Dalston (Prout); [St. John's Wood, often common (South)].

Venilia macularia, L., Bishop's Wood (Knaggs fide Vaughan); Pinner Woods, common (Watts); Harrow-Weald (Rowland-Brown).

Angerona prunaria, L., one specimen, Bishop's Wood, Hampstead (Godwin).

Metrocampa margaritaria, L., Bishop's Wood, common, Kingsbury, Old Oak Common, rare (Godwin); Mill Hill, rather common (South); Bedford Park (Rev. J. W. Horsley); Chiswick (Ckll.); Whitton (Rendall); Harefield, one taken (Wall); Highgate (Shepherd); Ealing (Adye); Pinner Woods, Harrow-Weald, common (Rowland-Brown).

Ellopia prosapiaria, L., Whitton (Rendall); Harefield, one in 1886 (Wall).

Eurymene dolobraria, L., Bishop's Wood (Vaughan).

Pericallia syringaria, L., Bishop's Wood, fairly common, Old Oak Common, privet used to grow here (Godwin); Mill Hill, the larvæ not scarce on privet (South); Whitton (Rendall); Harefield, sparingly in gardens (Wall).

*Selenia** *bilunaria*, Esp., generally common (Godwin); Mill Hill (South); Bishop's Wood (Vaughan); Whitton (Rendall); Harefield, fairly common, summer var. also (Wall); Chiswick, once in July (Sich); Highgate (Shepherd); Ealing (Adye); Harrow-Weald (Rowland-Brown). *S. tetralunaria*, Hufn., Bishop's Wood (Bartlett fide Vaughan, as *illustraria*); Whitton (Rendall).

Odontoptera bidentata, Clerck, Bishop's Wood, common (Godwin); palings, Milfield Lane (Vaughan); Whitton (Rendall); Highgate (Shepherd); Harrow-Weald, common at light (Rowland-Brown).

Crocallis elingvaria, L., generally common (Godwin); Mill Hill, larvæ very common on hawthorn, sloe, &c. (South); Bedford Park (Rowland); Hampstead (Vaughan); Whitton (Rendall); Harefield, not common (Wall); Chiswick, larva common, the dark-coloured ones on pear trees and the light-coloured specimens on currant and honeysuckle (Sich); South Hampstead, common (Watts); Tufnell Park (Shepherd); Harrow-Weald (Rowland-Brown).

Eugonia alniaria, L., Hampstead Heath, Old Oak Common, Hammersmith, larva on sallow and willow (Godwin); West Hill, Highgate (Vaughan); Whitton (Rendall); Chiswick, larva

* *Selenia* has also been used by Nuttall for a genus of North American Cruciferae.

once on trunk of Lombardy poplar, near ivy (*Sich*); Ealing (*Adye*). *E. erosaria*, Bork., Pinner, 1882 (*Watts*); Highgate (*Shepherd*). *E. quercinaria*, Hufn., generally distributed (*Godwin*); Mill Hill (*South*); Regent's Park, Haverstock Hill (*Vaughan*); Whitton (*Rendall*); Harefield, two in 1886 (*Wall*); Regent's Park, abundant (*Watts*); Highgate (*Shepherd*); Kensington Gardens (*Mera*); Clapton (*Bacot*). *E. fuscantaria*, Haw., Whitton (*Rendall*); one on a lamp near Acton (*Mera*).

Himera pennaria, L., Bishop's Wood, Hampstead, Hampstead Heath, generally distributed (*Godwin*); Mill Hill, larvæ on hawthorn, sloe, &c., found at night (*South*); Whitton (*Rendall*); Harefield, rather common (*Wall*); Chiswick, once (*Sich*); Highgate (*Shepherd*); Ealing (*Adye*).

Subf. *Amphidasynæ*.

Phigalia pedaria, Fb. (= *pilosaria*), generally distributed, on lamps (*Godwin*); Mill Hill, at rest on palings, trees, &c. (*South*); Bishop's Wood (*Vaughan*); Whitton (*Rendall*); Chiswick, larva on plum, sallow, &c. (*Sich*); Hyde Park and Hampstead, common (*Watts*); Highgate (*Shepherd*); Shepherd's Bush (*Mera*); Harrow-Weald (*Roland-Brown*).

Nyssia hispidaria, Fb., said to have been taken in Bishop's Wood, Hampstead (*Godwin*); Kew Wood fence (*Vaughan*).

Biston hirtaria, Clerck., generally distributed (*Godwin*); Bedford Park (*J. Gray*); various squares and gardens (*Vaughan*); Whitton (*Rendall*); Chiswick, larva on lime (*Sich*); common (*Watts*); common (*Shepherd*); Hammersmith (*Mera*); Clapton (*Bacot*); Harrow-Weald (*Rowland-Brown*); Dalston (*Prout*).

Amphidasys strataria, Hufn., Finchley Road (*Godwin*); Whitton (*Rendall*). *A. betularia*, L., generally common (*Godwin*); Mill Hill, larvæ very common on various trees (*South*); Bedford Park (*Fenn*); near site of Burleigh Road, about 1865 (*Vaughan*); Whitton (*Rendall*); Chiswick, larva, green specimens on willow and young shoots of apple trees, brown ones on elm and birch (*Sich*); South Hampstead, common (*Watts*); Bishop's Wood (*Shepherd*); Hammersmith (*Mera*); Clapton (*Bacot*); Harrow-Weald (*Rowland-Brown*); Dalston (*Prout*).

Subf. *Boarmiinæ*.

Hemerophila abruptaria, Thnb., generally common (*Godwin*); Mill Hill (*South*); Bedford Park (*Miss E. Sharpe*); Camden Town, Kentish Town, City Road, many specimens of the dark var.* have been taken in these localities (*Vaughan*); Whitton (*Rendall*); Chiswick, common at rest, larva once near privet hedge (*Sich*); South Hampstead, common (*Watts*), Tufnell Park (*Shepherd*); Ealing (*Adye*); Hammersmith (*Mera*); Clapton

* See also D. A. Onslow, Entom. 1890, p. 136.

(*Bacot*); Dalston (*Prout*); [St. John's Wood, common, the dark form occasionally (*South*)].

Cleora lichenaria, Hufn., Pinner Woods, larvæ very plentiful (*Rowland-Brown*).

Boarmia repandata, L., generally distributed (*Godwin*); larvæ common on hedges at night at Mill Hill (*South*); Bishop's Wood (*H. Bartlett*); common at Hampstead (*Watts*); Tufnell Park (*Shepherd*). *B. gemmaria*, Brahm. (= *rhomboidaria*), generally distributed (*Godwin*); Mill Hill, larvæ common (*South*); Bedford Park (*Miss E. Sharpe*); Whitton (*Rendall*); Chiswick, larva on plum and white jasmine (*Sich*); common at Hampstead (*Watts*); Highgate (*Shepherd*); Ealing (*Adye*); Hammersmith (*Mera*); Clapton (*Bacot*); Harrow-Weald (*Rowland-Brown*); Dalston (*Prout*). *B. gemmaria* var. *perfumaria*, Newm., Kentish Town, Highgate (*Vaughan*); Tufnell Park (*Shepherd*); [St. John's Wood, not uncommon (*South*)]. *B. roboraria*, Schiff., one specimen, Pinner Woods, July 7th, 1882 (*Watts*). *B. consortaria*, Fb., near Uxbridge (*Bembow*, Entom., 1878, p. 21).

*Tephrosia** *crepuscularia*, Hb., Pinner Woods, April 27th, 1881, &c. (*Watts*).

Subf. *Geometrinæ*.

Pseudoterpna pruinata, Hufn., Whitton (*Rendall*); Harefield, moderately common (*Wall*); Hampstead Heath, 1879 (*Watts*); Old Oak Common (*Mera*).

Geometra papilionaria, L., Bishop's Wood, bred (*Godwin*); Haverstock Hill, about 1848 (*Knaggs*); Bishop's Wood (*Bartlett*); Whitton (*Rendall*); Harefield, one in 1889 (*Wall*). *G. vernaria*, Hb., Whitton (*Rendall*).

(To be continued.)

ENTOMOLOGICAL NOTES, CAPTURES, &c.

A HINT TO BREEDERS OF SPHINGIDÆ.—As the time will soon be here when we may expect to see the hawk-moths emerging in our breeding-cages, a hint that I have found very successful (with *S. ocellatus*) may be of use to some of your readers, and what at first looks like a disappointment may turn out to be an advantage; and that is, when you have a female with crippled wings emerge, place her out in your garden, on the proper food-plant, if possible, and she may possibly attract a male (I have tried it several years, and each time it has been a success). Last year I placed a female on a small willow tree, and the next morning there was a very fine male paired with her, (the eye-spots are quite a Cambridge-blue, very different from any I have ever seen). I obtained about twelve dozen fertile ova from the female. When the larvæ hatched I sleeved about half

* *Tephrosia* was early used for a well-known genus of Leguminosæ, but preoccupation in botany is not usually allowed to interfere with a zoological genus.

on poplar and the rest on willow, but the poplar-fed ones got on very much the best, and the pupæ are much larger.—W. E. BUTLER; Hayling House, Oxford Road, Reading, March 18, 1892.

NOTES ON LEPIDOPTERA TAKEN IN 1891.—Please allow me to correct a slight mistake in the above (Entom. 82). The *Eupæcilia geyeriana* bred by Mr. N. M. Richardson was from *Pedicularia palustris* gathered by himself on the same spot where, a few days after, I gathered that from which it was bred by Mr. Eustace Bankes.—O. P. CAMBRIDGE; April 12, 1892.

COCCIDÆ FROM JAMAICA.—The Institute of Jamaica are issuing sets of Coccidæ prepared by Mr. T. D. A. Cockerell, Curator of the Museum. The following ten species are comprised in Set 1:—The Rufous Scale (*Aspidiotus articulatus*); the Masked Scale (*A. personatus*); the Coconut Scale (*Chionaspis vandalicus*); the Pepper Scale (*Diaspis* n. sp., Kll.); the Croton Chaff-Scale (*Parlatoria pergandii*); the Filiform Palm-Scale (*Ischnaspis filiformis*); the Light-spotted Scale (*Aspidiotus ficus*); the Purple Scale (*Mytilaspis citricola*); the Brown Scale (*Leucanium hemisphæricum*); the Black Scale (*Bernardia oleæ*).

ENTOMOLOGICAL PINS.—In my article on pins, in the March number of the 'Entomologist,' I mentioned, when recommending the use of silver pins, that it would be necessary to have a guarantee that the wire is of pure silver. As regards this point, I have received a further communication from Messrs. Watkins and Doncaster, to the effect that the wire used is not pure silver, but consists of 92 per cent. of pure silver and 8 per cent. of copper and alloy. Messrs. Watkins and Doncaster obtained their wire from the successors to the makers that supplied me with the material for fifteen years or more (they were originally recommended to me by Prof. Flower of the British Museum), and it is, I believe, the same quality as I have been accustomed to use. As I know that this wire is perfectly free from the attacks of verdigris in Coleoptera, I have little doubt that it will prove also satisfactory for Lepidoptera and insects of other orders in which I have tested it but little. I think, therefore, that instead of insisting on the wire being of "pure silver," it be merely required to be up to the standard of 92 per cent. of pure silver, the purposes entomologists have in view will be secured. As regards the price of the pins made from this silver-wire, I see that Messrs. Watkins and Doncaster quote them in their new price-list at from 7s. 6d. to 8s. 6d. per 1000. I believe, from my own experience, that this is a very reasonable price; and I am glad to mention this as Messrs. Watkins and Doncaster have been put to a good deal of trouble in the matter, and I feel that the thanks of entomologists are due to them for introducing into commerce an article that will be of considerable value to working entomologists, but for which the sale can never be very extensive.—D. SHARP; Cambridge, April 5, 1892.

RELAXING LEPIDOPTERA.—Mr. Anderson (Entom. 95) asks for information as to the best means of relaxing foreign Lepidoptera. The method I have employed for a number of years has always afforded me most satisfactory results, and I have, therefore, great pleasure in giving a few particulars concerning it. First, a zinc-box is obtained. A very convenient size is one measuring 12 in. by 10½ in., by 9½ in. deep; three trays, of equal depths, made to lift out easily, with perforated bottoms, and a block in each corner to prevent the upper falling into the lower ones; the lid should be on hinges. Into the trays are placed pieces of ordinary house-flannel,

folded double, which should have previously been soaked in warm water containing a little carbolic acid (about one teaspoonful to a quart of water), and well wrung out, so that no water will afterwards drip from them. The insects may then be placed on the flannel. Carbolic is an important item, as it not only prevents mould, but kills germs which may be in the specimens. It is rather difficult to set down an average time for relaxing, as there are so many things which tend to retard the softening process. A great deal depends on how the insects have been killed, and what treatment they may have been subject to afterwards. A few days ago I had a collection in papers, which appeared to have been subjected to the influence of some essential oil, causing the specimens to be almost proof against vapour, some of them taking as long as a fortnight to relax. Under favourable conditions, and in a warm temperature, Lycænidae and small moths will take about twenty-four hours; the smaller Nymphalidae, two days. The most difficult of all are *Prepona*, *Charaxes*, &c, which should always be thoroughly relaxed before attempting to set them. Delicate green moths require a little different treatment: carbolic acid should not be used for these, as it takes away the colour, neither must the specimens touch the flannel; they should be pinned or placed on a sheet of paper over the flannel. Relaxation may be hastened by placing the box near a fire, but a medium temperature is always preferable.—A. CANT; 54, Weymouth Street, Portland Place, W.

GREEN AND BROWN PUPÆ OF PAPILIO.—Theoretically, Mr. Cockerell's views respecting the time of emergence of the Papilionidae are interesting (Entom. 93), but it certainly does not hold good with *P. machaon*, as both forms of pupæ pass through the winter; and as the green form is more abundant than the brown, the coloration in this species is not apparently produced for protective resemblance. Last spring I obtained many pupæ of *machaon* from Cambridgeshire, from which imagines commenced to emerge in May, and continued to do so until the middle of August, with the exception of four, three being of the green form and one of the brown; all four are still alive, having passed two winters at least. The coloration in the pupæ of different genera is undoubtedly caused principally by the colouring of the immediate surroundings during the process of pupation, but is not constant. I have obtained differently coloured pupæ of the same species of *Pieris*, which had all pupated under precisely similar conditions, and at the same time. But yet I know they do very frequently partake of the surrounding colour, and agree very closely therewith in both tone and hue; for instance, *P. brassicae*, when attached to a cabbage-leaf, will not only exactly assume the colour, but will also lose the usual black markings.—F. W. FROHAWK; Balham, S.W., April, 1892.

GREEN AND BROWN PUPÆ OF PAPILIO.—Last August, while in Norfolk, I obtained about two dozen larvæ of *P. machaon*, which all pupated at the beginning of September, and have remained in that stage till now. In these there are three distinct shades of colour to be noticed, viz., a very dark brown (almost black), a lighter flesh-coloured, and a bright green; all these were reared under as nearly as possible the same conditions with regard to food, light, &c., and the green ones do not seem to have chosen a more illuminated position for their metamorphosis than the darker ones (in fact, in some cases, the reverse); and I should like to know if this difference in colour can be accounted for by the fact that the green pupæ pupate on the food of the larvæ, whereas the darker pupæ are placed away

from the food, *i. e.*, on adjacent reeds, which would afford *them* much better protection. In my limited experience I have certainly found that the darker pupæ changed *almost* invariably on the sides and roof of the breeding-cage in which the larvæ were kept; and I should be glad to hear if the experience of any of your correspondents agrees with my own.—F. P. BEDFORD; London, N., April 13, 1892.

“ASSEMBLING” IN LEPIDOPTERA.—I see that in his paper on this subject (Entom. 84), Mr. Sykes, quoting the instance of *Brephos parthenias*, which came under my notice last year, thinks it probable that the next species, *notha*, would be affected in the same way. On this point I can give him no information; but his theory is supported to some extent by the fact that *Orgyia gonostigma*, a congener of *antiqua*, quoted by him as an instance, assembles freely. The males fly only during the hottest sunshine. The female of this species seems to be so attractive, when freshly developed, that even during a stiff breeze I have seen males come up from all quarters of the compass. Another point worthy of remark is that nearly all the males seem freshly emerged; indeed, a series of male *gonostigma* taken in this way is nearly equal to bred. Other species in which I have noticed “assembling,” are *Hepialus lupulinus* and *hectus*; and among the Geometers, *Larentia didymata* and *Cidaria suffumata*.—(Rev.) G. H. RAYNOR; Panton Rectory, Wragby, April 4, 1892.

BOMBYX QUERCUS PUPATING IN SEPTEMBER.—In August, 1890, I found near Christchurch, Hants, a larva of the above insect; and my brother found one about the same time at Yarmouth, Isle of Wight. Both these caterpillars pupated early in September; one (a female) emerged July 14th, 1891, and the other (a male) two or three days after. They were both the typical form.—B. A. BRISTOWE; Durlstone, Champion Hill, S.E., March 20, 1892.

MACROGLOSSA FUCIFORMIS FEEDING ON SNOWBERRY.—During the last five seasons I have found larvæ of the above insect, and also those of *Sphinx ligustri*, feeding on the snowberry (*Symphoricarpos racemosus*) at Bourne-mouth.—B. A. BRISTOWE; Durlstone, Champion Hill, S.E.

SATURNIA CARPINI TWO YEARS IN PUPA.—I had a number of pupæ of *S. carpini* lying over for two years. On the 22nd January I was much surprised to find that a beautifully-developed male had emerged; and since that date other emergences have taken place, as follows:—February 2nd, a female; 7th, two males; 9th, a crippled female. The box in which the pupæ were had been kept all last summer and this winter in an outhouse, consequently the imagines were certainly not forced. Is not this an unusual occurrence?—W. J. MEAD; 29, Brooksby's Walk, Homerton, March 18, 1892. [This species often remains in pupa for two years, and sometimes even longer. Autumnal emergence of the imago has been recorded by Mr. Blaber, Entom. xix. 251.—ED.]

RETARDED EMERGENCE OF *E. VERSICOLOR*.—In March, 1891, some pupæ of *E. versicolor* were given to me. Several of these did not hatch that spring, and I continued to keep the pupæ in my breeding-cage. On February 20th, 1892, I was surprised to find a fine female specimen just emerged. I am sorry to say that no more have emerged up to the present time.—E. W. H. BLAGG; Cheadle, Staffordshire, April 7, 1892.

[It would probably be exceptional for all the imagines of this species to emerge the first spring after pupation.—ED.]

NOTES ON THE EARLY MOTHS.—January 2nd. On reading the news papers I find a very severe winter predicted by Professor Walter H. Smith, “the best-known meteorologist in Canada.” I am sceptical, as the winter ought to be nearly over, and we have fine weather. (The forecast turned out to be too correct.) 4th. Hard frost. 5th. Thaw. 7th. Heavy fall of snow; general; about three inches in the streets, which is unusual for Chester. 8th. Continued heavy snow showers; seen nothing like it here in the last fourteen years. 9th. Intense frost. 12th. Thaw, with rain. 22nd. Up to this date we have had intense frosts, snowstorms, and partial thaws; snow still lying outside the city. 23rd. Snow all gone; N.W.; spring-like. February 3rd. Still open weather; young nettles and docks strong and abundant; these come in useful for many of my hibernating larvæ. 5th. Eaton Park; fine; N.W.; picked two male *Phigalia pedaria* (*pilosaria*) off oaks growing by the sides of the drive; a woodman told me there were lots of them in the woods, and had been during the last week; snowdrops in bloom. 6th. Saw *Hybernia rupicaprararia* near Chester. 13th. Went for the day to Delamere Forest; so far we have had a fine, mild February; a lovely morning. Left the train at Delamere station, and for the rest of the day had the exclusive society of moths, magpies, jays, and long-tailed tits. Took only one *P. pedaria*, a male, very pale, light grey, with the “four waved transverse bars” on the upper wing, and two on the lower wing, clearly marked out in dark brown,—one of the finest forms of the insect I possess. No *Nyssia hispidaria*; they are evidently not out. Found eggs of *Orgyia antiqua* on an oak trunk. Came across a very small *Noctua* caterpillar hibernating in a doubled up bilberry leaf: head, body, and under side, dirty grey, liberally blotched with brick-red, which gives the caterpillar a brick-red appearance. The leaf had been netted in eating, the delicate veins being left like a skeleton leaf. I should say the egg had been deposited on the leaf by the parent moth, which was, probably, *Calocampa solidaginis* (see notes by Mr. Day, Entom. xxiv. 301). I tried digging for pupæ at the roots of trees, but it was a complete failure. From oak trunks (I took all my moths from the trunks of trees or palings) I secured quite a study of *Hybernia leucopheararia*. Where it occurs, this moth is, I believe, usually abundant; but it appears to be more local than the other *Hyberniidæ*. From the ‘District Entomological List,’ by Mr. A. O. Walker, I find it marked for “Prenton, Eastham, and Patrick (near Bromborough Mills) Woods; scarce at Ness and Puddington; Delamere, common.” Personally, I have only found it, in this district, in Delamere Forest. There are three forms, of which the following is a description:—*First, or type form.*—Fore wing brown; a clearly defined central grey bar, widest on the costal margin, on which, within the bar, is seated a constant median dark brown spot; the bar narrows to the inner margin, on which is sometimes seated, within the bar, another median dark brown spot. This bar is bounded by two dark brown lines: the first is near the base of the wing, and bent towards the hind margin; the second is beyond the centre of the wing, waved, and forms two lobes pointing towards the hind margin. Beyond this central grey bar there is a narrow, less defined waved band, situated near the hind margin. The fringe is grey, with a thin dark brown interior boundary line of minute crescents. The dark brown wing-rays are carried into the fringe. The lower wing is pale grey, with fringes of the same shade, bounded by a thin dark brown irregular and interior line; the dark brown wing-rays are continued into the fringe. From the interior

margin proceed faint indications of two parallel median dark brown lines. The first, nearest the base, is central; it is often continued across the wing. The second is short, and rarely continued to the centre of the wing. The antennæ (in the male) are delicately ciliated; the head, thorax, and body are dark grey. Abundant. All my captures of *H. leucophearia* were males. I did not see a single specimen of the apterous females. *Second form.*—Fore wings dark brown; the grey band is more clearly defined, and with two dark brown blotches near the tip on its interior boundary line; otherwise similar to the type. Common. *Third form.*—Fore wings black-brown; the grey band is reduced to a series of four or five indistinct spots; lower half of hind wings smoky brown; otherwise similar to the type. A beautiful, but scarce, form: throughout the day I only took three specimens. Feb. 14th. Chester. Off a wall-coping I took a male *H. marginaria* (*progemmaria*), and a fine dark female *P. pedaria*. 15th. Total change in the weather; wind, N.E., with snow showers. 16th. Hard frost. 17th. Showers of snow from the N.W.; snow again covering the streets. 18th. Intense frost; weather general, and on the Continent; 18° of frost at Chester. 20th. Severe frost yet; a N.E. gale to-night; blizzards in the South of England; skating here; snow all over the country; equally severe in Ireland, and on the Continent south of this latitude as far as Venice; strong, disastrous gales at Gibraltar; thunder and lightning with the South of England snowstorms. About two miles out of Chester I came upon a bank of blue, scented violets free from snow, having a south aspect. 21st. Complete thaw; frost and snow all gone; S.S.E.; sunny, warm. Female *P. pedaria* laid eggs in a crevice in her chip-box; eggs dull green, elliptical. 25th. A warm, dark night; thunderstorm with lightning away in the east. Found, next day, the centre of the storm had broken over Delamere Forest, where it was very violent. *H. rupicapraria*, *H. marginaria*, abundant on gas-lamps; also *P. pedaria*. 26th. Same insects plentiful on the gas-lamps; warm. March 1st. N.E., bitterly cold; hard frost. 3rd. Not a moth on the lamps; bitter and cold. 8th. Up to to-day bitter cold N.E. breezes, with frost. 9th. Heavy snowfall. The 'Standard,' of to-day, says:—"A more backward spring could not well be; and March has neither come in with the ferocity of the lion nor the gentleness of the lamb, but rather with the surliness of the bear."—J. ARKLE; Chester, March, 1892.

CHÆROCAMPA NERII: AN ADDITIONAL RECORD.—Having recommenced collecting, after a lapse of some sixteen years, I have recently been reading last year's 'Entomologist,' and see, on pp. 195 and 221, a list of authentic British specimens of *Chærocampa nerii*. Will you kindly let me state that I have in my cabinet a very good specimen, which was caught at Ascot by a gardener in June, 1873, by whom it was given to a friend of my brother, who was then a boy at school at Eton. He gave it to my brother, who brought it home with him, and it has been in my cabinet ever since. The capture was recorded in the 'Field' newspaper of June 28th, 1873.—E. F. STUDD; Oxtou, Exeter, April 16, 1892.

COLLECTING IN ABERDEENSHIRE.—We have had a very severe winter in the North, and as much of my collecting has been performed in the midst of blinding snowstorms, it will be at once apparent that my exertions have not added much to my former store of larvæ or pupæ. I have had most success with *Acronycta myricæ*. As is well known, the larva of this insect spins its cocoon in any crevice it may find on stone walls, palings,

and I have or some years found it in plenty on rails and railway chairs; in any of the above positions it is most difficult to find, owing to the precaution which the larva adopts to ensure its safety. After a long and persistent search I have been rewarded with over 300 pupæ, and nearly all were found while the snow was deep on the ground; of course it was only possible to search the parts where the sun had melted the snow. *Phigalia pilosaria* was well on the wing in February, and several were found quietly sitting on the trees with the thermometer many degrees below freezing point, and a coating of six inches of snow on the ground. My opportunities for searching for *Stilbia anomala* and other larvæ have been much restricted, owing to the snow. I have only seen about three dozen *anomala*, a few *Triphana orbona*, and other Noctuæ larvæ being found at the same time. *Scoparia* larvæ are not rare just now on moss-covered walls; and *Solenobia* larvæ are again on the move, although the majority appear to have pupated. The two "Tigers," *Cheloniacaia* and *Arctia (Spilosoma) fuliginosa*, have both awakened from their winter's sleep; they are both more plentiful than usual. I have also seen a few small *Chelonia plantaginis* larvæ. One or two hibernating Tineæ have been found on quiet evenings, fluttering over the snow. *Larentia multistrigaria* is also now on the wing; it is about a month later than last year.—WM. REID; Pitcaple, N.B., March 18, 1892.

LATE SPECIMEN OF *EPIONE VESPERTARIA*.—Whilst collecting larvæ of *Bombyx rubi* and *Spilosoma fuliginosa* on Strensall Common, near York, on the afternoon of Saturday, Oct. 3rd, 1891, I found a somewhat worn specimen of *Epione vespertaria* at rest on dwarf willow. This is by far the latest date on which this species has been known to occur.—W. HEWETT; 12, Howard Street, York.

USUALLY COMMON MOTHS SCARCE IN 1891.—*Cheimatobia brumata*, *C. boreata*, also *Hybernia aurantiaria* and *H. defoliaria*, did not occur last season in the neighbourhood of York in anything like their usual abundance, whilst *Himera pennaria* totally failed to put in an appearance, and *Oporabia dilutata* was represented by some half-dozen specimens.—W. HEWETT.

EARLY APPEARANCE OF *PIERIS RAPE*.—An imago of *Pieris rapæ* (a male) was brought to me on Sunday, the 24th January. It was taken on the wing, on the main road here, at about four o'clock in the afternoon, and it would appear to me that it had emerged on the same day. Excepting a small fold in one of the wings, it is a well-grown specimen. As I have never before heard of so early an appearance of this insect, I should be glad to know if it has previously been seen in Britain in the month of January. I conclude the necessary heat can only have been derived from some artificial source. I may add that the weather had for the few days preceding been unusually mild.—LIONEL R. CRAWSHAY; Llandaff, S. Wales, Jan. 29, 1892.

ARGYNNIS LATONA IN DEVONSHIRE.—I may record the capture by myself here on September 11th, 1871, of a perfect specimen of *Argynnis latona*, now in my cabinet. It was flying over a rough fallow field, in which a quantity of borage always grows wild. I remember I could not make out, from its appearance and flight, whether it was *Euphrosyne* or *Megara*, and caught it to see; and never shall I forget the excitement I experienced when I found the prize I had got.—E. F. STUDD; Oxton, Exeter, April 16, 1892.

ANNUAL EXHIBITION OF THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—Falling as it does on the very eve of the new collecting season, the date fixed for the next Annual Exhibition of this Society (May 5th and 6th) appears to be well chosen, and the affair promises to be a great success. The Committee, upon whom the arrangements devolve, desire to make this year's exhibition as attractive and instructive as any previous one. Of course the success of the enterprise largely depends upon the members themselves, and there is no doubt each one of them has liberally responded to the Secretary's appeal for assistance.

SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON.—*April 13th, 1892.*—Mr. Henry John Elwes, F.L.S., Vice-President, in the chair. Mr. Francis Jaffrey, M.R.C.S., of 8, Queen's Ride, Barnes, S.W., was elected a Fellow of the Society. Mr. R. McLachlan exhibited specimens of *Anomalopteryx chauviniana*, Stein, a Caddis-fly remarkable for the abbreviated wings of the male, the female having fully developed wings; he alluded to the Perlidæ as including species in which the males were frequently semi-apterous. Dr. Sharp enquired if Mr. McLachlan was aware of any order of insects, except the Neuroptera, in which the organs of flight were less developed in the male than in the female. Mr. C. G. Barrett and Mr. H. J. Elwes cited instances amongst the Bombycidæ in which the wings of the male were inferior in size and development to those of the female. Dr. Sharp exhibited specimens of both sexes of an apparently nondescript phasmid insect allied to *Orobia*, obtained by Mr. J. J. Lister in the Seychelles islands, together with *Phyllium gelonus*. He also exhibited specimens of both sexes of an Acridiid insect, of the group *Proscopides*, remarkable for its great general resemblance to the Phasmidæ, though without resemblance, so far as is known, to any particular species. In reference to the *Phyllium*, Dr. Sharp called attention to the fact that the similarity of appearance of parts of their organisation to portions of the vegetable kingdom was accompanied by a similarity, amounting almost to identity, of minute structure. He said that it had been stated that the colouring-matter is indistinguishable from chlorophyll, and that Mr. Lister had informed him that when in want of food a specimen of the *Phyllium* would eat portions of the foliaceous expansions of its fellows, although the Phasmidæ are phytophagous insects. The resemblance to vegetable products reached its maximum of development in the egg; and Mous. Henneguy had observed that when sections of the external envelope of the egg of *Phyllium* are placed under the microscope no competent botanist would hesitate to pronounce them to belong to the vegetable kingdom. Dr. Sharp also stated that in some species of Phasmidæ it was easy to obtain the egg by extraction from a dried specimen. Mr. Barrett exhibited, for Major J. N. Still, a specimen of *Notodonta bicolora*, which had been captured in a wood near Exeter. Major Still had stated that the captor of the specimen was unaware of the great rarity of the species. Mr. Barrett also exhibited, for Mr. Sydney Webb, some remarkable varieties of *Argynnis adippe* and *Cænonympha pamphilus*; also two specimens of *Apatura iris*, and two of *Limenitis sibylla* in which the white bands were entirely absent. The Hon. Walter Rothschild exhibited, and contributed

preliminary notes on, some hundreds of Lepidoptera, representative of a collection of some 5000 specimens recently made in five weeks, by Mr. W. Doherty, in the South-west of Celebes. The collection included species of *Nectaria*, *Ideopsis*, *Saletaria*, *Limnias*, *Radena*, *Tirumala*, *Euplœa*, *Lethe*, *Melanitis*, *Micalesis*, *Yphthima*, *Elymnias*, *Amathusia*, *Pseudamathusia*, *Discophora*, *Acrœa*, *Ergolis*, *Cethosia*, *Cynthia*, *Cupha*, *Terinos*, *Cirrhochroa*, *Junonia*, *Precis*, *Rhinopalpa*, *Xoma*, *Cyrestes*, *Hypolimnas*, *Euripus*, *Rohana*, *Parthenos*, *Neptis*, *Athyma*, *Symphœdra*, *Euthalia*, *Limenitis*, *Abisara*, *Huphina*, *Catopsilia*, *Eronia*, *Appias*, *Ornithoptera*, *Papilio*, &c., and several species of Hesperidæ. Many of the species were new, and others very rare. Mr. Elwes, Colonel Swinhoe and Mr. S. Stevens commented on the interesting nature of this collection, and a vote of thanks to Mr. Rothschild for exhibiting it was passed by the meeting. Mr. E. B. Poulton gave a lecture "On the denudation of the Scales in certain Species of Lepidoptera, and illustrated it by a large number of photographs shown by means of the oxy-hydrogen lantern. Mr. G. F. Hampson, Mr. Elwes and Mr. Poulton took part in the discussion which ensued.—H. Goss, *Hon. Secretary*.

SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—*March 24th, 1892.*—Mr. C. G. Barrett, F.E.S., President, in the chair. Mr. J. R. Burt, of Streatham, was elected a member. Mr. Merrifield exhibited examples of *Selenia illustraria*, *S. illunaria*, *S. lunaria*, *Vanessa urticæ*, *Platypteryx falcataria*, *Chelonia caia*, *Bombyx quercus* and var. *callunæ*, to illustrate the effects of temperature on these species. Mr. Merrifield prefaced his remarks on the experiments he had made by referring to those of Weisman and Edwards, which were made on seasonally dimorphic species. He said the results obtained by him were consistent with those of these gentlemen; but he went further than they did, and he found, by subjecting the pupæ to certain temperatures, he invariably, in the majority of the specimens, obtained certain results, a lower temperature generally producing examples which were darker and more intense in colour than those subjected to higher temperatures. In *illustraria*, a brood divided into two portions, and one, placed at a temperature of about 80°, produced normal specimens, while the other portion, placed at a temperature of from 50° to 60°, were strikingly darker in colour; the same results were obtained with *illunaria*, *lunaria*, and *E. autumnaria*, but in the last-named species they were not quite so pronounced. *P. falcataria*, *B. quercus*, its var. *callunæ*, *C. caia*, and *V. urticæ* were similarly affected, but in a lesser degree than the species of *Selenia*; in *V. urticæ* some of the examples closely approached the var. *polaris*, the specimens subjected to the lower temperatures being generally darker, and the blue crescents were more intense in colour. In conclusion, Mr. Merrifield said a temperature of 47° seemed to stunt the size, and produced a large proportion of cripples; higher temperature than this seemed more conducive to health and vigour. It had been suggested that the results he had obtained were attributable to the unhealthy condition to which the pupæ were exposed, but this was not at all a correct explanation. In the 172 specimens which he exhibited, 150 were not cripples; extreme temperatures produced crippling, but moderate temperatures were quite sufficient to account for the extreme difference of colouring. Mr. Fenn said he had, since 1859, paid great attention to the earlier stages of Lepidoptera, and he assumed that variation was either natural or artificial; that natural variation

might be divided into three nearly equal causes, *viz.*, heredity, moisture, and natural selection. In artificial variation the causes might generally be said to be abnormal or diseased; by disease he meant a general weakening of the constitution by unnatural influences; the least deviation from natural conditions might lead to variation. Mr. Fenn then remarked that the temperature necessary to alter the colour, *viz.*, 87° to 57° and 57°, alone was quite sufficient to put at least all our winter, spring, and autumn insects entirely out of action. *E. autumnaria*, one of the species relied on, Mr. Fenn had had considerable experience in breeding, and in the series he exhibited there were many paler and many darker than any shown by Mr. Merrifield, and the larvæ and pupæ had been kept under usual conditions, and the greater portion of them followed the parent forms. In conclusion, he said such variation as was shown by Mr. Merrifield was practically impossible in a state of nature, unless it was the result of disease. Messrs. Weir, Adkin, Tugwell, Carrington, Dobson, Barrett, and Tutt continued the discussion, the last-named gentleman following Mr. Fenn in attributing the variation to disease, and that to a large extent it was caused by preventing the proper development and formation of the colouring pigment. He thought the action of temperature was indirect, and produced variation by interfering with the normal development. Mr. Merrifield agreed with many of Mr. Fenn's observations, and thought most of them were consistent with the results obtained in his experiments, as reported by him. In any case, there could be no doubt that, in the species principally operated on by him, temperature, applied in such moderation as not to affect the healthy appearance of the insect, produced great uniformity; conspicuous differences in colouring. There were other species in which no considerable effect was produced, unless the temperature was so extreme as to cause a certain amount of crippling or imperfect development. The meeting closed with a vote of thanks to Mr. Merrifield, proposed by Mr. Fenn and seconded by Mr. Jenner Weir.—H. W. BARKER, *Hon. Sec.*

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY. — *April 11th*, 1892. — S. J. Capper, F.L.S., F.E.S., President, in the chair. Messrs. W. Webster, of St. Helens; C. F. Johnson, of Stockport; and the Rev. C. J. Buckmaster, of Wigan, were elected members. Mr. J. E. Robson, of Hartlepool, editor of the 'British Naturalist,' read a paper entitled "Melanism and its Theories." After reviewing the various theories of previous writers for the tendency of certain species to darken, he said it was his belief that no single theory could account for the phenomena of melanism now going on; and while agreeing with Lord Walsingham that the dark colour of insects in cold and snowy regions was due to that colour being most suitable, he also considered that the increase of smoke and dirt would, by obscuring the rays of the sun near large towns, also tend to produce melanism by the laws of natural selection. The paper was illustrated by numerous examples of melanic forms of Lepidoptera and Coleoptera; Mr. C. A. Briggs' very dark *Sphinx ligustri*; the President's black *Boarmia cinctaria* and *B. roboraria*; and Mr. Robson's very dark *Arctia menthastri*, *Odontopera bidentata*, and *Chortobius pamphilus* being specially fine; but the little box that attracted most attention contained, side by side, Mr. Briggs' fine variety of *Arctia caia*, with faint buff-coloured markings on the fore wings, black *bicolor*-like spots occupying the centre, the under wings being all red; and Mr. Capper's variety of the same species, the fore wings of which are immaculate, with the exception of one

black spot near the centre, the hind wings being normal. Mr. Newstead exhibited types of *Prosporophora dendrobii*, Doug. MS., very remarkable Coccid from Demerara, descriptions of which will shortly appear. Mr. Collins, on behalf of Messrs. C. R. Billups and J. Dutton, of Warrington, exhibited *Dytiscus dimidiatus*, male and female, captured in the fens in 1891, after being lost sight of for eight years; and *Silpha atrata* var. *subrotundata* from the east and south-west coast of the Isle of Man in February, 1892.—F. N. PIERCE, *Hon. Sec.*

CAMBRIDGE ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—
February 17th, 1892.—A meeting of six old members of the Society was held at Mr. Jones's, 59, Trumpington Street, to discuss the possibility of setting the Society going again, the last meeting having been held March 8th, 1889. The advisability of altering some of the existing rules was discussed, one item being the changing the name of the Society from the "Cambridge Entomological Society" to the "Cambridge Entomological and Natural History Society." As several members of the University were desirous of joining, and the anniversary meeting had always been held in February, it was decided that the next meeting should be the anniversary meeting, and that all gentlemen willing to join should be invited to attend for the purpose of being elected members, and to take part in the subsequent business of electing officers for the year, and considering the proposed alterations of the rules.

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

March 11th.—Mr. A. M. Moss, President, in the chair. Messrs. W. G. S. Malim, H. C. T. Langdon, and H. V. Bull were elected members. Mr. F. V. Theobald, F.E.S., sent for exhibition two cases of Diptera; one showing the life-history of the "daddy-longlegs" (*Tipulæ*), *T. oleracea*, *T. gigantea*, and *T. lutescens*; and the other being a case of *Tabanus bovinus* and *T. asilus*; also a box of living specimens of the "corn and rice weevils" (*Calandra granaria* and *C. oryza*). The Secretary read some notes on the exhibit by Mr. Theobald. The specimens of *Tabanus bovinus* exhibited were from Switzerland, where they attack the horse to a dreadful extent; they are also common in parts of England, notably the New Forest, Sussex, &c. *Calandra* (corn and rice weevil) are very destructive to stored wheat, barley, oats, and rice, and, to some extent, maize, especially abundant in Calcutta wheat, but also coming from other parts. The weevil lays its eggs one on each grain, and the young larva bores its way in, where it assumes the pupal state. Mr. Jones read a paper on "Killing and Setting Lepidoptera;" discussion ensued, chiefly on the several methods of killing, Mr. Jones and Mr. Farren recommending the use of ammonia in preference to cyanide. A vote of thanks to the author for his interesting paper concluded the meeting.—WILLIAM FARREN, *Hon. Sec. and Treas.*

THE ENTOMOLOGIST.

VOL. XXV.]

JUNE, 1892.

[No. 349.

COLOUR-VARIATION IN THE OVA OF *BISTON HIRTARIA*.

BY ROBERT ADKIN, F.E.S.

ON 29th April, last year, I took a fairly fresh female *Biston hirtaria* at rest on a wall near here, and being desirous of rearing the species from ova, I put her aside in a large chip-box covered with lino; and upon examination, after two or three days, I found that she had deposited a considerable number of ova in cracks in the box; these were then of the colour that I have been accustomed to regard as natural to this species, a deep green. During the next day or two further ova were deposited; these were, at first, a pale golden yellow, but afterwards turned to a deep orange, which colour they retained; and a few that were deposited still later remained of the pale colour, without showing any perceptible change. On the 30th of the same month I took a much worn female from the bole of a lime tree, and, as she showed some variation from the one previously taken, I kept her, also, for ova; evidently the bulk had already been parted with, but of those that I obtained, which were at first all of the pale golden yellow colour, the earliest deposited changed to a yellowish green, the next to a pale orange, and the latest remained yellow, as in the former case. I concluded that those that had not changed colour would prove infertile, but with a view to satisfying myself on this point, I carefully divided the proceeds of each moth into three lots,—marked respectively, No. 1. A; No. 1. B; No. 1. C; and No. 2. A; No. 2. B; No. 2. C,—according to the order in which the ova were deposited. In due time each lot became almost black, and subsequently hatched, but not in the order in which they had been laid, as will be seen by the following table:—

No. 1. A.	Turned colour,	June 2;	hatched,	June 3.
B.	„	„	June 8;	„ June 10.
C.	„	„	June 4;	„ June 5.

No. 2.	A.	Turned colour,	June 3;	hatched,	June 4.
	B.	"	"	June 8;	" June 10.
	C.	"	"	June 5;	" June 8.

In each case, therefore, the ova that had remained yellow hatched before those that assumed the orange colour. For some time I managed to keep the whole of the larvæ, but as they grew their prodigious appetites rendered such a proceeding impossible, and from time to time I set some of each lot at liberty, in order to give such as were retained a chance of feeding up. I was, therefore, unable to obtain a complete record of the imagines resulting from the various batches; but I have this spring reared a sufficient number of each to lead me to suppose that there would have been no difference between them, either as regards the proportionate number of each sex, or the robustness or coloration of the individuals.

Lewisham, May, 1892.

A PRELIMINARY LIST OF THE INSECT-FAUNA OF MIDDLESEX.

COMPILED BY T. D. A. COCKERELL, F.Z.S., F.E.S.

(Continued from p. 118).

LEPIDOPTERA.

Phorodesma pustulata, Hufn., Mill Hill, two in the garden at Goldbeaters (South); Bishop's Wood (Vaughan).

Iodis lactearia, L., Bishop's Wood (Godwin); Mill Hill (South); Highgate Wood (Vaughan); Whitton (Rendall); Harefield, fairly common (Wall); Harrow-Weald, common (Rowland-Brown).

Hemithea strigata, Müll., Bishop's Wood, Kingsbury (Godwin); Mill Hill (South); Bedford Park (J. Gray); Highgate Wood (Vaughan); Whitton (Rendall); Harefield, taken sparingly (Wall); Chiswick, on the wing at dusk (Sich); Ealing (Adye); Old Oak Common (Mera); Harrow-Weald (Rowland-Brown).

Subf. *Ephyrinæ*.

Zonosoma punctaria, L., Bishop's Wood (Godwin); Whitton (Rendall). *Z. porata*, Fb., Bishop's Wood (Godwin); Mill Hill, one in the garden, 1876 (South).

Subf. *Acidaliinæ*.

Asthenes candidata, Schiff., Bishop's Wood, Kingsbury, Old Oak Common (Godwin); Mill Hill (South); Highgate Wood (Vaughan); Pinner (Watts). *A. luteata*, Schiff., Mill Hill (South); Harefield, taken sparingly (Wall).

Acidalia dimidiata, Hufn., Bishop's Wood (*Godwin*); Mill Hill, common in a hedgerow (*South*); Dartmouth Park (*Vaughan*); Harefield, rather common (*Wall*); Chiswick, common, larva once (*Sich*); Hampstead, common (*Watts*). *A. bisetata*, Hufn., Bishop's Wood (*Godwin*); Mill Hill (*South*); Whitton (*Rendall*); Chiswick, common on the wing at dusk (*Sich*); Hampstead, common (*Watts*). *A. rusticata*, Fb., Harefield, one taken in 1890 (*Wall*). *A. humiliata*, Hufn. (= *dilutaria*=*interjectaria*), Mill Hill (*South*); Chiswick, common on the wing at dusk (*Sich*); Finchley (*Shepherd*). *A. virgularia*, Hb. (= *incanaria*), Mill Hill, at rest on summer-house in the garden (*South*); Highgate (*Vaughan*); Whitton (*Rendall*); Chiswick, common (*Sich*); Hampstead, common (*Watts*); Dalston (*Prout*); [St. John's Wood, Kingsbury (*South*)]. *A. marginepunctata*, Göze. (= *promutata*), Chiswick, once at rest (*Sich*). *A. immutata*, L., said to have been taken at Enfield* (see *Pract. Nat.*, 1883, p. 131). *A. imitaria*, Hb., Bishop's Wood (*Shepherd*); Mill Hill, common about a privet hedge, bred from larvæ found on privet (*South*); Whitton (*Rendall*). *A. remutaria*, Hb. (= *remutata*, Newm.), Bishop's Wood, common (*Godwin*); Mill Hill (*South*); Pinner Woods (*Watts*). *A. aversata*, L. † [banded form], London (*Rendall*, *Entom.*, 1887, p. 200). *A. aversata*, Bishop's Wood (*Godwin*); Mill Hill (*South*); Bedford Park (*Chll.*); Dartmouth Park (*Vaughan*); Whitton (*Rendall*); Harefield, rather common (*Wall*); Chiswick, common, larva once on *Nepeta glechoma* (*Sich*); Hampstead, common (*Watts*); Harrow-Weald (*Rowland-Brown*); Tottenham (*Prout*). *A. emarginata*, L., Mill Hill, in various hedgerows (*South*); Whitton (*Rendall*); Harefield, a few in 1887 (*Wall*). *A. herbariata*, Fb., Cannon Street, London (*Meek*, *Entom.*, 1879, p. 226).

Timandra amataria, L., common (*Godwin*); Mill Hill, common in ditches (*South*); Highgate (*Vaughan*); Whitton (*Rendall*); Harefield, taken freely some seasons (*Wall*);

* In September, which, if correct, would indicate a second brood. Newman gives only June.—T. D. A. C.

† The true *A. aversata*, popularly known as the "ribbon-wave," has the space between the two central transverse lines filled up with darker, and is the typical form. Stephens describes and Wood figures it under this name, but Guenée refers the banded form to *lividata*, Linn., representing his *A. aversata* var. A; and he uses *aversata*, Linn., for the commoner form without central fascia. Stainton mentions both forms under the name of *aversata*. Staudinger appears to have been doubtful whether the common form of *aversata* was properly referable to *remutata*, Linn., *Syst. Nat.* x. 528, and so gave to this form the name of *spoliata* (Horsé, *Soc. Ent. Ross.*, 1870, p. 150). Newman, in his 'British Moths,' p. 82, figures the plain form as var. *remutata* and the banded form as var. *aversata*. The typical form of *aversata* is, perhaps, less common than the *spoliata* form in many of the localities cited above; but, although the fact has not been indicated, it probably occurs in all of them; certainly at Bishop's Wood, Mill Hill, Harefield, Harrow, Kingsbury, Hampstead, and Tottenham.—ED.

Chiswick, once on the wing (*Sich*); Hendon, 1879 (*Watts*); Finchley (*Shepherd*); Oxhey Lane (*Rowland-Brown*); [Harrow and Pinner, common (*South*).]

Geometridæ subf. *Caberinæ*.

Cabera pusaria, L., Mill Hill (*South*); Bishop's Wood (*Godwin*); Isleworth (*Meyers*); Chiswick, common, larva on birch (*Sich*); Oxhey Lane* (*Rowland-Brown*); Hampstead (*Watts*); Harefield, common (*Wall*); Ealing (*Adye*). *C. rotundaria*, Haw., Bishop's Wood (*Godwin* and *Shepherd*). *C. exanthemata*, Scop., Mill Hill (*South*); Bishop's Wood (*Godwin*); Oxhey Lane (*Rowland-Brown*); Harefield, common (*Wall*); Hammersmith (*Mera*); Ealing (*Adye*).

Bapta temerata, Hb., Bishop's Wood, common (*Godwin*).
B. bimaculata, Fb., Harefield, one in 1889 (*Wall*).

Subf. *Macariinæ*.

Halia vauaria, L., Mill Hill (*South*); generally distributed, on lamps, palings, walls, &c. (*Godwin*); Balls Pond, Islington, Kentish Town, Hampstead (*Vaughan*); Bedford Park (*Ckll.*); Chiswick, common, larva on currant (*Sich*); Whitton (*Rendall*); Oxhey Lane (*Rowland-Brown*); South Hampstead, common (*Watts*); Harefield, common (*Wall*); Tufnell Park (*Shepherd*); Hammersmith (*Mera*); Clapton (*Bacot*); Dalston (*Prout*); [St. John's Wood (*South*)].

Subf. *Fidoniinæ*.

Strenia clathrata, L., Mill Hill (*South*).

Panagra petrarica, Hb., Old Oak Common (*Godwin*); Bishop's Wood (*Vaughan*); Whitton (*Rendall*); Graemes Dyke, Harrow-Weald (*Rowland-Brown*); Hampstead Heath (*Watts*).

Bupalus pinivaria, L., Whitton (*Rendall*); Graemes Dyke (*Rowland-Brown*); London (*Whittle*, Entom. 1887, p. 211).

Sterrhia sacraria, L., Swains Lane, Highgate (*H. Pryer* fide *Vaughan*); near Uxbridge (*Benbow*, Entom. 1878, p. 21).

Aspilates gilvaria, Fb., Willesden (*Klein*); Oxhey Lane (*Rowland-Brown*).

Subf. *Zereninæ*.

Abraxas grossulariata, L., Mill Hill (*South*); generally distributed (*Godwin*); Kentish Town (*Vaughan*); Bedford Park (*Fenn*); very common at Chiswick, larva abundant, especially on cultivated evergreen, *Euonymus* (*Sich*); Whitton (*Rendall*); Harrow-Weald (*Rowland-Brown*); common (*Watts*); Harefield,

* Mr. Rowland-Brown heads his list, "Middlesex," but gives several species from Oxhey Lane, which is just in Hertfordshire, according to the Ordnance Survey Map. I leave them in the list, as the lane seems to extend into Middlesex. Last year (Entom. xxiv. 69) *Pterostoma palpina* is recorded only from Oxhey Lane; but if this is in Hertfordshire the species may still be kept in the Middlesex list, having been taken at Hounslow (*W. Powley*) and Willesden (*Klein*).

too abundant (*Wall*); Hammersmith (*Mera*); Ealing (*Adye*); Clapton (*Bacot*); Dalston (*Prout*); Isleworth, pupa on currant (*Ckll.*);* [St. John's Wood, generally common (*South*)]. *A. grossulariata* ab. *lutea*, *Ckll.*, *Entom.* xxii. p. 2. Mr. Prout writes that he has a specimen of this, taken in his garden at Greenwood Road, Dalston.

Ligdia adustata, Schiff., Chiswick, once at *Tanacetum vulgare* (*Sich*); Whitton (*Rendall*); Harrow-Weald (*Rowland-Brown*); Hampstead Heath, 1880, &c. (*Watts*); Harefield, not common (*Wall*); Hammersmith (*Mera*); [Kingsbury (*South*).]

Lomaspilis marginata, L., Mill Hill (*South*); generally common, especially at Bishop's Wood (*Godwin*); Chiswick, larva on Lombardy poplar (*Sich*); Harrow-Weald (*Rowland-Brown*); Hampstead Heath (*Watts*); Harefield, rather common (*Wall*) abundant near Ealing (*Adye*); [Northwood (*South*).]

Subf. *Hyberniinae*.

Hybernia rupicapraria, Hb., Mill Hill (*South*); generally common (*Godwin*); Millfield Lane (*Vaughan*); Chiswick, not often taken (*Sich*); Whitton (*Rendall*); Harrow-Weald (*Rowland-Brown*); Hampstead (*Watts*); Harefield, abundant (*Wall*); Bishop's Wood (*Shepherd*); [Kingsbury (*South*)]. *H. leucophaearia*, Schiff., Mill Hill (*South*); generally common (*Godwin*); Bishop's Wood (*Vaughan*); Chiswick, occasionally (*Sich*); Whitton (*Rendall*); Harrow-Weald (*Rowland-Brown*); Hyde Park and Hampstead (*Watts*); Harefield, common (*Wall*); near Acton (*Mera*). *H. aurantiaria*, Esp., Bishop's Wood (*Godwin*); Harefield, common (*Wall*); Tottenham (*Prout*). *H. marginaria*, Bork. (= *progemmaria*), Mill Hill (*South*); generally common (*Godwin*); Bishop's Wood (*Vaughan*); Bedford Park, April, 1891 (*Ckll.*); Chiswick, common, larvæ on birch and plum (*Sich*); Whitton (*Rendall*); Harrow-Weald (*Rowland-Brown*); Hampstead, common (*Watts*); Harefield, abundant (*Wall*); near Acton (*Mera*); Isleworth, a form intermediate between the type and the var. *fuscata*, Mosley (*Ckll.*). *H. defoliaria*, Clerck, Bishop's Wood (*Godwin*); Chiswick, common, larva on elm and pear trees (*Sich*); Whitton (*Rendall*); Stanmore (*Rowland-Brown*); Harefield, plentiful (*Wall*); Bishop's Wood and Highgate (*Shepherd*); Ealing (*Adye*); Dalston (*Prout*). *H. defoliaria* ab. *suffusa*, *Ckll.*, † *Entom.* 1886, p. 37. Mr. Sich (*Entom.* 1888, p. 112) refers to a dark reddish form at Chiswick.

Anisopteryx æscularia, Schiff., Mill Hill, female may be found on hedges at night (*South*); generally common, especially

* From an Isleworth specimen I bred an Ichneumonid, black, about 14 millim. long, wings dusky hyaline, with a rather large dark stigma.

† This is apparently hardly to be separated from a variety named *obliteraria*, concerning which see A. H. Waters, 'Nat. World,' Jan. 1886, p. 8.

Regent's Park (*Godwin*); Hampstead (*Vaughan*); Chiswick, fairly common at rest (*Sich*); Whitton (*Rendall*); Oxhey Lane (*Rowland-Brown*); Harefield, not common (*Wall*); Highgate (*Shepherd*); Ealing (*Adye*).

Subf. *Larentiinae*.

Cheimatobia brumata, L., Mill Hill (*South*); generally common (*Godwin*); Hampstead (*Vaughan*); Chiswick, abundant, larva in young shoots and buds of fruit and other trees (*Sich*); Whitton (*Rendall*); Harrow-Weald, very common (*Rowland-Brown*); Harefield, exceedingly abundant (*Wall*); Highgate (*Shepherd*); Hammersmith (*Mera*); Clapton (*Bacot*); Dalston (*Prout*).
C. boreata, Hb., Bishop's Wood (*Godwin*).

Oporabia dilutata, Bork., Mill Hill (*South*); generally common, especially Hampstead (*Godwin*); Isleworth (*Fenn*); Chiswick, occasionally, also larva (*Sich*); Whitton (*Rendall*); Harrow-Weald (*Rowland-Brown*); Harefield, common (*Wall*); Highgate (*Shepherd*); Clapton (*Bacot*). *O. dilutata* var. *obscurata*, Stgr. Mr. Shepherd wrote me that he had taken this at Hampstead; and Mr. Sich refers to a suffused form at Chiswick (*Entom.* xxi. 112).

Larentia didymata, L., Mill Hill (*South*); generally common (*Godwin*); Bishop's Wood (*Vaughan*); Whitton (*Rendall*); Hampstead, common (*Watts*); Harefield, common (*Wall*); Dalston (*Prout*); [Northwood (*South*)]. *L. multistrigaria*, Haw., Mill Hill, at rest on palings (*South*); Hampstead Heath (*Godwin*); Whitton (*Rendall*); Hampstead Heath, 1882 (*Watts*).
L. viridaria, Fb. (= *pectinataria*), Bishop's Wood (*Godwin*); Whitton (*Rendall*); Harefield, occasional (*Wall*); [Northwood, common (*South*)].

(To be continued.)

NOTES ON BRITISH LEPIDOPTERA.

By RICHARD SOUTH.

THE GENUS MELANIPPE.

(Continued from p. 114.)

MELANIPPE GALIATA.

The ground colour of fore wings is generally chalk-white, with a greyish patch at the base, and more or less tinged with ashy grey on the outer marginal area. The central band, which has a decided projection on its outer edge, is usually divided transversely into three parts by thin black or blackish lines; the median portion is always the widest, and, as a rule, darker than the narrow inner and broader outer portions, which are alike in

colour; the blotch towards apex is a variable quantity, sometimes very well defined, but often only represented by a patch or two of darker scales; in the strongest marked specimens there is a dark transverse line from the inner edge of this blotch to inner margin, and a whitish submarginal line touches its outer edge, and intersects a dark grey cloud-like spot near the middle of the marginal area; the inner portion of this spot is often separated into two dots.

Considerable diversity is exhibited in the composition of the central band, but it is hardly necessary to refer to all the minor modifications of this and other characters, as it will suffice for present purposes to mention the more striking points of variation. In some specimens from Ventnor the base of fore wings is tinged with grey, limited by a slightly darker line, and the central band is pale grey, enclosed and traversed by blackish lines; black discoidal spot distinct. Other specimens from the same locality, and also from Folkestone and Eastbourne, have the median portion of the central band rather bluish grey, and the narrow inner and broader outer portions tinged with brownish; the basal patch in these examples is almost as dark as the central band, and is intersected by a grey suffused whitish band; the outer marginal area is more or less suffused with greyish.

Mr. Porritt very generously sent me a series of specimens from Yorkshire. These have a very dark grey, almost blackish, basal patch; the central band is rather wider than usual, bluish black in colour, and the transverse intersecting lines are hardly traceable; the outer marginal area is distinctly suffused with greyish, and the white submarginal line is unusually distinct; the apical blotch and cloud below are well defined. The hind wings are fuliginous grey, with a whitish double central line and a single submarginal line.

I understand that this form of *galiata* is very local, and I am inclined to think that it is the *unilobata* of Haworth, which was also from Yorkshire.

Quadriannulata, Haworth, appears to be a rather uncommon aberration of *galiata*. Stephens (Ill. Brit. Ent. Haust. iii. p. 223) describes it as having the "anterior wings ashy brown at the base, then with two geminated waved fuscous strigæ, and between these a narrow fascia of four rounded white spots, edged with black; then a broad fuscous-ash space or fascia, terminating in a geminated fuscous striga, with a black spot within towards costa; behind this the wings are whitish, a little clouded with cinereous and darker shades and waves, with a small emarginate black spot towards apex of costa; posterior wings pale cinereous white, with the border rather darker. Cambridgeshire and coast of Devon."

Wood figures this form (565) and also *unilobata* (564) in his 'Index Entomologicus.' In the last-named figure the central

band is fuscous, and does not agree with the Yorkshire specimens of *galiata* referred to above.

MELANIPPE FLUCTUATA.

Specimens of this species, captured even in a London garden, exhibit considerable variation in colour and markings of fore wings. First, as regards colour: this is most frequently whitish or greyish, but specimens are sometimes more or less tinged with ochreous, and one or two taken by myself in my garden are nearly as much suffused with fuliginous as examples of the species from Aberdeen, presently to be more particularly referred to. Then as to the markings: perhaps the largest number have simply the typical dark patches at base, middle of costa, and towards apex; but specimens with an entire and well-defined blackish central band are often obtained, together with intermediate forms, which show the gradual development, stage by stage, as it were, of the band. The banded form is figured by Wood and Newman, and is the var. β , Haworth, and α , Guenée. Besides graduation towards the fully-developed band, the costal blotch becomes modified in the direction of complete effacement; but so far I have not seen a specimen without at least a remnant of this mark. I have taken two specimens in St. John's Wood, in both of which the costal blotch is reduced to very slender proportions. One of these has the usual blotch represented by a blackish transverse bar, which is slightly contracted above the middle, and extends from the subcostal to the median nervures; this is the var. *costovata*, Haw. In the other specimen the costal mark is somewhat triangular in shape. The costal half of the central band usually contains some pale irregular-shaped marks, the upper one enclosing the black discoidal spot. The inner edge of the band is often indented, but is usually entire and forms a curve; the outer edge has a more or less distinct tooth-like projection before the middle, and below this the band is often contracted to about half its original width. The twin black spots below apical blotch are generally present, although not invariably so, but vary in size and definition. A very wavy black line starts from the inner edge of apical blotch, but does not always attain the inner margin. Hind wings fuscous grey, with a small black spot and darker transverse line before the middle, and some darker and paler lines and bands on the outer half of the wing.

Aberdeen specimens of *M. fluctuata* are grey, tinged sometimes with brownish, and generally suffused with fuliginous. The central band is continued from costa to inner margin, and bordered on each side by a narrower whitish band, which is intersected by a darker line; submarginal line whitish, edged internally with darker. These whitish bands and lines are present in English specimens, but, owing to the paler ground

colour, are not conspicuous. Millière, in 1869 ('Iconographie,' iii. p. 267, pl. 131, fig. 7), described and figured a form of *fluctuata* under the name of var. *neapolisata*. He says that in the neighbourhood of Naples this variety is the dominant form of the species, but he appears to have met with males only; and it is worthy of note that he says of these that the antennæ are more strongly pectinated than in typical males. In 1887 Millière received Aberdeen specimens of *fluctuata*, and figured a female specimen as this sex of his var. *neapolisata* (Ann. Soc. Ent. Fr. (6), vii. p. 218, pl. v. fig. 7, ♀). Probably Millière was correct in his identification, but if the Aberdeen form of *fluctuata* is identical with that from Naples in colour and marking, the males do not agree in the character of the antennæ, as the Aberdeen males of *fluctuata* have these organs just exactly as much pectinated as males of the type form, and no more. It seems a pity that the type female of var. *neapolisata* was not obtained from the same locality as the male of that form.

Mr. McArthur informs me that *fluctuata* is very rare in the Shetlands, and that the specimens are dark in colour, but the central band is not complete. Specimens from Dumbarton and Clydesdale, in my series, have the wings suffused with dark grey, but they are not so dark as those from Aberdeen. The central band is generally continued to inner margin, but it is paler than in typical specimens; the whitish band following the fascia is very conspicuous towards costa. Arran specimens are "very dark, and much suffused with black" (Weir, Entom. xv. p. 253).

I have but one example of the species from Ireland (kindly sent to me some years ago by Mr. P. Russ, of Sligo); this is identical with Dumbarton specimens. Mr. Fitz-Gibbon, of Dublin, has most kindly sent me for examination a very pretty specimen, which he captured on the blossom of Japanese privet at Howth, August, 1891. This example is rather smaller than the largest Aberdeen specimen in my series; the ground colour is silvery grey, and the central band unusually broad, especially the costal half, which contains a large patch of the ground colour enclosing a black dot.

Seeing how very variable *M. fluctuata* is in tone of colour and definition of marking, it does not seem advisable to trouble ourselves very much about names for the various forms. At the same time, one may find almost endless amusement in endeavouring to arrange and group into detachments the numerous varieties of this species.

Var. B, Guenée=var. δ , Haworth, has the fore wings deep olive-grey, bands and marks obscured by the dark ground colour. Hind wings uniform grey. Duponchel represents a form intermediate between vars. A and B of Guenée.

Var. C, Guenée. All the lines of the fore wings are evane-

scent, except the submarginal; the blotches are as in the type, but more restricted.

Var. *acutangulata*, from the Caucasus (Rom. sur Lep. iii. p. 2, pl. i. figs. 1a, 1b, 1887), has the central transverse band continued to the inner margin; the angular projection or tooth on the outer edge of this band is rather more pointed than usual. I believe this form is not uncommon in Britain.

My smallest example is a London one, and measures barely 11 lines in expanse; the largest specimen in my collection is from Aberdeen, and expands 1 inch 5 lines.

SPRING LEPIDOPTERA IN ITALY.

BY H. ROWLAND-BROWN, M.A.

THE following list of spring Rhopalocera is compiled from hasty notes jotted down in railway carriages, and upon two or three country walks made outside Florence and Rome. To the British observer of nature the marvellous southern spring, seen for the first time in all its abundant glory, is a revelation never to be forgotten. It would seem as if nature lavished her whole bounty upon the April and May of North and Central Italy, leaving the later months destitute of those exquisite wild flowers which, earlier in the year, greet the eye at every turn in town and country alike.

I saw the first butterfly (March 23rd) at Biasca, a small station on the Italian slope of the St. Gotthard Pass, flying over the snow; it was *G. rhamni*; and every foot the railway descended the same insect became more and more plentiful. At Bellinzona, *P. rapæ* was already out, flying over the white crocus meadows that bordered upon the line. On March 24th I walked from Lugano to Melide along the high road, the banks of which were covered with primroses, white violets, periwinkles, and anemones; whilst the willows by the lake side were already in leaf, and the camelias flowering abundantly in the villa gardens. *V. egea*, fresh from the chrysalis, was everywhere; and occasionally *V. polychloros* and a few *P. brassicæ*. Between Como and Milan the fields were white with snowdrops, but the weather turning very wet I saw no more insects until I arrived, March 31st, at Florence. By the side of the railway from Bologna to Florence, across the Apennines, the green hellebore and great spurge were flowering in the already half-dried-up torrent beds, and the woods were putting out their leaves. Walking to Fiesole on April 1st, I noticed many butterflies flitting over the rose-maries and already radiant rose bushes of the old hill town.

In addition to those I have already mentioned, I came across a single *G. cleopatra*, *V. atalanta*, *V. cardui*, *A. euphrosyne*, and

the ubiquitous *M. stellatarum*. In the Cascine, the fashionable park of Florence, *L. argiolus* and *V. egea* were flying in profusion round the bay trees; but, oddly enough, during the five weeks I was in Italy, I never once came across a hibernated specimen of *V. urticae*; and on one occasion only at Rome (on the Palatine) did I see *V. io*. I amused myself one day, when visiting the picture galleries, with studying the Lepidoptera of the Old Masters. Butterflies, however, play a very insignificant part, even in the still-life pictures of the Dutch school. Among the Italians I could find no single painting of any moth or butterfly, though in one of the monasteries, I think it was at Certosa near Florence, I saw a very passable *A. atropos* done upon the wall of one of the cells. Ruysch Rachele occasionally introduces *V. atalanta*, *P. brassicae*, and even *E. cardamines*; and in a Van Huysum I discovered a really fine *P. napi*. In Rome, the most favoured locality for Lepidoptera was the Palatine hill, which is a perfect garden of flowers, wild and cultivated. The slopes are covered with giant fennel plants, where I was not surprised to find (April 16th) *P. machaon* in abundance, together with *P. megæra* and *C. pamphilus*, and literally hundreds of *G. rhamnii* and "the whites." It was not, however, until I went to Tivoli that I realized the full richness of the Italian insect-fauna. In Hadrian's villa (April 22nd), for the first time in my life, I gazed upon *P. podalirius* on the wing, evidently just emerged, and in the most perfect condition. With the help of a Kodak camera I was able to take away my first impressions of this insect in a very practical manner. In the woodland glades, *P. egeria* was to be seen with *V. c-album*, *N. lucina*, and one or two *L. duponcheli*, a very feeble flyer, yet hardly ever settling. In the sunny brakes that cover much of the palace of the Cæsars, *T. rubi*, *G. cleopatra*, *P. machaon*, *E. cardamines*, and the spring fritillaries, *A. selene*, *A. euphrosyne*, and *A. dia*, together with *C. pamphilus*, might have been taken in any quantities, but having no apparatus with me I could only watch and admire the countless hundreds of insects that passed before my eyes. Of the wild flowers it would be impossible to speak with too much enthusiasm; but to the English eye the simultaneous appearance of what, with us, are spring and midsummer flowers respectively, is, to say the least of it, rather confusing.

As I said before, these are only hasty jottings, but they may prove of interest to readers of the 'Entomologist'; and anything that may help to induce our native collectors to disregard their insularity, and extend the field of the observations and operations to the wider study of European Rhopalocera, must be of service. Perhaps, therefore, a word of advice will not be out of place to the innumerable tourists who are attracted every spring to Italy and the Riviera; and that is, take your collecting-boxes with you.

The subjoined list of twenty-four species will show at a glance some of the insects commonly to be taken in March and April; and there are many others at this season, I have no doubt, which I either missed or was not fortunate enough to encounter:—*Papilio podalirius*, *P. machaon*, *Pieris brassicæ*, *P. rapæ*, *P. napi*, *Thecla rubi*, *Lycæna argiolus*, *Euchloë cardamines*, *Leucophasia duponcheli*, *Gonepteryx rhamni*, *G. cleopatra*, *Vanessa atalanta*, *V. egea*, *V. c-album*, *V. cardui*, *V. polychloros*, *V. io*, *Nemeobius lucina*, *Pararge egeria*, *P. megæra*, *Argynnis selene*, *A. euphrosyne*, *A. dia*, *Cænonympha (Chortobius) pamphilus*.

Oxhey Grove, Harrow-Weald, May 4, 1892.

NOTES ON THE SYNONYMY OF NOCTUID MOTHS.

By ARTHUR G. BUTLER, F.L.S., F.Z.S., &c.

(Continued from p. 93.)

The genus *Ariola*, Walk., contains very heterogeneous material: thus the type *A. cælisigna* appears to me to be a *Lithosiid*; but of this I am at present uncertain, though the neuration seems to me to point rather to that family than any other. *A. dilectissima* and "*Acontia*" *dicycla* belong to *Pachylepis*, Feld., and are undoubtedly Glottulidæ; *A. pulchra*, Butl., is a Micro-Lepidopteron probably allied to *Davendra*; *A. continua* and *deflexa*, Walk., from Borneo, are sexes, and belong to the Deltoid genus *Lazandra* = *Labanda*, Walk.; and *A. saturata* is a *Paracrama*, and belongs to the Nycteolidæ. *A. includens* is, at present, unknown to me.

Thalpocharis mundula, Zell., appears to be a Deltoid allied to *Rivula*.

I followed Lederer, Staudinger, Walker, and others, in placing *Argyropsila* (and consequently *Micardia*) in the Leucaniidæ. An examination of the wing-veins proves clearly that both *Argyropsila* and *Micardia* are Acontiidæ: in general aspect they are more like Eublemmidæ.

Anthophila indecisa, Walk., appears to belong to the Hypogrammidæ, in Walker's sense of the family; the neuration corresponds: the specimen is rubbed and faded almost beyond recognition, which accounts for its specific name.

A. divergens, Walk., and *A. erecta* = *Atethmia inusta* = *A. subusta* = *Laphygma trilinea* = *Anomis dispartita* = *Poaphila congesta* are Heliothidæ of the genus *Lygranthæcia*, which is consequently synonymous with *Atethmia*, Hübn.

Dyrzela cara, Butl., from Japan, is a *Cosmia* nearest to *C. diffinis*, L.: the type of *Dyrzela* belongs neither to the Acontiidæ nor Eublemmidæ, but will come much later in the arrangement.

Xanthodes? *arcuata* is probably an *Avitta*, and belongs to the *Herminiidæ*; and *Acontia*?? *ræselloides*, Walk., is a *Sarrothripa*.

Thalpochares orba, Grote, is a *Hypenid*; it is identical with Walker's *Hydreliæ*? *latipalpis*.

Micra tineoides, Walk., is a *Lithosiid* allied to *Sorocostia vetustella*.

Of reputed *Acontiidæ* hitherto not mentioned *A. discalis* is a *Tineid*. *A. discoidalis* = *venustula* is a *Spragueia*, as also is *A. decisa*. *A. olivacea* = *Anthophila nebulifera* is a genus of *Eublemmidæ* near to *Eublemma*, but I think distinct. *A.*? *nigripalpis* is so much worn, rubbed, and faded that it is impossible to be certain of its genus; it is an *Acontiid*, so far as can be judged by its venation, and may be *Hiccodes dosaroides* of Moore, which it resembles in general colouring and size; but the markings are almost entirely obliterated. *Tarache destituta* is an *Ozarba*. Under *Erastria* Walker described two *Hadenids*,—*E. varia* = *Oligia festivooides*, Guén., and *E.*? *basistigma*, which is also an *Oligia*.

OZARBA, Walk.

Ozarba punctigera.

Ozarba punctigera, Walker, Lep. Het. Suppl. 2, p. 685 (1865).

Grammodes excavata, Walker, l. c., 3, p. 973 (1865).

Asia and Australia. Types in Coll. B. M.

Miana honesta, Walk., is an allied species.

ACANTHOLIPES, Led.*

Acantholipes circumdata.

Hydreliæ? *circumdata*, Walker, Lep. Het. xv. p. 1763 (1858).

Docela vetustalis, Walker, l. c., Suppl. 4, p. 1258 (1865).

Congo. Types in Coll. B. M.

EUBLEMMA, Hübn.

Eublemma rosita.

Micra rosita, Guenée, Noct. ii. p. 245, n. 1036 (1852).

Micra derogata, Walker, Lep. Het. xii. p. 825, n. 17 (1857).

Australia, Formosa, Ceylon, Bombay. Coll. B. M.

The following group differs somewhat in character from typical *Eublemma*, but appears not to differ structurally: it consists of *E. pannonica* from Europe, *secta*, *leonata*, *hemirhoda* (and two other undetermined species in the Museum series), from Java, New Guinea, Australia, &c.

* It is doubtful whether this genus is actually distinct from *Microphysa*; in any case it is a convenient name for a group.

(To be continued.)

ENTOMOLOGICAL NOTES, CAPTURES, &c.

THE RECENT EXHIBITION.—Successful as the later displays of the South London Entomological and Natural History Society have been, the Twelfth Annual Exhibition of this Society, which was held at the Bridge House Hotel on the 5th and 6th ultimo, was not second to any one of them, from whatever point of view we may regard it. The number of exhibitors were not, perhaps, quite so numerous as they sometimes have been on these occasions, but the table and all other available space was well filled with a choice assortment of natural-history objects, largely entomological. Of these last the Secretary's report, which will be found on p. 149, will give full particulars. The educational value of exhibitions of this kind can never, perhaps, be satisfactorily ascertained; but it is safe to assume that some, who are attracted by mere curiosity to the show, are so impressed by the beautiful objects they see around them that they, too, resolve to form a collection of some of Nature's gems. Another way in which these exhibitions are distinctly useful is, that they afford an opportunity to fellow-workers for making the personal acquaintance of each other; and this was freely taken advantage of at the last show.—ED.

THE PRESENT PRICE OF "COPPERS."—At Stevens', on the 16th of last month, seven specimens of *Polyommatus dispar* were sold, and realized the large amount of £15 18s. 6d., or, roughly speaking, an average of £2 5s. apiece. A fair male specimen was knocked down for £3 3s., and a nice female example fetched the handsome sum of £4 10s., whilst two other, not very fine, females went for £2 15s. and £2 2s. respectively. One male, minus both antennæ and abdomen, was sold for £1 8s.; a female, in poor condition, for £1; and a chipped male, reversed, for £1 10s. Altogether it would seem that anything in the way of a British "copper" is worth money. Among the other things offered in this sale were three pairs of *Lælia canosa*, not all in the best possible condition; these realized £1 1s., £1 4s., and £1 12s. 6d. per pair. A fine pink, but small, example of *Noctua subrosea* went for £2 10s.; two others fetched £2 10s. the pair; but the next two lots only commanded 16s. per pair. A specimen of *Arctia caia*, with yellow abdomen and hind wings, found a purchaser at 8s. 6d.—ED.

HEREFORDSHIRE LEPIDOPTERA.—Mr. Thomas Hutchinson has published a list of the Herefordshire Lepidoptera in the Leominster and Tarrington districts:—510 Macro-Lepidoptera and 669 Micro-Lepidoptera are enumerated, making the respectable total of 1179 species.—ED.

"BUG-HUNTING."—In a pamphlet of 16 pp., bearing this title, Mr. Hewett, the author, gives most excellent advice to the young collector; and many, who consider themselves experienced in all that pertains to the catching and setting of Lepidoptera, will find therein some hints which it would probably be to their advantage to adopt, especially as regards the setting business.—ED.

EGGS OF ANTHOCHARIS CARDAMINES.—The ovum has the same form as all those composing the genus. It is shiny; in colour, opal, with a slight yellowish tint, afterwards changing, if fertile, to orange-red, and, before the exit of the young larva, to dull lead-colour, transparent at the tip. These eggs are laid singly in an upright position, and are attached by the base, which is flat, to the peduncle (or flower-stalk) of the plant. They

are sometimes deposited in the very centre of the racemes, in which position they require careful hunting for. Occasionally several occur on one plant, but never in the same position. On April 22nd, this year, I watched a female, near here, ovipositing on the flower-heads of *Turritis glabra* (tower-cress). Afterwards, examining a plant which I had just observed her to visit, I found an egg, and subsequently, on several occasions, others. The caterpillar emerged nine days afterwards.—F. BROMILOW; Nice, France, May 2, 1892.

DRURYIA ANTIMACHUS, FEMALE.—A specimen of this, so far as I can learn, unique insect, has just come to hand from the Gaboon, West Africa. It is a very small insect, and differs from the male by the fore wings being rounded on the outer margin instead of concave; they are also much less clothed with scales, and approach a semi-diaphanous condition. It was accompanied by an unusually fine large dark male, caught in the same locality, and both specimens are in good order. The anal segment of *antimachus* is exactly the same sexually as in the genus *Ornithoptera*, the males having a horny clasped terminal, whilst in the female it is simple and thickly pubescent. Both the specimens have been added to the fine collection of Mr. Herbert J. Adams, of Enfield, whose new museum, being now completed, the collections can be seen by appointment.—WILLIAM WATKINS; The Hollies, Croydon, May 5, 1892.

APORIA CRATEGI IN ENGLAND.—In the 'Entomologist's Record,' for April last, Mr. Tutt is somewhat severe on Mr. Hodgkinson for not being aware that the last record of this species was that of the specimens taken in 1887, and vouched for by Mr. S. Webb. As a matter of fact, this is *not* the last record, as the species was taken by my nephew in 1888, and recorded in the 'Entomologist' (xxi. 184), as well as in the 'Young Naturalist.' I wrote to the 'Record,' pointing out the error; but Mr. Tutt has not thought proper to insert the correction.—C. A. BRIGGS; 55, Lincoln's Inn Fields, May 18, 1892.

A HINT TO BREEDERS OF LEPIDOPTERA.—In the 'Societas Entomologica,' of the 15th April, an ingenious but simple method is described of keeping cuttings of hollow-stemmed plants fresh for at least eight to ten days, and a translation may be useful to breeders of Lepidoptera:—"Take a tin pipe of 2 centimètres diameter, give it the shape of a quicksilver barometer, making the shorter arm about 12 and the longer arm about 75 centim. in length; the short arm is plugged by cork, pushed tightly in until it is even with the rim, perforate it with a hot needle, into which the sprig of the plant fits tightly. After insertion of the sprig cover the surface of the cork with wax, with which powdered kolophonium has been mixed to ensure quick drying. Now fill the long arm with water, and it follows, if the shorter arm has been efficiently closed, that the water, by the pressure in the longer tube, must rise inside the hollow stem of the sprig; and, after a couple of hours, the sprig will hold up its head as if it had never been separated from the parent plant. Then fix the tube by wire to a stick in a perpendicular position, stick this into the earth, and the arrangement is complete."—N. F. DOBRÉE; Beverley, E. Yorks, May 6, 1892.

PSEUDOPSIS SULCATA, *Newm.*—I have the pleasure of recording the capture of two specimens of this rare beetle, in February last, among refuse from a haystack standing near Birkenhead. The species has not been previously recorded from the Liverpool district; and, unfortunately,

the stack from which the refuse was obtained had been removed before the specimens were diagnosed.—JOHN W. ELLIS; 18, Rodney Street, Liverpool, April 26, 1892.

SPRING CAPTURES AT LEICESTER.—The following are a few notes on gas-lamp entomology and collecting at the shallows, this spring, at Stoneygate and Knighton. Gas-lamps:—*Selenia illunaria*, *Hybernia rupicaprararia*, *H. progemmaria*, *Anisopteryx aescularia*, *Anticlea badiata*, *Cidaria silaceata*, *Tæniocampa instabilis*, *T. stabilis*, *T. gothica*, *T. cruda*, *T. munda*, *Xylocampa lithorhiza*, and *Diurnea fagella*. Sallow (in addition to the above):—*Tæniocampa rubricosa*, *T. gracilis*, and *Calocampa vetusta*. In all seventeen species. The weather has been so bitterly cold that it has on several occasions stopped collecting at least for a week at a time.—C. B. HEADLEY; Stoneygate, Leicester, May 1, 1892.

CAPTURES IN WESTMORELAND, 1891.—The following notes of my captures in Westmoreland, between July 11th and August 5th, last year, may be of interest. I hoped to take *Phothedes captiuncula*, and, thanks to notes recorded in the 'Entomologist,' was successful. It was fairly abundant from the 13th to the 17th; then it almost disappeared, owing to the heavy rain, the last being taken on the 27th. *Thera simulata* disappeared in the same way, just as I was completing a fine series. My expedition for *Erebia epiphron*, on the 16th, was not pleasant, owing to ceaseless rain, the mountains being enveloped in clouds; after close hunting some twenty were obtained, but not in very good condition; probably it was too late in the season. The same remark applies to *Cænonympha typhon* and *Argynnis adippe*. *Erebia æthiops* appeared on the 29th and following days, all in superb condition. *Carsia paludata* was fine from the 20th, and can be taken in wet weather by searching. *Nemeophila russula* (two females on the wing), *N. plantaginis* (three females on the wing), *Hepialus velleda*, *Notodonta dictæa*, *N. dictæoides*, *L. camelina*, *Xylophasia sublustris*, *X. monoglypha* (black var.), *Mamestra abjecta*, *M. furva*, *Agrotis lucerneæ*, *Xanthia fulvago* (female), *Hyria muricata* (worn), *Larentia salicata*, *L. olivata*, *Eupithecia venosata*, *E. sobrinata*, *Coremia munitata*, were also taken amongst others. Light, during the first week in August, was very successful; it even attracted *Mixodia schulziana*, presumably from a "moss" quite a mile and a half away. Larvæ of *Dianthæcia capsineola*, *D. cucubali*, *D. carpophaga*, and *Eupithecia venosata*, were exceedingly abundant. *Notodonta ziczææ*, *Asphalia flavicornis*, *Acronycta menyanthidis*, *Panolis piniperda*, *Hadena glauca* (rare), *Plusia chrysitis*, *Anarta myrtilli*, not uncommon.—E. B. NEVINSON; 7, Staple Inn, W.C.

COLLECTING ON THE SCOTCH BORDERLAND.—My first collecting expedition was on April 21st, when I paid a visit to the Scotch borderland, to the spot where I took *Micropteryx sangii* last year. Although the weather was cold, I found that I had hit the right day. Being joined by Tom Duckworth, an able assistant and a good worker, we proceeded to business, he used the umbrella, and I manipulated my sweeping-net, and together we secured 150 specimens of various *Micropteryx*, including *sangii*, *caledoniella*, *unimaculella*, *purpurella*, and *semipurpurella*. We paid three more visits on succeeding days, with an extra stock of boxes, numbering at least 250. Tom Duckworth determined that we should not go back until all the boxes were full, a task which did not take long to accomplish. This great catch was effected on an area of not many yards in extent. Among other captures was a very fine *Gracillaria stramineella*, the Scotch

form; the last time I met with this form was in 1846, near Pitlochry. I also picked up a fine variety of *Saturnia pavonia*, with a black head, and near the shoulder a jet-black patch, about three-eighths of an inch in width. I brought home, unset, about 1000 species; when these are set, no doubt some of my Micro friends will participate in the spoil.—J. B. HODGKINSON; Ashton-on-Ribble, May 2, 1892.

PHIGALIA PILOSARIA.—I bred a fine black variety of this species from a larva taken in Delamere Forest last year.—H. McDOWALL; The Terrace, Nashville Park, Howth, near Dublin, May 16, 1892.

EARLY APPEARANCE OF PIERIS BRASSICÆ.—Yesterday, in the neighbourhood of Mickleham, my brother and I saw several specimens of *Pieris brassicæ* of both sexes. Is not this an unusually early date? *P. rapæ* was in abundance, and *G. rhamnii* and *S. malvæ* were common.—T. H. BRIGGS; Surrey House, Leatherhead, April 25, 1892.

STAUROPOUS FAGI.—Yesterday, the 15th May, I found a fine female of the above on a beech trunk near here, on the Berkshire side of the Thames. The earliest I have ever found it before was the 21st (Entom. xxi. 158).—W. E. BUTLER; Hayling House, Oxford Road, Reading, May 16, 1892.

NOTES FROM READING.—*Brephos parthenias* has been common; and I have taken *Asphalia flavicornis* from birch. *Lobophora lobulata* has been common on tree trunks. *Xylocampa lithoriza*, *Xylina rhizolitha* (hybernated), *Tephrosia punctulata*, *Boarmia cinctaria*, *Notodonta camelina*, *Tephrosia crepuscularia*, *T. biundularia* (commonly), *Ephyra omicronaria*, *Demas coryli* (commonly), and *Lithosia aureola*, I have also taken from trunks. I searched birch for *Endromis versicolor*, but failed to get it; it has, however, been taken in the district. Where *Platypteryx unguicula* swarmed last year, I have only seen two. On the 12th inst. I went for *Stauropus fagi*, and brought home two males. Since then I have taken eleven,—eight males and three females. The former vary from the light to the very dark forms; the females are typical. With one exception, all were taken from the N. and N.E. sides of the tree; and eleven were from the smallest trees, *i. e.*, those from 1½ to 4 inches in diameter; the other two were on middle-sized trees. I searched all trees, but from the big ones got none. This may be useful information to those within reach of beech and oak woods.—J. CLARKE; Reading, May 19, 1892.

ANOTHER IRISH LOCALITY FOR NYSSIA ZONARIA.—In the 'Irish Naturalist' for May, Mr. G. H. Carpenter, one of the editors, records the occurrence of a female *Nyssia zonaria* on the sand-hills of Achill Island, and observes that the only Irish locality previously known for this species was Ballycastle in Co. Antrim.—ED.

NOTES ON THE EARLY MOTHS.—From the 15th to the 27th of March the weather was warm and sunny. On the 19th I paid another visit to Delamere Forest to continue my observations on *Hybernia leucophaaria*. The moth was out in hundreds, and, in addition to the three forms already described (see Entom. 122, 123), I took a specimen of a fourth, of which the following is a description:—All the wings black-brown and unicolorous, the lower wings being slightly paler than the upper; head, thorax, and antennæ, smoke-coloured; body black-brown. The broad transverse central

bar on the upper wing is obliterated, being filled up with black-brown instead of grey. The position of the bar is, however, marked by indistinct black boundary lines. The exterior margins are bounded, as in the other three forms, by a thin black line of minute crescents, beyond which is the slightly paler fringe. The wing-rays are delicately pencilled in black. My other captures were a common humble-bee, which I set free again; *H. marginaria* (*progemmaria*), four males and two females; half a dozen *Anisopteryx æscularia*, males; three *Nyssia hispidaria*, males (this is now a scarce insect in the forest); three *Phigalia pedaria* (*pilosaria*), males; and a dozen or more of the fussy little *Tortricodes hyemana*. I also took a small brown Geometer larva (probably one of the *Eupithecia*) crawling up an oak. This caterpillar, together with the small brick-red one, mentioned in my forest notes for February 13th (Entom. 122), has since spun a few threads for a cocoon, and changed into a greenish brown chrysalis. My next visit was on the 26th, and, as the train sped on through the green fields, it was evident, from the catkins in blossom on favoured willows and the water-grass stretched upon the surface of the ponds, that I must be prepared for a march of the season in the forest. My chief object was to secure a female *N. hispidaria*, and as the three dials in the morning 'Standard' showed a falling barometer all over England, no time was to be lost. I found the early moths had almost disappeared. Three male *A. æscularia*, about a dozen male *H. leucophæaria*, and one female, showed that the time had been reached between *Hybernia* and *Tæniocampa*. As the female *H. leucophæaria* is rare, I will venture to describe it. Head, thorax, and body silvery grey, with minute black spots. Thorax ornamented with a wide black Λ , the angle pointing towards the head. The 1st, 2nd, 3rd, and 4th segments of the body have each two dorsal and conspicuous black spots; these spots are rectangular, and largest on the 2nd and 3rd segments. Antennæ black; wings microscopic; legs black, long, and very spider-like. The sport was poor until about 3.30, when a moth, with rapid movement, suddenly started on the wing from an oak trunk. I had no net, but the resources of civilization were not yet exhausted. Seizing my hat I gave chase, and knocked the insect down. It turned out to be a fine female *Brephos parthenias*, the first recorded capture for the district. For years back I have undoubtedly seen this species in the forest on the wing. Shortly after this capture I came across Messrs. Mason Bros. from Manchester, with whom I had the pleasure of working for the remainder of the afternoon. On comparing our captures at the close of the day, I found they had each secured a specimen of *H. leucophæaria*, Form 4. Their other good things were *N. hispidaria* (three males), *Larentia multistrigaria*, and *Asphalia flavicornis*. I took a female *N. hispidaria*, which unfortunately declined to oblige me with eggs, and a couple of *A. flavicornis*, females; all by trunk-searching. Each of the latter afterwards laid eggs; those of the first were infertile. The egg of this moth is a beautiful object, even to the naked eye. Under the microscope it is an irregular ellipse, with an indistinct "apical zone" (this is a most descriptive phrase, and I borrow it from Dr. Chapman). From this zone proceed rough longitudinal furrows down the entire length of the shell; but the beauty of the egg lies in the different colours assumed within the first week, all being perfectly visible to the unaided eye: on the first day it is white; about the second, cream-coloured; third day, yellow; fourth, cherry-plum; fifth day, coral-red. I had a few of these eggs on a piece of white cotton-wool, together with some of *N. zonaria*, which are bright pea-green, and the picture was an exceedingly

pretty one. The eggs of *A. flavicornis* retain their coral tint, but gradually lose in brightness. Before nightfall—I am now referring to my last Delamere visit—a cold rain set in; and next day, March 27th, there was a general fall of snow from the N.E. April was ushered in by warm, summer-like weather. Mr. C. Leeson Prince, writing from the Observatory, Crowborough, to the 'Standard' for April 11th, says:—"We have had the highest recorded temperature since 1848 during the first April six days. In 1848 the average temperature for the six days was 69°; in 1892, 67°. The fine weather broke up on the 12th, with snow, as in 1848. Previous to the break up I took three larvæ of *Arctia caia*, April 3rd; and an imago of *Pieris rapæ* on April 10th. In my breeding-pots, the first *Tephrosia biundularia* var. *delameriensis* (first brood, bred from the moths of last summer) appeared, March 22nd; *Tæniocampa instabilis* and *T. opima*, April 4th; *T. gothica*, April 8th. All of these were bred from the egg, but none of the species deserve special comment except *T. opima*, with which I have been exceptionally fortunate this year. Up to date, April 21st, twelve specimens have emerged. They exhibit, I believe, every variety of the moth, from the darkest to the lightest; the latter appeared to be the type; all were bred from the same batch of eggs, and under the same conditions. Some of the forms are very beautiful, and would puzzle many an experienced entomologist. *Agrotis ashworthii* larvæ have been scarce, but imagines of *N. zonaria* plentiful,—to entomologists who know where to go, and when. Three years ago I laid down scores of *zonaria* eggs in a likely spot near Chester, but all my efforts to establish the insect have been unsuccessful. *Diurnea fagella* is just now, exceptionally and generally, abundant, and "black" forms are frequent among the types.—J. ARKLE; Chester, April 21, 1892.

ERRATA.—Page 119, line 16 from top, for *Leucanium hemisphæricum* read *Lecanium hemisphæricum*; page 126, line 4 from top, for *Saletaria* read *Salatura*, and for *Limnias* read *Limnas*.

SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON.—April 27th, 1892.—Mr. Robert McLachlan, F.R.S., Treasurer, in the chair. Mr. William Edward Baily, of Lynwood House, Paul Churchtown, Penzance; and Mons. Edmond Fleutiaux, of 1, Rue Malus, Paris, were elected Fellows of the Society. Mr. C. G. Barrett exhibited, for Mr. Sabine, varieties of the following species:—*viz.*, one of *Papilio machaon*, bred by Mr. S. Baily, at Wicken, in 1886; one of *Argynnis lathonia*, taken at Dover in September, 1883; one of *A. euphrosyne*, taken at Dover in 1890; and one of *A. selene*, taken at St. Osyth, in 1885, by Mr. W. H. Harwood. He also exhibited a long series of *Demas coryli*, reared by Major Still from larvæ fed exclusively on beech, which he said appeared to be the usual food of the species in Devonshire, instead of hazel or oak. Mr. Barrett also exhibited, for Mr. Sydney Webb, a number of varieties of *Arge galathea*, *Lasionmata megera*, *Hipparchia tithonus*, and *Cænonympha pamphilus*, from the neighbourhood of Dover. The Rev. J. Seymour St. John exhibited a variety of the female of *Hybernia progemmaria*, taken at Clapton in March last, in which the partially developed wings were equally divided in point of colour, the base being extremely dark and the outer portion of the wing very pale. The

Rev. Canon Fowler made some remarks on the subject of protective resemblance; he said his attention had been recently called to the fact that certain species of *Kallima* apparently lose their protective habit in some localities, and sit with their wings open, and that Dr. A. R. Wallace had informed him that he had heard of a species of *Kallima* sitting upside down on stalks, and thus, in another way, abandoning its protective habits. Mr. W. L. Distant said that a species of butterfly in South Africa, which when its wings were vertically closed resembled the reddish soil on which it settled, in the Transvaal rested with open wings on quartzite rock, which the upper surface of the wings protectively resembled. Mr. Barrett, Mr. McLachlan, Mr. Jacoby, Mr. Champion, Mr. H. Goss, Canon Fowler, and Mr. Frohawk, continued the discussion. Mr. Goss informed the meeting that, in pursuance of a resolution of the Council passed in March last, he and Mr. Elwes had represented the Society at the recent Government enquiry, as to the safety and suitability of the proposed Rifle Range in the New Forest, held at Lyndhurst by the Hon. T. W. H. Pelham, on the 20th, 21st, 22nd, and 23rd inst., and that they had given evidence at such enquiry, and addressed a large meeting of counsel, solicitors, War-Office officials, Verderers, and Commoners.

May 11th.—Mr. Frederick DuCane Godman, F.R.S., President, in the chair. Dr. Edward A. Heath, M.D., F.L.S., of 114, Ebury Street, Pimlico, S.W.; and Mr. Samuel Hoyle, of Audley House, Sale, Cheshire, were elected Fellows of the Society. The President announced the death, on the 4th of May, of Dr. Carl August Dohrn, of Stettin, one of the ten Honorary Fellows of the Society. Mr. Stainton expressed regret at the death of Dr. Dohrn, whom he had known for a great number of years, and commented upon his work and personal qualities. Dr. D. Sharp exhibited drawings of the eggs of a species of Hemiptera, in illustration of a paper read by him before the Society; and also a specimen of a mosquito, *Megarhina hæmorrhoidalis*, from the Amazon district, with the body, legs and palpi furnished with scales as in Micro-Lepidoptera. The Rev. Canon Fowler, on behalf of Mrs. Venables, of Lincoln, exhibited cocoons of a species of *Bombyx* from Chota Nagpur; also the larvæ-cases of a species of Psychidæ, *Cholia crameri*, from Poona; and a curious case, apparently of another species of Psychidæ, from the island of Likoma, Lake Nyassa. Mr. McLachlan, Mr. Poulton, and Mr. Hampson made some remarks on the subject. Mr. F. W. Frohawk, on behalf of the Hon. Walter Rothschild, exhibited a specimen of *Pseudacræa miraculosa* mimicking *Danais chrysippus*; also a specimen of the mimic of the latter, *Diadema missippus*, and read notes on the subject. Mr. C. G. Barrett exhibited, and commented on, a long series of specimens of *Melitæa aurinia (artemis)* from Hampshire, Pembrokeshire, Cumberland, and other parts of the United Kingdom; also a long and varied series of *Coremia fluctuata*. Mr. H. Goss exhibited, for Mr. W. Borrer, jun., of Hurstpierpoint, a portion of a wasp's nest which had been built with the object of concealing the entrance thereto and protecting the whole nest from observation. He also read notes on the subject, which had been communicated to him by Mr. Borrer. The Hon. Walter Rothschild communicated a paper entitled "Notes on a collection of Lepidoptera made by Mr. Wm. Doherty in Southern Celebes during August and September, 1891, Pt. I. Rhopalocera." He also sent for examination the types of the new species described therein. Dr. Sharp read a paper entitled "On the eggs of an Hemipterous Insect of the family *Reduviidæ*."—H. GOSS & W. W. FOWLER, *Hon. Secs.*

SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—
April 14th, 1892.—Mr. C. G. Barrett, F.E.S., President, in the chair. Mr. South exhibited several aberrant specimens of *Arctia caia*, L., and read notes on the variation of this species; and also exhibited examples of the species artificially darkened by being killed with nicotine just after the expansion of the wings and before they had dried. Mr. C. G. Barrett exhibited a long series of *Noctua festiva*, Hb., from all parts of the British Isles, including the Isle of Shetland, and stated that Mr. Hart, of Dublin, had taken what appeared to be a partial second brood, and some of these were comparable to the so-called *Noctua conflua*. Mr. Barrett expressed the opinion that the series shown were all one species. Mr. Adkin also exhibited a series of *N. festiva* from Forres, Rannock, and Shetland. Mr. Tugwell, southern forms of *N. festiva*, specimens from Aberdeen, and one from Kincardineshire, similar to the Shetland form. In the discussion which ensued, Mr. Tugwell remarked that the late Mr. Doubleday was of opinion that *Noctua festiva* and *N. conflua* were identical. Mr. Lewcock said that, from an examination of Mr. Tutt's long series of *festiva* and *conflua*, he could observe no satisfactory specific distinction. Mr. Fenn questioned the appearance of a second brood in so short a time; in the examples he had from Shetland some had narrow and others broad wings; he expressed an opinion that the narrowness of the wing arose from the hardness of the conditions of life to which the species was exposed in the Shetlands, and was a kind of immaturity. Mr. South said that Mr. Tutt based his distinction of *Noctua festiva* from *N. conflua* mainly on the shape of the wing, whereas Treitschke, in his description of the last-named species, did not refer to the shape; the original type came from the Riesengebirge Mountains in Silesia. Since then specimens had been obtained from Iceland, and referred to the *conflua* of Treitschke; the Shetland specimens were not in any way referable to this form, but were the var. *thulei* [*thules*]; the narrow wings, in his opinion, were certainly not due to immaturity. He added that the moorland form of *festiva* was not peculiar to the north, as he had taken it in Devonshire. Mr. Barrett exhibited a specimen of *Notodonta bicolor*, Hb., which was taken in Devonshire in 1880, and until recently had been in a local collection under the name of *Notodonta cucullina*. He also exhibited, on behalf of Mr. Sydney Webb, of Dover, varieties of Rhopalocera. Mr. Adkin exhibited *Phibalapteryx lapidata*, Hb., and *P. vittata*, Bork., and read notes relative thereto. Mr. Lewcock, vars. of *Silpha atrata* from English, Scotch, and Irish localities; var. *subrotundaria* from Orkney and Ireland; also *Mesites tardii*, Curt., male and female, to show that in the male the antennæ are inserted nearer the apex of the rostrum than in the female, and that the male has a much stouter rostrum. It was also noted that this species was now taken in quantity under the bark of old holly trees.

April 28th.—Mr. C. G. Barrett, F.E.S., President, in the chair. Mr. J. V. Blachford, M.B., F.R.C.S., was elected a member. Mr. A. Cant exhibited a case of the genital organs of the Hesperiidæ, mounted in such a manner that they could be kept with the series in the cabinet. Mr. Frohawk, varieties of the under side of *Pieris rapæ*, L., from Cambridge, a variety of *Argynnis euphrosyne*, L., and a black example of *Apatura iris*, L., without any spots on the inferior wings. Mr. C. G. Barrett, on behalf of Major Still, a series of *Demas coryli*, L., reared this spring, and showing the variation the species was subject to in Devonshire; Mr. Barrett pointed out that in some cases the central markings were eliminated. On behalf of

Mr. Sabine, Mr. Barrett also exhibited a variety of *Papilio machaon*, L., with the dark bands narrow, and marginal primrose spots broad and upright; a specimen of *Argynnis latona*, L., with large black spots, and the wings suffused with a peculiar bronze colour; *Argynnis euphrosyne*, L., having the black spots massed together into large sharp deep black bands, and the fulvous colour in bright intermediate bands; also a much suffused specimen of *Argynnis selene*, Schiff., with the black spots massed in broad ill-defined bands. Mr. Barrett also, on behalf of Mr. Sydney Webb, exhibited varieties of *Melanargia galatea*, L., varying from dark to very pale forms. Mr. Billups exhibited *Pimpla graminella*, Schr., remarking that the cocoons were obtained from a larva of *Odonestis potatoaria*, L., and given to him by Mr. Fenn in January, 1891; four specimens were bred in 1891, and nineteen had emerged during the present month. Mr. E. Step exhibited a large collection of lichens, and contributed notes and observations thereon.

Annual Exhibition.—The twelfth Annual Exhibition was held on the 5th and 6th of May, at "The Bridge House," London Bridge, S.E. —Mr. C. G. Barrett, F.E.S., President, supported by Mr. J. Jenner Weir, F.L.S., Vice-President, formally opened the Exhibition, which comprised examples of all branches of Biological Science. During each evening Mr. F. Enoch, F.L.S., &c., gave the "Life-history of the Trap-door Spider," illustrated by his original micro-photographs; and there were also lectures on other subjects by Mr. E. Step and Mr. G. Day, F.R.M.S. Among the more important of the Entomological exhibits were those of Mr. J. H. Leech, who showed a number of drawers containing Palearctic Lepidoptera, comprising extensive series of *Smerinthus ocellatus* and *S. populi*, together with the Algerian *austauti* and its var. *staudingeri*, and the Russian *tremula*; *S. tiliæ* in great variety, with *christophi*, Staud., and *tatarinovii*, Brem.; many beautiful forms of *Bombyx quercus*; a selection of Japanese Noctua, including remarkable forms of many species of the genus *Tanio-campa*. Mr. S. Edwards, a large selection of Exotic Rhopalocera. Mr. J. Jenner Weir also showed Exotic species, arranged to show mimicry. Mr. Crockett, life-histories of many silk-producing species of Bombyces. British Lepidoptera was represented by over forty exhibitors, including Mr. C. J. Barrett, with varieties of *Pieris napi*, *Anthocharis cardamines*, and *Lycæna icarus*; extensive series of varieties of *Agrotis cursoria* and *A. tritici*, from the east coast of England to west of Ireland; also extreme varieties of *Odonestis potatoaria*, the colour of the males ranging from chocolate to pale buff. Mr. Barrett also exhibited a drawer of varieties of Rhopalocera, which included Mr. E. Sabine's varieties of *Argynnis latona*, *A. euphrosyne*, and *A. selene*. The Rev. Joseph Green, a specimen of *Epinephle ianira*, with all the wings longitudinally and regularly striped between the nervures with a satiny whitish drab-colour, Dr. Wheeler, a striped and banded example of *Argynnis aglaia*. Mr. J. E. Robson, a striking form of *Colias hyale*. Mr. S. Webb, fine forms of *Melanargia galatea*, gynaandrous and partially gynaandrous specimens of *Lycæna æyon*, whitish blue and smoky blue examples of *L. corydon*. Dr. Mason, almost entirely black specimens of *Argynnis aglaia* and *A. euphrosyne*. Mr. C. S. Gregson, varieties of *Dianthæcia nana (conspersa)*, from many localities; also a magnificent series of *Abraxas grossulariata*, many being extremely pale, and others having the whole or the greater part of the wings suffused with the black colour. Mr. Tugwell also had some very fine varieties of *A. grossulariata*; also extreme forms of *Tephrosia crepuscularia* and *T.*

biundularia, and fine series of many rare species, including *Boletobia fuliginaria*. Mr. J. A. Clark, splendid series of *Spilosoma lubricipeda*, *S. menthastri*, and *Lælia canosa*. Varieties of *Arctia caia* were exhibited by Messrs. T. W. Hall, A. Short, A. W. Mera, and Goldthwait. Mr. J. Henderson showed a drawer of forms of *Tephrosia crepuscularia*. Mr. Machin, long series of the genus *Acidalia*; also of *Asteroscopus nubeculosa*, *Dicranura bicuspis*, and *Drepana harpagula (sicula)*. Mr. Tutt, long and variable series of *Taniocampa gothica*, and other species of Noctuæ. Mr. Farren, a series of yellow examples of *Bryophila perla*, and a series of *B. impar*, Warren, taken at Cambridge, and arranged side by side with a long series of *B. muralis (glandifera)*; also interesting series of Geometræ from Cambridge. Mr. C. H. Williams, a gynandrous specimen of *Argynnis paphia*, taken by him in the New Forest in 1891. Mr. R. Adkin, British Sphinges and Bombyces, arranged to show local variation; also types of a collection of Macro-Lepidoptera, made at Rannoch in 1891, illustrating an article on the local variation recently contributed by Mr. Adkin to 'The Entomologist.' Mr. Wellman, his collection of the genus *Dianthæcia*, a long series of *Notodonta carmelita*, and *Cidaria truncata (russata)*, taken at and bred from ova obtained from numerous localities. Mr. Adye, some of the rarer Sphinges. Mr. R. S. Standen, fine varieties of species of the genus *Argynnis*. Mr. Jäger, *Callimorpha hera* and var. *lutescens*, also the larvæ of the species. Mr. South, nearly the whole of his collection of British Pyrales, Crambi, Pterophori, and Tortrices; a selection of British Noctuæ, among which were extensive series of most of the polymorphic species in this group; a drawer of *Lycana icarus*, showing the colour-range of both sexes (one very blue female without the black discoidal spots was especially interesting); a drawer of Geometræ, showing that the colour and ornamentation of the female parent is transmitted to a large proportion of her offspring. The cases of *Selenia illustraria*, *S. illunaria*, &c., recently exhibited by Mr. Merrifield at a meeting of the Society, were on view, and were rendered more attractive by an additional case showing the effects of temperature applied for a very few days to pupæ at a sensitive stage, *i.e.* just before they began to show colouring. Mr. Hawes, Rhopalocera bred and captured during 1890 and 1891: these included some very fine and beautiful forms. Life-histories of many species, mounted on the natural food-plants, were shown by Mr. Simes, Mr. Quail, and Mr. A. J. Croker; and preserved larvæ were exhibited by Mr. Raine. In other orders Mr. R. McLachlan exhibited four drawers of European Neuroptera. Coleoptera were shown by Mr. W. West, Mr. G. Lewcock (fine series of the genus *Donacia*), and Mr. T. R. Billups; the last-named gentleman also exhibiting British Hemiptera-Heteroptera and Homoptera, each specimen being labelled with the locality and date of capture; rare species of Hymenoptera-Aculeata; long series of Ichneumonidæ, many being unique and others new to Science; also two drawers showing the life-histories of many species of internal parasites, showing the imagines and larval stage of the Lepidopterous host from which bred; the addition of the cocoon of the parasite did much to complete an exhibit which was certainly one of the most instructive in the room. Mr. Auld showed a nest of the Hornet; and Mr. H. Moore, Exotic Orthoptera, and Wasps' nests from Nova Scotia, Demerara, Bermuda, and Nassau. Mr. C. H. Goodman had two cases illustrating the comparative anatomy of the different orders of insects. The microscopical exhibits were as interesting as on former occasions, some thirty microscopes being available.

During the two days the Exhibition was open it was visited by upwards of 1100 visitors.—H. W. BARKER & A. SHORT, *Hon. Secs.*

BIRMINGHAM ENTOMOLOGICAL SOCIETY.—*May 9th, 1892.* Mr. G. H. Kenrick, F.E.S., Vice-President, in the chair. Mr. Robert Allday, Handsworth, was elected a member. Mr. P. W. Abbott showed *Melitæa athalia* from Abbots Wood and the South of France; *Oporina croceago*, taken on sallow blossoms at Wyre Forest; and other Lepidoptera. Mr. Kenrick remarked that the English *athalia* were finer than the French. Mr. G. W. Wynn showed a number of moths taken on the sallows at Marston Green, including *Tæniocampa populeti*, *T. gracilis*, &c. Mr. R. C. Bradley read a paper on the Tipulidæ, showing six boxes of specimens in illustration; he said that there were 170 British species, out of which he had taken 112, also one new to Britain, two formerly considered as doubtfully British, and one or two perhaps new to science.—COLBRAN J. WAINWRIGHT, *Hon. Sec.*

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY.—*May 9th, 1892.*—Mr. S. J. Capper, F.L.S., F.E.S., President, in the chair. Mr. Samuel Hoyle, of Sale, was elected a member. The Rev. H. H. Higgins, M.A., read a paper, entitled "Butterfly life before leaving the egg," in which, after describing the formation of the egg, he traced the gradual growth of the nucleus through the various stages until the tiny caterpillar was complete in all its parts and ready to leave the egg. The paper was illustrated by various eggs of Lepidoptera shown under microscopes. Mr. Higgins also showed some Brazilian Lepidoptera, and pointed out a strong case of mimicry. The President exhibited the rare *Crambus myellus* from Perth. Mr. Stott, on behalf of Mr. Rigby, Natural History Museum, Nottingham, a case of educational entomology, containing the life-history of *Eriogaster lanestris*. Mr. Jones, recently-bred Lepidoptera, and a fine variety of *Asphalia flavicornis*.—F. N. PIERCE, *Hon. Sec.*

NORTH KENT ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—The Fifteenth Bi-annual Meeting of the above Society was held on Wednesday, May 11th, at the Royal Assembly Rooms, New Road, Woolwich, Mr. J. Woodward in the chair. The minutes of the previous meeting being read and confirmed, Mr. Dennis was elected a member. Owing to the pressure of business the exhibits were not numerous, Mr. Allbuary showing specimens of Geometræ and Micro-Lepidoptera; Mr. W. Broughton, *E. cardamines*, &c.; Mr. Povey, Micro-Lepidoptera; Mr. Woodward, larvæ and ova of *G. papilionaria*; Mr. Poore, conchological specimens. The officers for the ensuing six months were elected as follows:—President, Mr. J. Woodward; Vice-President, Mr. C. H. J. Baldock; Treasurer, Mr. A. S. Poore; Secretary and Librarian, Mr. H. J. Webb; Assistant ditto, Mr. T. Moore; Committee, Messrs. Allbuary, E. Knight, Sargent, W. Broughton, Povey, and Wilson; Trustees, Messrs. Webb and Sargent; Auditors, Messrs. Allbuary and H. Broughton. The question of reducing the subscriptions was then opened, and, after full discussion, the proposition of the Secretary was adopted, *viz.*, that ordinary members pay 1s. 3d. per quarter, and corresponding members (outside a ten-mile radius) pay, in advance, 2s. 6d. per annum. A vote of thanks to Mr. Baldock, for donation, concluded the meeting.—H. J. WEBB, *Secretary.*

THE ENTOMOLOGIST.

Vol. XXV.]

JULY, 1892.

[No. 350.

DEIOPEIA PULCHELLA IN ENGLAND.

By RICHARD SOUTH.

I AM not able to ascertain the exact date of the earliest-known British specimen of *Deiopeia pulchella*, which I believe was taken in Yorkshire, but the example, generally considered to be the second-known "Britisher," is that figured in Samouelle's 'Entom. Calendar' (1819), which was captured by the late Mr. J. C. Dale in a field near Christchurch, Hants, on the 1st of October, 1818. Between the date last mentioned and the year 1827 two other specimens were captured in September and October, respectively, by Mr. Brown, at Hove, near Brighton. One of these found its way into the cabinet of the late Mr. J. F. Stephens, and was figured by Curtis on plate 169 of his 'British Entomology.' The date on this plate is 1827.

In the Westwood edition of Wood's 'Index' the species is figured (pl. 8, fig. 95), but no additional localities are given. Stainton, in his 'Manual,' vol. i. p. 150 (1857), gives Epping, Manchester, Stowmarket, and Worthing, and remarks that it is a very rare species, and has the reputation of being partial to stubble-fields. Newman, 'British Moths,' p. 31 (1869), writes:—"Mr. Doubleday has a single specimen taken at Epping, and we believe there are two or three other British specimens in different cabinets."

In 1869 the capture of three other British *D. pulchella* is recorded. One of these was taken at Folkestone, a second at Reading, and the third in Monmouthshire, all in the autumn. Two specimens were added to the still small and select band in 1870, *i. e.*, one at Scarborough in June, and one at Littlehampton; in the latter instance the month is not mentioned.

The greatest capture of *D. pulchella* on British soil was made in 1871, when no less than thirty of these pretty moths were made examples of. These were all caught on the east, south, and south-west coasts, and the Isle of Wight, and established a

record that has not been beaten up to date. After a rest of two years the species suddenly appeared in May, 1874, in Cornwall, and in June in Sussex, two specimens being noted as taken in each county. In the autumn of that year three examples were captured on the south and south-west coasts, and one individual in Derbyshire. The next year twenty-four were recorded, the larger number from places on the south, south-east, and south-west coasts, between September 16th and 20th; but one was obtained on the south-west coast on October 2nd, and one in a clover-field at Waltham Cross on September the 19th, at about the same time that the largest number were being taken on the coast. The number of specimens for 1876 is only one below that of the preceding year, and, with the exception of one example, which was taken at Neath, were all captured on the east, south, and south-west coasts, and the Isle of Wight. So far as I can find there is no notice of *D. pulchella* in England in 1877, and only three specimens are recorded for 1878; two of these were taken in May on the south-west coast, and one in the Isle of Wight some time during August. In 1879 a specimen was found between the deck planks of Southsea pier, and one at Gosport, but the time of year is not mentioned in either instance. The total for 1880 exceeds that of the two previous years, together, by one example; all the specimens were taken on the east and south-east coasts, and the Isle of Wight. One specimen was taken at Bournemouth in July, 1881; and one in Cornwall in September, 1884. In 1885 a specimen was captured on the Suffolk coast in May; and one at Folkestone in September. In the last-named place a specimen was taken in August, 1886; and two at Ramsgate in October of the same year. During the years 1887—1891, inclusive, *D. pulchella*, if really in the country at all during that period, seems to have been overlooked, or at least unrecorded. Already this year (1892) we have received intelligence of six specimens having been taken on our coasts, one example in a northern suburb of London, and one in N. Staffordshire; the largest number ever recorded so early in the year.

The following table will show the erratic manner in which *D. pulchella* has appeared and disappeared in this country during the last quarter of a century.

Table showing the occurrence of *DEIOPEIA PULCHELLA* in Britain during the last twenty-four years.

Year	Specimens	Year	Specimens	Year	Specimens
1869	3	1877	nil	1885	2
1870	2	1878	3	1886	3
1871	30	1879	2	1887	nil
1872	nil	1880	6	1888	„
1873	„	1881	1	1889	„
1874	18	1882	nil	1890	„
1875	24	1883	„	1891	„
1876	23	1884	1	1892 June ..	8

On a former occasion I stated that *D. pulchella* was probably not permanently established in this country, and I may add that I still entertain this view. There is little doubt that—like *Cotias edusa*, *D. livornica*, *Plusia gamma*, and certain other species which it is unnecessary to mention—*D. pulchella* is a migrant. The proper European home of the species is south of the Alps, and especially along the shores of the Mediterranean;* it is common in Asia and Africa, and its range of distribution extends to Australia. In America it is replaced by *D. bella*.

With regard to the specimens of *D. pulchella* taken in England this year, it seems exceedingly probable that they are immigrants; not, however, simply specimens that have been blown over from the French coast, for, as a matter of fact, the species is as uncertain in its appearance in other parts of Central Europe as it is in England. Should specimens of the species occur here in the autumn (if the summer is favourable they probably will do so in some numbers), they may, I think, very properly be considered as the descendants of a new stock. It would, therefore, be of considerable interest if, from the present time, everyone having the good fortune to capture a specimen or specimens would make a point of placing such capture on record. Of course *D. pulchella*, even as an immigrant, has a perfect right to a place in our collections. I am not aware of the larva of the species having been found in England, although I have no doubt that it has often been searched for, especially in places where the moth has occurred. Imagines were said to have been bred about 1856 from ova deposited by a female captured at Torquay, but no particulars are given (Entom. v. 243). Mr. Tugwell (Entom. xi. 186, 251) gives us a most interesting account of the metamorphoses of the species. From eggs received from Mentone in May, 1878, moths were bred in July; from these one hundred eggs resulted, but only about a third of that number produced larvæ, some of which pupated in August, and yielded moths in September. A female of this second brood, having duly paired, deposited a few eggs each night for a fortnight, but all were infertile. Mr. Tugwell supplied the young larvæ with a garden variety of *Myosotis* and also *Borage officinalis*, and he observed that the former was preferred. Afterwards the common forget-me-not, *Myosotis palustris*, was introduced, and seemed to be greatly enjoyed by the larvæ, as they ate both flowers and leaves.

Myosotis is the pabulum given by most of the authors that I have consulted, but some of them mention *Heliotropium europæum* and *Solanum tomentosum* (not British plants); Kirby adds *Plantago*; and viper's bugloss (*Echium vulgare*) has been mentioned as a food-plant.

* Mr. J. J. Walker says the species is always common at Gibraltar, but "was so numerous in the middle of May, 1887, as to be a nuisance" (E. M. M. xxiv. 182).

THE LEPIDOPTERA OF EAST SUSSEX IN EARLY JUNE.

By W. H. TUGWELL.

ON the 2nd of June, Mr. G. T. Porritt and myself started for a ten days' collecting trip in the Abbott's Wood district, East Sussex. Hailsham was selected for head-quarters, where we had secured suitable rooms. We arrived at our destination by a Victoria train at 5.6 p.m., and, after dining and unpacking, we set out, at 7.30, for the woods, to try the alluring power of sugar. The spot chosen for our operations was a ride in a wood, where, eighteen years before, I had obtained a specimen of the rare *Ophiodes lunaris*, and where, too, a few days afterwards, Mr. William Borrer had captured the still rarer *Catephia alchymista*. We hardly hoped to see these rarities again, but as we knew by previous experience that the locality was a rich one, we anticipated a good harvest of interesting species. After applying our sugar we plied the net on the numerous Geometridæ that were on the wing, and secured several fairly good ones. Our fellow moth-catcher, the goatsucker, was evidently busy, so we lighted our lamps, and from the first tree it was clear we were in for a good night of it; moths simply swarmed on every tree, not by twos and threes, but by the score and even hundreds. In the early twilight the most numerous species was *Tephrosia extersaria*; twenty to thirty on a tree was the general thing. Perhaps the next most common feaster was *Erastria fuscula*; a little later *Grammesia trilinea* were in profusion, interspersed pretty freely with *Cymatophora or*; *Aplecta nebulosa* and *A. herbida*, both evidently just out, and in splendid form and condition. *Diphthera orion* from time to time turned up, as did *Acronycta ligustri*, *Cymatophora fluctuosa*, *Thyatira batis*, and *Heliothis marginata*; whilst Mr. Porritt netted *Chærocampa elpenor* as it buzzed at his sugar. *Apamea unanimitis*, *A. basilinea*, *A. gemina*, and *A. oculea* were all more or less abundant, some pretty forms amongst them; *Xylophasia rurea*, and some very rich examples of the form *combusta*, too, *X. hepatica*, and several *Agrotis*. From this truly vast assemblage of moths, selecting a good form here and a well-marked specimen there, with uncommon things fairly thick, we soon came to an end of our pretty large supply of boxes, and we were forced to leave heaps of interesting insects still feasting on our spread banquet of sweets. We left the wood, walking home on the best of terms with ourselves, with some hours' work of setting on hand. We continued to sugar this round each night of our stay (Sunday excepted), and every night moths were in the greatest profusion. It was most interesting to watch from night to night the waning of one species and the increase in numbers of others; each day we added some new insects to our list. The most striking phenomena of our eight nights' sugaring was that

all our old notions of propitious weather or atmospheric influence were completely upset, as during our stay, with one night excepted, we had a bright moonlight and cloudless sky, up to a perfectly full moon, shining brilliantly on to our sugar patches. No matter which way the wind blew—north, east, and west—or if none at all, moths abounded just the same; there they were fighting for places, and we could only come to the conclusion that, as Lord Dundreary would say, “It was one of those things no fellow could understand.”

We were favoured with splendid weather; day after day we had bright hot sunshine, and in consequence the Diurni were in full force. I paid considerable attention to the butterflies, looking out for varieties, and was rewarded with three good aberrations of *Argynnis selene*; a fine form, with silver markings on the upper surface of the inferior wings, is exceptionally good, and unique, so far as my experience goes. The markings are three quadrate spots, identical in pattern on each wing. It was very readily detected, even on flight. I also obtained an extremely good var. of *Syrichthus alveolus*.

Aided by such grand weather, captures day after day utterly beat our powers of setting, and for myself, *nolens volens*, I had to bring home a number of unset specimens. Night after night we were forced to leave lots of species that ordinarily would have been duly boxed. *Aplecta herbida*, in magnificent condition, six and eight on a tree, were left feasting; we could have taken hundreds of it.

Of the Diurni, we captured or saw twenty-six species. *Pieris brassicæ*, *P. rapæ*, and *P. napi*; one good var. with bright canary-yellow under wing and tip of fore wing. *A. cardamines* was fairly common; *G. rhamni* (tattered) of both sexes. *Colias edusa* we saw most days, sometimes several; evidently it is to be an *edusa* year, like 1877. *Argynnis euphrosyne*, mostly wasted, and *A. selene* were plentiful and fine, although they rapidly got out of condition, and mostly wasted by end of our stay; a week earlier would have been better. *Melitæa artemis*, one male only, and I saw one other that had been secured in the well-known Whitefield; *M. athalia* were distributed all over the wooded district, nowhere abundant. *Vanessa atalanta*, a few, whilst *V. cardui* were everywhere; *Satyrus megæra* and *S. tithonus*; *Cænonympha pamphilus*, abundant; *Polyommatus phlæas*, a few only. *Lycæna agestis*, *L. alexis*, *L. adonis*, and *L. alsus*, all common; *L. argiolus* was reported, but we did not meet with it. Of the skippers, *Syrichthus alveolus*, *Nisoniades tages*, and *Hesperia sylvanus*, all in abundance.

Of the Nocturni, eighteen species were observed or captured. *Macroglossa fuciformis* was fairly common over *Ajuga reptans*; one *M. stellatarum* only seen at Eastbourne. *Ino (Procris) statices* and a very small form of *Zygæna trifolii* were both fairly common

in a meadow in Abbott's Wood. *Nola confusalis*, a few only on tree-trunks, whilst the Lithosiidæ were sparingly represented by two *L. aureola* and one *L. mesomella*; in former years I have seen *L. aureola* in plenty on sugar. *Nemecophila* (*Chelonia*) *plantaginis* dashed about freely in the hot sunshine, and one *Arctia villica*, on the wing, looked almost too brilliant a species for our more sober coloured insect; it seemed like a flashing meteor, and gave one quite a start.

Of the Geometridæ, forty-four species were captured. Nothing particularly rare, the best perhaps being *Eurymene dolobraria* (at sugar, several), *Selenia lunaria* (beaten out), *Tephrosia consouaria* and *T. extersaria* (common at sugar), *Boarmia consortaria* (by no means rare), all the *Ephyra* except *orbicularia*, *Eupisteria heparata*, *Emmelesia affinitata*, and *Lobophora sexalata* (all sparingly), *Melanippe hastata* (a few each day). Of the genus *Acidalia*, *A. subsericeata*, *A. promutata*, and *A. inornata* were the best; *Tanagra chærophyllata* was in plenty over the common earth nut (*Bunium flexuosum*).

Noctuæ, fifty-seven species were captured, amongst them *Thyatira batis* and *T. dèrassa*, *Cymatophora fluctuosa*, *C. or*, *Diphthera orion*, *Acronycta psi*, *A. leporina*, *A. aceris*, *A. megacephala*, and *A. ligustri*; curiously of *A. auricoma* we did not see a single specimen; generally common here. Leucaniidæ (two species), *L. pallens* and *L. comma*; *Xylophasia rurea*, in great force and variety; grand forms of var. *combusta*, *X. lithoxylea*, and *X. hepatica*; *Mamestra anceps*, *M. brassicæ*, and *M. persicaria*: *Apamea basilinea*, good vars. also of *A. gemina*; *A. unanimitis* and *A. oculea*. All these species were just coming out in force. *Miana strigilis* in swarms, with a few *M. fasciuncula*. The commonest *Noctua* was undoubtedly *Grammesia trilinea*; in great variety, some extremely good forms; *Rusina tenebrosa*.

The Agrotidæ were represented by *A. suffusa*, *A. segetum*, and *A. exclamationis*; and the Triphænæ by *pronuba* only. *Noctua plecta*, *N. c-nigrum*, *N. brunnea*, *N. festiva* (just coming out), and *N. rubi* were all common. *Tæniocampa gothica*, a late specimen; *Tethea retusa*, larvæ more rare than usual here; *Phlogophora meticulosa*, common; *Euplexia lucipara*, grand forms, purple tone; *Aplecta herbida*, in profusion; *A. nebulosa*, ditto; *A. tinctoria*, a few only; *Hadena dentina*, very variable; *H. oleracea*, *H. pisi*, *H. thalassina*, and a few *H. geniste*; *Heliothis marginata*, at sugar; *Heliodes arbuti*, flying in sunshine; *Erastria fuscula*, in plenty at sugar; *Habrostola triplasia*; *Plusia gamma*, in swarms everywhere; *Gonoptera libatrix*, hibernated specimens; *Euclidia mi* and *E. glyphica*; and the little *Phytometra ænea*. Most of the above occurred in large numbers, principally at sugar.

In sugaring my friend Mr. Porritt was more lavish with his sweets than myself, and his patches were both larger and thicker;

as a consequence he had many more insects on his trees than I did. It was by no means unusual to see on some of these larger patches over 200 moths feasting at one time. Still, although my patches of bait were smaller, and consequently fewer moths on each tree, my captures of the better species were about equal to his, save in one species, viz., *Xylophasia hepatica*. Of this insect Mr. Porritt took possibly two dozen, whilst I only secured some three or four specimens. It almost appeared as if the vast mob of moths frightened away some of the more timid and flighty species. During our eight nights' sugaring we must have seen over 20,000 moths. I never in all my experience saw anything to equal the numbers; it was indeed a sight to recollect.

Amongst the Deltoids only four species were observed, and of the Pyralidæ thirteen species were obtained, the best thing being *Agrotera nemoralis*, now rare; only a single specimen occurred, where in former years I have taken readily several dozen each day. *Botys lancealis*, too, was sparingly taken by beating, and one specimen came to sugar. *Ennychia octomaculalis* occurred freely. We saw a few only of the commoner Crambites, and the Tortrices seemed unusually scarce; the only common thing was *Roxana arcuana*, and that was in thousands.

Thus, during our ten-day stay at Hailsham, we captured or observed 160 species of Macro-Lepidoptera, that is, to end of Pyralidæ; and, considering time of year, this is truly a good number. Although we failed to turn up any specially rare insect, and missed a few we had anticipated, yet, as an outing, it was a great success and thoroughly enjoyable.

Greenwich, June 20th, 1892.

ON THE RECENT ABUNDANCE OF *PLUSIA GAMMA* AND *VANESSA CARDUI*.

By ROBERT ADKIN, F.E.S.

DURING the past few weeks the neighbourhood of London has been visited by one of those remarkably sudden appearances of *Plusia gamma* that are from time to time observed. Up to 24th May I had not noticed a single example of the species, but on going into my garden at dusk on that evening, I found them literally swarming; they were arriving in numbers, whence no one could tell, dashing wildly about, or hovering over the wall-flowers for a moment, and disappearing in the twilight equally suddenly, but only to be replaced by others. Again, after dark, I spent some time in watching them by the light of a lantern, and found them coming and going just as before; the evening

was very warm, and many other species were also on the wing, but *P. gamma* many times outnumbered the whole of them put together. I captured and examined many of them; a few presented a battered appearance, but the majority had their thoracic crests and wing fringes intact, their pale colour alone suggesting that they were not recently emerged from pupa, or that their wings had done more than ordinary service; a great number of them were females, and deposited ova freely directly they were boxed, they no doubt being engaged in that operation when captured.

At a meeting of the South London Entomological Society, on the 26th May, members present mentioned that they had met with *P. gamma* in abundance at various places covering an area of some ten miles round London, but in no case had they observed it prior to the 24th.

On the nights of the 25th and 26th thunderstorms, accompanied by heavy rain, passed over, but the temperature remained high for the time of year; and *P. gamma* continued to visit my garden nightly, though in decreasing numbers, until June 10th, since which date I have been unable to discover but one individual, the disappearance coinciding with the sudden fall in temperature and wet weather of the 11th and 12th.

P. gamma, being so common, I concluded that it would not be necessary to go very far to find *Vanessa cardui* also, and in this I was not disappointed. My first trip towards the outskirts of London was to the neighbourhood of Edgware, on May 28th, and, on leaving the railway-station, the first insect that met my gaze was *V. cardui*, and during the afternoon many more were seen; and on June 6th I found it still more abundantly in the lanes in my own neighbourhood; indeed, I do not remember to have previously seen it so commonly in the district. I have also met with an occasional specimen of *Nomophila noctuella (hybridalis)*, an insect which appears frequently to accompany any general abundance of the other species under notice.

Nor is London the only district affected; and to friends resident in various other parts of the country I am indebted for many valuable notes, from which the following are taken:— From Polegate, Sussex, I learn that *P. gamma* and *V. cardui* are very common. "*P. gamma* swarmed in my garden; I could have taken twenty at one sweep of the net. They appear very light in colour this season." In the New Forest both species were noticed commonly about the middle of May; *P. gamma* was flying in some numbers at Stockbridge, Hauts, on June 4th, and came freely to flowers of *Lychnis* at Northwood, Herts, early in June. At Brentwood, Essex, on 29th May, "*V. cardui* was swarming over a patch of bluebells; and *P. gamma* was in thousands." From Herefordshire I learn that, "although opportunities for observation have been limited, it has been impossible not to

note that *V. cardui* and *P. gamma* have been more than usually common; as a rule *V. cardui* is rather a rare insect in this neighbourhood (Herefordshire). We first noticed them about three weeks ago" (*i. e.*, about 26th May). Going farther north, near Rotherham, Yorks., on "May 28th, June 2nd and 7th, *P. gamma* was unusually abundant; one field we passed for a near cut to the woods was alive with them. *V. cardui* is this year abundant also; we do not see it every season." The last named is also abundant on the cliffs at Scarborough, Yorks. From Perthshire I learn that, owing to the very unfavourable weather, *V. cardui* has not been seen at all, and *P. gamma* only very sparingly; but in Sutherlandshire "*P. gamma* occurred pretty freely at flowers of *Arctostaphylos uva-ursi*, and even on the top of Ben More and Canisp, over 3000 ft.; it struck me as rather curious then, since I have seen them more commonly here (Invershin), but certainly not in any way swarming; I saw about fifty at sugar one night, by far the commonest moth that particular night. I have not seen a single *V. cardui*, although I have been well over the country, forty or more miles, and well on the coast; so they have not reached here yet." And still farther north, in Shetland, we find *P. gamma* in unusual numbers. "I first saw *P. gamma* about the beginning of this month (June); I believe it was on the 3rd. In former years I have only taken it on the cliffs, but this year I have met with it from the water's edge to the tops of the highest hills (900 ft.), but not by any means common. Owing to the spell of bitterly cold north-east wind we have had they have been checked, if not killed; it is fully a week now (16th) since I saw one. I have seen no *V. cardui* up to date; if I remember rightly, the end of this month is the time for them here."

So far as I can learn, neither species was particularly common last autumn; undoubtedly some few *P. gamma* were to be found, but in my own experience their number was below the usual autumn average; and of *V. cardui*, I did not see a solitary one, nor did we find any abundance of either species during the warm weather of this spring, April 2nd to 10th, when the shade temperature touched 74°; or the warm days later in that month and the earlier part of May, when they would surely have been tempted from their winter quarters had they been hibernating. I have little doubt that the abundance of both species recently noted is due directly to the agency of migration; in other words, that the individuals comprising it are themselves immigrants, which may, under favourable conditions, be the forerunners of a still greater abundance in the autumn. The subject is, however, one of too deep an interest to be dismissed with a few hasty remarks, founded largely upon scattered fragments of evidence; and it is in the hope that entomologists, not only in this country, but in those other countries similarly affected to our own, may be

induced to record from time to time systematic observations upon the subject, that I have ventured to bring together some few facts and my conclusions touching the recent abnormal numbers of the species referred to in Britain.

Lewisham, June 20th, 1892.

SYNONYMIC NOTES ON PHYTOPHAGOUS COLEOPTERA.

BY MARTIN JACOBY, F.E.S.

GENUS *DERECTIS*, Clark.

Two species have been described by Clark in the 'Annals of Natural History,' 1865, and are contained in the collection of the British Museum. A comparison of the types has convinced me that Clark's genus is identical with *Antipha*, Baly, described in the same Journal and in the same year. Clark's name has, however, the priority, and should be retained.

Pachytoma dives, Karsch., 1881 =

Mesodonta submetallica, Jac., 1888.

I think that this species was rightly placed by me in *Mesodonta*.

Megalognatha Bohemanni, Baly = *Cncorane foveicollis*, Jac.

Megalognatha elegans, Baly = *Apophyllia elegantula*, Jac.

Baly was probably right in placing these two species in *Megalognatha*.

Stenoplatys robusta, Allard.

A specimen kindly given to me by M. Duvivier, and named as above, differs entirely in structural characters from *Stenoplatys*.

ENTOMOLOGICAL NOTES, CAPTURES, &c.

SOME PROMINENT FEATURES OF THE PRESENT SEASON.—This season will apparently resemble that of 1888 in the abundance of *Plusia gamma* and *Vanessa cardui*. For the past three weeks or more *P. gamma* has been extremely abundant, both in the daytime and in the evenings, and the swarms round lilac-bushes at dusk have been really extraordinary. With regard to *V. cardui* (which I have not taken here since 1888), I have seen two or three specimens, and have heard of several other captures in the neighbourhood. Hibernated specimens of *V. atalanta* have also been unusually common. A still more welcome feature of this year is the appearance in Enfield of another periodical insect, *Colias edusa*. Although I have been collecting Lepidoptera in this district for the past five years, I have never met with this butterfly till the present month, nor have I heard of a capture here of recent years. Last Saturday I saw a female specimen

of this insect flying across a meadow, in which I was standing net in hand. I was extremely surprised at such an unusual sight, and immediately gave chase, watched till *edusa* settled down, crept cautiously nearer and nearer till just within range, and then—off it flew! I again hotly pursued it, and had the satisfaction of seeing it fly over a tall hawthorn hedge. I spent the rest of that day in mental self-vituperation, as I never expected to see *edusa* again in Enfield. However, on the following Monday (Whit-Monday), I saw two others, and my spirits have risen accordingly, as I anticipate an “*edusa* year.” I believe the periodical abundance of insects has never been satisfactorily explained; it appears to me strange that *V. cardui* and *P. gamma* should turn up in abundance in seasons of such a widely different character as 1888 and 1892. If I remember rightly, the weather in 1888 was miserably wet and cold, whereas this summer bids fair to rival that of 1887.—HENRY D. SYKES; The Cedars, Enfield, June 7, 1892.

COLOUR-VARIATION IN THE OVA OF *BISTON HIRTARIA*.—I have read with interest Mr. Adkin's note (Entom. 129) on the “Colour-variation in the Ova of *Biston hirtaria*.” Last winter I received some pupæ of *Biston hirtaria* from London, and two of the insects emerged on April 6th. After pairing, I shut the female up in a box with lino, and the next day she laid thirty-three eggs, which were of a brilliant grass-green colour, which, after some days, gradually turned a darker green, and finally deep purple, the ends of the eggs falling in. The larvæ hatched out on May 8th, and are now nearly full-grown, having fed on plum.—DOUGLAS H. PEARSON; The College, Chilwell, Notts, June 11, 1892.

ASSEMBLING IN LEPIDOPTERA.—With reference to Mr. Sykes' interesting article on this subject (Entom. 84) I have pleasure in informing him that I have noticed this habit in *Melanthia rubiginata* on one occasion last autumn, as many as eight or ten males being around the female at one time, and on several of the males being captured their places were almost immediately occupied by others. The night was very warm, and the wind S.W. Another species which assembles is *Hepialus hectus*.—WILLIAM HEWETT; Howard St., York.

Apropos of Mr. Butler's remarks concerning the assembling of male Sphingidæ by means of a crippled female (Entom. 118), it is noteworthy that Weismann, in the ‘Theory of Descent,’ mentions that by pinning a female *Smerinthus* to a tree, in an exposed situation in a favourable locality for the species, she is sure, during the night, to be visited by a male of the same species, and will subsequently lay fertile ova. It seems remarkable that a pairing should be effected under such conditions. The following instance of assembling once came under my own observation:—Noticing a buzzing group of *Zygana filipendulæ*, I found it to consist of several males hovering over what appeared to be a recently paired couple of the same species. On separating the two, and removing the male, the attentions of another male were almost immediately accepted by the female, and pairing ensued. Merrin, in his ‘Lepidopterist's Calendar,’ mentions that *Lithosia caniola* may be obtained by “assembling” with a virgin female.—R. M. PRIDEAUX; 9, Vyvyan Terrace, Clifton, May 19, 1892.

BREPHOS PARTHENIAS AT DELAMERE FOREST.—In the ‘Entomologist’ for last month (Entom. 146), Mr. Arkle records, for the first time, the capture of *Brephos parthenias* at Delamere Forest. I think it may interest him, and others of your readers, to know that it has been twice previously

taken there. I took one specimen, and saw two others, on April 18th, 1891; and I find it recorded also in the 'Naturalist,' March, 1887, as having been taken there by F. N. P.; *vide* also Dr. Ellis' list of 'Lancashire and Cheshire Lepidoptera,' p. 49. I have seen it there again this year.—E. CLARIBEL TOMLIN; Thorpe Villa, Chester.

LARVA OF *TORTRIX VIRIDANA* UNUSUALLY ABUNDANT.—The oak trees in Windsor Forest are now experiencing a very severe attack of the *Tortrix viridana*. It appears that every year this moth is present in some numbers, but this season it is exceptionally abundant. The trees are completely stripped of their leaves, giving the forest a very weird and wintry appearance. The beech and hawthorn, which occur scattered about amongst the oak, are not attacked, and form pleasant breaks in the otherwise dreary aspect of the wood. A week or two ago the larvæ were seen hanging in millions from the trees suspended by their fine silken threads. They have now, for the most part, changed into the pupal state, and the advanced guard of the imagos is appearing. Birds are by no means as numerous as might be expected. Some rooks, starlings, and titmice were noticed. It might, perhaps, be mentioned that these oaks were planted somewhere about the beginning of this century, to provide timber for the royal navy. On the introduction of the ironclad, the forest seems to have become more and more neglected. Ought not some attention to be drawn to this fact, as it must be injuring what would otherwise be a valuable timber forest?—E. P. STEBBING; R. I. E. College, Cooper's Hill, June 16, 1892.

DELAMERE FOREST FORMS OF *HYBERNIA LEUCOPHÆARIA*.—I am indebted to Mr. South for the following comment on the four forms of this insect, described in my "Notes on the Early Moths" (see Entom. for May and June):—"Your form I. is typical; III., var. *marmorinaria*, Esp.; II. is intermediate; and IV. is a parallel variety with that of *H. marginaria* (*progemmaria*) var. *fuscata*."—J. ARKLE; Chester.

PLUSIA GAMMA AND VANESSA CARDUI AT CHESTER.—These insects are extraordinarily abundant just now in the Chester district, and have been so since the beginning of June. *P. gamma* is a complete nuisance when netting moths in the evening. I wonder if they appear as heralds of an "edusa year"!—J. ARKLE; Chester, June 13, 1892.

EARLY LEPIDOPTERA IN YORKSHIRE.—*Hybernia rupicaprararia* and *H. marginaria* have not been so common this season in the neighbourhood of York; but from amongst a number of specimens of *H. marginaria* I have been able to select some very pretty forms connecting *fuscata* with the type; a very pretty form, which occurs sparsely, is that with a broad black border to the fore wings. It is rather singular that the *fuscata* form has become much commoner of late years; some ten years ago it was quite unusual to find a specimen; now it occurs almost as commonly as the type. Doubtless the very cold, wet, and sunless summers that we have had during the past few years have had something to do with it. I have also taken specimens of *H. leucophæaria*, including the variety *marmorinaria*, Esp., *L. multistrigaria*, and *A. ascularia*.—WILLIAM HEWETT; Howard St., York.

COLIAS EDUSA IN 1892.—

Worcestershire. — I have pleasure in recording the appearance of *Colias edusa* at Worcester during the present month. One worn female was caught by a boy near here, and brought to me for identification; another was seen by a friend at Monkwood; and two more I saw flying

along the roadside about six miles away. They were apparently all hibernated specimens, being much worn; and the two I saw flying and also the one brought to me were females, so I hope they will turn up in this district in August. I would like to know if other entomologists have noticed *edusa* so far inland this season? I do not think it has occurred here since the great "*edusa* year," which must be nearly twenty years ago.—WILLIAM H. EDWARDS; 11, Tything, Worcester, June, 1892.

London.—I was sitting in the Temple Gardens to-day, about 2 o'clock, when I saw a fine male *Colias edusa* fly across the lawn. The excitement among the sparrows was simply immense, but I am glad to say that the butterfly proved a match for his innumerable pursuers, and sailed calmly over the railings towards the city. I do not know whether this insect ever penetrated so far into London in 1877, the great "*edusa* year." I took it continually in North Middlesex at Harrow-Weald, but never to my knowledge has it been seen in the metropolitan area. It is quite possible that in some way or another it had been imported with the bedding-plants which have lately been put in, but I think its appearance sufficiently remarkable to call for special mention. I may add that I was with a friend who has considerable entomological knowledge, and he had no hesitation in immediately fixing the identity of the strange, yet very welcome, visitor.—H. ROWLAND-BROWN; Oxhey Grove, Harrow-Weald, June 22, 1892. [This species was seen in London during August, 1877. Mr. J. H. Jones states that he saw "several specimens in the gardens on the Thames Embankment, near Charing Cross"; and Dr. Lang mentions seeing "one in a street leading out of Tottenham Court Road, and another in the neighbourhood of Russell Square" (*vide* Entom. x. 253).—ED.]

South Devonshire.—It may be worth recording that on May 31st, this year, I saw, at a place in South Devon, a fine specimen of *C. edusa*. The insect was a female, and was flying over a flowery meadow. It frequently settled, and I was able once to approach within a yard of it, and so was enabled to see that the wings were very bright in colour and in perfect condition. On June 3rd I saw, in my garden near Exeter, a male of *C. edusa*; this specimen also was in good condition.—ALBERT BONUS; Exeter.

Surrey.—On May 30th I saw a female specimen of *Colias edusa*, in fair condition, on Mickleham Downs; and I saw another, yesterday, near Leatherhead station. *Vanessa cardui* is common; and I have seen three *V. atalanta*.—T. H. BRIGGS; Surrey House, Leatherhead, June 9, 1892.

Hampshire.—I learn from Mr. C. Gulliver that *Colias edusa* is now common near Brockenhurst and "at Ringwood in dozens." This augurs well for another "*edusa* year." Mr. J. N. Young, of Rotherham, Yorks., also informs me that he saw a specimen of this insect near that place on 7th of June last.—ROBT. ADKIN; Lewisham, June 16, 1892.

On the Borders of Hampshire.—On the last two days of May I saw five *C. edusa*, and my brother saw two others. They were all observed in different places, some of them many miles apart, and were flying straight, fast, and appeared to be actuated by a common desire to get on and away to some other part of the country. Not one of them, unfortunately, gave us a good chance of capturing it, but I have not the least doubt about their identity.—W. M. CHRISTY; Watergate, Emsworth, Hants.

Sussex.—Several seen in the early part of June, by Mr. Tugwell, in the neighbourhood of Abbott's Wood (*ante*, p. 157).

Croydon.—My father saw a clouded yellow (*C. edusa*) flying along the Park Hill Road on 31st May; and on the 2nd June I also saw one on the railway bank between Croydon and London. It is the first I have seen near Croydon. The last one I caught was at Lexden, near Colchester, in 1883.—EDWARD NEWMAN MENNELL; The Red House, Croydon.

DEIOPEIA PULCHELLA.—Records of the recent occurrence of *D. pulchella* in England have been received as follows:—

Southsea.—"Let those laugh who win." This old proverb was well exemplified at the review on Southsea Common on Wednesday, May 25th, when a number of persons indulged in a good laugh at seeing a man—Mr. W. H. Mackett, head-master of St. Matthew's School, Gosport, and an ardent entomologist—rush after what appeared to be a very dilapidated specimen of a small common white butterfly, but which turned out to be one of the rarest of British moths, *viz.*, the crimson-speckled (*Deiopeia pulchella*), and which is consequently of great interest and value. In Newman's standard work on this branch of entomology, the number of British specimens is limited to about three; and Morris reports about the same number. This "good thing" of entomologists was caught in the thickest part of the crowd during the "march past," and must have passed thousands of persons during its peregrinations.—*Evening Mail*, May 27, 1892.

As regards colour, the description of the insect referred to above accords generally with that of Morris, except that the red dots near the exterior edge of the upper wing coalesce, forming an irregular line, and also that the red dots are more intense near the anterior edge. The back is shaded with yellow. As regards time of appearance, it differs considerably from either Morris's or Newman's work, in which the time given for the appearance of the insect is from July to September, but, unless double-brooded, I cannot account for the fact that the three most recently taken (two of which when caught had evidently only just attained the imago stage) were captured in May. Perhaps some of your readers may be able to shed a little more light on this point.—W. H. MACKETT; St. Matthew's School, Gosport.

Christchurch.—My son Wilfred took a very fine specimen of *Deiopeia pulchella*, on the 30th May, flying in a field adjoining Christchurch harbour. It appeared to be quite fresh from the pupa.—R. E. BRAMELD; Mudeford, Christchurch. [This appears to be the same specimen referred to by Mr. Adye.—ED.]

I have just learnt from my friend Mr. Brameld that a specimen of the above insect was taken by his son, on May 30th, flying in a field not far from the harbour. It is in such fine condition that it must have only just emerged from the pupa. I also know of another taken on the same day and in the same neighbourhood. Many of your readers may recollect that I recorded a specimen (*Entom. xix.* 157) as taken May 18th, 1878, and was at the time impressed with the idea it was a strange time of appearance; also its faded condition, when captured, caused me to suggest hibernation. This, however, was not considered to be the case by Mr. South, who added that the species is probably not permanently established in Britain. In consequence of this latter statement a discussion arose in the following numbers of the magazine (*Entom. xix.* 169, &c.).—J. M. ADYE; Christchurch, June 4, 1892.

On the 30th May (1892) I received from Mr. Shelton, of Christchurch, a living specimen of *Deiopeia pulchella*, taken by him at Christchurch on the 29th May.—JOHN H. ASHFORD; Stanpit Villa, Christchurch.

Dover.—Messrs. Allbuury and E. Knight, when collecting at Dover at Whitsuntide, were fortunate enough to obtain a specimen of *D. pulchella*. It was captured by Mr. Knight, and exhibited at the meeting of the North Kent Entomological and Natural History Society on June 8th.—H. J. WEBB; 3, Gunning Street, Plumstead.

This afternoon, May 28th, 1892, Miss Emden, eldest daughter of one of my near neighbours, and taking keen interest in natural history, came and awoke me from a sound sleep, stretched at full-length on my lawn, to say that she had caught such a pretty moth for me. My reply, in a semi-somnolent condition, was, "Oh, where is it?" when forth came a very much-crumpled handkerchief, with the captive secured in one corner. I expected to find that great rarity *filipendula* in a somewhat shiny and nude condition. However, I was most agreeably surprised, on opening the receptacle, to find a beautiful fresh female *D. pulchella*, and in very good condition, considering the manner in which it had been captured and conveyed to me. When the insect first attracted her attention it flew up and settled at a short distance off; after a few ineffectual attempts she finally captured it under a light cap she was wearing, and eventually transferred it to the handkerchief. I was soon awake, in fact wide awake enough to take it indoors to more secure quarters.—J. T. WILLIAMS; St. Margaret's Bay, near Dover, May 28, 1892.

June 6th. Since writing you last I have been diligently hunting the spot where the capture of *pulchella* took place. On the second day after, between 10 and 11 o'clock a.m., I caught sight of another, and had my net within six inches of it, but it again rose too quickly for me, and was carried away by the wind, which was blowing very hard at the time, and I lost sight of it altogether. The first one being a female I was in hopes of obtaining ova from her, and kept it alive for that purpose, but I did not succeed in getting any. I also took her out with me, with the view of attracting males, but was equally unsuccessful. I am not sorry that I tried these methods to increase my stock, although it has not added to the original beauty of the insect. It has given me satisfaction to know that I have not lost a chance for want of trying.—J. T. W.

North of London.—On the evening of the 31st of last month, I was going, about 8.15, to see a friend living about a quarter of a mile from my house, and passing down a green road with palings on each side, separating it from a field, I saw, resting on the top of one of the bars of the palings, what I took to be, at a few yards distance, *S. menthastris*. On going close up to it, judge of my intense astonishment on seeing not the common moth I thought it was, but a beautiful and evidently freshly-emerged *D. pulchella*, apparently just come up for its first flight. I could hardly believe my eyes, as it was about the last moth I should have expected to see in this locality. Of its identity there was no possible doubt; but by great misfortune I had nothing whatever to take it with, not even a pill-box. Whilst looking at it, and considering how I could take it, I took out my pipe, which was in a soft leather case, hoping to get it somehow into the case; but on putting the case close upon it, it flew off, settling in the road upon a blade of grass. I again got near it, and tried to put my soft felt-hat over it, but by this time it was alarmed and flew over the palings on the other side. I marked the spot where it settled, and saw it on a dried-stalk, but on getting close to it, it once more took flight and disappeared altogether in the dusk. My disappointment was intense, and nearly caused me a sleepless night. I searched for it all round the place on the three following evenings, but have

never seen it again. On taking up my June number of the 'Entomologist,' which arrived just after I had seen this specimen of *D. pulchella*, I saw the two recorded captures of the species at Dover and Gosport. The questions arise:—Is this a "*pulchella* year"? Is the species double-brooded? What are the atmospherical conditions favourable to its appearance now? Does it feed on other plants besides *Myosotis arvensis* in nature.—(Rev.) J. SEYMOUR ST. JOHN; 42, Castlewood Road, Stamford Hill, N., June 13, 1892.

Essex.—On June 6th I took a specimen of this rare moth at St. Osyth; a few minutes later I saw another, but, having just swum a creek, I was not prepared for it, or could easily have taken this also. In September, 1874, when shooting, I saw two specimens of this rare species in a stubble-field at Birdbrook in this county.—EDWARD A. FITCH; Maldon, Essex.

North Staffordshire.—Mr. F. C. Woodforde, of Market Drayton, and I have been collecting to-day, June 25th, 1892, in some meadows on the north-west side of this border parish, our only known locality for *P. statices*. The weather was warm, and a light rain falling. We found that both *P. statices* and *T. chærophyllata* were plentiful this season, and as my friend wanted a supply of these moths, both for himself and for correspondents, we were busily engaged amongst them, when he aroused from the long grass a moth evidently very different from the ordinary species which frequent these meadows. I was a few yards from him at the time, but having no net ready he called to me for mine, so that we both saw it flying with a heavy sluggish flight for some seconds. The moth was readily caught, and judge of our surprise and delight to find that it was a slightly worn female specimen of *D. pulchella*, certainly a grand addition to our North Staffordshire list. In a neighbouring wood we found *A. sylvata* and *M. albicillata* fairly plentiful; and we also took single specimens of *E. heparata* and *T. batis*; and saw one *M. hastata*, which we failed to capture.—(Rev.) T. W. DALTRY; Madeley Vicarage, Newcastle, Staffordshire, June 25, 1892.

VARIATION OF *D. PULCHELLA*.—The fore wings are whitish or cream-coloured, and are traversed by five crimson and five, or, including the marginal row, six black transverse series of spots, which vary in size. In some specimens the spots composing each series coalesce and form bands; in other examples the black or the crimson only are confluent. Sometimes most of the black spots are absent, especially on the inner three-fourths of the wing, and often the crimson series are represented only by spots on costal and inner margins, with one or perhaps two between; in some examples the crimson spots are very pale. An apical oblique macular dash is generally present, but, like the other markings, is subject to modification, and may be entirely absent. The hind wings are white, with a black outer marginal border, which varies in width and in the outline of its inner edge; this last is often deeply indented just below the middle.—RICHARD SOUTH.

MACROGLOSSA STELLATARUM AT HASLEMERE.—This pretty hawk-moth has been visiting my garden the last few days, and even coming into the house. It stays at one plant for several minutes together, poising with invisible wing, and suddenly dipping for a moment into pansy blossoms. Its appearance, on the wing, fully justifies its English name of humming-bird.—T. P. NEWMAN; Hazelhurst, Haslemere, June 20, 1892.

DEILEPHILA LIVORNICA AT DORKING.—You may probably like to record the capture of *Deilephila tivornica* (= *lineata*). I took it at rhododendron flowers in my garden at Dorking on 8th June. It bears the appearance of

a hibernated specimen, and was, of course, not improved by being taken in the net.—FREDERICK FLOOD; Denfield, Dorking, June 11, 1892.

DEILEPHILA LIVORNICA NEAR CARLISLE.—On Friday, June 10th, a specimen of *D. livornica* flew inside the window at Headsnook, Carlisle, the residence of Mr. W. H. Porter. It is a fine example, but has slightly damaged the tips of its wings in a cyanide bottle, which was too weak to kill it quickly. It measures $2\frac{3}{4}$ in. across.—MARY G. ROUTLEDGE; Stone House, Carlisle.

DEILEPHILA LIVORNICA.—Mr. T. E. Newton, of Exeter House, Winchester, captured a specimen of this insect in very fair condition on May the 31st, at rest, in his garden. He has kindly presented the specimen to me.—E. B. NEVINSON; 7, Staple Inn, W.C.

WHIT-MONDAY IN DELAMERE FOREST.—This was certainly one of my most enjoyable collecting days. Over the heaths and mosses round the lake of Oakmere, *Thecla rubi*, *Saturnia pavonia (carpini)*, and *Anarta myrtilli* were abundant, while hundreds of *Libellula quadrimaculata* and *L. scotica* (dragonflies) sported about in the heat and sunshine. (I am frequently asked to recommend a book on dragonflies. Let me advise those who are interested in these beautiful but rather neglected insects to get the 'Illustrated Handbook of British Dragonflies,' by W. H. Bath, published by Wesley & Son, 28 Essex Street, Strand, London. It is a thoroughly instructive and enjoyable book, well written, and well illustrated.) In the forest three of us took eight larvæ of *Geometra papilionaria* from birch. Over the buttercups—in deep, secluded, and shady lanes—flitted *Heliaca tenebrata (arbuti)*. I could make a long list of common things, amongst which the palm for abundance would have to be given to the irrepressible *P. gamma*.—J. ARKLE; Chester.

A FORTNIGHT IN THE NEW FOREST.—On Saturday, the 21st May last, I went to Brockenhurst to collect Lepidoptera, and stayed until the 7th June. With the exception of one dull and gloomy day, the weather was almost perfect, there being bright sunshine nearly all day long. The first insect I took was *Gonoptera libatrix* in my room in the house where I was staying, and later on in the evening I netted several nice specimens of *Panagra petriaria*. Commencing in earnest on the Monday, the following are the species I met with during my visit. Among the Rhopalocera, *Pieris brassicae*, *P. rapæ*, *P. napi*, *Pararga egeria*, *Cænonympha pamphilus*, *Lycæna icarus*, *Syrichthys malvæ*, and *Nisoniades tages*, were all very common. I took some rather variable specimens of the second brood of *P. egeria*, which appeared during the last few days I was there. Battered specimens of *Gonopteryx rhamnii* were fairly plentiful; and on the 24th May I sighted *Colias edusa*, doubtless hibernated, but a collector whom I met, and who had also seen it, seemed to think it was an early brood. *Argynnus ephrosyne* was plentiful, but rather worn after the first week; *A. selene* put in an appearance on the 2nd June. *Nemeobius lucina* was scarcer than in former years, and very local. Hibernated specimens of *Vanessa polychloros* and *V. io* were to be seen now and then, but their condition was very seedy; *V. atalanta* and *V. cardui*, on the other hand, were fairly abundant, and in fair condition; I took two quite fresh specimens of *V. atalanta* on 6th June. *Pararge megæra* was tolerably plentiful; but *Thecla rubi* and *Polyommatus phleas* were represented by only one example

of each. *Hesperia sylvanus* appeared on 1st June, and *Epinephela ianira* on the 6th. Tree searching resulted in a few nice *Boarmia consortaria*, *B. repandata*, *Tephrosia luridata*, *Aplecta prasina*, and *Phalera bucephala*; *Melanippe montanata* was, of course, very abundant. I worked hard among the beeches for *Stauropus fagi*, but was unsuccessful; I hear it is very scarce in the forest now. Beating produced nice specimens of *Drepana falcataria*, *D. cultraria*, *Zonosoma linearia*, *Z. punctaria* (1 only), *Acidalia remutaria*, *Bapta temerata*, and *B. bimaculata*: also *Eurymene dolabraria*. *Bupalus piniaria* was common flying round the firs; and on the heaths, *Bombyx rubi* and *Ematurga atomaria* were fairly abundant. *Plusia gamma* was met with in large numbers during the day, also *Venilia macularia* and *Panagra petraria*; *Iodis lactearia* was also frequently seen. Specimens of *Agrotis exclamationis*, *Apamea basilinea*, and *Hepialus lupulinus* were also met with. Although no rarities were met with, insects of the commoner species were plentiful; and, on the whole, I consider my visit an improvement on one I paid last year, when we had had a wet spring, and insects seemed scarce.—PHILIP W. RIDLEY; 2, Camden Terrace, Bath.

NOTODONTA DICTÆA BRED.—On May 17th I bred a *Notodonta dictæa* from a pupa taken in March behind the moss on a fallen stump. This is the first I have met with in this neighbourhood.—DOUGLAS H. PEARSON.

SALLOWS IN YORKSHIRE: SEASON 1892.—These were well out by April 5th, on which date I and Mr. S. Walker, of this city, visited some near York, and found moths quite scarce. The only species which occurred in any numbers was *Cerastis vaccinii*, and most of these appeared to be in good condition. The other species noted were *Scopelosoma satellitia*, *Pachnobia leucographa* (two specimens only), *P. rubricosa*, *Teniocampa gothica*, *T. instabilis*, three *T. populeti*, *T. stabilis*, *T. cruda*, and one *Calocampa exoleta*. I sugared a number of trees, but only one *C. exoleta* turned up. We noticed a few *Anticlea badiata* flying over the dog-rose; wind S.W. April 7th.—In company with Messrs. S. Walker and R. Dutton I again visited shallows. Moths scarce, the commonest being *C. vaccinii*, but this was not so abundant as on the 5th. *T. gothica* and *T. instabilis* came next in point of number. We also took a few *T. stabilis*, *T. cruda*, *S. satellitia*, three *P. leucographa*, and nine *T. populeti*: this latter species seems very difficult to get in good condition unless bred. Two *Hybernia marginaria* also dropped into sheets from off the shallows. April 9th.—Tried shallows at Strensall, near York, but only *T. stabilis* and *T. gothica* fell into the sheets. Sugared a number of trees on outskirts of Birch Wood, but on visiting them after dark did not see a single insect. About dusk *Larentia multistrigaria* began to fly fairly commonly, and I soon netted a couple of dozen nice specimens in fine condition. I noticed three or four males hovering about a small birch tree, as if “assembling,” but although I searched diligently for her “ladyship” I could not discover her. After dark I searched the hedgerows, and obtained a few *Anisopteryx æscularia* and *H. marginaria*; also two *Asphalia flavicornis* ascending the hedge, evidently newly emerged specimens. During the afternoon I obtained several *L. multistrigaria* by searching the boles of oak, birch, and beech trees. April 11th.—In company with Messrs. E. G. Potter, of York, and W. Mansbridge, of Horsforth, I had another evening at shallows. Moths fairly common. We obtained fifteen *P. leucographa* males in splendid condition, six *T. populeti* (including fine banded form), and a good number of *T.*

gothica, *T. instabilis*, *T. stabilis*, *T. cruda*, *C. vaccinii*, also a few *P. rubricosa* and *S. satellitia*. We also saw a few *A. badiata* on the wing, and several *Diurnea fagella* at rest on the boles of oak trees. Wind due north; moon at full. April 19th.—In the morning slight frost, weather cold, wind N.E., but about noon wind changed to due south; so, in company with Mr. R. Dutton, we had another night at sallows. Commenced shaking about 8 p.m. Moths fairly common. Result, eighteen *P. leucographa* males, and one female, the first female taken up to this date; on being placed in seclusion, she kindly deposited about sixty eggs. The females seem to emerge later than the males. Five *T. populeti*, seven *P. rubricosa* males and two females (one of which laid about forty eggs), eight *T. gothica*, seven *T. stabilis*, nine *T. instabilis*, and a few *T. cruda*, one *S. satellitia*, and one *H. marginaria*, also one *T. opima*. On this occasion, whilst searching the sheets, I noticed the partiality of several of the Tæniocampidæ for light. *P. leucographa*, *P. rubricosa*, *T. stabilis*, *T. gothica*, and *T. cruda*, buzzed around the lamp and up the glass, in endeavouring to get to the flame, some of them actually getting inside the lamp and extinguishing the flame; they also crawled up our hands, arms and faces; one individual actually walked into my mouth—whether he mistook it for a “moth trap” I of course cannot state. April 22nd.—In the evening off to the sallows, and moths common; took fifteen *P. leucographa* at one shake. Total number of *leucographa* taken by myself and Mr. W. Mansbridge, of Horsforth, on this occasion was forty-seven, of which twelve were females; several of the males were, however, worn. One *T. gracilis*, also a fair number of *T. gothica*, *T. stabilis*, *T. instabilis*, *T. cruda*, and *P. rubricosa*, including two females of the latter species; also a few *C. vaccinii* and some six *T. populeti*, but most of these were worn. We also noticed a few *A. badiata* on outskirts of the Wood, and *D. fagella* at rest on oak trees. Saw the first *Selenia illunaria* of the season flying round a lamp about 10.30 p.m. April 23rd.—My seventh and last visit to sallows, in company with Mr. W. Mansbridge. We had the last and best night at sallows of the season. Commenced operations about 8 p.m. The best shake of the evening produced sixteen *P. leucographa*, four *P. rubricosa*, one *T. gracilis*, and a number of *T. stabilis*, *T. instabilis*, *T. gothica*, *T. cruda*, and *C. vaccinii*. Total result of the evening, fifty-one *P. leucographa*, including eight females. *T. instabilis*, *T. stabilis*, *T. gothica* and *T. cruda* were common; twelve *P. rubricosa*, of which four were females; two or three *T. populeti*, but these latter were so denuded of scales as to make them look like varieties. We also noticed a few *C. vaccinii* and *S. satellitia*. I sugared some trees, which later on in the evening were visited by numerous *C. vaccinii*; also a few *T. gothica*, *T. stabilis*, *T. instabilis*, two *T. gracilis*, *T. cruda*, and *S. satellitia*. We noticed a few *A. badiata* on the wing, whilst *D. fagella* was common, about 10 p.m., at rest on boles of oak trees. From amongst the many *gothica* and *instabilis* taken at sallows this season, I have picked out a fine and variable series of each for my own collection, including varieties *pallida* and *brunnea* of *T. gothica*; varieties *atra*, *cærulescens*, *trigutta* and *virgata-brunnea* of *T. instabilis*; also vars. *obliqua* and *pallida* of *T. stabilis*; but from among the numerous *P. leucographa* obtained I could find but very slight variation: the females, however, were darker than the males. After sacrificing several females of the last-named species, I managed to obtain ova from a few of them, although none laid freely, and several died without depositing any ova. Of those I obtained some were unfertile. The first larva hatched on April 26th, and from that date until May 4th others

appeared, and are now feeding on plantain. As regards the sallow work, we found as a rule that the first shakes gave the best results; and I am of opinion that if light were used as a means of attracting the Tæniocampidæ it would prove remunerative. The absence of *T. munda* and the great scarcity of *T. gracilis* were certainly the remarkable features of our experience at sallows this year.—WILLIAM HEWETT; Howard St., York.

SALLOW BLOSSOM IN SUSSEX.—From March 23rd to April 11th I worked the sallows about every other evening, and was rewarded by getting nearly all the Tæniocampas and a few other things. *Pachnobia leucographa*, six specimens. *P. rubricosa*, twelve. *Tæniocampa gothica*, common. *T. incerta (instabilis)*, only two or three specimens. *T. stabilis*, very common and in great variety; one specimen is extremely pale, with a slight tinge of pinkish, the markings being scarcely visible. *T. gracilis*, six. *T. miniosa*, twelve. *T. munda*, twelve. *T. pulverulenta (cruda)*, very common. The weather during the greater part of the time was beautifully warm, but I did not notice many more moths than on some of the earlier nights at the end of March, when the weather was chilly and the wind in the north. The excessively bright sunny days brought out the blossom much too fast, and after April 11th I could not find a branch in blossom anywhere. Most of my sallows are in the copse woods, and are not very easy to work, as they are so crowded in with various kinds of small timber. When there are no convenient bushes, at the edge of rides for instance, I cut down branches and place them in suitable spots. These are just as attractive as the growing plant, but for one night only, and if you cut enough of them; but it adds much to the labour of collecting. The other species which I took at the sallow were:—*Xylina socia (= petrificata)*, one. *X. ornithopus (= rhizolitha)*, one. *Xylocampa areola (= lithorhiza)*, one. *Scopelosoma satellitia*, a few. Quantities of *Cerastis vaccinii* (I noticed no *C. ligula (= spadicea)*). *Eupithecia abbreviata*, two or three; &c.—W. M. CHRISTY; Watergate, Emsworth, Hants.

MOTH TRAPS.—Since I described my trap, in 1890 (Entom. xxiii. 231), I have not heard of anyone else adopting this very convenient arrangement for capturing moths. It seems a pity, because I find my trap so very useful, and I am sure that many other collectors of Lepidoptera would do so also, if they had one properly constructed. Some traps that I have lately seen for sale, with only a round hole as an entrance for the moths, instead of a long aperture *right across* the trap, as mine has, are not a success I am told. During April my trap was catching twelve to twenty moths a night. It is always set without regard to weather, and is seldom empty in the morning. On one of the last days of April it contained about fifty moths. It went on satisfactorily until May 28th, on which night it took the unprecedented number of 107 moths, exclusive of Micros. That night was a perfect one for light as regards weather, and so were the nights on each side of it, but they were unfortunately lost by bad management of the lamp. Since then I have had two takes of seventy and eighty moths, and never less than thirty. Twice, just lately, thirty-three species, exclusive of Micros, have been taken in the trap. Of the good things I have recently taken I may mention:—*Sphinx ligustri*, 1 (it is so perfect a specimen that I thought when I saw it this morning that it had been taken out of one of the breeding-cages); *Nola confusalis (= cristulalis)*, several; *Lithosia sororcula (= aureola)*, 1 (the only one ever taken here); *Cilia glaucata*

(= *spinula*), 2; *Stauropus fagi*, 1 (the only one ever taken here); *Notodonta trepida*, 3; *N. trimacula* (= *dodonæa*), 4; *Demas coryli*, commonly; *Apamea basilinea*, 3 or 4; *Agrotis cinerea*, 4; *Pachnobia rubricosa*, 1; *Dianthæcia cucubali*, 1 or 2; *Hadena adusta*, commonly; *H. thalassina*, several; *Eurymene dolobraria*, 3; *Selenia lunaria*, 4 or 5; *Tephrosia luridata* (= *extersaria*), 1; *Bapta bimaculata* (= *taminata*), several; *Numeria pulveraria*, commonly; *Eupithecia pusillata*, 1; *Phibalapteryx vitalbata*, 2 or 3; *Cidaria silaceata*, several. I have seen more species of the better class about this year than I have observed for several years past at this place, and last evening (June 3rd) the sugar was covered with moths; the first time I have seen it so, here, since 1888.—W. M. CHRISTY; Watergate, Emsworth, Hants, June 4, 1892.

FOOD OF THE LARVA OF ASTEROSCOPIUS NUBECULOSA.—Birch is generally considered to be the proper food of this species; but elm, hornbeam, buckthorn, and guelder rose have been mentioned as food-plants. Quite recently I have found that the larva will eat willow, and is very fond of honeysuckle. I have ascertained by experiment that the larvæ will do very well for two or three days on a diet of these plants, but I am not prepared to say that they would thrive if supplied with honeysuckle and willow only. When birch can be obtained it should be given, but those plants I have mentioned will be found useful as occasional substitutes.—RICHARD SOUTH; 12, Abbey Gardens, N.W.

A CORRECTION.—I find that the insect taken by me at Lytham last year was not *Lycæna adonis*, but a variety of *Lycæna icarus*, male, with barred fringes to the wings [*vide* Entom. xxiv. 267].—G. RENSHAW; Sale Bridge House, Sale, Cheshire.

A SATURDAY HALF-HOLIDAY AT RICKMANSWORTH.—On the 11th of June last I went out for a few hours' collecting in the neighbourhood of Rickmansworth. On alighting at the station, I at once made my way for some grey poplar trees (*Populus canescens*), upon which I had on the previous Saturday evening found several larvæ of *Taniocampa populeti*, but I only obtained one caterpillar of the species this time. However, I collected a nice lot of rolled poplar leaves, from which I hope to breed *Padisca ophthalmicana* later on, and possibly also *Orthotania branderiana*, as I have obtained both species in the locality in former years. Having operated on the birches without any satisfactory result, I next visited a meadow situated near the railway and about halfway between Rickmansworth and Northwood stations. In this meadow I have seen *Ino statice* fairly common, but only one specimen was netted on this occasion. *Zygæna filipendulæ* and *Z. trifolii* were both out, and I secured some nice specimens of each, including two examples of the confluent form of the last-named species. Both species were flying together. *Epinephele ianira* was just emerging, as also was *Campptogramma bilineata*. The larva of the latter insect is a grass-feeder, but the imagines resort to the hedges soon after emergence from the pupa, and, as is well known, are often a great nuisance to the collector engaged in hedgerow work. Soon after 7 p.m. the evening flight of *Emmelesia albulata* commenced, and was at its height about 8 o'clock. A little later, numbers of *Miana fasciuncula* were to be seen darting about, and soon afterwards *Hepialus lupulinus* began to scour the plain. I netted a number of *Miana*, but all were *fasciuncula*, not a single *M. strigilis* among the lot. From time to time larger moths dashed across the

line of sight, and when within reach were made captive. Among the specimens thus added to the bag were *Leucania comma*, *Apamea basilinea*, *Grammesia trigrammica* (= *trilinea*). On the way to the station, specimens of *Emmelesia affinitata*, *E. decolorata*, and a very pretty example of *Melanippe montanata*, were netted.—RICHARD SOUTH.

THE INSECT FAUNA OF MIDDLESEX.—Mr. Cockerell is quite correct in his statement (Entom. xxv. No. 349, p. 132) that Oxhey Lane is just in Hertfordshire according to the Ordnance Survey Map. The lane, however, extends to join the main road from Pinner to Stanmore about a mile into Middlesex, and those insects recorded as observed by me in the "Preliminary List of the Insect-Fauna of Middlesex" have been either seen or taken on the Middlesex side of the border only, where I live. I could add a good many species that are found just on the dividing line, notably in the woodland that extends along the London and North-Western Railway to the left going north, but such insects properly belong to Hertfordshire. About a fortnight ago *A. euphrosyne* and *A. selene* were flying about the bugle-flowers, whilst *T. tages* and *H. malvæ* were always well represented, with *P. geryon*, *S. clathrata* (which I have never found in Middlesex), and other spring Lepidoptera. The railway bank by Oxhey Lane bridge is a capital hunting-ground, the bridge itself being a favourite haunt of *B. perla*.—H. ROWLAND-BROWN; Oxhey Grove, Harrow-Weald, June 20, 1892.

SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON.—*June 1st, 1892.*—Mr. Robert McLachlan, F.R.S., Treasurer, in the chair. The Hon. Walter Rothschild sent for exhibition *Neptis mimetica*, n. s., from Timor, mimicking *Andasena olope*, one of the Euplœidæ, and *Cynthia equicolor*, n. s., a species remarkable for the similarity of the two sexes, from the same locality; also a hybrid between *Saturnia carpini* and *S. pyri*, and specimens of *Callimorpha dominula*, var. *romanovii*, var. *italica*, and var. *donna*, bred by a collector at Zurich; he further exhibited a very large and interesting collection of Rhopalocera made by Mr. W. Doherty in Timor, Pura, Sumba, and other islands, during October and November, 1891. Col. Swinhoe remarked that the various species of *Neptis* were usually protected and imitated by other insects, and did not themselves mimic anything, and that the pattern of the *Neptis* in question was very common among butterflies in the Timor group. Mr. Jenner Weir, Prof. Meldola, Mr. Trimen, and others continued the discussion. Mons. A. Wailly exhibited about fifty species of Australian Lepidoptera, mostly from Queensland, and fertile ova of *Trilocha varians*, which are arranged in small square cells, fastened together in large numbers, and present an appearance quite different from the usual type of lepidopterous ova. Mr. F. Merrifield exhibited a series of *Drepana falcataria*, half of which had been exposed for a week or two, in March or April, to a temperature of about 77°, and the other half had been allowed to emerge at the natural out-door temperature. The latter insects were in all cases darker than the former, all being equally healthy. Mr. McLachlan, Mr. Barrett, Mr. Jenner Weir, and others took part in the discussion which followed. Mr. C. G. Barrett exhibited a curious variety of the male of *Arctia mendica*, bred by the Rev. W. F. Johnson, of Armagh. Canon

Fowler exhibited the egg-case of a species of Mantidæ from Lake Nyassa, and specimens of *Bledius dissimilis*, Er., from Bridlington Quay, Yorkshire. Mr. McLachlan called attention to the re-appearance in large numbers of the diamond-backed moth, *Plutella cruciferarum*, which was very abundant in gardens near London, and expressed his opinion that the moths had been bred in the country and had not immigrated. Mr. Jenner Weir, Mr. Bower, and Prof. Meldola stated that they had recently seen specimens of *Colias edusa* in different localities near London. Mr. Jenner Weir and others also commented on the large immigration of *Plusia gamma*, and also on the appearance of a large number of *Cynthia cardui* and other Vanessidæ. The Hon. Walter Rothschild communicated a paper on two new species of *Pseudacraea*.—W. W. FOWLER, *Hon. Sec.*

SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—*May 26th, 1892.*—Mr. C. G. Barrett, F.E.S., President, in the chair. Mr. Jenner Weir exhibited a specimen of *Anosia plexippus*, L., var. *erippus*, Cramer, which Mr. Weir remarked had been obtained by one of the employés of Captain Parke in the Falkland Islands. Until this insect was captured, the only butterfly known in these islands was *Brenthis cytheris*, Drury. During Capt. Parke's residence in the islands he had never seen there a specimen of the *Anosia* in question; it therefore appeared that, like its northern representative the true *Anosia plexippus*, the southern form had the migratory habit similarly developed. Mr. Hawes exhibited and contributed a note on a series of *Pieris napi*, L., bred from ova laid by the parent insect taken near Bentley, Suffolk, June 10th, 1891, seven males and a female imagines appearing from 21st to 31st July. The remainder of the brood stood over until the spring, and thirty-one emerged between the 6th and 20th of May. Mr. Hawes suggested that the cool summer of last year affected the pupa to such an extent as to retard three-fifths of the brood. Mr. Jenner Weir said this was the most interesting exhibition he had ever seen on this subject, the two forms of the species, *viz.*, the summer and spring emergences, having both appeared from a single brood reared under exactly similar circumstances. Mr. Frohawk, a pupa of *Argynnis paphia*, L., and made some observations as to the time occupied in the pupal change; he also suggested that the brilliant metallic markings mimicked a dew-drop on a dead leaf. Mr. Tugwell, specimens recently taken by him at Tilgate Forest, including *Syrichthus malvæ*, L., approaching the var. *taras*, Meig.; *Nisoniades tages*, L., showing variation; varieties of *Argynnis euphrosyne*; also an extremely pale variety of *Anisopteryx asculi*, Schiff., taken by Mr. Hamne, of Reading. Mr. R. Adkin, a bred variety of *Asteroscopus nubeculosa*, Esp., and remarked on the species remaining in pupa for two or three years, those now exhibited having pupated in 1890. Mr. Tugwell stated he had bred them the first season. Mr. Hill, *Tæniocampa gothica*, L., and var. *gothicina*, from Rannoch. Mr. Carpenter, an example of *Vanessa antiopa*, L., taken on Tooting Common some years back. Mr. Adkin called attention to the unusual abundance of *Plusia gamma* on the last few evenings. Mr. Dobson, Mr. J. A. Cooper, Mr. Frohawk, Mr. Adye, Mr. Winkley, Mr. Tutt and Mr. Barrett also made some observations thereon. Mr. Jenner Weir delivered a zoological lecture, in which he drew attention to some remarkable cases in which mammalia and birds, having been in remote geological times differentiated for one mode of life, had adopted entirely different habits.—H. W. BARKER, *Hon. Sec.*

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

CAMBRIDGE ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—*April 29th. 1892.*—The President in the chair. Messrs. R. Freeman, B.A.; E. B. Marriott, B.A.; W. Bateson, M.A.; and Dr. Sharp, F.R.S.; were elected members of the Society. Mr. White exhibited *Plusia interrogationis* from Radnorshire, and a very dark variety of *Smerinthus tiliæ* taken at Cambridge. Mr. Moss, some good varieties of *Taniocampa stabilis* and *T. instabilis*, and specimens of *Hybernia progemma* var. *perfusca*, *Venusia cambricaria*, &c., from Windermere. Mr. Farren read a paper on "Protective Resemblance." Several of the lichen-feeding species of Lepidoptera were mentioned as affording good instances, and the prevailing colour and style of markings of many species of fen Lepidoptera as affording them protection by the likeness to dead reeds and sedge, on which the moths are in the habit of resting. The paper was illustrated by an exhibition of about forty species of fen Lepidoptera, comprising seven large families and thirteen genera; also specimens of *Bryophila muralis* and *B. perla*, *Cleora lichenaria*, *Leptogramma literana*, and living larvæ of *Geometra vernaria* and *Cleora lichenaria*. Messrs. Moss, Trase, Jones and Farren continued a long discussion on the subject, many instances being quoted to support the theory of protective resemblance, the unanimous opinion of the meeting being in favour of the theory.—WM. FARREN, *Hon. Sec.*

NORTH KENT ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—The usual fortnightly meeting was held on Wednesday, June 8th, at the Royal Assembly Rooms, Woolwich, Mr. J. Woodward presiding. The attendance was good, and at the conclusion of the ordinary business the following members exhibited specimens:—Mr. Wilson, larvæ of *Endromis versicolor*, *Drepana lacertinaria*, *Trichiura cratægi*, *Asteroscopus nubeculosa*, and *Lasiocampa quercifolia*, and contributed remarks on the feeding. Mr. H. Broughton, *Polyommatus phleas* (two splendid vars.), &c. Mr. W. Broughton, some striking varieties of *Smerinthus tiliæ*. Mr. Povey, several species of Lepidoptera, including *Melitæa aurinia*, *Acronycta leporina*, *Bapta temerata*, *B. bimaculata*, *Hadena genistæ*, &c. Mr. T. Moore, several species of Lepidoptera, and a few preserved larvæ of *Vanessa urticæ*. Mr. Poore, Micro-Lepidoptera. Messrs. E. Knight and Allbuary showed their captures at Dover, which included *Colias edusa*, *Nemeobius lucina*, and many other species; but the gem in the box was the specimen of *Deiopeia pulchella*, taken by Mr. Knight on Whit-Monday, and recorded, *ante*, p. 167.—H. J. WEBB, *Secretary*.

THE ENTOMOLOGIST.

VOL. XXV.]

AUGUST, 1892.

[No. 351.]

ON THE EARLIER STAGES OF *HESPERIA LINEOLA*.*

By F. W. HAWES.

AFTER disappointment in the season of 1891, I am now able to give a life-history of *Hesperia lineola*, partly from ova obtained from the captured imago, and partly from larvæ taken by sweeping and searching in the known haunts of the butterfly. By confining several females of the species with two or three kinds of coarse grass (*Triticum*) in a glass jar placed in the sun, a quantity of ova were laid in August, 1890, and some of the larvæ from these lived long enough to complete the first moult. Again, in August, 1891, a still larger number of ova was obtained from captured females, but these all (with two exceptions) failed to emerge, owing, as I believe, to a lack of moisture in their surroundings just previous to the period of emergence. However, by assiduous searching and sweeping, I was able to take three larvæ of an *Hesperia* on the evening of the 4th June; and again, on the 18th June, three others were taken (two by Mr. E. Joy), in all respects similar to the first, on the now well-known ground at Leigh, Essex, *viz.*, the sea-wall extending from Leigh in the direction of Canvey Island. Judging from the fact that *H. lineola* is by far the most abundant of the two species of the "Skipper" genus that have been noticed on this sea-wall, I came to the conclusion that the six were larvæ of *H. lineola*, which is now sufficiently confirmed by the emergence on 13th and 18th July of two perfect insects, well-marked male specimens, the first bred by Mr. Joy and the second by myself.

Before proceeding to a description, it may be well to correct an error with regard to both *H. thaumas* and *H. lineola*, which appears to be accepted as fact. Neither species passes the winter in the larva state. The eggs are laid at the end of July and beginning of August, and remain as such until the following

* Paper read before a meeting of the South London Entomological and Natural History Society, June 23rd, 1892. Revised July 19th.

spring, emerging about April 20th, *i. e.*, after March winds have subsided, and more genial and warmer weather has set in, and the young blades of various grasses have attained some little height above ground. On the 8th of August, 1891, at Leigh, I noticed that the female butterflies were in excess of the males, and that beyond assembling on the heads of thistle and other plants, then in flower, they appeared anxious only to fly amongst the low-growing grass, and more particularly along the edge of the inland ditches, which are a feature of this and other parts of the Essex coast. Here, then, I presume, the eggs are laid, and although at different times I have noticed the perfect insects *in copulâ*, I have not, up to the present, been able to detect the female in the act of ovipositing; but by those captured and confined in the glass jar, with grass (*Triticum*) from the locality, eggs were very freely laid in the two seasons of 1890 and 1891. I should say, from observation, that each female is capable of depositing at least from thirty to forty eggs, these being, for the size of the insect, rather large, and in confinement laid in a row or rows in the sheath formed by the culm and main stem of the blade. From these and the sources above mentioned I append the following description.

The egg—which may be described as a rounded oblong and flat, *i. e.*, like a bean—is of a pale straw colour when first laid, the shell throughout, and even after the larva emerges, shining very much like mother-of-pearl. After about eight days the colour changes from pale straw to a deep yellow, and from that, in about three weeks, or about a month after being laid, to a dark leaden hue, and the young larva becomes plainly visible coiled on one side, the head being placed at one of the shorter sides. In this embryo state the larva remains all the winter, securely attached to the interior of a culm of a dry and stiff species of grass of the genus *Triticum*, common on sea-walls, and in this hidden position defies the mouths of straying horses and cattle (the grass being probably too coarse at this season for their consumption), and also the coldest of winters and heaviest of inundations, if at all subjected to these last, by reason of the stoutness and closeness of the texture of the egg-shell. In this respect the chief enemy to the species at this stage would seem to be the practice of burning the old grass in early spring, when, of course, the ova would perish, and the insect as a consequence appear in diminished numbers the following summer. About April 20th, judging from the last two seasons, the larva begins to awaken and moves slowly in the shell, and presently, piercing a hole, emerges, leaving behind a curiously-frayed opening, which gives evidence of the substantial character of the shell. So far as I have observed, the young larva does not eat the egg-shell, but immediately wanders in an upward direction, doubtless searching for the tender blades of grass. On emerging the larva is, in

general shape, a miniature of its form when full grown, thicker at the middle, and tapering towards the head and anal segments, and in colour is a pale yellow, with a black head and black plate on the second segment; when moving it draws up the hinder segments slightly, if disturbed, curling up into a ring in which the anal segments protrude. At this time its movements are by no means slow, but it evidently desires concealment, and rests in the middle of a blade of grass, reaching its head to one side and scooping out portions of the blade. I found, also, that in several instances the larva had further protected itself by spinning two silken cords from side to side of a blade over its back. After the first moult the head still continues black, the plate decreasing in size, and the colour of the body becoming paler, and with an inclination towards the green of the later stages. From this point I must depend on the larvæ obtained at large. One of these was so small as to have certainly moulted no more than twice, and had in this skin lost the plate behind the head and attained to a yellowish green, having a rather broad dorsal stripe of darker green, which stripe is continued as a distinct brown mark over the head to the mouth. On each side of this brown mark the head is paler, being of a faint brownish tint. There are two thin subdorsal yellow stripes, and a light line traverses each side just below the spiracles; the segmental divisions are yellow, and the belly and legs of a deeper and clearer green. In the next skin, *i. e.*, after the third moult, the only difference noticeable is the more pronounced colouring, especially of the head, where, besides the central brown mark, two others, one on each side, are present. This, with the body of a clearer green, gives the larva a more attractive appearance than is usual among this family of the butterflies. As distinguished from the larva of *H. thaumas*, this species appears to lose none of its active upward movements, and may be found by a close search at dusk, and no doubt during the night, near the tops of the blades of grass. In the next skin, *i. e.*, after the fourth moult, the only change noticeable is a still greater intensity of the previous colour and markings; and, further, that the distinction between this larva and that of *H. thaumas* can be readily taken in by a glance at the head of each: as above stated, in *H. lineola* this is a *pale yellowish, with three brown lines*; and in *H. thaumas*, a *whitish green, without lines*. At this time the resemblance of the full-grown larva to a grass-blade is very remarkable, the striped green of the body assimilating in a wonderful manner to the stem on which it rests, and the brown striped head corresponding accurately to a withered tip of the blade; doubtless this is a provision of nature on behalf of the larva against its foes. In this, and also in the previous skin, two white scaly excrescences are formed between the fourth and fifth or final pairs of prolegs, which excrescence is thrown off

with the skin, and forms afresh, being very noticeable in the full-grown larva. The larva, when full grown, spins the grass-stems together low down by a network of white silk, and changes to a long yellowish green pupa (in which the dorsal stripe of the larva is retained), and in this state it remains from about a fortnight to three weeks, according to temperature. About four days before the perfect insect emerges the wings assume their golden brown colour and the eyes become a brilliant crimson, changing in two days to black, and the black-tipped antennæ are then plainly visible through the pupa-case. The larva appears to be a slow and deliberate eater, living as such from about eight to ten weeks, and, when young, both spins in the interior of a blade and has the power of falling from a thread from the mouth; it also frequently retreats, when feeding, in a backward movement down the blade.

Grasmere, North Finchley, N., July 19, 1892.

A CECID BRED FROM COCCIDÆ.

By T. D. A. COCKERELL, F.Z.S., F.E.S.

PROF. COMSTOCK, in the Report of the U. S. Department of Agriculture for 1880, records the breeding of a *Diplosis* from under the scale of *Aspidiotus juglans-regiæ*, Comst., in California. At the same time, he quotes from various writers on the habits of *Diplosis* and *Cecidomyia*, showing that *Diplosis aphidimysa*, Rd., and *Cecidomyia napi* live under Aphides;* while many others live as guests in galls formed by different species. Inquiline Cecids are, in fact, quite numerous, and several might be added to the list given by Comstock; but very little appears to be known about those bred from Coccidæ, notwithstanding the interesting nature of the relationship.

In October last year some leaves of *Acalypha*, infested with species of *Parlatoria*, *Aspidiotus*, and *Dactylopius*, were sent to the Museum of the Jamaica Institute from the Parade Gardens, Kingston. From these were bred many specimens of the small *Diplosis*, described below under the name *D. coccidarum*.

Later, Miss L. A. Long gave me some pieces of *Coleus*, gathered in Kingston, badly infested by *Orthezia* and *Dactylopius*, and from these were bred many more of the same *Diplosis*. The empty Cecid pupæ were afterwards found sticking out from the masses of secretion, &c., formed by the Coccidæ. Again, quite recently, another specimen has been bred, which may be described as follows:—

* Compare also the habits of *Diplosis grassator*, Fyles (Rep. Ent. Soc. Ontario, 1883, p. 30), which is associated with *Phylloxera*.

Diplosis coccidarum, n. sp.

♂ forceps.



palpus.



♀ genitalia (from above).



♀ genitalia (side view).

♀. Length about $1\frac{1}{2}$ millim.; thorax and abdomen scarlet, thorax quite dusky above, abdomen slightly so; legs blackish, inner side of femora pale; wings hyaline, strongly purple-iridescent. Antennæ about $\frac{1}{2}$ millim. long, moniliform, with 14 ($2 + 12$) joints, which are hairy (the last but sparsely so), and regularly diminish in size towards the end, excepting the two basal joints, which are shorter than the third. Crown of head with 5 or 6 hairs directed forward; thorax with many hairs directed backward; scutellum with 4 rather long hairs; each segment of abdomen fringed with hairs above and below; genitalia hairy; femora with a row of long hairs on one side; tibiæ and tarsi with only short hairs. Halteres large, pyriform, with only a few very short hairs. Antennæ inserted about half-way between mouth and crown; palpi of four joints, the first very broad and short, the second longer, and emitting several hairs, the third equal to the second, and emitting a single rather long hair, the fourth longest, with two short hairs at its end. Thorax not much arched; abdomen stout, with 8 segments plainly visible; ovipositor short; its basal joint largest, and broad when viewed from the side, emitting two long, and other shorter hairs, terminal joint very hairy, but the hairs mostly short. Wings hairy, lower margin with a thick fringe of long hairs; no cross vein; second longitudinal vein strong and straight; third longitudinal vein very weak, but with both branches continued to the margin.

Described from a fresh specimen, which emerged in a box containing leaves of *lignum-vitæ*, on which were *Aleurodes*, n. sp., and *Aspidiotus aurantii*, Mask., and a young fruit of *Anona*, partly covered with *Dactylopius*, n. sp. Hab. Kingston, Jamaica; emerged June, 1892.

Var. *a*, ♀. Antennæ 16-jointed, black; wings longer than body; body orange-red, legs brownish, hind legs as long as body + wings; length of body about 1 millim.; all the wing-veins distinct.

Described from specimens bred from *Coleus*, on which were many *Orthezia insignis*, Dougl., and a few *Dactylopius*, found in Kingston, Jamaica, by Miss L. A. Long.

Var. *b*, ♂. Smaller than var. *a*, only one specimen found, in

the same box with them. Body brown. Basal joint of forceps rather broad, grey, with one or two small hairs on its outer side; terminal joint brown, directed inwards, thick at its base, but otherwise long and slender. Prolongation of 3rd longitudinal vein very weak.

The specimen described as var. *a.* represents, I believe, only an individual mutation, and var. *b.* is in all probability the normal male. In the absence of positive proof as to this, it seems convenient to treat them as varieties; but the only special characters of var. *a.* are the better-defined third longitudinal vein, the paler legs, and the greater number of antennal joints. Of these characters, the first two are certainly variable, while the number of antennal joints has been found to vary in another species.*

The specimen described as var. *b.* was the only male found, and no doubt its brown colour is a secondary sexual character.

It is to be observed that *Dactylopius* was the only Coccid genus present in every instance, so that if the *Diplosis* is associated with one genus in particular, it must be this. I do not suppose that it is a true parasite, but rather that it breeds under the Coccidæ, feeding on their refuse products.

Institute of Jamaica, Kingston, Jamaica, June 8, 1892.

A PRELIMINARY LIST OF THE INSECT-FAUNA OF MIDDLESEX.

COMPILED BY T. D. A. COCKERELL, F.Z.S., F.E.S.

(Continued from p. 134).

LEPIDOPTERA.

Emmelesia affinitata, St., field at back of Bishop's Wood, Finchley side (*Vaughan*); Harefield, one in 1889 (*Wall*). *E. albulata*, Schiff., Mill Hill, two on the common (*South*); Old Oak Common, common (*Godwin*); at lamps in Millfield Lane (*Vaughan*); Ruislip, abundant, 1883 (*Watts*); Harefield, very common (*Wall*); Ealing (*Adye*). *E. decolorata*, Hb., Mill Hill, not scarce amongst ragged robin (*South*); Clutterhouse Lane, common, larvæ in capsules of *Lychnis diurna* (*Godwin*); Bishop's Wood (*Vaughan*); Harefield, rather common (*Wall*); Finchley (*Shepherd*); Ealing (*Adye*); [Northwood (*South*)].

Eupithecia oblongata, Thnb. (= *centaureata*), Mill Hill (*South*); common generally (*Godwin*); Camden Town, Kentish Town (*Vaughan*); Chiswick, common, larva on flowers of fennel and seeding cabbage (*Sich*); Harrow-Weald (*Rowland-Brown*); South

* See Dr. B. Wagner on the Hessian Fly, in 3rd Rept. U. S. Entom. Commission, Appendix, pp. 12 and 14 (1883).

Hampstead, common (*Watts*); Harefield, a few in 1887 (*Wall*); Tufnell Park (*Shepherd*); Hammersmith (*Mera*); Clapton (*Bacot*); Dalston (*Prout*). *E. subfulvata*, Haw., Mill Hill, at honey-dew at night (*South*); Hampstead, 1884 (*Watts*); Harefield, one in 1888 (*Wall*). *E. plumbeolata*, Haw., Bishop's Wood (*Vaughan*). *E. isogrammaria*, H.-S. (= *isogrammata*, Newm.), Dalston (*Prout*). *E. castigata*, Hb., Mill Hill (*South*); common generally (*Godwin*); Bishop's Wood (*Vaughan*); Harrow-Weald (*Rowland-Brown*); Highgate (*Shepherd*). *E. virgaureata*, Dbl., Hampstead (*Watts*). *E. fraxinata*, Crewe, Regent's Park (*W. Warren*, Entom. Soc., Sept. 1, 1886). *E. nanata*, Hb., Hampstead Heath, 1880 (*Watts*). *E. subnotata*, Hb., Mill Hill, several netted in the garden (*South*); Kentish Town (*Vaughan*); South Hampstead (*Watts*); [Kingsbury (*South*)]. *E. vulgata*, Haw., Mill Hill (*South*); common generally (*Godwin*); Kentish Town (*Vaughan*); Whitton (*Rendall*); Harrow-Weald (*Rowland-Brown*); South Hampstead, common (*Watts*); Harefield, common (*Wall*); Highgate (*Shepherd*); abundant at Ealing (*Adye*); Dalston (*Prout*); [Kingsbury and St. John's Wood (*South*)]. *E. albipunctata*, Haw., Kentish Town, at light, Bishop's Wood, Highgate Wood (*Bartlett fide Vaughan*); Chiswick, larva common on *Heracleum sphondylium* (*Sich*). *E. absinthiata*, Clerck, London (*Rendall*, Entom. 1887). *E. minutata*, Gn., Hampstead Heath (*Watts*). *E. assimilata*, Gn., Highgate Road, at light (*Vaughan*); Chiswick, larva on red currant (*Sich*); Dalston (*Prout*). *E. subciliata*, Gn., Harefield, taken sparingly (*Wall*). *E. abbreviata*, St., Mill Hill, one at rest on an oak tree (*South*); Pinner Woods, 1882 (*Watts*); Highgate (*Shepherd*). *E. exigua*, Hb., Mill Hill (*South*); Bishop's Wood (*Vaughan*); Whitton (*Rendall*); Hampstead, 1881 (*Watts*); [Kingsbury (*South*)]. *E. sobrinata*, Hb., Highgate Road and West Hill, common at light (*Vaughan*). *E. pumilata*, Hb., Mill Hill, at rest on palings (*South*); abundant at Ealing (*Adye*); [Stanmore Common (*South*)]. *E. coronata*, Hb., Mill Hill, netted in garden (*South*); Chiswick, at rest on a tree trunk (*Sich*); Hampstead Heath, 1880 (*Watts*); Highgate (*Shepherd*). *E. rectangulata*, L., Mill Hill, common on apple-tree trunks (*South*); Kentish Town (*Vaughan*); Isleworth (*Fenn*); Chiswick, common, larva in apple blossom (*Sich*); Whitton (*Rendall*); South Hampstead, generally black varieties (*Watts*); Harefield, taken freely some seasons (*Wall*); Highgate (*Shepherd*); Hammersmith (*Mera*). *E. rectangulata* var. *nigrosericeata*, Haw., Bedford Park (*Ckll.*); Dalston, the only form taken (*Prout*). Most of the above records of the species doubtless include this form, which is frequent in the London district. See Entom. 1888, p. 112 and p. 249; [St. John's Wood, a variety intermediate between this form and the type (*South*)].

Lobophora halterata, Hufn. (= *hexapterata*), Millfield Lane (*Vaughan*); Whitton (*Rendall*); see also Proc. S. Lond. Ent.

Soc. for 1887, p. 71. *L. viretata*, Hb., Chiswick, once only (*Sich*); Harefield, one in 1886 (*Wall*). *L. carpinata*, Bork., Harrow-Weald (*Rowland-Brown*).

Thera juniperata, L., Whitton (*Rendall*). *T. simulata*, Hb., Whitton (*Rendall*). *T. variata*, Schiff., Mill Hill, netted in garden (*South*); Hampstead Heath, 1880 (*Watts*); Highgate (*Shepherd*).

Hypsipetes sordidata, Fb. (= *elutata*), Mill Hill, bred from larva on sallow (*South*); Clutterhouse Lane, Hampstead, Kingsbury (*Godwin*); Bishop's Wood (*Vaughan*); Bedford Park (*Ckll.*); Chiswick (*Sich*); Whitton (*Rendall*); Harrow-Weald (*Rowland-Brown*); Pinner (*Watts*); Harefield, common (*Wall*); Hammersmith (*Mera*); abundant at Ealing (*Adye*).

Melanthia bicolorata, Hufn., Mill Hill, very common, several bred from larvæ on plum (*South*); Bishop's Wood, Hampstead, Kingsbury (*Godwin*); Chiswick, not common (*Sich*); Whitton (*Rendall*); Harefield, two in 1889 (*Wall*); [Kingsbury, often abundant (*South*)]. *M. ocellata*, L., Mill Hill (*South*); Bishop's Wood (*Vaughan*); Whitton (*Rendall*); Harrow-Weald (*Rowland-Brown*); Hampstead Heath, common (*Watts*); Harefield, frequent (*Wall*); [Kingsbury (*South*)]. *M. albicillata*, L., Pinner, 1881 (*Watts*); in house at Kentish Town, July, 1881, perhaps an escaped specimen (*Shepherd*).

Melanippe tristata, L., Graemes Dyke (*Rowland-Brown*). *M. procellata*, Fb., one about 1866, Dartmouth Park (*Vaughan*); Harefield, one in 1889 (*Wall*). *M. unangulata*, Haw., Bishop's Wood (*Shepherd*). *M. rivata*, Hb., Bishop's Wood, Hampstead (*Godwin*); Chiswick, occasionally (*Sich*); Harrow-Weald (*Rowland-Brown*). *M. sociata*, Bork. (= *subtristata*), Mill Hill (*South*); Bishop's Wood (*Godwin*); Isleworth (*Fenn*); Chiswick, occasionally (*Sich*); Whitton (*Rendall*); Hampstead Heath, abundant (*Watts*); Harefield, frequent (*Wall*); Hammersmith (*Mera*); [Northwood, abundant (*South*)]. *M. montanata*, Bork., Mill Hill (*South*); Bishop's Wood (*Vaughan*); Chiswick, occasionally (*Sich*); Harrow-Weald (*Rowland-Brown*); Hendon (*Watts*); Harefield, common (*Wall*). *M. galiata*, Hb., reported from Enfield Chace (see *Pract. Nat.*, 1883, p. 131). *M. fluctuata*, L., Mill Hill (*South*); generally common (*Godwin*); Kentish Town, Highgate (*Vaughan*); Isleworth (*Fenn*); Bedford Park (*Ckll.*); Chiswick, very common, larva on cabbage and garden nasturtium (*Sich*); Northend, Hampstead (*Ckll.*); Whitton (*Rendall*); Harrow-Weald (*Rowland-Brown*); South Hampstead (*Watts*); Harefield, very common in the gardens (*Wall*); Tufnell Park (*Shepherd*); Hammersmith (*Mera*); Ealing (*Adye*); Clapton (*Bacot*); Bloomsbury (*Brit. Mus.*); Dalston (*Prout*). *M. fluctuata*, var. *neapolisata*, Mill. (see *Entom.*, 1888, p. 249). *M. fluctuata* [var. *costovata*, Haw. (see *Entom.* p. 136)], ab. *deleta*, *Ckll.* (*Entom.* xxii. p. 100), in St. John's Wood (*South*,

Proc. S. Lond. Ent. Soc. for 1886, p. 44). This aberration has also been taken at Catford, by Mr. Bouttell.

Anticlea rubidata, Fb., Mill Hill, one netted in garden, 1875 (South); Whitton (Rendall). *A. badiata*, Hb., Mill Hill, very common in garden (South); Clutterhouse Lane, and generally common (Godwin); Bishop's Wood (Vaughan); Whitton (Rendall); Harefield Common, very plentiful on April 20th, 1889 (Wall); Highgate (Shepherd). *A. nigrofasciaria*, Göze (= *derivata*), Mill Hill, rather common in garden (South); Clutterhouse Lane, and generally common (Godwin); Pinner, 1883 (Watts); Harefield, frequent (Wall); near Acton (Mera).

Coremia designata, Hufn. (= *propugnata*), Mill Hill (South); Millfield Lane (Vaughan); Chiswick, common in May and July (Sich); Whitton (Rendall); Hampstead Heath, common (Watts); Harefield, common (Wall). *C. ferrugata*, Clerck, Mill Hill (South); Highgate (Vaughan); Whitton (Rendall); Harefield, frequent (Wall); abundant at Ealing (Adye). *C. unidentaria*, Haw., Bishop's Wood, Hampstead (Godwin); Highgate (Vaughan); Chiswick, occasionally (Sich); Whitton (Rendall); abundant at Ealing (Adye). *C. quadrifasciaria*, Clerck, Whitton (Rendall).

Camptogramma bilineata, L., Mill Hill, a pest (South); generally common (Godwin); common everywhere (Vaughan); Isleworth (Fenn); Bedford Park (Ckll.); Chiswick, very common, larva obtained by sweeping grass in March (Sich); Whitton (Rendall); Harrow-Weald (Rowland-Brown); common (Watts); Harefield, exceedingly abundant (Wall); Highgate (Shepherd); Hammersmith (Mera); Ealing, abundant (Adye); Clapton (Bacot); Dalston (Prout). *C. fluvialata*, Hb., Dartmouth Park (Vaughan); Hammersmith (Mera).

Phibalapteryx tersata, Hb., Harrow-Weald (Rowland-Brown); Harefield, once taken (Wall). *P. vittata*, Bork. (= *lignata*), Mill Hill, a female netted in a ditch (South). *P. vitalbata*, Hb., Mill Hill, one at light at Goldbeater's (South).

Triphosa dubitata, L., Mill Hill, two in the garden (South); Whitton (Rendall); Harrow-Weald (Rowland-Brown); Hampstead (Watts); Harefield, taken occasionally (Wall); Hammersmith (Mera).

Eucosmia certata, Hb., Mill Hill, one netted in garden, 1876 (South); Kingsbury, Regent's Park (Godwin); Chiswick, at flowers of bay tree (Sich); Hampstead (Watts); a few at Ealing (Adye). *E. undulata*, L., Bishop's Wood (Knaggs fide Vaughan); Harefield, two in 1887 (Wall).

Scotosia vetulata, Schiff., Mill Hill, several beaten out of a hedge on the common (South); Clutterhouse Lane, Kingsbury (Godwin); Harefield, one in 1887 (Wall). *S. rhamnata*, Schiff., Mill Hill, two netted in garden, also bred from larvæ (South); see also Jäger, Proc. S. Lond. Ent. Soc. for 1887, p. 61); [Kingsbury (South)].

ON THE IDENTIFICATION OF *ATTACUS ATLAS*, LINN.,
AND ITS ALLIES, WITH REMARKS ON SOME OTHER
SPECIES OF THE GENUS.

By W. F. KIRBY, F.L.S., F.E.S., Assistant in Zool. Dept., British
Museum (Nat. Hist.), S. Kensington.

WHILE lately looking over the British Museum collection of *Attacus*, I made some notes on synonymy, &c., which I think will be found interesting to lepidopterists.

Genus *ATTACUS*, Linn.

Phalæna Attacus, Linn., Syst. Nat. i. (2), p. 809 (1767).

Attacus atlas, Linn.

Bombyx atlas, Linn., Syst. Nat. i. p. 495, n. 1 (1758); Mus.
Ulr. p. 366 (1764).

Saturnia silhetica, Helf., Journ. As. Soc. Bengal, vi. p. 41, n. 4
(1837).

The commonest Indian form of this group, with two well-marked transparent spots on the front wings. It differs much in size, and the largest specimen in the British Museum expands very nearly a foot; it is probably the largest lepidopterous insect known. This insect generally stands as *Attacus atlas* in collections, and appears to correspond to the typical Linnean description of the species. *Attacus talus*, Hübn., *lorquini*, Feld., and *taprobanis*, Moore, appear to me to be only varieties of this.

Var. a. *Attacus talus*, Hübn.

Attacus talus, Hübn., Verz. bek. Schmett. p. 156, n. 1615
(1822?).

Aurivillius (Vet. Akad. Handl. (2), xix. (5), p. 144) quotes Cramer, Pap. Exot. t. 9, a. as the typical figure of *Attacus atlas*, Linn. In this he is so far correct that it agrees fairly with Petiver's figure, Gaz., t. 8, f. 7, which is the first cited by Linné, and which I should also have been inclined to regard as authoritative, but that Linné alludes to the *second* transparent spot on the front wings. The specimens most nearly agreeing with these figures in the British Museum are from Burmah. The transparent spots are of considerable size and breadth, and the second transparent spot on the front wings is generally absent. Hübner calls this form *Attacus talus*. It is also figured by Olivier as *Bombyx ethra*, Enc. Méth. Atlas, t. 9, fig. 2. *Attacus atlas*, Geyer (Samml. Ex. Schmett. iii.), from China, also seems to belong here.

Var. b. *Attacus lorquini*, Feld.

Attacus lorquini, Feld., Wien. Ent. Mon. v. p. 306 (1861);
Maass. & Weym. Beitr. Schmett. ii. ff. 46, 47 (1873).

A large dark-coloured form from the Philippines, closely allied to *Attacus atlas*, as figured by Cramer, and probably not truly distinct. The second transparent spot of the front wings is obsolete.

Var. c. *Attacus taprobanis*, Moore.

Attacus taprobanis, Moore, Lep. Ceylon, ii. p. 124, pl. 127, ff. 1, 1a (1883).

This form differs from the true *A. atlas* in the transparent spots being small and triangular; the second transparent spot of the front wings is often obsolete. It is the ordinary form in Ceylon, but I have seen specimens closely resembling it from various parts of India.

Attacus edwardsii, White.

Attacus edwardsii, White, Proc. Zool. Soc. Lond. 1859, p. 115, t. 57.

A handsome species, with the second transparent spot on the front wings obsolete. Easily recognised by its very dark colouring, and the sharp contrast formed by its white markings.

Attacus crameri, Feld.

Attacus crameri, Feld., Sitz. Akad. Wiss. Wien. xliii. p. 31, n. 67 (1861).

A. atlas, Stoll, Pap. Exot. iv. tt. 381c, 382a (1782).

A very distinct species, with small transparent spots near the middle of the wings, instead of touching the dentated black line, edged outside with white, which crosses both wings in all the allied species.

Attacus cæsar, Maass.

Attacus cæsar, ♀, Maass. & Weym., Beitr. Schmett. ii. f. 22 (1873).

A female from Mindanao, greener than the allied species, with three transparent spots on each wing; the smaller ones, at least, contiguous to the white band.

Attacus imperator.

Attacus imperator, Kirb., Cat. Lep. Het. i. p. 746, n. 5 (1892).

A. cæsar, ♂, Maass. & Weym., Beitr. Schmett. ii. f. 23 (1873).

This insect comes from Bohol, not Mindanao, and differs so much from the supposed female that I dare not put them together without proof. There are three small transparent spots on the front wings, and two contiguous ones on the hind wings.

Attacus (?) vitrea.

Phalæna arcuata-vitrea, Perry, Arcana (1811).

Perry's figure appears to have been taken from a specimen belonging to the group of *Attacus atlas*, though he states that it

comes from South America. It is, however, very rough, and may possibly represent some unknown species allied, not to *Attacus*, but to *Rhescyntis hippodamia*, Cram.

AMERICAN GROUP OF ATTACUS.

Attacus erycina.

Attacus erycina, Shaw, Nat. Misc. vii. t. 230 (1797).

|| *Phalæna hesperus*, Cram., Pap. Exot. i. t. 68_A (1775).

? *Bombix splendida*, Pal. de Beauv., Ins. Afr.-Amér. p. 133, pl. 22, ff. 1, 2 (1805?).

A widely-distributed species in South America, and occurring as far north as Costa Rica. The British Museum has specimens of a hymenopterous parasite (*Conurus flavicans*, Spin., one of the *Chalcididæ*), bred from its cocoons in Cayenne. *Attacus splendidus*, Beauv., from St. Domingo, may prove to be distinct, when we receive a series from that island; its alleged occurrence in Texas is certainly an error.

Attacus orizaba.

Saturnia orizaba, Westw., Proc. Zool. Soc. Lond. 1853, p. 158, t. 32, f. 2; Druce, Biol. Cent.-Amer. Lep. Het. ii. p. 189, n. 2 (1886).

Attacus splendida, Clem., Proc. Acad. Nat. Sci. Philad. 1860, p. 160; Hulst, Ent. Amer. i. p. 160 (1885).

Clemens's description applies fairly well to *A. orizaba*, and not at all to *A. erycina*; moreover, Hulst asserts that "*A. splendidus* and *orizaba* have been proved, by breeding, to belong to the same species"; whereas neither *erycina* nor *orizaba* are rare in collections; and the British Museum possess both sexes of both. Again, Druce states that *A. orizaba* is common in Mexico, but becomes rare further south; while *A. erycina* is a much scarcer and more southern species.

NOTES ON THE SYNONYMY OF NOCTUID MOTHS.

BY ARTHUR G. BUTLER, F.L.S., F.Z.S., &c.

(Continued from p. 141.)

PROFESSOR SMITH is anxious to discover what my classification of the Noctuæ is based upon; at the same time he does not mention upon what he bases his own. He agrees with me in one thing, that the Trifidæ and Quadrifidæ of Guenée represent natural groups, and that is certainly more than other American writers have admitted in practice, if they have accepted the distinction theoretically. In fact, Guenée himself unfortunately failed to follow it strictly.

As I mentioned in my introductory remarks, the details of my arrangement of the genera of Noctuæ are subject to alteration, as I acquire more knowledge of the group, and I should judge that this may be the case with all arrangements.

—————

Eublemma hemirhoda.

Micra hemirhoda, Walker, Lep. Het. Suppl. 3, p. 799 (1865).

Anthophila roseifascia, Walker, l. c., p. 803 (1865).

Java and New Guinea. Types in Coll. B. M.

It is possible, and even probable, that the following group may belong to the Deltoids, in which case it would stand close to *Mestleta*. In cases where the structural characters are almost identical in every particular, it is impossible, without seeing the larvæ, to be certain of assigning these little moths to their rightful groups: if their larvæ are semi-loopers they cannot be associated with the Eublemmidæ, the larvæ of which are of the typical Noctuid form characteristic of Guenée's Trifidæ, and therefore must necessarily follow them. This group, which structurally agrees with *Mestleta* in the fact that its posterior tibiæ do not exceed the femora in length, whereas in *Eublemma* the difference is very marked, may be called *Eumestleta*, with "*Thalpochares*" *patula*, Morrison, as type: this genus also includes *T. nuda*, Chr., *Anthophila virginea*, Guen., *A. vestalis*, Butl., and *A. ragusana*, Freyer.

Eumestleta patula.

Thalpochares patula, Morrison. (See Grote's Check-List, p. 37, n. 1042.)

Tarache patruelis, Grote (on label).

Anthophila flammicincta, Walker, Lep. Het. Suppl. 3, p. 801 (1865).

North and South America. Coll. B. M.

Grote's and Walker's types are in the Museum; the former is admitted by its describer to be a synonym of *E. patula*.

PALINDIIDÆ.

In his revision of this family M. Constant Bar has done wrong to include *Dyomyx*, Guen.; the form of the wings and palpi in the latter genus proves it to belong to the Pseudodeltoids of Guenée.

The genus *Eulepidotis*, Hübn., takes the green-coloured species of the *ilyrias* group, viz., *E. ilyrias*, Cr., *viridissima*, Bar, *chloris*, Bar, and allies. Nearest to *Eulepidotis* come *Palindia dominicata* and allies, viz., *P. argyritis*, *rectimargo*, *persimilis*, *candida*, and *santarema*: these are followed by the typical Palindidæ, *P. julianata* and allies, amongst which I have to record the following synonyms:—

Palindia julianata.

Phalæna julianata, Stoll, Suppl. Cram. Pap. Exot. p. 40;
pl. 8, fig. 4.

Palindia egala, Walker, Lep. Het. Suppl. 3, p. 807 (1865).
Amazons. In Coll. B. M.

Var. *juncida.*

Palindia juncida, Guenée, Noct. ii. p. 277, n. 1076 (1852).

Palindia aglaura (part), Bar, Ann. Ent. Soc. Fr. 1876, p. 7;
pl. 1, fig. 10.

Colombia (*Guen.*), Ega and Brazil. In Coll. B. M.

Var. *aglaura.*

Palindia aglaura (part), Bar, Ann. Ent. Soc. Fr. 1876, p. 7;
pl. 1, fig. 11.

Amazons and Sao Paulo, Brazil. In Coll. B. M.

The above forms undoubtedly represent only one species.

We have typical *P. julianata*, and the darkest form of *P. aglaura*, taken by Dr. Traill on the Rio Madeira; also typical *P. julianata* and *P. juncida*, taken together by Bates at Ega; lastly, we have typical *P. juncida* and the dark form *P. aglaura* taken together by Dunkinfield Jones at Sao Paulo. There is, therefore, practical evidence that the three forms of *P. julianata* occur constantly together: the width of the bands on primaries is evidently a variable character, as is the width of the subapical costal pale spot.

Palindia alabastraria.

Noctua alabastraria, Hübner, Zutr. Exot. Schmett. figs.
311, 312.

Palindia punctangulata, Walker, Lep. Het. xii. p. 848, n. 8
(1857).

Palindia pulchella, Bar, Ann. Ent. Soc. Fr. (1876), p. 245;
pl. 5, fig. 17.

Amazons. In Coll. B. M.

Allied to *P. detracta*, Walk.

Palindia albula.

Palindia albula, Bar, Ann. Ent. Soc. Fr. (1876), p. 12, n. 20;
pl. 1, fig. 16.

Palindia alabastraria, Walker (not Hübner), Lep. Het. xii.
p. 846, n. 3 (1857).

Amazons. In Coll. B. M.

It is evident that M. Bar failed to examine Hübner's figure, or he could not have re-described *P. alabastraria* under the name of *P. pulchella*. It is singular that he failed to observe the affinity of the latter to his *P. albula*.

Palindia vincentiata.

Phalæna vincentiata, Stoll, Suppl. Cram. Pap. Exot. v. p. 39 ;
pl. 8, fig. 3.

Palindia caudata, Herrich-Schäffer, Aus. Schmett. fig. 136.

Palindia ornata, Bar, Ann. Ent. Soc. Fr. (1876), p. 11 ; pl. 1,
fig. 13.

Ega, Amazons. In Coll. B. M.

PHRYGIONIS, *Hübner*.

M. Bar has described several species of this genus to which my Amazon species are evidently closely related: if, however, his figures are reliable, as they appear to be, the forms of the Amazon will prove to be distinct from those of French Guyana. Thus *P. regalis*, Butl., resembles *P. stella*, Bar, but differs in the much broader purple belt on primaries and the consequently small orange spot (instead of a triangular orange belt) which follows it. *P. dives*, Butl., resembles *P. emilia*, Bar, but is larger, darker, has straighter and consequently more parallel bands across the primaries, and a distinct lunate renal stigma beyond the second belt.

Palindia formosa, Bar, seems to me to be an under-fed specimen of *Phrygionis corinna*; beyond its inferior size, and slightly brighter and paler colouring, I see nothing to distinguish it.

(To be continued.)

ENTOMOLOGICAL NOTES, CAPTURES, &c.

DEIOPEIA PULCHELLA IN 1892: ADDITIONAL RECORDS.—

Suffolk.—On June 10th I took a specimen of *Deiopeia pulchella* at Felixstowe, Suffolk. It was flying by day over long grass.—A. W. MERA; 79, Capel Road, Forest Gate, July 9, 1892.

East London.—I captured a female of this rare insect in this neighbourhood on June 3rd, between 8 and 9 o'clock a.m. I may also mention that I have taken, in this unusual locality, a specimen of *Dianthæcia capsophila*.—H. S. WOOLEY; 65, East Ferry Road, Isle of Dogs, July 12, 1892.

Hampshire.—I captured one example of *Deiopeia pulchella* on the 25th May this year, in a field near Christchurch.—E. PERCIVAL HART; Bow House, Christchurch, Hants, July 12, 1892.

An evidently freshly-emerged specimen of this insect was taken at Grange, on May 29th, by my friend Mr. T. H. Larcom. It was blowing hard at the time, and, after it was first recognised, it succeeded in hiding itself in the grass so successfully that an hour and a half was spent in searching before it was finally secured. In my copy of Kirby and Spence's 'Introduction to Entomology,' published in 1815, this insect is figured under the name of *Bombyx pulchella*.—W. T. PEARCE; 2, Cranbourne Road, Gosport, July 18, 1892.

NOTE ON *DEIOPEIA PULCHELLA* AND *EUCHELIA JACOBÆE*.—With reference to the remarks (Entom. 166–8) concerning *Deiopeia pulchella*, there were large numbers of this insect on the wing in Malta on the 9th May last year. I am led to make this note from the fact that Newman, in 'British Moths,' p. 31, seems to imply all Europe when he says, "The moth appears in July." I took a single perfectly fresh specimen on the 24th August of the same year at Rosas Bay, on the N.E. coast of Spain. Also *Euchelia jacobææ*, which Newman, on the same page, says appears in July, was swarming here (Chatham) from the middle of May.—PHILIP DE LA GARDE; H.M.S. 'Pembroke,' Chatham, July 5th, 1892.

COLIAS EDUSA IN 1892: ADDITIONAL RECORDS OF CAPTURE.—

Kent.—I captured, on 30th May, a specimen of *C. edusa* on the "Warren," a piece of rough ground near Bexley Heath, and another in Joyden's Wood; they were both females, and in fair condition. I also saw several more on Dartford Heath, but was unable to secure any, owing to the high wind. I visited Dartford Heath several times afterwards, but did not meet with it again in this neighbourhood; but on 8th June I saw a male close to Eynsford, and a female on the downs near Shoreham.—P. T. LATHY; Warren Road, Bexley Heath, Kent, July 7, 1892.

Essex.—During the month of June I have seen several *C. edusa* flitting about Chingford, and, although I have tried hard to capture one, still I have not succeeded. All that I saw seemed to be in good condition. This is a very unusual sight in this locality.—PERCY G. CRANE; Chingford, Essex.

Somersetshire.—I had the pleasure of seeing a specimen of *C. edusa* at Clevedon, Somerset, on May 31st. *Vanessa cardui* and *Plusia gamma* were very frequently seen then and early in June, and *Nemophila noctuella* in numbers almost everywhere; the last named has scarcely been seen for some years previously. *Vanessa urtica* is now very common here in Wales.—T. B. JEFFERYS; Laughorne, Carmarthenshire, July 6, 1892.

Oxfordshire.—I saw a female *C. edusa*, at Cowley, on the 29th May, but could not secure it, as I had not a net with me. On the 6th of the following month I took a female near Bledlow, and on the 10th a specimen was seen near Shabbington Wood by a friend of mine. He did not notice its sex.—F. W. LAMBERT; 17, Woodstock Road, Oxford.

Hampshire.—More than a dozen specimens have been reported to me as having been seen or taken in various parts of the Gosport district.—W. T. PEARCE; Gosport.

COLIAS HYALE IN WILTSHIRE.—It might interest readers of the 'Entomologist' to know that on the 19th of June last I caught a damaged specimen of *Colias hyale*, three miles north of Salisbury, in windy weather, with some rain.—C. G. SELIGMANN; 26, Clifton Gardens, Maida Vale, N., July 2, 1892.

VANESSA CARDUI AND PLUSIA GAMMA.—It may be interesting, in view of correspondence in the 'Entomologist,' to know that, when I left home (near Exeter) about three weeks ago, *V. cardui* and *P. gamma* were plentiful; the former were much worn, and evidently hibernated. There were swarms of *P. gamma* in the clover fields last August and September, but I had not seen a specimen of *V. cardui* for years, nor any of *C. edusa*, except one (a male), in September, 1889, when out shooting.—E. F. STUDD; 130, Queen's Gate, S.W., July 3, 1892.

VANESSA POLYCHLOROS PUPÆ ON A STONE WALL.—On Thursday last (July 14th), I took three pupæ of *V. polychloros* on a stone wall near Oxford; one of the insects emerged to-day (Saturday). My friend Mr. F. W. Lambert also took two pupæ of the same species from the same locality. —S. KIPPING; 13, St. Giles, Oxford, July 16, 1892.

HYBRID OF THECLA SPINI AND *T. ILICIS*.—In the summer of last year I collected a number of larvæ of *Thecla spini* from two bushes of *Rhamnus catharticus*; nearly all of these yielded imagines in course of time. Two out of this number differed from the type in having a dash of ochreous yellow in the centre of the fore wings, also a row of spots along the outer margin of the hind wings like that seen in *T. ilicis*. The under surface, however, was identical with that of *T. spini*. I may add that *Thecla ilicis* is to be met with in the same locality, and, I take it, that the form I have just described must be a mule between the two species, like that mentioned by Millière in the case of *Lycæna cyllarus* and *L. melanops*. —FRANK BROMILOW; Maison Maïssa, St. Martin Vésubie, Alpes Maritimes, July 7.

PLUSIIDE IN ESSEX.—*Plusia gamma* seems to have been very plentiful everywhere, although here it was not so plentiful as last year, when it seemed to be the only insect about. *P. iota* has eclipsed *P. gamma*, as it is to be seen in every direction in hundreds; every patch of honeysuckle seems to be alive with them. *P. chrysitis* is also extremely plentiful; while standing in front of a clump of nettles last evening, I netted eleven specimens of this species in three minutes, all of which were in good condition. Among other moths that seem very plentiful this season, I might mention *Uropteryx sambucaria* (which flits about at dusk as plentiful as the white butterfly in the daytime), *Metrocampa margaritata*, and *Hepialus humuli*. —PERCY G. CRANE; Chingford, Essex, July, 1892.

PLUSIA MONETA AT TUNBRIDGE WELLS, 1892.—I had the good fortune to take three fine specimens of *Plusia moneta*, at light, on the 11th, 12th, and 14th inst., within a very short distance of the place where I captured a specimen on the 3rd July, 1890 [recorded Entom. xxiii. 334]. I caught two specimens on the 12th, but one got out of my net. The garden where they were caught abounds with monkshood (*Aconitum*). —R. A. DALLAS BEECHING; 24, St. James Road, Tunbridge Wells, July 13, 1892.

PLUSIA MONETA IN MIDDLESEX.—On July 9th, while working with the net over flowers, in the dusk (about 8.30), I took a moth which was totally unknown to me. On taking it to Mr. Cooke, of Museum Street, he pronounced it to be a specimen of *Plusia moneta*. I was still further fortunate enough to take another specimen, under exactly similar conditions, on July 14th. —C. R. PEERS; Harrow-Weald, Middlesex.

STAUROPUS FAGI, &C., IN WICKHAM WOOD.—On Monday, June 20th, I went to Wickham Wood, and took three fine females of *Stauropus fagi*, between noon and one o'clock. Two were at rest on a fence, and the third on a beech-trunk about two feet from the ground. Surprised at my success, as I had heard that *S. fagi* was now seldom to be found at Wickham, I went again on the following day, and took a fine specimen of a male on a pine-trunk about seven feet from the ground. Among my other captures on the tree-trunks were *Macaria notata* (4), *M. liturata* (8), *Boarmia consortaria* (2), *Tephrosia extersaria* (abundant), *Ypsipetes impluviata*, *Aplecta*

nebulosa, *Cymatophora fluctuosa*, *Lobophora hexapterata*, and *Melanthia albicillata*.—C. M. WELLS; Hurstfield, The Avenue, Gipsy Hill, June 28.

ASSEMBLING OF AMPHIDASYS BETULARIA. — On June 5th, I bred a female *Amphidasys betularia*, and, having seen *A. strataria* mentioned in Mr. Sykes's list of assembling species, I thought that the female of this species might also prove attractive to the males. I therefore enclosed the insect in a cage, similar to that recommended by Dr. Knaggs in the 'Lepidopterist's Guide,' and placed it on a tree in our garden for six nights in succession, with the following results:—June 5th, 6 males, first at 9.15, last at 9.45; 6th, 16 males, first at 9.45, last at 11.30; 7th, 2 males, first at 9.55, last at 10.10; 8th, 7 males, first at 9.45, last at 11.20; 9th, 2 males, first at 9.45, last at 10.5; 10th, 2 males, first at 9.45, last at 10.30. The weather did not appear to make any difference to the moths "assembling," as on the 5th and 10th the nights were bright, with warm south-westerly breezes; and on the other four nights it was very bright, but with cold winds from the east. I usually found the males came most freely between 9.45 and 10.15.—P. T. LATHY; Warren Road, Bexley Heath, Kent, July 4, 1892.

ZYGENA FILIPENDULÆ var. CHRYSANTHEMI.—On or about the 24th of last month, in a field a few miles from Hastings, in which *Z. filipendulæ* were swarming, I took a melanic specimen of that moth. The fore wings are smoky black, with green and rosy gloss showing; the six spots black, and apparently slightly raised. The hind wings are dull black.—C. A. BIRD; Rosedale, 162, Dalling Road, Hammersmith, W., July 5, 1892. [We congratulate our correspondent on his good fortune in capturing a specimen of var. *chrysanthemi*, Esper, a rare aberration of *Zygena filipendulæ* (see Entom. xxiv. 234).—ED.]

ABERRATION OF ZYGENA LONICERÆ.—A short time ago I captured a remarkable variety of *Zygæna loniceræ*. The wings on the left side are of the normal size, and the markings differ in no way from the type; but those on the opposite side were somewhat dwarfed and very misshapen. There is, moreover, what must be considered as an elongated extra spot, measuring in extent rather more than twice the largest spot, placed on the inner margin of the fore wing near the base.—F. BROMILOW; St. Martin Vésubie, Alpes Maritimes, France, July 1, 1892.

MACROGLOSSA STELLATARUM ABUNDANT IN NORTH DEVON.—Although the weather is wet and stormy here just now, there is an extraordinary number of *Macroglossa stellatarum* flying about the town. It is very interesting to watch these pretty creatures hovering about the *Valerian*, of which plant there is a quantity growing near the pier. This morning I observed numbers of these moths flying about the blossoms in the pouring rain. I have captured a few specimens, but all are worn and not worth setting. I may add that yesterday I went over to Lynmouth, where I was told that *M. stellatarum* had been very common in the village for some time.—J. A. COOPER; Ilfracombe, July 5, 1892.

MACROGLOSSA STELLATARUM IN JERSEY.—Wherever I have been this year this species seemed to abound in such numbers as I have never seen before. Just now I am staying in Jersey, and I can fairly say that *M. stellatarum* is as common here as *Pieris brassicæ*.—W. J. KAYE; Dudley House, Bagot, Jersey.

MACROGLOSSA BOMBYLIFORMIS IN LINCOLNSHIRE.—I am not a subscriber to Mr. C. G. Barrett's new book on the British Lepidoptera, and therefore do not know whether it is a useful work in the matter of localities; but ever since its publication was announced I have not ceased to wonder why no notice has appeared in the 'Entomologist,' requesting collectors to furnish lists of localities. This course was adopted by the late Edward Newman, before issuing his 'British Butterflies,' with a very satisfactory result. Of course, in the case of rare species, one does not expect the exact locality to be specified. No doubt most of your readers know that in Stainton's 'Manual,' for instance, Cambridge (or Ca. in abbreviated form) embraces a district of certainly not less than ten miles round the famous University town. Well, the foregoing thoughts have been suggested to me by the fact that, although I have been collecting since 1866, I could never succeed in obtaining even a type of *M. bombyliformis* in the way of exchange, nor had I ever encountered the species personally, until May 26th, 1892. On that day I was collecting in a wood near Wragby, and captured two specimens of *Macroglossa*, hovering over blue bugle (*Ajuga reptans*) in a sunny riding of a large wood, where, if the truth must be told, *Hesperia paniscus* disports itself at that period of the year. I thought no more about my two *Macroglossa* until I came to set them out, when I discovered one to be the long-sought-for *M. bombyliformis*. On May 27th, I took another in the same wood, and on May 28th five more, making a total of seven; but after that day I could only find *M. fuciformis*. The two species seem to be of very similar habit, and hover over blue bugle flowers, during sunshine, in the damp ridings of large woods. So far as my knowledge extends, *M. bombyliformis* has of late years occurred very rarely in the British Islands, and I think that if any of your readers have come across it, a short account of the occurrence would be extremely interesting. All my specimens were in very fine condition, having travelled several miles alive in glass-bottomed boxes without sustaining any injury.—(REV.) G. H. RAYNOR; Panton Rectory, Wragby, July 16, 1892.

BUTTERFLIES SCARCE IN JUNE AND JULY, 1892.—I should be very glad to know whether anyone has noticed a considerable diminution in the number of butterflies (generally) about lately. During the hot weather at the end of May there were quantities about, but since then I have seen very few. On the 3rd July, I walked from Cobham to Maidstone, most of the way being through country, and under conditions very favourable for butterflies; but the only insects I saw were *Pieris brassicæ*, a few; *P. rapæ*, a few; *Euchtoë cardamines*, a very much damaged male; *Colias hyale*, or very pale *edusa*, one; *Argynnis aglaia*, three, perfect; *Vanessa urtica*, frequent, perfect; *V. atalanta*, frequent; *Epinephele ianira*, everywhere; *Cænonympha pamphilus*, a few; *Thecla rubi*, two, damaged; *Lycæna icarus*; *Hesperia sylvanus*.—PHILIP DE LA GARDE; H.M.S. 'Pembroke,' Chatham, July 5, 1892.

FOOD OF THE LARVA OF ASTEROSCOPIUS NUBECULOSA.—In addition to the plants mentioned by me, *ante*, p. 173, I find that the larva of *A. nubeculosa* will eat plum freely. Mr. McArthur informs me that the larvæ do well on pear.—RICHARD SOUTH; 12, Abbey Gardens, St. John's Wood.

COSMOPTERYX ORICHALCELLA IN DORSETSHIRE.—Among other good Micro-Lepidoptera I took two specimens of *C. orichalcella* by sweeping among rough herbage in Bere Wood, near Bloxworth, on the 7th of July,

1892. One specimen was in beautiful condition, the other worn. This insect has not, I believe, been previously recorded in Dorsetshire.—(Rev.) O. PICKARD-CAMBRIDGE; Bloxworth Rectory, July 16, 1892.

SCYBALICUS OBLONGIUSCULUS IN DORSETSHIRE.—I took six specimens of this beetle at Ringstead, Dorsetshire, on the 1st July this year.—(Rev.) F. O. PICKARD-CAMBRIDGE; 5, Henry Street, Carlisle.

NOCTUÆ IN DORSETSHIRE.—Three nights' sugaring in Bere Wood, near Bloxworth (July 7th, 8th, and 11th) produced the following result:—*Cymatophora duplaris*, common. *Thyatira batis* and *T. derasa*, rather scarce. *Leucania lithargyria*, *L. impura*, and *L. pallens*, abundant. *Xylophasia rurea*, abundant. *Apamea gemina*, common. *Miana strigilis*, common. *Noctua plecta*, common. *N. ditrapezium*, six specimens. *N. triangulum*, *N. brunnea*, and *N. festiva*, exceedingly abundant; on an average about a dozen or more of these three on every tree. *Triphana subsequa*, one specimen. *Aplecta herbida*, two specimens—one fine, one worn. *A. nebulosa*, exceedingly abundant. *Euplexia lucipara*, exceedingly abundant. *Mania typica*, one specimen. *Caradrina blanda*, common. Besides these, *T. pronuba*, *T. orbona*, *Xylophasia polyodon*, and other universally abundant insects, were swarming; and a few species of *Agrotis* were beginning to make their appearance.—A. W. PICKARD-CAMBRIDGE; Bloxworth Rectory, July 16, 1892.

A REMINISCENCE.—Mr. E. L. Layard, writing in the 'Field' (June 18th), says:—"Fifty-one years ago I was living at Cambridge, and scoured the country round in search of Lepidoptera. On the Devil's Dyke, the old Saxon rampart near Newmarket, I found *Colias edusa* and *C. hyale* (the clouded yellow and pale-clouded yellow) in some abundance. My late wife, then a girl, took numerous specimens of both on the heath, between Isleham and Mildenhall, and got bitten in the foot by a viper in the pursuit. She also took several examples of *Deiopeia pulchella* (the crimson speckled footman) in the larval and perfect stages. I exhibited these rare butterflies, and a specimen of *Vanessa antiopa* (the Camberwell beauty), taken by my brother-in-law from a little lad who had knocked it down with his cap in a lane at Bottisham, near Cambridge, and was only too proud to give them to 'the doctor,' to Professors Babington, Henslow, and others, who were greatly pleased with them. I also gave specimens to that well-known entomologist, the Rev. Leonard Jenyns, who was then vicar of Swaffham, and to old Downie, the entomologist who supplied many rare things to the collectors among the undergraduates. Downie, in return, put me up to seeking the large copper butterfly. Acting on his suggestion, I went down to Yaxley Fen, near Huntingdon, and was fortunate enough to secure several fine examples of *Lycæna dispar*, and the scarce copper, *L. virgaureæ*. I also took some fine *Papilio machaon*, and several rare British moths. This country is, I believe, now all drained, and, the food-plants of these rare British 'flies' being extirpated, the 'flies' themselves have all disappeared, I suppose. It would be interesting if any of your readers, living in that neighbourhood, would give us some information on this point. The year 1841 was a famous year for butterflies. I recollect the fields round Isleham swarming with *Ino statices* (the green forester), and the five-spot and six-spot burnets (*Anthrocera loti* and *A. filipendulæ*). Isleham, as its name implies, was in the Cambridgeshire fens, the 'Island hamlet.' It was approached from Fordham (another suggestive name) by a raised causeway. I believe all this country is now drained."

NOTES FROM SOUTH WALES.—During April and the early part of May larvæ of *Melitæa artemis* were simply swarming in the Penarth district, more particularly in one field, where some 2000 were taken by the members of the Penarth Entomological and Natural History Society, the majority of which have found their way to various parts of the country. At the end of May the imagines were very plentiful. During May several specimens of *Saturnia carpini* were taken on Barry Island, and during May and June the larvæ have been very abundant, feeding on bramble. This is the first year we have come across *S. carpini* about here. On May 14th, I was fortunate in taking, on Barry Island, a female of *Spilosoma fuliginosa*, which, although a cripple, kindly gave me a good number of ova, which have since hatched; the larvæ are now feeding well on dock-leaves. Another specimen was captured at Porthkerry, near Barry, by Mr. W. E. R. Allen; these two are the first of *S. fuliginosa* noted for this district. On June 12th it was again my fortune to take, at Penarth, *Macroglossa bombylifformis*, as the insect was settled on the grass. It is believed two or three specimens have been seen on the wing. *Vanessa cardui* has turned up very suddenly in extraordinary numbers. None having been seen last season about here, seems to imply that the present visitors are immigrants. *Zygæna filipendulæ* is also literally swarming just now. Several *Arctia villica* have been taken on Barry Island. The aspect thus far promises a very good entomological season.—G. A. BIRKENHEAD; DOWNS VIEW, Penarth, near Cardiff, June 27, 1892.

MICRO-LEPIDOPTERA OF BURTON-ON-TRENT.—The 'Transactions of the Burton-on-Trent Natural History and Archæological Society,' vol. ii., contains a list of the Micro-Lepidoptera of Burton-on-Trent and District, compiled by J. T. Harris, F.E.S., and Philip B. Mason, F.L.S., &c. A list of the Macro-Lepidoptera was published in vol. i. of the Society's 'Transactions.'—ED.

NOTES ON THE SEASON, NORTH STAFFORDSHIRE.—*E. debiliata* is just now out in abundance in some of the woods in this neighborhood. I took seven off one tree to-day in the rain, and altogether got about forty. I might have taken two or three times as many had I wished it. Sugaring about here has been very bad. On two or three apparently suitable nights there was hardly anything at all on the trees. On Wednesday I only took seven *A. tincta*, though the larvæ were abundant in the spring; whereas last year there were three or four on every tree. It was a showery night, and moths were abundant on the wing, but did not seem to care for the sugar; and so it has been all through this season. I have read with surprise how attractive sugar has been in the south. Last year, when useless in the New Forest, it was most successful here.—F. C. WOODFORDE; Market Drayton, Salop, July 9, 1892.

TAPINOSTOLA EXTREMA IN STAFFORDSHIRE.—On the 13th July, in a marsh near here, I took a single specimen of *Tapinostola extrema* (concolor) in moderate condition. The species has not been recorded from this locality before, but the district has never been thoroughly worked. I should visit the particular spot more often myself, but that it swarms with a terrible gnat, whose bite is most venomous. For two days after having been there my face and hands are so swollen that I am hardly recognisable, and one cannot wear a veil at dusk because one wants all one's eyes. *Plusia festuæ*, *Acidalia immutata*, and *Phibalapteryx vittata* (lignata) occur there

also; and *Hyphenodes costæstrigalis*.—F. C. WOODFORDE; Market Drayton, July 24, 1892.

THE PROPOSED RIFLE RANGE IN THE NEW FOREST. — Persons interested in the New Forest will be glad to hear—if they have not already heard—that the vigorous opposition made, during the winter and spring months, to the Government proposal to acquire sites in the Forest for rifle ranges, to which I alluded in my previous note (February, 1892), has been successful. In the first place, the “Ranges Act, 1891,” under the authority of which the *whole* Forest was at the mercy of the War Office, has been repealed; and subsequently the objectionable clauses of the Military Lands (Consolidation) Bill, 1892—by virtue of which the Government, although giving up their greater powers, might still have retained 800 acres of the Forest—have been struck out in Committee. Further, a clause has been inserted in the bill last mentioned, providing that “Nothing in this Act shall authorise the taking of any land in the New Forest, or shall empower the Commissioners of Woods to grant, or lease, or give any license over any land in the New Forest.” The result of the recent agitation, and the consequent repeal of the “Ranges Act, 1891,” and the modification of the “Military Lands (Consolidation) Bill, 1892,” is to leave the New Forest in exactly the same position, legally, as it was after the passing of the “New Forest Act, 1877,” by which Act it was secured to the public as an open space, and the rights of the Crown to fell timber and make further enclosures were stopped. All naturalists and other persons interested in the Forest should feel much indebted to the Verderers and Commoners of the Forest, the London and local press, and to various individuals, for their continuous efforts, for many months, to preserve the Forest for the public, the happy results of which have been attained only after a long and uphill struggle, and the expenditure of a considerable sum of money.—H. Goss; Marazion, Cornwall, July, 1892.

SOCIETIES.

SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—*June 23rd, 1892.*—Mr. C. G. Barrett, F.E.S., President, in the chair. Mr. Tugwell exhibited five varieties of *Argynnis selene*, Schiff., one example having three silvery spots on the upper surface of each of the inferior wings; *Melitæa athalia*, Rott., one specimen having one of the hind wings nearly black; *Synichthus malvæ*, L., var. *taras*, Meig. Mr. Tugwell remarked that he had been recently collecting with Mr. Porritt in Abbot's Wood, Sussex, and in the course of eight nights he estimated they had seen 20,000 insects at sugar, and had taken 161 species of Macro-Lepidoptera. Mr. S. G. C. Russell exhibited a specimen of *Argynnis selene*, and another doubtful specimen, which, in the opinion of Messrs. Barrett, Tugwell, and Frohawk, might be either *A. selene* or *A. euphrosyne*, L. Mr. C. G. Barrett showed *Spilosoma mendica*, Clerck., bred by the Rev. W. F. Johnson, of Armagh; and *S. menthastri*, Esp., bred from larvæ from Belfast. Mr. Frohawk, a long bred series of *Melitæa cinxia*, L., showing considerable variation in depth of markings, one specimen having very dark suffused hind wings, whilst in others the central band of the fore wings was absent; a male of *Pieris napi*, L., intermediate between the spring and summer

forms, and approaching the spring form. Mr. Frohawk stated the ovum was laid June, 1891, and the larva pupated July, and emerged June, 1892. Mr. Hawes exhibited ova, larvæ, and pupæ, with imagines, of *Hesperia lineola*, Ochs., and read a paper describing the earlier stages of the species. He stated that the larva emerged in April, and fed for about eight or ten weeks, chiefly at dusk, on *Triticum maritima* and other coast grasses; the pupa was similar to that of *H. thaumas*, and was enclosed in a network of silk spun among the blades of grass.

July 14th, 1892.—The President in the chair. Mr. Oldham exhibited, among other species, *Dicycla oo*, L., and *Cynatophora ocellaris*, Gn., taken at sugar in Epping Forest. Mr. C. Fenn, a fine series of bred specimens of *Psilura monacha*, L., from the New Forest, some of the specimens being very dark. Mr. Fenn stated the series was bred under normal conditions. Mr. R. Adkin, a pupa-case of *Sesia scoliiformis*, Bork., from which the imago had emerged. Mr. Tugwell remarked that the pupæ of this genus, particularly of *S. sphegiformis*, forced their way through the bark about one-eighth of an inch, where they should emerge, but on a change of weather to cold they would retreat back into the stem. Mr. Tutt said that *Nonagria typhæ*, Esp., had the same power of going up and down the stem. Mr. Adkin said he had always heard that *S. chrysidiformis*, when it pupated, threw up a sort of tower; he had bred the species many times, and had never seen this. Mr. Tugwell stated he had observed this on one or two occasions only in *S. sphegiformis*. Mr. Barrett showed a fine series of *Stauropus fagi*, L., taken by Mr. Holland at Reading; the specimens ranged from light to dark forms. Mr. Moore, a scorpion, and made some observations thereon. Mr. Hawes, living larvæ of *Lycæna ægon*, Schiff., feeding on *Ulex europæus*, and contributed notes, and a discussion followed. Remarks were made on the abundance of *Colias edusa*, *Vanessa atalanta*, *Plusia gamma*, *Deiopeia pulchella*, and many other species. Mr. Fenn stated he had taken *Catoptria juliana*, Curt., flying over apple trees in his garden on three successive evenings, flying as nearly as possible at 8 o'clock; and just before, *Carpocapsa pomonella*, L., flew. Mr. Oldham referred to the small size of many oak-feeding species at Epping, which he attributed to the oaks having been stripped of their foliage by the larvæ of *Tortrix viridana*, L.—H. W. BARKER, *Hon. Sec.*

BIRMINGHAM ENTOMOLOGICAL SOCIETY. — July 11th. — Mr. G. H. Kenrick, V.P., in the chair. The following exhibits were made:—By Mr. Wainwright, for Mr. Wynn, a specimen of *Stauropus fagi* bred from a larva found at Wyre Forest last year; also a box containing some of Mr. Wynn's captures made during the recent visit of the Society to Sherwood Forest, including *Hadena contigua*, *Acronycta leporina*, *Agrotis suffusa*, &c. Mr. Kenrick showed Sherwood captures; also *Aplecta herbida* from Trench Woods, and a few Scotch insects, including a fine red variety of *Smerinthus populi*. Mr. P. W. Abbott, a fine variety of *Arctia caia*, from a larva reared on coltsfoot; three specimens of *Stauropus fagi* from Wyre Forest; and a nice series of *Melanippe hastata* from the same place. Mr. W. D. Spencer, a bred specimen of *Acronycta alni* from near Rugby. Mr. C. J. Wainwright, Diptera taken at Sherwood this year; also a few taken in 1889, including *Xiphura atrata*, &c. Mr. A. Johnson, larva of *Anthocharis cardamines* found on pods of the white rocket, which they resemble very closely. Mr. R. C. Bradley, his Sherwood Diptera, and read a few notes upon them; they included two species of *Criorhina*, *floccosa* and *ruficauda*,

berberina also being taken by Mr. Wainwright; also other good Syrphidæ, and a few nice "daddies," including one perhaps new to the British list.—COLBRAN J. WAINWRIGHT, *Hon. Sec.*

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

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

YORK AND DISTRICT FIELD NATURALISTS' SOCIETY.—*July 13th.*—Mr. Dutton exhibited bred specimens of *Ocneria dispar* (a very large female example), *Acronycta leporina*, *Pericallia syringaria*, and *Eupithecia fraxinata*, &c. Mr. J. Hawkins, bred specimens of *Anarta myrtilli*, *Geometra papilionaria*, &c., and varieties of *Spilosoma lubricipeda*. Mr. W. Hawkins, several species of Heterocera, including *Bombyx rubi* and *Eurymene dolobraria*. Mr. W. Hewett exhibited bred specimens of *Notodonta dictæoides* and *Nemeophila plantaginis*; the latter were from Lincoln, and very dark in colour; a long and variable series of *Thera variata*; specimens of *Tephrosia biundularia* var. *delamerensis* from Doncaster, Sledmere, Selby, and York; also *Epione advenaria* and living larvæ from Doncaster, fine series of *Asthena blomeri*, *Venusia cambriacaria*, and a variety of *Odontoptera bidentata*, from same locality.—W. HEWETT, *Hon. Sec.*

ENTOMOLOGICAL CLUB.—A meeting was held on the 6th of July at Loanda, Beulah Hill, Upper Norwood, the residence of Mr. S. Stevens, chairman for the evening. Mr. R. Adkin, of Lewisham, was elected an honorary member; and other business was transacted. Fourteen sat down to supper.—RICHARD SOUTH, *Hon. Sec.*

THE ENTOMOLOGIST.

VOL. XXV.]

SEPTEMBER, 1892.

[No. 352.

ON THE EARLIER STAGES OF *COLIAS EDUSA*.

By F. W. FROHAWK, F.E.S.

On the 7th of June last I had the pleasure of receiving two live females of *C. edusa*, which Mr. S. G. C. Russell had taken in the Polegate district the previous day. He very kindly presented both to me, knowing I was anxious to rear this species from the egg. A few notes thereon may be of interest, as we are now in the height of an *edusa* season, after a lapse of fifteen years.

Upon becoming possessor of these lively females, I immediately went in search of a couple of suitable plants of clover for their reception, and in less than two hundred yards from my house I hit upon the very plants, which I soon had potted ready for them; curiously enough the plants I dug up had already been visited by *C. edusa*, as I found an egg upon each, which had, from their appearance, been deposited a day or two before, being then of lilac colour, and the following day they became light red. These two eggs I kept carefully under observation, and upon these further notes will be made later on.

I placed a female *C. edusa* on each plant, and enclosed them under a gauze covering. Upon the gauze I spread a little sugar and water, and placed them in the sun. At mid-day I found one female had deposited a few eggs, and towards evening I was pleased to see several more, about two dozen, had been laid by the same female; the other had also deposited a few ova. The female first referred to died the following day; the other appeared also to be in a dying condition, so I removed her from the plant, uncoiled her tongue and immersed it in treacle, which she immediately began to imbibe, and continued for fifteen or twenty minutes. Thinking she had taken enough I again put her upon the plant, and found her quite revived; she quickly deposited more eggs. The following day I treated her the same, and she recommenced laying and spent herself. On the 11th I was able to count at least three dozen eggs laid by her; in all, I counted

fully five dozen eggs upon the two plants. The larvæ commenced hatching out on the 13th June, thus remaining only about six days in the egg state.

Descriptions of the egg and young larva may be worth including, as they are stages which may have been overlooked by some.

The ova are deposited singly, and generally on the upper surface of the leaves of clover; some were laid upon the stems, and a few on the under surface of the leaves, but I believe the upper surface of the leaf is the site generally chosen; both the eggs I found upon the plants were in that position. They are laid erect, and are fairly conspicuous when a few days old from the brightness of their colour. The egg is $\frac{1}{24}$ of an inch in height, and $\frac{1}{3}$ its height in diameter, of an elongated ovate form, both ends much attenuated but rounded; it is slightly concave just below the summit; there are about twenty longitudinal keels, the majority of them running its entire length, a few beginning about $\frac{1}{6}$ below the summit; it is very delicately ribbed transversely by about thirty-six in number. When first laid it is of a yellowish pearl-white, gradually becoming deeper in colour, approaching creamy yellow. When about twenty-four hours old it assumes a light copper-pink hue, from which it gradually deepens into a rosy orange-pink, the high lights glistening with blue, the orange colouring showing in shadow; both the summit and base are tipped with yellow; it retains the beautiful rosy colouring until about a day before hatching, when it finally changes to a leaden or purplish grey.

The two eggs laid at large hatched on the 11th June. The young larva upon emerging consumes the greater part of the shell, which is its first meal. It then measures $\frac{1}{15}$ of an inch in length, and is pale ochreous or olive-yellow; the head black; both head and body are covered with short club-shaped spiracles, the club formation being at the apex; the longest and finest are situated on the anal segment, those on the head being extremely short but strongly clubbed. It feeds on the cuticle of the upper surface of the leaf.

From this point I will only briefly give notes, as further descriptions would occupy too much space.

The first moult took place on the 21st June, making the first stage to be ten days, which probably was of longer duration than is usual, as the weather became dull and cold on the day of hatching, and, continuing so, undoubtedly retarded the growth of the larva during its first stage. The time occupied between the third and fourth moults was much shorter; the third moult was during early morning on July 1st, and the fourth moult (and last) took place on the 4th, the larva feeding for only two days, as it fixed for moulting on the morning of the 3rd, and changed its skin

next day. On July 11th, being just a month since it emerged from the egg, the larva commenced crawling restlessly about. I then found it time to place a gauze covering over the plant, the plants having been entirely uncovered since the death of the females. After roaming about for several hours it attached itself to the gauze, early morning on the 12th, and pupated mid-day on the 13th, producing a male imago on the 31st July.

The above history refers to one individual, but I was successful in rearing almost the entire number, as I lost only one larva, which apparently was a weakly one all along; it succeeded in fixing up for pupation, but then died; two pupæ died soon after pupation, and a few I sent to a friend; therefore my casualties were but very few. I had in all about seventy-five pupæ, which all produced imagines, except those mentioned above.

My series consisting of sixty fine specimens,—twenty-nine males and thirty-one females,—which makes the proportion of sexes about equal. They exhibit but slight variation, either in size, colour, or pattern. With few exceptions, the most noticeable are two males with semitransparent secondaries, which is due to lack of colouring pigment, having, in certain lights, the appearance of being scaleless; another specimen, a female, has the marginal band pale smoky brown, tinged with pink, and the series of spots much enlarged, forming almost a median yellow band. Many of the males have the secondaries shot with a beautiful rose-purple bloom, which is entirely absent in the females. I have just succeeded in obtaining a few eggs from a female, captured yesterday; therefore I hope to rear a second brood this autumn.

August 20, 1892.

A PRELIMINARY LIST OF THE INSECT-FAUNA OF MIDDLESEX.

COMPILED BY T. D. A. COCKERELL, F.Z.S., F.E.S.

(Continued from p. 185).

LEPIDOPTERA.

Cidaria miata, L., Mill Hill, two at sallow and two at sugar (South); Bishop's Wood (*Knaggs* fide *Vaughan*); Chiswick, once beaten from ivy (*Sich*); Oxhey Lane (*Rowland-Brown*); Harrow, 1881 (*Watts*); Harefield, one or two taken most seasons in the gardens (*Wall*). *C. corylata*, Thnb., Mill Hill (South); Bishop's Wood (*Vaughan*); Pinner, 1882 (*Watts*); Harefield, occurs sparingly (*Wall*). *C. truncata*, Hufn. (= *russata*), Mill Hill (South); Bishop's Wood, Hampstead, Kingsbury, Old Oak Common (*Godwin*); Whitton (*Rendall*); Harefield (*Wall*).

C. truncata var. *centum-notata*, Fab.* Mr. Wall mentions this as the form most frequently taken at Harefield. *C. suffumata*, Hb., Mill Hill, common in the garden (South); Clutterhouse Lane (Godwin); [Northwood (South)]. *C. silaceata*, Hb., Chiswick, once (Sich). *C. testata*, L., Mill Hill (South); Clutterhouse Lane, Kingsbury, Old Oak Common (Godwin); Bedford Park (Miss E. Sharpe); Chiswick, once from bramble bush (Sich); Hampstead Heath, common (Watts); Harefield, common (Wall); [Northwood (South)]. *C. fulvata*, Forst., Mill Hill (South); generally common (Godwin); Bishop's Wood (Vaughan); Chiswick, not common (Sich); Harrow-Weald (Rowland-Brown); Hendon (Watts); Harefield, common (Wall); Hampstead (Shepherd); [Kingsbury (South)]. *C. dotata*, L. (= *pyraliata*), Mill Hill, larvæ common on *Galium mollugo* (South); generally common (Godwin); Bedford Park (Rev. J. W. Horsley); Harrow-Weald (Rowland-Brown); South Hampstead (Watts); Harefield, frequent (Wall); Hampstead (Shepherd). *C. associata*, Bork. (= *dotata*, Gn.), Mill Hill, one netted in the garden, 1876 (South); Chiswick, common, larvæ on red currant (Sich); Harefield, occasional (Wall); Hammersmith (Mera, as *dotata*); Dalston (Prout).

Pelurga comitata, L., generally common (Godwin); Kentish Town (Vaughan); Bedford Park (Ckll.); Chiswick, common (Sich); Whitton (Rendall); Harrow-Weald (Rowland-Brown); South Hampstead (Watts); Harefield, one in 1888 (Wall); Hammersmith (Mera); Clapton (Bacot).

Subf. *Euboliinæ*.

Eubolia cervinata, Schiff. (= *cervinaria*, Newm.), Old Oak Common (Godwin); Bedford Park (Rowland); Chiswick, larva on *Malva* (Sich); Harefield, taken rarely (Wall). *E. limitata*, Scop. (= *mensuraria*), Mill Hill (South); Old Oak Common (Godwin); Harrow-Weald (Rowland-Brown); Harefield, frequent (Wall); Finchley (Shepherd). *E. plumbaria*, Fb. (= *palumbaria*), Hampstead Heath, common (Watts); Harefield, common (Wall); Old Oak Common (Mera); [Northwood, common (South)].

Anaitis plagiata, L., Bishop's Wood, Hampstead (Godwin); Whitton (Rendall); Harefield, a few of the autumn brood in 1885 (Wall).

Chesias spartiata, Fues., Hampstead Heath (Godwin); Haverstock Hill (Knaggs fide Vaughan); Harefield, plentiful (Wall). *C. rufata*, Fb. (= *obliquaria*), Hampstead Heath (Godwin).

Subf. *Sioninæ*.

Tanagra atrata, L. (= *chærophyllata*), Mill Hill (South);

* In the case of a polymorphic insect, like *truncata*, it seems most convenient to use the specific name in the broad sense, as covering all the forms, and designate any special form by a name, even though it may be that which originally stood for the species.

generally common among cow-parsley (*Godwin*); field at Finchley end of Bishop's Wood, larva found (see Ent. Mo. Mag.) (*Vaughan*); near Harrow (*Rowland-Brown*); Hampstead Heath (*Watts*); Finchley (*Shepherd*); Old Oak Common (*Mera*); abundant at Willesden (*Adye*).

GENERAL CONSIDERATIONS.

Having now arrived at the end of the Macro-Lepidoptera, it seems opportune to consider some of the characteristics of the county fauna.

When the list was first suggested, two or three very excellent entomologists expressed the opinion that to catalogue the fauna of so small an area was rather a waste of time, since the distribution of the great majority of species in England was already ascertained, and it was not to be expected that a Middlesex catalogue would add any facts of importance. From this opinion I was inclined altogether to dissent; and now that a fairly large body of facts has been presented, I believe it is possible to show that the insect-fauna of Middlesex is well worthy of serious study, and is capable of throwing light on some of the problems of geographical distribution. Taking the county fauna as a whole, it may be said to consist of six groups of species:—

(1.) Species which belong to the fauna of the Thames Valley, and occur about as commonly in Middlesex as in the neighbouring counties. This includes most of the ordinary common species, and some that are more rare.

(2.) Species which belong to the fauna of the Thames Valley, but have become rare or extinct* in Middlesex, probably, for the most part, within recent years. The species of *Argynnis* illustrate this class. It can hardly be doubted that *A. paphia* was at one time common in Middlesex, and probably *A. adippe*. They still occur numerously in the neighbourhood of Maidenhead, as reported by Dr. H. C. Lang (Nat. Hist. Notes, 1882, p. 108). The present writer well remembers an enjoyable walk, in company with Dr. Lang, to Dropmore, to see *A. adippe* in the woods, undisturbed by anybody except the entomologist. Probably many species have become sensibly rarer within the past fifty years, especially in the immediate neighbourhood of London. Some of the older entomologists could, doubtless, give valuable information on this point.

(3.) Species which belong to the fauna of the Thames Valley, but have become increasingly abundant in Middlesex of late years. This is another point on which information is much required; that there is such a class, I have little doubt. The decrease of woodlands and the increase of meadows, and especially

* Stephens recorded *Sphinx pinastri* from near Colney Hatch Wood years ago, but the claim of this insect to be a native nearing extinction seems quite doubtful. See 'Brit. Nat.' Suppl., 1891, p. 49.

market-gardens, must have a tendency to favour the multiplication of certain species, such as *Abraxas grossulariata* and *Biston hirtaria*.

(4.) Species which do not belong to the original fauna, but have been introduced, and have now become common. These are chiefly household pests, as certain ants and cockroaches; and insects which occur on cultivated plants, especially in hot-houses.

(5.) Species which do not belong to the fauna, but have been introduced, accidentally or otherwise, and have not succeeded in establishing themselves. These have mostly occurred as single individuals, as, for instance, at the docks, where exotic species are frequently to be found. The means whereby an insect may be conveyed into Middlesex are now so numerous and varied, that the occurrence of almost anything is possible. The propriety of recording such accidental importations in a faunal list may be questioned; but it has been thought best not to omit them in the present case, partly because it is not always easy to be certain whether an insect was imported, and partly because we can only get a proper knowledge of the value of this factor in distribution by observing and recording the instances.

(6.) Species which do not belong to the fauna, but occasionally wander into Middlesex from their native districts. Such are the chalk species, common in Kent and Surrey; as, for example, *Lycena corydon*. Looking through the list, several species may be noted which come under this head.

There is also a possible seventh group, which, if it has any real existence, is of great importance. This would consist of endemic species or varieties, and those having their origin and metropolis within the limits of the county, if not actually confined to it.

Nobody supposes that there are any species of insects peculiar to Middlesex; but if we permit ourselves to include the immediate neighbourhood of London on the south side of the Thames, and perhaps a small portion of Essex, there seems to be good evidence for the existence of a few characteristic forms of melanism, which have originated independently in the London district, and chiefly in Middlesex. That most or all of them have also been found far from London does not necessarily prove that the melanic varieties in Middlesex came from other counties, as, though they may not have spread from the London district any great distance, there is no reason why similar forms should not have arisen elsewhere, perhaps in several distant but suitable localities, quite independently. Supposing this to be the case, it would probably be found that when a species had two melanic races, say one in London and the other at Manchester, the *facies* of the two, when long series were compared, would be somewhat different.

All the above statements and suggestions are purposely of a very general character, because it is hoped that further information on many points will be available before any analysis of the details need be attempted. Sooner or later, it will be desirable to make a searching comparison between the fauna of the several localities and the present and past fauna of each locality, where they can both be ascertained. Where we know species to be non-existent in Middlesex, but abundant in Surrey or some other neighbouring county (*e. g.*, various chalk species), an analysis of the records of wandering specimens may help us to estimate the extent to which some insects stray from their natural habitats. If we can ascertain how many exotic insects are imported into London by various means, and of these how many succeed in establishing themselves, it may throw light on the changes produced in fauna by immigration. It will, doubtless, be found that, if the circumstances are favourable, the introduction of a very few individuals is sufficient to start a thriving colony, but that many species may be introduced in numbers and yet never gain a footing. Thus it might possibly be shown that the non-existence of certain common continental species in England was not simply due to the intervening channel.* One of the most striking features of the list is the absence of several species which are generally looked upon as common. It will be interesting to see whether they are really wanting or merely not observed (so many lists have been received that, in the latter case, they must be rare), and to ascertain the reasons for their non-appearance.

May I venture to suggest that Middlesex entomologists, especially those who have resided long in the county, should summarize their experiences as relating to the above-mentioned points, and send their notes to the Editor? Such notes might be gathered together and published from time to time under the heading, "Insect-Fauna of Middlesex," and would surely contain much of value that would otherwise be lost, or, if published, rendered more or less inaccessible by being scattered through various journals and various years.

(To be continued.)

* The mollusc *Clausilia biplicata* illustrates this. It is common on the continent, and yet almost extinct in England, occurring very locally near London. In fifty years it will probably be exterminated. Yet there is good evidence to show that it is an indigenous species, now dying out, and not a mere importation.

COLIAS EDUSA, *C. HYALE*, &c., IN ENGLAND IN 1892.

SOME of our correspondents have thought it necessary to apologise for sending us notes on the occurrence of *C. edusa*, but we can assure them that all observations on this, and other species which are erratic in their appearance in England, are of value. The present year bids fair to rival that of 1877 as an "*edusa* year;" therefore it would be well to make the record of the present occurrence of the species as full and complete as possible, so that some idea may be formed of the area of distribution and relative numbers throughout that area.—ED.

Lancashire.—I saw *Colias edusa* once on the 5th, and twice on the 8th, of June, on the nearest railway-cutting south from St. Bees. I am told also that one other had been seen about a mile off. Of *Vanessa cardui*, eight or more have been caught, and far more seen. I have occasionally caught this species in the spring since 1888. One—the last one—I caught to-day (July 13th). Of *V. atalanta*, which is much rarer than *cardui* here, I have caught two, and one was given me. I cannot say that I have noticed *P. gamma* commoner this year than last.—JOHN WEBSTER; Barony House, St. Bees, Carnforth, July 13, 1892.

Devon.—I have just returned from a fortnight's visit to Sidmouth, S. Devon, where I found *C. edusa* very plentiful along the coast. The cliffs there being very steep, make collecting extremely difficult, but I succeeded in capturing between fifty and sixty specimens in lovely condition. Towards the last two or three days they seemed to spread inland a little, for I took about a dozen in clover fields in the neighbourhood. Included in my series is a beautiful var. *helice*, and I missed another.—B. H. CRABTREE; The Oaklands, Grange Avenue, Levenshulme, Manchester, Aug. 11, 1892.

Dorsetshire.—*C. edusa* was very plentiful at Blandford, on the downs and in lanes, during last week.—(MISS) CLARIBEL TOMLIN; Long Ashton Vicarage, Aug. 13, 1892.

Essex.—At Chingford, on Sunday, Aug. 14th, I captured two females of *C. edusa*, perfectly fresh; a third specimen I saw escaped. On the following Sunday the insect was fairly abundant, and amongst my captures was one specimen of the var. *helice*. As this was my first excursion with the net after several years' abeyance, it was doubly gratifying.—W. T. LANE; 9, Teesdale Street, Hackney Road, E., Aug. 23, 1892.

Gloucestershire.—*Colias edusa* has been plentiful at Cheltenham.—E. GORDON C. BROOKE; 6, Queen's Villas, Queen's Road, Cheltenham, July 24th, 1892.

On June 27th I saw a female *C. edusa* here, and on July 7th, within a few yards of the same place, a male; also, on August 14th, two more. All were in good condition. This insect seems to be rare in this district; I have only met with five in the last ten years, the four mentioned above, and one in 1888.—N. F. SEARANCKE; Mitcheldean, near Gloucester, August 18, 1892.

On June 24th I captured, on Leckhampton Hill, near here, a much battered *Colias edusa*, and on July 8th saw another on the College ground. To-day I saw two more flying over the ground at the same time from the north-east. At the end of June they were said to be plentiful near the

Severn, I fancy near a clover field, where they swarmed last September. *Vanessa cardui* was plentiful in June here, and *Plusia gamma* extremely abundant. I had not seen *V. cardui* since 1889, when it was very common. Some *C. edusa* were taken that year, but I was not fortunate enough to capture it myself.—H. J. BURKILL; 3, Royal Parade, Cheltenham, August 20, 1892.

Kent.—On Saturday, August 6th, I succeeded in taking fifteen specimens of *Colias edusa* in a field near Strood, and on Monday, August 8th, twenty-nine specimens more from the same place, all in good condition; there were six males to one female. I may add that *Vanessa io*, *V. atalanta*, *V. cardui*, *V. urticae*, *Pieris napi*, *P. brassicae*, *P. rapae*, and *Pararge megæra* were exceedingly abundant in Chattenden Wood.—G. KIPPING; 13, St. Giles, Oxford, Aug. 12, 1892.

Colias hyale is beginning to appear at Folkestone; three specimens were captured there at the end of last week, and yesterday eleven others were taken.—R. ADKIN; Lewisham, Aug. 23, 1892.

One specimen of *C. edusa* seen in field close to the railway station at Broadstairs, Aug. 21st. *Vanessa cardui* common along the edge of the cliffs.—GEORGE W. OLDFIELD; Earl's Court.

I understand from Mr. Adkin that *C. edusa* is common at Folkestone, and that several examples of the var. *helice* have been taken.—R. S.

Middlesex.—Walking along the railway bank near Pinner Station (L. N. W. R.), on the afternoon of July 29th, I was surprised to find a female *C. edusa* resting on the flowers of the purple vetch, which grows there in great abundance. It was slightly rubbed, but otherwise a perfect specimen; and, as I took it just three hundred yards on this side the county stone, I may fairly claim it as a Middlesex insect. I have not seen *C. edusa* in this neighbourhood since 1877.—H. ROWLAND-BROWN; Oxhey Grove, Harrow-Weald, Aug. 5, 1892.

I noticed a fine male *C. edusa* on the railway embankment near Northwood Station (Met. Rail.) on the 14th of August.—RICHARD SOUTH; 12, Abbey Gardens, N.W.

I saw two *Colias edusa* near Bowes Park Railway Station about 9.30 a.m.—H. WILDE; Enfield.

The following specimens of *C. edusa* have been taken in the neighbourhood of Harrow:—One worn female, June 8th; two fresh males, July 20th; and one fresh female, July 23rd.—J. LEWIS BONHOTE; Harrow, July 31, 1892.

Somersetshire.—I observed *C. edusa* on the railway banks in Somersetshire, while travelling down from Chester. *C. cardui* I saw several times, and *Vanessa atalanta* very plentifully, and occasionally *V. io*.—(Miss) E. CLARIBEL TOMLIN; Long Ashton Vicarage, Clifton, Aug. 13, 1892.

On the bank of the River Barle, near this town (Dulverton), I saw, a few days ago, a perfect specimen of *C. edusa* (male), but as I was fishing at the time, I much regretted being unable to capture it, though it allowed me to go close to examine it.—PHILIP DE LA GARDE; Dulverton, Somerset, Aug. 9, 1892.

Surrey.—*Colias edusa* is fairly common at Haslemere this year. The males are much more plentiful than the females, having been taken in the proportion of about five to one.—T. P. NEWMAN; Hazelhurst, Haslemere, Aug. 12, 1892.

On August 4th, I saw a male specimen of *Colias edusa*, which I failed to capture, near Oxted. In the neighbourhood of Purley I captured one

male on Aug. 5th, and two on Aug. 6th. — ALEX. DISTANT; Russell Hill, Purley, Surrey. The above note, written by my son, records the present abundance of *Colias edusa* in this neighbourhood. It was also moderately plentiful in early June, when he captured a fine female specimen. *P. cardui* has appeared in similar manner, plentiful then and abundant now, only that the present specimens are fresh and highly coloured, whilst the former were pale and worn, as might be expected. Amongst other insects which have been not uncommon in my garden, but not previously observed during my eight years' residence, may be mentioned *Aretia villica*, and the fine dragon-fly, *Æschna cyanea*, Müll.—W. L. DISTANT.

Four specimens of *C. edusa* seen on August 3rd in an old chalk pit on the Titsey Hills; one which I captured was in very good condition.—H. WILDE; Clay Hill House, Enfield.

Sussex.—I have already captured eighty-seven specimens of *C. edusa* on the downs here, including amongst fifty captured yesterday two splendid examples of the var. *helice*, in lovely condition, beautifully white, the orange blotch on the hind wing (smaller than usual) being the only orange or tint of that colour about them. In one the hind wings are very grey; in the other the fringes, antennæ, and thoracic crest are a lovely deep cherry colour. Amongst other things in butterflies, I have taken one female *Apatura iris* and two fine *Limenitis sibylla* at Polegate. — C. G. MORRIS; 4, Oriental Place, Brighton, Aug. 9, 1892.

Colias edusa and *Vanessa (Cynthia) cardui* simply swarm in the neighbourhood of Eastbourne. I heard of three var. *helice* being captured last week, and on Aug. 11th I took three myself at Beachy Head. I have not seen *C. hyale*. — W. W. ESAM; Upperton College, Eastbourne, August, 1892.

During August my brother Mr. Frederick Anderson captured seven beautiful specimens of *Colias edusa* var. *helice* in a clover field here. The insects vary from white to cream colour, the marginal spots differing in size like the typical female *edusa*. *C. edusa* first made its appearance here on May 28th, when a specimen was observed flying in the garden. During June the butterfly was frequently to be seen, the worn condition of all of them showing evidently that they were hibernated and migrants. The second brood appeared at the beginning of August, the specimens captured being in splendid order. I know it is thought by some that all freshly-emerged *edusa* have more or less a rosy flush on the hind wings. Having set from time to time a very large number of specimens, I am convinced this is not correct; out of a quantity captured during this month only one had the rosy glow. The insects differ much in depth of colour; some are bright orange, others inclining to yellow, and the marginal spots in the borders of the female also vary considerably in size. Six specimens of *Colias hyale* were taken in a clover field in the neighbourhood in August. This butterfly I have always found, even in the best *edusa* years, very rare in this locality.—JOSEPH ANDERSON, JUN.; Chichester.

Colias edusa seems to be very plentiful in this district; I counted twenty-five specimens to-day, of which I captured several. Of *Colias hyale*, I have only seen one (a male), which I took. *Macroglossa stellatarum* is also plentiful; I also took *M. bombyliformis*. I have not seen a single specimen of *Vanessa polychloros* all the summer.—L. S. GILES; Eartham, Chichester, Aug. 20, 1892.

Whilst collecting on the downs near Brighton, I captured a fine speci-

men of *C. edusa* var. *helice*, just emerged and drying its wings. — B. L. NUSSEY; Forest Gate, Essex, Aug. 17, 1892.

Hampshire.—It may be of interest to note that *C. edusa* made its appearance at Christchurch as early as the middle of July, and soon became extremely abundant; but during the first fortnight or three weeks the specimens consisted chiefly of males. Those friends who have been successful so far are, firstly, Mr. Brameld, who took a large number, including four of the well-known variety *helice*, on the cliff not far from High Cliff; Mr. Druitt found it very plentiful in meadows by the river, and captured six of the variety *helice*; whilst Mr. McRae and myself succeeded in taking an unusual number by the river in one morning (August 6th), finding the species in extraordinary profusion, unparalleled since the year 1877. We succeeded in capturing one fine specimen of *Colias hyale*, and missed two others; on the following morning I visited the same particular field, and managed to get another similar specimen of this latter in fine condition. I have never heard of this species occurring in Christchurch. I took rather a poor specimen on the cliff at Bournemouth in 1875.—J. M. ADYE; August 20, 1892.

During a week (Aug. 4th to 11th) in the New Forest, near Brockenhurst, we captured three males and eight females of *Colias edusa*; also one fair specimen of var. *helice*.—F. L. BLATHWAYT; Walney House, Aylstone Hill, Hereford, Aug. 20, 1892.

Colias edusa is very common at Gosport. I have been out twice, and have captured over a hundred, including examples of the var. *helice*.—W. H. MACKETT; St. Matthew's School, Gosport, Aug. 5, 1892.

Herefordshire.—At Hereford, this year, one male *Colias edusa* was taken.—F. L. BLATHWAYT; Walney House, Aylstone Hill, Hereford, Aug. 20, 1892.

Yorkshire.—Last Sunday (August 21st), when rambling near Aberford, Yorkshire, I captured a male of *Colias edusa* in splendid condition, and a gentleman from Idle, who was with me, also took one. Both specimens were beaten from a whitethorn hedge.—EDWARD SELF; The Gardens, Ferniehurst, Shipley, Yorkshire, Aug. 23, 1892.

NOTES ON THE SYNONYMY OF NOCTUID MOTHS.

BY ARTHUR G. BUTLER, F.L.S., F.Z.S., &c.

(Continued from p. 191.)

Phrygionis cæruleilinea.

Palindia cæruleilinea, Walker, Lep. Het. xv. p. 1768 (1858).

Var. *Palindia lucia*, Bar. Ann. Ent. Soc. Fr. 1875, p. 300; pl. 5, fig. 7.

Espiritu Sancto and Rio Janeiro. In Coll. B. M.

P. lucia is the commoner form, in which the area enclosed by the first and second bands is not suffused with purple: it seems highly probable that *P. stella* and *P. corinna* are parallel forms of one species, since they differ precisely as *P. cæruleilinea*

does from *P. lucia*, only owing to the brighter ground colour the purple belt in *P. stella* becomes more prominent.

Calydia bourgaulti, Bar, is nearly related to *C. setosa*, Butl., but is brighter in colouring, and has cupreous instead of steel-blue metallic lines on primaries. *C. osseata*, Bar, is also near to *C. metalligera*, but is smaller and whitish; the smaller spots near the centre of the internal area of the primaries are apparently not shot with purple as in *C. metalligera*. and all the other markings are less pronounced. At the same time I think it probable that *C. metalligera* may be no more than a better-preserved and larger sample of Bar's species.*

Palindia micra, Bar, *P. magdalensis*, Bar., *P. perlata*, Guen. (which is Walker's *P. spectabilis*), *P. mabis*, Guen., and *P. egista*, Bar, are all allied to *Dyomix*, both in pattern, in neuration, and their long upcurved acuminate palpi: in my opinion they should be referred to the Deltoids.

CATEPHIIDÆ.

Cocytodes modesta.

Catocala modesta, Van der Hoeven, Tijd. voor Natuurl. Geschied. 7, p. 282, pl. 7, figs. 8, 8 b (1840).

Cocytodes granulata?, Guenée, Noct. iii. p. 42, n. 1371 (1852).
Java and Ceylon. In Coll. B. M.

The identity of M. Guenée's species with *C. modesta* of Java is not absolutely certain, as it is said to have a pupillated orbicular spot and the reniform spot clear. It comes from Central India, and, therefore, though clearly much nearer to *C. modesta* than to any other known form, may prove to be distinct, though probably not. *C. modesta* has been confounded with the following, owing to the imperfect references given by Guenée and later authors to Van der Hoeven's description, and the consequent difficulty of consulting it.

Cocytodes polygrapha.

Arcte polygrapha, Kollar, in Hügel's 'Kaschmir,' p. 478, n. 1 (1842-4).

Cocytodes cærula, Walker (not Guenée), Lep. Het. xiii. p. 1123, n. 1 (1857).

North India. In Coll. B. M.

Although Walker's description agrees with Kollar's insect, the bulk of the specimens placed under the name *C. cærula* in the collection are referable to that species.

* In the Zeller collection I found both of my species of *Calydia* identified as Bar's *C. bourgaulti* and *osseata*. Of course it is possible that they may vary more than I supposed when I described them; but a good series would be necessary in order to establish this.

ÆDIA, Hübn.

Anophia, Guenée, is not distinguishable from this genus; in fact, the two species generically distinguished by European writers, though undoubtedly distinct, differ only a little more than the extreme varieties of some of the tropical forms of the genus. Under '*Anophia*' *olivescens* several distinct species have been confounded, and, at the same time, the examples with a nearly white patch on the primaries have been separated as *A. acronyctoides*, an allied, though distinct, Australian species.

*PREMUSIA, Walk.**Premusia intrahens.*

Premusia intrahens, Walker, Lep. Het. xv. p. 1780, n. 1 (1858).

Anophia smaragdaria, Walker, *l. c.*, p. 1811 (1858).

Dysedia zibellina, Felder, Reise der Nov. Lep. iv. pl. cxii., fig. 8.

Sarawak. Types in Coll. B. M.

ERYGIA, Guen.

This genus comes nearest to *Mosara*, but differs in the simple antennæ of the males. The typical species is slightly variable, and the varieties form the types of several species, in addition to Walker's genus *Calicula*.

Erygia apicalis.

♂ *Erygia apicalis*, Guenée, Noct. iii. p. 50, n. 1381 (1852).

♀ *Calicula exempta*, Walker, Lep. Het. xv. p. 1808, n. 1 (1858).

♀ *C. squamiplena*, Walker, *l. c.*, n. 2 (1858).

♀ *Dianthœcia geometroides*, Walker, *l. c.*, Suppl. 3, p. 722 (1865).

♀ *Erygia usta*, Walker, *l. c.*, p. 918 (1865).

Java, Moulmein, India, Japan, Australia. Types in Coll. B. M.

The types of *E. apicalis* and *usta* are from Java, collected by Horsfield; that of *C. exempta*, from Moulmein; that of *C. squamiplena*, from Moreton Bay; and that of *D. geometroides*, from Swan River. Walker wrongly described the last mentioned as a male.

*AUDEA, Walk.**Audea bipunctata.*

♂ *Audea bipunctata*, Walker, Lep. Het. xiii. p. 1135, n. 1 (1857).

♀ *Phoberia?* *fatua*, Felder, Reise der Nov. Lep. iv. pl. cxvi. fig. 1 (1875).

Natal. Type in Coll. B. M.

Audea catocala.

Phoberia catocala, Felder, Reise der Nov. Lep. iv. pl. cxvi. fig. 2 (1875).

Natal. In Coll. B. M.

It is simply extraordinary that Felder should have referred these two species to a genus of *Ophiuidæ*, to which they bear no resemblance in any particular.

CATOCALIDÆ.

In this family I am satisfied that too many species have been created; but perhaps with such attractive insects it is to a certain extent excusable. As there is, however, some difficulty in distinguishing between species and varieties (the latter being oftener far more distinct in appearance than the supposed species), I will not venture to do more than express my opinion as to the synonymy, leaving it to those who have bred them, or, at any rate, have dissected out the male genital organs, to set me right where I am in error. Some of the species appear to be distinguished by the colour of the wing-fringes alone, a character not always to be relied on, but which I shall, nevertheless, admit as a possible specific difference.

Allotria.

I am unable to separate *A. lineella*, Grote, from *A. amica*, Hübn. Hardly two examples of *A. amica* can be found which perfectly correspond in the lights and shades of the primaries, and our eighteen examples form a perfect transitional series from the lightest to the darkest type; in the defined markings the differences are only individual.

The genus *Zalissa*, Walk., belongs to the *Agaristidæ*, and supersedes *Scudyra*, Stretch. *Catocala albifascia*, Walk., from Burmah and N. China, belongs to this genus.

(To be continued.)

ENTOMOLOGICAL NOTES, CAPTURES, &c.

ELECTRICITY FOR ENTOMOLOGISTS.—As electricity is now coming into such general use, entomologists will be interested to know that they can easily have their moth-traps and lamps converted for the electric light at the Sherborne Electric Installation, under the superintendence of Mr. E. R. Dale, son of the late J. C. Dale, who has done so much to promote the use of electricity in Dorset and Wilts. We may mention that amongst the various collections of portable lamps, exhibited at the Sherborne and South of England Horse and Carriage Show, was one to fit on a strap, labelled

"County Police," which would also be useful to the entomologist, as the light can be switched on and off instantly. This appears to be the very thing for a sugaring expedition.—ED.

ON LOCAL LISTS.—The Rev. G. H. Raynor (*ante*, p. 195) expresses surprise that I have not advertised a request to be supplied with local lists of Lepidoptera. I considered the desirability of doing so, but came to the conclusion that it was not absolutely necessary, since, besides a vast amount of personal experience, and the enormous mass of information comprised in this and other magazines, I am, through the kindness of friends and correspondents, supplied with most of the published lists, and with others in MS. But I would not for a moment suggest that further information would not be desirable and welcome, and, if Mr. Raynor will furnish me with such a list of his own numerous captures, I shall feel greatly obliged to him: further, if, from this suggestion of his, collectors in other districts should be stirred up to contribute fresh and reliable material, I shall be equally thankful. There is one difficulty in asking for lists: it seems to include an obligation to accept them, faults and all. And nowhere does there seem to be a greater risk of error than in compiling a local list. Every species that somebody thought that he saw, and every one that has been wrongly named, is sure to creep in, and no one, except he has tried it, has any clear idea of the difficulty of sifting out the truth and avoiding the errors. The same may, of course, be said of magazine records; and here are materials close at hand for illustration:—On page 197 the capture of *Tapinostola extrema* in Staffordshire is recorded, without a word of confirmation, or even any indication that the (supposed) captor has any idea how improbable is the statement. *Tapinostola extrema* has been a lost species for thirty or forty years, and although it has, within the last three years, been rediscovered somewhere in the fen country, it is almost certainly confined to a small part of that district. But I am open to conviction, of course. If the moth is found to be *T. extrema* (*concolor*), it will add to our information. To take another case. In a paragraph at p. 196, quoted from the 'Field' newspaper, the writer states that fifty-one years ago he took, at Yaxley Fen, Huntingdonshire, "several fine examples of *Lycana dispar*, and the scarce copper *L. virgaureæ*." Here it is hardly possible to escape the impression that he mistook one of the sexes of *L. dispar* for *virgaureæ*; and this impression is strengthened when he goes on to say, after mentioning that he captured some rare moths, that "the food-plants of these rare British flies being extirpated, the flies themselves have all disappeared." The food-plants in question would be the great water-dock (*Rumex hydrolapathum*), the golden-rod (*Solidago virgaurea*), and probably the sallow, the sweet gale, the common reed, and the sedge (*Cladium mariscus*); and to say that these have been extirpated would draw some expressions of surprise from any botanist or entomologist. I do not point to these instances in a carping spirit, but only to suggest the desirability of accuracy in local lists and records.—CHAS. G. BARRETT; 39, Linden Grove, Nunhead.

VARIETIES OF EPINEPHELE HYPERANTHUS.—I obtained a few eggs from a fine but normally marked female *E. hyperanthus*, taken in the New Forest in July last year; they hatched in August, seven larvæ survived the winter, became pupæ by the end of June, and seven fine imagines emerged during July last, four males and three females. Three of them—two males

and one female—are very beautiful examples of the lanceolate var.; the males are exceptionally rich in colour, and the large lanceolate markings stand out in bold relief on the dark colouring of the under surface. The female is the grandest example I have seen, the largest marking measuring in diameter a quarter of an inch. The space in normal specimens between the second and third spots on the secondaries is in this individual occupied by a circular sprinkling of yellow scales forming an additional spot, thereby completing the band; the spots on the primaries are also connected. The specimen is a most striking and beautiful variety, the markings even surpassing in magnitude those of the exceptionally large female I captured in the Forest in 1890, which I then believed to be the finest lanceolate var.; but that specimen is now eclipsed by the example which emerged on the 13th July last. The two males emerged on the 5th and 6th respectively. All three have the markings on the upper side lanceolate in form and clearly defined. I think it must be an unusual thing to obtain three such rich vars. out of so small a number as seven specimens, and can only account for it by supposing that probably the markings of the male parent were of the same lanceolate type. — F. W. FROHAWK; 9, Dornton Road, Balham, S.W., August, 1892.

VARIETY OF *SESIA FORMICIFORMIS*.—I bred, on the 26th June last, a curious but beautiful var. of *S. formiciformis*. The usual deep red colouring of the species, viz., the apical portion of the wings and abdominal band being in this specimen replaced by a metallic bronze-gold, in no way approaching a red or orange, quite distinct in colour, and giving the insect a delicate, refined appearance. It is a male.—F. W. FROHAWK; August, 1892.

XANTHIC VARIETY OF *EUCHELIA JACOBÆÆ*.—A beautiful yellow, or, more correctly, dull orange, specimen of this moth was captured by my young friend and neighbour Edgar H. Purchase, in their garden on May 21st. From the limpness of the wings and perfect condition of the cilia, it had apparently only just left the pupa. It forms a good acquisition to my cabinet. It is a female, and I was almost inclined to try for eggs. Fearing, however, damage to the insect, I determined not to hazard the experiment. —JOSEPH ANDERSON, JUN.; Chichester.

PSILURA MONACHA var. *EREMITA*, Ochs.—Last year I received, through Mr. Edmunds, of Windsor, larvæ of *P. monacha* from Fontainebleau, and from these I bred several male specimens of the *eremita* form. With one or two exceptions, in which the hind wings were fuscous, all the female specimens reared from these larvæ were of the typical *monacha* form. A few males were intermediate between the type and var. *eremita*, and others were of the typical coloration, but the black waved lines on the middle third of the fore wing were more or less confluent. A number of ova were deposited in clusters about the cage in which the moths emerged, and from these I am now breeding imagines. So far the variation exhibited is exactly identical with that to which I have referred as occurring last year. The larvæ in 1891 were fed on apple and hawthorn principally, but oak was given occasionally; this year the larvæ were supplied with oak only.—RICHARD SOUTH; Aug. 20, 1892.

NOTE ON *CIDARIA SUFFUMATA*.—In my note on this species (Entom. xxiv. 171-2), I mentioned that I had pupæ from three pairs of moths.

Unfortunately the majority of these pupæ failed to produce imagines; but the results, so far as they go, are satisfactory, and tend to prove that the "Dover form" of *C. suffumata* is as amenable to the law of hereditary transmission as are several other forms of species which I have reared at various times:—

1891.	1892.
A. Typical ♀ × typical ♂.	Result, 3 ♂ and 4 ♀ specimens of type form.
B. Black-banded silvery ♀ × typical ♂.	Result, 5 ♀ specimens type form, 2 ♀ of variety.
C. Typical ♀ × crippled typical ♂.	Result, 2 ♀ specimens type form.

I think there is little doubt that if a larger number of brood B had emerged, the proportion of specimens of the varietal form would have been greater.—RICHARD SOUTH; 12, Abbey Gardens, St. John's Wood, N.W., June, 1892.

APORIA CRATAGI.—In 'The Field' of June 25th, p. 949, an editoria^l note appears, in reply to a correspondent, as follows:—"No; the name of *Pieris cratagi* is not changed, and the butterfly was last year taken in limited numbers in North Kent, but is now very rare in England.—Ed." This note somewhat surprised me, as I was not aware that this species had been taken since Mr. Briggs's capture at Ramsgate, on June 9th, 1888. A note of mine therefore appeared on the subject in 'The Field' of July 9th, p. 17, asking for further information of the captures last year, and by whom they were seen, and if they were recorded. The following was the answer I received:—"We can assure our correspondent that a series of *Aporia cratagi* were taken in North Kent last year, and others left to continue their existence. We therefore cannot agree with his remark that the species is apparently extinct. For some years several entomologists rather readily jumped to the same conclusion, but the species reappeared.—Ed." The above cannot be considered in any way a satisfactory answer, and if *A. cratagi* was actually taken last year, as stated, why not record the fact by stating by whom the captures were made, with dates of capture, and a more precise locality, as North Kent embraces a considerable area of country, fully seventy miles in extent. Such a vague record is scientifically worthless. Why are entomologists often so reticent in the matter of localities? I do not imply that it is wisdom to make public the precise spot where a good thing can be taken, as it would speedily be a dealers' resort; but a district might be given in the case of important and interesting captures. The appearance of *A. cratagi* again in this country would be most interesting news to many, if not all. I hope therefore that some reliable information may come to hand respecting the reported captures made in North Kent in 1891.—F. W. FROHAWK; August, 1892.

OVA OF SMERINTHUS POPULI DEPOSITED IN CLUSTERS.—When at Barnes, on June 7th last, I found sixteen eggs, which have since produced larvæ of *Smerinthus populi*. The eggs were, however, neither green in colour nor deposited singly on the under side of a leaf, as is usual with this species. They were placed, evidently by a crippled female, in two groups on a brown dead twig, which had grown from the stem of a balsam poplar, and the eggs were, like the twig, brown in colour.—ALFRED SICH; Villa Amalinda, Burlington Lane, Chiswick, July 20th, 1892.

I found eighteen ova of *S. populi* on one small leaf.—J. LEWIS BONHOTE; Harrow, July 31, 1892.

ASSEMBLING. — During July I have tried "assembling" with several species of Macro-Lepidoptera, and have been successful with three, viz., *Porthesia similis*, *Odonestis potatoia*, and *Uropteryx sambucaria*. *P. similis*: I placed a female in our garden on the 19th—a cold, windy night—but did not get anything; on the 20th—another cold night—I took it to a small wood, and obtained one male, which made its appearance at 10.35. *O. potatoia*: A friend bred a female, and we took it out on the 15th and 16th, cold, damp nights; one male came on the first night at 9.40. I afterwards bred two females of this species, and took them out several nights, but they failed to attract the opposite sex. *U. sambucaria*: On 3rd and 4th—warm, bright, and windy nights—I placed a female in a sheltered spot in our garden, with the following results:—3rd, ten males, first at 10.15, last 10.45; 4th, four males, first at 10.10, last 10.35. There was a marked difference in the three insects in their manner of approaching the cage; *P. similis* immediately alighted on the gauze, and searched all over the cage for an entrance; *O. potatoia* dashed wildly around, sometimes knocking against the cage, but never settling on it; *U. sambucaria* came very slowly, and was very shy till it had been on the cage about a minute, when it could be easily boxed. — P. T. LATHY; Bexley Heath, Kent, August 11, 1892.

ASSEMBLING OF MALES OF ACIDALIA BISETATA. — On the evening of July 21st I noticed a number of small white moths hovering in a cluster over a leaf, and found that under the leaf were a pair of *Acidalia bisetata*, the moths round being eight or ten males of the same species.—R. M. PRIDEAUX; Clifton.

CONFUSION BETWEEN LARVÆ OF DREPANA FALCULA AND D. SICULA.— I should like just to draw attention to what may not be a universally known error in Newman's plate of the larvæ of Cuspidates. It is that the larva named "*Drepana sicula*" is evidently not that species, but is a woodcut of *D. falcula*. Having once seen the larvæ of both species, it would be impossible to confuse the two.—R. M. PRIDEAUX; 9, Vyvyan Terrace, Clifton, Bristol, Aug. 7, 1892.

LEPIDOPTERA IN THE BLACK FOREST, GERMANY.— Whilst staying recently at Bad Boll, Bonndorf, Baden, towards the end of July, I noticed *Parnassius apollo* commonly close to the river, flying over rank vegetation and among willows at about 1800 feet above sea-level, also in open places in the fir-woods; some specimens had reddish orange spots instead of the usual crimson ones. I have never seen this species below 4500 feet in Switzerland. *Apatura iris*, common, and frequently found settling on wet places on the roads. In England *iris* is a difficult insect to capture, but this does not appear to be the case in the Black Forest, as I saw a boy catch several specimens with his hat. The following butterflies were abundant:—*Vanessa c-album*, *V. polychloros*, *V. atalanta*, *V. cardui*, *Colias hyale*, *Polyommatus virgaureæ*, *Lycæna corydon*, *L. damon*, *Melanargia galatea*, *Erebia ligea*, *Argynnis paphia*, *A. niobe*, *A. adippe*, *Melitæa didyma*, *Hesperia sylvanus*. Among the moths I observed *Sphinx pinastri*; a fine specimen of *Plusia bractea* came to light in the hotel, and many Noctuæ were buzzing about the rooms of an evening. Geometræ appeared to be plentiful. As I was intent on fishing and not on collecting insects, I did not make many captures of the latter. I may add that the hotel seems a

good one, and the charges very moderate. — J. H. LEECH; 29, Hyde Park Gate, S.W., Aug. 20, 1892.

A DAY ON THE CUMBERLAND MOUNTAINS.—On the 21st June, the morning gave so much promise of a fine day that I decided to go up to my pet place on the mountains in search of *Erebia cassiope*. I set off on foot at 8.30 a.m., and commenced my nine miles' walk, six of which were amongst some of the most beautiful scenery in the Lake District, viz., along the eastern side of Lake Derwentwater, and through the Vale of Borrowdale, the remainder being mountain climbing. The sun was very bright, in an almost cloudless sky. The first insect picked up was *Iodis lactearia*; further on I noticed one or two *Vanessa atalanta*, in fine condition, which I did not disturb; next a nice lot of *Argynnis euphrosyne*, close to the roadside; then a few *Scoparia basistrigalis*; and observed that the oak trees here, as well as in the Great Wood, were stripped of their leaves by various larvæ. Toiling upwards, I now began to find the mountain species, but nothing worth taking until I reached the ground frequented by *Erebia cassiope*, at about 11.30, at an elevation of about 2200 ft. The first insect netted was a very good specimen of *Mixodia schulziana*, and, walking on a few yards, I took the first specimen of *E. cassiope*, which was rather rubbed; then three others in quick succession, all rather rubbed. (I suspect the time between noon and 4.30 is the time for *cassiope* hatching out; I got one, about 4.30, drying its wings.) After wandering about for some time, I took my first good specimen, and the fun began; *E. cassiope* was on all sides, like black flakes, fluttering over the short grass, and now and then settling on a small flower, which grows amongst the grass, very low down, being in shape and size like the smaller flowers of wild strawberry, but of a bright yellow colour. I now darted about, netting and boxing as quickly as possible (for the clouds were gathering), several times two at once, with an occasional *C. furcatellus*, *C. pratellus*, a very good variety of (I think) *Melanippe fluctuata*, one *Emmelesia minorata*, and several *Nemeophila plantaginis*, a pair of the latter *in cop.* The sun was now greatly obscured, only shining a few minutes at a time, and I had to search very closely on the grass, and as that was rather slow work, and the afternoon nearly gone, I reluctantly commenced the descent, having in my boxes about eighty *cassiope*, mostly good specimens, besides about a score more insects of various species. As I got down to the lower slopes of the mountains, I took a miner's path, which ran for about two miles at an elevation of 300 or 400 ft. Here I filled up all my remaining boxes with a lot of *Micros*, including such species as *Crambus perlellus*, *C. hortuellus*, *C. pratellus*, *C. margaritellus*, *Ennychia cingulalis*, &c. I had just time to catch the omnibus which runs from Borrowdale Hotel to Keswick to take visitors to and from the station.—H. A. BEADLE; 28, Lake Road, Keswick.

DEILEPHILA LIVORNICA IN THE NEW FOREST.—On June 4th, Mrs. Ward-Jackson caught a very fine specimen of this species in our garden at Lyndhurst in the New Forest. I understand that it is a rare moth in England.—W. R. WARD-JACKSON; 7, Fig Tree Court, Temple, July 26, 1892.

[This species is certainly rare in Britain, but one or more specimens have been taken in this country nearly every year during the past quarter of a century. The years in which it does not appear to have been observed are 1874, 1876, 1881, 1882, 1885, 1886, 1889, and 1890. In 1868 over a score of specimens were recorded, and its range extended from Cornwall to York-

shire; six in 1883, and five in 1888. One specimen was captured in 1887 in the month of February, and examples have been taken in each month from May to September inclusive; but June and August appear to have been the best months. Three other captures are recorded for this year (Entom. 168-9).—ED.]

PLUSIA MONETA AND CUCULLIA GNAPHALII AT TUNBRIDGE WELLS.—I have much pleasure in announcing the capture of *Plusia moneta*, by myself, on the 13th of July, at Southborough. It is as perfect as if bred. I am in hopes of taking it again, there being plenty of its food-plant in the locality. In July, 1879, I captured, nearly at the same place, a lovely specimen of the rare *Cucullia gnaphalii*, which I now possess. Can you kindly inform me whether it has been taken during the last ten years? I have tried for it each year since, but have not seen another specimen, neither have I seen it mentioned at all in the 'Entomologist' during the same period.—MATTHEW M. PHIPPS; Southborough Brewery, Tunbridge Wells, August 11, 1892. [Larvæ of *C. gnaphalii* are found almost every year by those who are fortunate enough to know how, when, and where to search for them. They are very subject to the attacks of ichneumons, &c., and the percentage of imagines bred is often exceedingly low.—ED.]

PLUSIA MONETA IN HANTS.—I took a specimen of this moth at lamp-light in the house on the 12th July last.—S. G. REID; Froyle House, Alton.

ABUNDANCE OF COLIAS.—*Colias edusa* seems to be abundant and widely distributed this year. Early in the summer I saw single specimens at Deal and Darenth Wood, and two more at St. Leonards on August 30th. Along the Thames Valley, from Goring to Taplow (Aug. 12th and 13th, 1892), they were plentiful, five out of six that I took being males. Even in the London district they are about, one of six that I saw from the railway train between Taplow and London being just outside Paddington. One was seen in a garden at Stamford Hill the first week in August, and seven at Finchley. I have this morning returned from Lowestoft after a two days' visit. Walking through a lucerne field on Sunday afternoon, half a mile behind the town, I saw several *Colias hyale*. Of course, I had no net, but, having a box or two, succeeded in boxing three. Yesterday afternoon I went there again, and took eight more beauties, all quite fresh, and one of them as white as *P. rapæ*. *C. edusa* was very abundant in the same field, and I could easily have taken a hundred. Fifteen that I netted at random all proved to be males; and curiously enough, the only female I caught or noticed was a specimen of var. *helice*. This was slightly chipped, but otherwise good. The field in question was not more than half an acre in extent, but in a neighbouring field, four times the size, I only saw two *C. edusa* and no *C. hyale*. I was only just in time, as they are cutting the field to-day (Tuesday).—RUSSELL E. JAMES; Chesterville, Hornsey Lane, N., Aug. 23, 1892.

ACHERONTIA ATROPOS AT CHICHESTER.—A fine full-fed larva, which went into earth at once, was brought me on August 5th. It was found feeding on potato-leaves in a garden here.—JOSEPH ANDERSON, JUN. Chichester.

DEIOPEIA PULCHELLA AT ST. LEONARDS.—On May 28th last, in passing through a field at St. Leonards, I started and netted a splendid specimen.

of *Deiopeia pulchella*. I searched the field, which was a very large one, thoroughly, and eventually captured another very transparent specimen, about 150 yards from where I had caught the first.—W. W. ESAM; Upperton College, Eastbourne, August, 1892.

DEIOPEIA PULCHELLA AT BRIGHTON.—A fine specimen of *Deiopeia pulchella* was captured on the barrack-walls last month by a street boy.—C. G. MORRIS; 4, Oriental Place, Brighton, Aug. 9, 1892.

LARVÆ OF VANESSA CARDUI AT CHESTER.—The numerous specimens of *V. cardui* I referred to in the 'Entomologist' for July have now larval representatives on the nettles in several of the country lanes near the city. This is the first time I have come across the larvæ in this district, and on previous occasions I have always found them upon thistles.—J. ARKLE; Chester.

LYCÆNA ARION IN SOUTH DEVON.—During the first half of July last, I had the pleasure of taking this butterfly in the neighbourhood of Selcombe. I explored a good deal of the coast in search of the species, and found it inclined to be very local, and not very abundant even where it occurred. It can hardly have been too late for the species, as out of about twenty-five specimens, which I managed to net, two-thirds were in very fair condition, and a few absolutely perfect. The riotous profusion of commoner butterflies about the coast here is a very pleasant sight, especially so to anyone accustomed to the Bristol neighbourhood. The most conspicuous species were perhaps *Argynnis aglaia*, *Satyrus semele*, *Vanessa urtica*, and (in places) *Lycæna ægon*, together with plenty of *Epinephele hyperanthes*, *E. tithonus*, *E. ianira*, *Pararge ægeria*, *Cænonympha pamphilus*, *Polyommatus phlæas*, *Hesperia sylvanus*, *H. linea*, and a few *Argynnis selene*, *Thecla rubi*, and *Lycæna alexis*. Hybernated specimens of *Vanessa cardui* and *V. atalanta* were to be seen; the first fresh specimen of the latter I netted on July 12th. Larvæ of both were very abundant. *Macroglossa stellatarum* was to be seen commonly at blossoms of *Centranthus ruber*; also seen to visit the red campion and *Calamintha clinopodium*. I did not get a glimpse of *Colias edusa*, but have met with one here to-day (7th August).—R. M. PRIDEAUX; 9, Vyvyan Terrace, Clifton, Bristol, Aug. 7, 1892.

ANTICLEA RUBIDATA THE SECOND YEAR IN PUPA.—I bred several specimens of *Anticlea rubidata* during June from ova laid by a female captured in July, 1890.—JOSEPH ANDERSON, JUN.; Chichester.

APAMEA OPHIOGRAMMA AT ENFIELD.—In the year 1889 I captured, at Bush Hill Park, near Enfield, a moth which I was unable to name. But last week, on sending it to Mr. Cooke, he pronounced it to be a specimen of *Apamea ophiogramma*, which, as he says, "is now decidedly rare." It is a fair specimen, and was taken flying in the house, probably attracted by the light.—F. W. JONES; Harley Lodge, Enfield, Aug. 14, 1892.

ARGYNNIS PAPHIA, &C., NEAR BRECON.—On August 4th I captured twenty-two good specimens of *Argynnis paphia* in an opening of a pine-wood near Brecon. At the same place I also caught seven *Grapta c-album*, in good condition. The opening was one mass of thistles and brambles. I have also seen specimens of *Colias edusa* in this district.—ELDRED GORDON BROOKE; Gwenffrwd, Alexandra Road, Brecon, Aug. 6, 1892.

ABUNDANCE OF ARGYNNIS PAPHIA IN GLOUCESTERSHIRE.—On August 10th I found *A. paphia* swarming at Symonds Yat, Gloucestershire, but saw no specimens of *Colias edusa*.—H. WILDE; Enfield.

ABUNDANCE OF UROPTERYX SAMBUCARIA AND TIMANDRA AMATARIA.—These beautiful moths have been unusually common during July about the hedges in the neighbourhood of Chester.—J. ARKLE; Chester.

ABUNDANCE OF COSMIA PALEACEA (EUPERIA FULVAGO) IN SHERWOOD FOREST.—This year seems to have been specially favourable for the above insect. I have seen a good deal of Sherwood, having spent several holidays there, but have never before seen *fulvago* in such numbers. August 10th was our first night at sugaring; on that night I took thirty-five, the second night twenty, the third thirty, besides other species. Last year I sugared for the same moth, but as I was at Sherwood that year fourteen days later, I only took four *fulvago*. On the last night there were more moths than we could carry away, some of which are unknown to me. The locality is a good one for *Agriopis aprilina*, but it is yet too early for them; I think they are still in the larva state. I may add that Sherwood Forest appears to be very poor in butterflies.—W. A. B. FERRIS; St. Matthew's Vicarage, Nottingham.

NOTES ON LEPIDOPTERA NEAR GLOUCESTER.—*Plusia gamma* has been as great a nuisance here as it seems to have been elsewhere. It began to disappear about June 20th, about which time *P. iota* almost took its place as regards numbers, occurring in hundreds at flowers at dusk, in beautiful condition. *Macroglossa stellatarum*, after many years' absence, has appeared here again, one being discovered by my wife in a flower-vase, and two more seen at flowers. This insect appears to be much more rare than formerly; twenty or twenty-five years ago, in Ireland, I remember it occurring in considerable numbers nearly every summer. One year it was particularly abundant; half a dozen could be seen at any hour of the day hovering over a strong-smelling blue flower, the name of which I forget. *Vanessa cardui* has also been more abundant than usual here this summer, a day seldom passing without several been seen. *V. c-album* is just beginning to appear. *V. polychloros*, one only, on July 14th. On August 18th, at verbeena, I captured a male *Celæna haworthii*; and on the 20th, at light, another, also a male; both newly emerged. There is no cotton-grass within a mile and a half, and, where it does occur, is very scanty; certainly not more than twenty tufts could be picked in the spot where it occurs. Is there any other food-plant known, and is the insect of frequent occurrence in Gloucestershire? These are the first I have seen here; and I can find no note of it having been taken in this county.—N. F. SEARANCKE; Mitcheldean, near Gloucester, August 19, 1892.

CAPTURES IN THE CHELTENHAM DISTRICT.—The following is a list of the rarer Lepidoptera that have been caught during the past term in and about Cheltenham, by the boys of Cheltenham College. Many more specimens have been taken, but only the first capture is noted. A prize is awarded to the boy who obtains the most "notices." An entomological section has been instituted at the College, and the boys take a keen interest in the study:—May 20th, *Notodonta dictæa* (male), College ground, by W. F. Buckle; 21st, *N. dictæa* (female), College ground, by Fowler; *Acronycta alni*, College ground, by E. A. Sanders; 29th, *Vanessa cardui*,

Cheltenham woodlands, by Sagar-Musgrave. June 1st, *Smerinthus populi* and *S. tilia*, College ground, by Sagar-Musgrave; *Sphinx ligustri*, Christchurch Road, by E. A. Sanders; 6th, *Chærocampa elpenor*, Charlton Kings, by Bagnall; 9th, *Colias edusa*, Railway bank, by E. A. Sanders. July 3rd, *Macroglossa stellatarum*, Leckhampton Hill, by Goodlake; 5th, *Graptac-album*, Hatherley Wood, by E. A. Sanders; 20th, *Macroglossa stellatarum*, Christchurch Road, by E. A. Sanders.—E. GORDON C. BROOKE; 6, Queen's Villas, Queen's Road, Cheltenham, July 24, 1892.

[Entomology flourishes in most, if not all, of our Public Schools, and we are glad to find that the boys of Cheltenham College are exhibiting such active and intelligent interest in the Lepidoptera of their district. It is to be hoped that other orders of the Insecta also receive a share of their attention.—ED.]

CAPTURES AT HEREFORD.—At Hereford, this year, *Vanessa c-album* is common as usual. Amongst other butterflies caught here are *Thecla w-album*, *Argynnis paphia*, and *A. adippe*; and, among the moths, one *Geometra paphionaria*, &c.—F. L. BLATHWAYT.

SIREX GIGAS IN SHROPSHIRE.—A fine female specimen of this sawfly was brought to me, July 13th, from the yard of a saw-mill at Ellesmere, Shropshire, where the insect had not been observed for over twenty years.—J. ARKLE; Chester.

ERRATUM.—Page 199, line 18 from top, for *Nonagria typhæ* read *Macrogaster arundinis*.

SOCIETIES.

SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—July 28th, 1892.—Mr. C. G. Barrett, F.E.S., President, in the chair. Mr. Frohawk exhibited seven specimens of *Epinephele hyperanthes*, L., bred from ova. The female parent, taken in the New Forest, was of the ordinary form; possibly the male was of the lanceolate form, as of the seven specimens bred no less than three were of this variety; a variety of *Sesia formiciformis*, Esp., having the usual red colour replaced by burnished gold; living pupæ of *Colias edusa*, Fb., *Vanessa cardui*, L., and *V. atalanta*, L. Mr. Frohawk stated he had obtained seventy pupæ of *Colias edusa*, the ova having been obtained from two females taken in the spring; he also remarked on the abundance of *Vanessa atalanta*. Mr. Rice exhibited, on behalf of Mr. Hickling, lepidopterous ova on stems of asparagus, for naming; and Mr. J. W. Hall suggested that probably they were *Triphæna pronuba*. Mr. South exhibited specimens of *Zygana trifolii*, Esp., selected from a number taken in Middlesex, showing great variation in the size and colour of the spots, in the colour of the hind wings, and in the width of the border of the hind wings; Mr. South stated that the series exhibited represented all the known phases of variation in this species. He also exhibited *Asthena blomeri*, Curt., taken in Buckinghamshire, and made remarks thereon. Mr. C. G. Barrett, *Vanessa c-album*, L., and pointed out differences between the first and second broods; a discussion ensued, the general opinion being that the species was certainly double-brooded. Mr. Frohawk remarked that he had recently been to the New Forest, and, although the weather was bad, he took three white-spotted specimens of

Argynnis paphia: the variety *valesina* was fairly common, and *Limenitis sibylla* exceedingly so, and very late in its appearance.

August 11th.—The President in the chair. Mr. West (Streatham) exhibited a series of *Apamea ophiogramma*, Esp., and *Eupithecia succenturiata*, L. Mr. Barrett remarked that the former species was very dark, and one specimen unusually so. Mr. J. A. Cooper said *A. ophiogramma* was frequently taken at Chingford. Mr. Russell, a handsome specimen of *Pieris napi*, L., from Woking, the upper wings being strongly suffused with black, and the spots unusually large. Mr. Barrett said the specimen was much more strongly marked than those from the North of Ireland. Mr. Russell also exhibited a series of varieties of *Epinephele ianira*, L., males and females, from Abbott's Wood: one male showed the orange-coloured blotch, in imitation of that of the female, which Mr. Barrett observed was the form found in the more northern and western range of the species. Mr. H. Moore exhibited three species of Orthoptera from the Amatola Mountains, South Africa, viz., *Platypyleura divisa*, Germ., a pretty cicada with moth-like coloration and markings; *Phylloptera prasinata*, Stal, a green tree-cricket; and *Ædipoda pictus*, a grasshopper showing considerable variation in the density of the colouring of the hind wings, the specimen shown having a faint tinge of yellow, whilst in others it is developed into opacity. Mr. Short referred to the exhibit made by Mr. Rice, at the previous meeting, of ova deposited on asparagus, and, in supporting Mr. J. W. Hall's identification, showed ova of *Triphæna pronuba*, L., on rush. Mr. Hawes exhibited a larva of what he originally thought to be *Hesperia comma*, L., but remarked that its lateness in that stage had made him feel doubtful as to its identity, and he was now satisfied that it was *Nisonaides tages*, L.; a discussion ensued, in which it was pointed out by Mr. Frohawk that the larva of *comma* was distinguishable from *tages* by the white markings on the tenth and eleventh segments, and which were to be found on the under side. Mr. Hawes also called attention to the tendency to lightness in colour in many species of butterflies during the present season, and gave as instances the extra brilliancy of the blue in males of the second brood of *Lycæna icarus*, and the large proportion of the females of that species which were blue; a discussion took place, in which Messrs. Carpenter, Frohawk, Barrett, Hawes, and Carrington took part. The President read a letter from Mr. J. Jäger, in which he reported the capture of *Callimorpha hera*, L., from South Devon on the 6th inst., and stated that as there were still a number of unbelievers regarding the genuineness of this beautiful moth, he felt it necessary to again come forward in its defence, as he felt sure that anyone who knew the country, intersected as it was by wooded mountains and tracts of marsh-land, would, he was sure, never favour the theory that it had been artificially planted there.—H. W. BARKER and A. SHORT, *Hon. Secs.*

BIRMINGHAM ENTOMOLOGICAL SOCIETY.—August 8th, 1892.—Mr. R. C. Bradley in the chair. Mr. G. W. WYNN showed a boxful of moths taken on sugar during two nights at Wyre Forest, including a nice row of *Aplecta tincta*; also *Cossus ligniperda*, *Cymatophora or.* &c. Mr. C. J. Wainwright, a nice series of *Xylota sylvorum* from Wyre Forest, forms of *Amphidasys betularia*, intermediate between the type and *doubledayaria*, &c. Mr. A. Johnson, series of *Cherocampa elpenor*, *Sphinx ligustri*, &c.; and some varieties of *Arctia caia* from larvæ fed on lettuce.—COLBRAN J. WAINWRIGHT, *Hon. Sec.*

THE ENTOMOLOGIST.

Vol. XXV.]

OCTOBER, 1892.

[No. 353.

LIFE-HISTORY OF *CARTEROCEPHALUS PALÆMON*.

By F. W. FROHAWK, F.E.S.

IN June, 1891, I received some living females of *C. palæmon* from the Rev. J. A. Mackonochie, who most kindly captured them expressly for me, my friend Mr. G. Bryant having informed him I was desirous of working out the life-history of this species; it is therefore through the kindness of both gentlemen I was enabled to carry out my wish, and so became acquainted with the complete history of *C. palæmon*, from the depositing of the egg to the emergence of the imago, which I will now proceed to give in detail.

Upon receiving the living females, I at once placed them on a growing plant of grass, *Bromus asper*, and soon had the pleasure of seeing a few eggs deposited, some upon the blades of grass, others upon the gauze-covered glass jar in which the plant was placed; they were laid singly, firmly adhering to whatever laid upon. The first lot of eggs were deposited on the 14th June.

The ovum is one-thirty-second of an inch wide, being about one-fifth wider than high, of a somewhat compressed conical form, bulging a little below the middle, and becoming less in size on nearing the base, which is rounded at the edge; the base itself is slightly concave; the crown is rounded; the operculum is small and rather sunken, and very finely punctured; the entire surface is smooth, showing only faint granulations and mere indications of striations on the lower half, running from the middle to almost the base. It has a pearly appearance, being whitish or yellowish white in colour, with opaline reflections; shortly before hatching the colouring becomes opaque, and a dark leaden spot appears at the crown, which is caused by the dark head of the larva showing through the shell. In ten days after the egg is deposited the young larva emerges by eating away the crown. The first egg hatched on June 24th.

Directly after emergence the larva is one-twelfth of an inch

long; the head is large, intensely black and shining; the body is cylindrical, of a creamy white colour, including the legs and claspers, and of a rough or velvety texture; on the first segment, encircling the upper half, is a black crescentic collar; there are six longitudinal series of short fine bristles, three on either side. The larva, soon after emerging, commences making for itself a little tubular dwelling, drawing together the edges of the grass-blade by spinning about three or four stout cords of silk, each cord composed of a great number of strands, which quickly contract, causing the edges to draw together and sometimes to overlap, forming a compact short tube; generally before spinning it nibbles off the extreme edge of the blade where the silk is afterwards attached to. It feeds upon the blade both above and below its abode, devouring so much that frequently only the midrib of the blade remains, and the tube only just long enough to conceal it; it then shifts its quarters, and prepares a new home. It is particularly active; upon the slightest touch it rapidly runs out of its tube, either backwards or forwards, and, after remaining for a time until all apparent danger has passed, it retreats into its abode.

The subsequent descriptions refer to the same specimen through all stages, so that the exact period from one stage to another may be given.

After the first moult, which occurred on July 8th, the larva is nearly a quarter of an inch long; the body is cylindrical and slender, without markings; the segments are well defined and transversely wrinkled; it is clothed with very short and fine hairs, most minute, giving the surface a velvety appearance; the colour is of a very pale yellowish green, in certain lights appearing of a whitish green; the head is large, elongated, and flattened above, black and shining, as also is the collar on first segment.

Second moult on 17th July. It then measures seventeen-twentieths of an inch in length; colour very pale green, with a fine longitudinal medio-dorsal line of a darker green, and a sub-dorsal green line, slightly darker than the ground colour; each line is bordered by a paler stripe; the head is black, and mottled with pale brownish grey occupying the centre of each lobe, and a blotch above the mouth; there are five glistening black warts, set on a glazed collar of pale green, encircling the upper half of first segment; the central wart is largest; on the last segment is an elongated oval black mark narrowed in the centre. On July 24th, being thirty days old and still after second moult, it was exactly half an inch long, one-tenth of an inch in diameter, and perfectly cylindrical throughout.

Third moult on July 30th. Seven days after third moult, forty-four days old, it measured seven-tenths of an inch long; the body of the same shape as previous stage; colour pale

whitish green; a longitudinal medio-dorsal line rather dark green, which is bordered on each side by an almost white, very fine line, followed by alternate darker and lighter lines, the lightest being extremely fine; then a subdorsal darker green line, bordered laterally by a conspicuous whitish line, which is again bordered below by a paler and indistinct green line, and a very faint spiracular whitish stripe, on which the spiracles are placed; they are white, outlined by a dark but indistinct ring; the under surface is whitish green; the head is about the same width as the body, rather depressed, and of a pale greenish grey colour with black markings, one central between the lobes, and one down the middle of each lobe, the central one bifurcating and uniting the others in front; the eye-spots are black; both the head and body are clothed with very short stiff hair; the anal segment is elongated, porrected, and flattened, overlapping the hind claspers; the central black marking previously mentioned is in this stage very conspicuous; the legs are dark grey, with whitish extremities; the claspers the same colour as the under surface; the segments are transversely wrinkled.

Fourth moult, and last, took place on 17th August, or possibly early on the 18th, as on that morning I found its cast head-skin lying below the tube in which it moulted. About four p.m. that day I expelled it from the tube by gently touching its head, when it instantly ran out backwards. I then had a good view of it, and took its portrait; it remained motionless for a long time. The colour was then of a clear pale whitish green; at each segmental division the skin is loosely wrinkled, each fold or wrinkle being pale yellowish white, especially noticeable between the first six or seven segments; the remainder are fairly uniform in colour; each segment is delicately wrinkled transversely, in addition to the divisional folds mentioned. In this moult a great and important change takes place, *i. e.*, in the colouring of the head, and the disappearance of the ovate black blotch on the last segment, which is so conspicuous in the former stage, and the black warts and collar on first segment.

The head is now entirely of a pale whitish green, with a faint bluish tinge, excepting an extremely fine central black line separating the lobes of the crown, and there are about six tiny black warts in the region of the eye; four are in the form of a crescent, the two lowest are the most conspicuous and bead-like; on each segment are a few exceedingly small black specks, only just visible by the aid of a strong lens; the most distinct are those forming a double longitudinal dorsal series, two in the middle of each segment; these appear concaved and very metallic, reflecting a high light; the markings appear precisely similar to those in the previous stage; the legs, claspers, and under surface are uniformly pale green in colour; below the spiracles the body

is dilated, making the under surface flat and rather concave. The head is large, fully one-twelfth of an inch in length, and broad in proportion; it is porrected and slightly compressed on the crown; the body is about the same width as the head, and of equal thickness throughout; the anal flap is of the same form as before moulting; both the head and body are clothed with short fine hair; the surface of the head is finely granulated. Upon measuring the larva, I found it had decreased in length by one-twentieth of an inch, but was stouter in proportion. On the 12th September it had considerably increased in length, then measuring fifteen-sixteenths of an inch, and the colour had changed to a clear yellowish green, but still pale; in other respects it was the same as described. If touched when resting in an extended position, it immediately contracts itself, making it much less in length.

(To be continued.)

ON THE BORDERS OF DARTMOOR.

By MAJOR JOHN N. STILL, F.E.S.

BAD as is the character of Devon, and of Dartmoor in particular, for rain, we have no cause to grumble this summer; the fine weather which commenced in May continued with few breaks to within a week of September, affording the entomologist every chance of following his favourite pursuit, and finding insects generally more plentiful. The year 1892 will long be remembered in the entomological world as a great "*edusa* year." In this county the insect could be seen in vast numbers, particularly along the coast; but far inland every garden and field seemed to contain *C. edusa*, with an occasional var. *helice*; they even penetrated into the streets of our towns.

It is many years since I remember seeing so many butterflies; the various species seemed to be early, to overlap each other, and to remain long in fine condition. It was not unusual to see seven or eight kinds together on the flower-heads of *Eupatorium cannabinum*, whilst the sheltered flowery spaces of our great woods exhibited a moving mass of insect life. *Melitæa athalia* appeared in June in those portions of the wood where, amongst underwood of two years' growth, foxgloves abounded; and high up on the moor, confined to a very small area, *Melanippe tristata* was numerous. On the grassy slopes the pretty *Pyrausta ostrinalis*, *Xanthoetia hamana*, and *X. zoegana* could be taken in plenty; and amongst the bracken of its moorland home the chimney sweep (*Tanagra atrata* = *chærophyllata*) swarmed. *Nemeophila russula* could be found at the same time and place, the male far outnumbering the female. On the trunks of the fir trees *Tephrosia*

crepuscularia var. *bundularia*, *Macaria liturata*, and *Bromolocha fontis* were numerous, the latter extremely shy, and most difficult to net when on the wing. The oak woods yielded *Hylophila prasinana*, *Lithosia mesomella*, *Gnophria rubricollis*, *Tephrosia luridata*=*extersaria*, *Geometra papilionaria*, *Eurymene dolobraria*, *Ephyra punctaria*, *Melanthia albicillata*, *Asthena sylvata*, *Erastria fasciana*, *Eupisteria obliterata*, and *Diphthera orion*.

The males of *Bombyx quercus* and *Odonestis potatoaria* were very plentiful, the latter quite a pest at light. The handsome scarlet tiger (*Callimorpha dominula*) and *Spilosoma fuliginosa* were by no means scarce, flying in the midday sun in the open glades of the woods. At dusk I took *Emmelesia affinitata* in plenty, *Anticlea rubidata*, the very local *A. sinuata*, *Aplecta herbida*, *Ceropacha duplaris*, and in low damp situations many specimens of *Perinephele lancealis*. Light and other attractions gave me *Pterostoma palpina*, some extremely dark *Rusina tenebrosa*, *Noctua brunnea*, *Agrotis strigula*, *Hydræcia micacea*, *Neuronia popularis*, *Luperina cespitis*, *Stilbia anomala*, *Polia chi*, *Gnophos obscuraria*, *Melanippe unangulata*, and many fine forms of the pretty *Cidaria silacea*. In its restricted range on the coast *Aspilates ochrearia* was to be found by day.

Light seems to have the greatest possible attraction for *Neuronia popularis* and *Luperina cespitis*, both insects coming early, just after dusk, the former in immense numbers, threatening to extinguish the lamp itself. I had no difficulty in taking nearly 400 in a very few evenings; out of this number there was but one female. What becomes of this sex? Why should light fail to attract the female as well as the male? *L. cespitis* of course is never so plentiful. I have on all occasions, and in localities far apart, taken these two species together; their habits and behaviour on arrival are, however, utterly different; *N. popularis* flies madly round and round the lamp, but its flight ceases about ten o'clock; whilst *L. cespitis* arrives singly, and at once settles, but continues its visits far into the night. One good *Tortrix* fell to my lot, viz., *T. cratægana*; and among the many species of small fry I may mention *Elachista cygnipennella*, and several vars. of *Peronæa tristana*.

Throughout the season the larvæ of many species have been plentiful, the best of my captures perhaps being *Asphalia ridens*, *Amphidasys strataria*, *Numeria pulveraria*, *Notodonta chaonia*, *N. trepida*, *N. dromedarius*, *Dicranura furcula*, and *D. bifida*; and by paying attention to the large quantities of alder which grow in this neighbourhood, I secured many of the lovely larvæ of *Acronycta leporina*, including a few of the black variety, and also *Eupisteria obliterata*.

On *Chrysanthemum inodorum*, var. *maritimum*, the larvæ of *Cucullia chamomillæ* were not uncommon. Newman, in his 'British Moths,' p. 445, and some other authors, give the

different species of bramble as the food-plant of *Erastria fasciana* = *fuscata*. This seems an error, the larvæ having been found feeding on *Molinia cærulea*. Mr. Bignell informs me that he has always taken it on this grass. The larvæ of many of the *Eupithecia* have been exceedingly abundant.

Sugar and light have both been more than usually attractive; day work and dusking have also produced good results. Therefore, taking into account the abundance of both imagos and larvæ, the season, now alas! almost over, has been one the like of which we may not soon see again.

Horrabridge, S. Devon, Sept. 12, 1892.

THE MUSTARD BEETLE (*PHÆDON COCHLEARIÆ*).

BY FRED. ENOCK, F.L.S., F.E.S.

No doubt most of the readers of the 'Entomologist' are acquainted with this common insect, but there may be many who do not know that *Phædon cochleariæ* (or *Phædon betulæ*, as some term it) is "The Mustard Beetle," one of the greatest crop pests we have in England; and though it has been known for quite fifty years, it still goes on increasing and appearing in the mustard-growing districts with the greatest regularity; and almost as regularly as the growers put in their seed, so does this beautiful blue beetle put in its appearance, and in many cases *utterly* ruins the whole crop, an additional loss being added by the expense of having it all ploughed in.

Now, one naturally asks, Cannot something be done to prevent or lessen the ravages of this insect pest? Like the greater number of "crop pests," the life-history of this beetle is but imperfectly known, though the reports of their appearance have been most regular from various correspondents; but as such cannot convey to your readers the slightest idea of the swarms of the Mustard Beetle, I purpose giving a short account of my "experience" in the fields around Littleport and Ely, the same neighbourhood where, in 1854, these beetles were noticed attacking the mustard. This has generally been looked upon as the *first* authentic account, but that most practical of field entomologists, John Curtis, has a note in his 'Farm Insects,' p. 96, of its appearance in 1841, for there is no doubt that the "small black larva," which Mr. Parsons mentions as having attacked both white and brown mustard was the larva of this identical Mustard Beetle.

During the first week in June I received intimation that the Mustard Beetle was plentiful, and spreading over the fields. I lost no time in going down to examine them myself, matters being made much easier and time saved by the kindness of Mr.

Luddington, who drove me over to a field of brown mustard, where the beetles were very plentiful on nearly every plant, all busily engaged in finding partners to keep up the family name, and, from the number noticed pairing off, there was every prospect of a large progeny.

This brown mustard was from two to three feet high, and too tall to do much work in, so we drove off for six or seven miles along one of those straight level roads, bounded on each side by hedgeless fields, the black soil of which reminded us that it was not many years ago when it was all fen-land; and though we had come with the intention of examining this crop pest, our thoughts and conversation often turned to those grandest of British butterflies, the Swallow-tail and Large copper, both of which *used* to be seen in these parts. *P. machaon* can still be found in the right locality, but *P. dispar* is an insect of the past.

Passing over into the borders of Suffolk, we pulled up at a field of white mustard, jumped the dyke, and landed safely on the other side, where I was almost staggered with the sight which presented itself to my eyes. The mustard was from nine inches to a foot in height, and *every* plant was absolutely *swarming* with the Mustard Beetles. I had my ordinary bag-net with me; this I held on one side of a drill whilst Mr. Luddington shook the plants, the beetles pouring off into the net by hundreds, so that in a very short time their weight was quite perceptible, necessitating transfer to a tin canister. A glance around and up the drills showed that *every* plant was swarming with beetles, which looked very beautiful as the sun shone upon their lovely blue elytra; but their work on the mustard was only too evident that this vast army in this field of six or seven acres required feeding, and, like a hostile enemy, everyone was for himself, and the beetles did not intend to starve as long as there was a green leaf left; and to insure complete destruction of the crop, the females were busily occupied laying their eggs on almost every leaf, and many tiny larvæ or maggots were already hatched, and rapidly reducing some plants to a mere skeleton.

We beat one drill for a distance of seventy yards, which occupied just fifteen minutes; the beetles I most carefully boxed and counted out at home the next day, and found that there were *over fifteen thousand* from this fifteen minutes' beating!

I pulled up several plants for the purpose of examination at leisure, and for making drawings, &c. I commenced counting the eggs on *one* plant, taking each leaf separately. These eggs are laid on the under side, alongside the mid- and cross-ribs. The female first scrapes out a small channel half-way through the cuticle, into which cavity she places an egg, so that it is embedded and protected from harm when the plants are blown about.

The top leaf had 85 eggs; the middle ones from 150 to over 500; whilst on one of the lower ones were no less than over 700

eggs! I must confess that I was glad when I reached the 35th and last leaf, and found that on this *one* plant alone there were no less than 9234 eggs laid! and this was not a special plant, for all examined appeared to be covered; and what the field looked like a month later I much regret that I cannot say, as I was prevented visiting it after June 11th, when Mr. Charles Waterhouse and I went down and found both beetles and larvæ hard at work reducing the mustard plants to bare skeletons. The beetles were not so plentiful, as no doubt most had played their part, laid their eggs, and died.

We were particularly struck with the great number of Diamond-back moths (*Plutella cruciferarum*) which flew up at every step. The mustard plants were *alive* with the larvæ of *this* pest, as well as those of the Mustard Beetle.

As I have been engaged for some years studying Economic Entomology as applied to Agriculture, I think I may venture to offer a few suggestions, in the hope that they may be useful to help check the advance of these "crop pests," for if mustard is worth ten pounds per acre, surely it is worth while trying to save from the throats of these busy beetles.

Watching these beetles time after time, feeding by thousands, or, I might say, *millions*, I cannot come to any other conclusion but that much might be done *if* growers of mustard, &c., would see the use of the sweeping or beating net, and impart that knowledge to their *employés*, that it would be possible to perceptibly diminish the vast army of this crop pest, as well as the Diamond-back moth; in fact, it is on record that a German *did* adopt such practical means to rid his fields of the Mustard Beetle, with the result that he saved his crop; but this plan, like everything else, ought to be done carefully, and at the *right* time. There is not the slightest difficulty to contend with as to the activity of the beetle, which is one of the *laziest* and most timid of creatures; and though having wings, it seldom uses them, but at the slightest shake of the beating-stick they drop down instantly, feigning death, and nothing could be easier to carry out than this simple plan of beating.

We must bear in mind that the growers want some *cheap* and easily applied remedy, which would not be too great a strain on their pockets, or the mental capacities of their *employés*.

It is *most* important that we should know the life-history of these crop pests from actual personal observation, so that, like an experienced general, we may know their hiding place at any time, to enable us to circumvent them. A few years, if needs be, spent in proving one *fact* in the economy of an insect is time well spent, rather than to go on for fifty years on an unproved statement.

During last winter I had the pleasure of regularly meeting a number of those engaged in farming and floriculture, most of

whom were anxious to know more of the insects whose ravages were so familiar to them; and no doubt in years to come, when old prejudices have died out, the coming generation of those engaged in tilling the soil will see the importance, profit, and pleasure of an acquaintance of their insect foes and friends.

APORIA CRATÆGI IN ENGLAND.

By C. A. BRIGGS, F.E.S.

I QUITE agree with Mr. Frohawk's remarks (Entom. 217) as to the very unsatisfactory character of the so-called records of the recent captures of this species in Kent. Neither Mr. Carrington (in the 'Field') nor Mr. Webb ('Brit. Naturalist,' ii. 150) state that they have seen any of the specimens they mention, nor give the name or names of the alleged captor or captors to enable other entomologists to form their own opinions as to his or their *bona fides* or reliability. The exact place of capture is a matter of minor importance, and for obvious reasons cannot always be given; but the captor's name is, in these days, unfortunately, an essential. The natural result of such mysterious reticence is to open the way to fraud. We shall, doubtless, soon have specimens offered for sale or exchange purporting to be the genuine North Kent and Sandwich specimens, "vouched for" by Messrs. Carrington and Webb; and, while the captor's name is withheld, such specimens cannot be checked or verified.

With a species that seems to be dying out with us, we cannot be too careful not to admit imperfectly authenticated records; and, for my own part, I do not consider these as records at all. Mr. Webb not only seems to be of the same opinion, but to have some private system of recording of his own, for he says that records need not be made in one or all of the entomological magazines to be received and quoted afterwards as an authority; but I trust that these views will not be adopted by many, for such publication and concealment joined are useless. No doubt many valuable facts are stored away and practically lost in the 'Proceedings' of our minor provincial Natural History Societies and in local newspapers; but whether either of these unfortunate methods have been adopted for the full record that Mr. Webb implies has been made of these captures is still a mystery, and the fact remains that the last open, candid record, without suppression of salient facts, is that of the specimens captured by my nephew in 1888. Messrs. Carrington and Webb have, no doubt, satisfied themselves of its more recent capture; but I certainly claim the right of knowing the grounds on which their judgment is formed before I form my own.

The question of the gradual extinction has for some years

been much discussed in our entomological journals, but it was last raised by Mr. Hodgkinson ('Record,' iii. 85) asking whether the species had *occurred* again. Mr. Tutt, in a note, replied:—"The last record should be well known to Mr. Hodgkinson. It is in the E. M. M. vol. xxiv. p. 131, and is vouched for by Mr. Webb. Mr. Edmonds has sold a large number of pupæ of late, but no one supposes they are of British origin." This refers to the 1887 captures; and if, as Mr. Webb tells us, Mr. Tutt was perfectly conversant with the fact of their annual occurrence at Sandwich (*i. e.*, in 1888—89—90—91), it appears a strange answer to Mr. Hodgkinson's plain question, which related *not* to the record, but to the occurrence, of the species. Probably, however, Mr. Tutt agreed with my opinion, that this emasculated record was not sufficient to enable it to be quoted, and, therefore, very properly ignored it.

55, Lincoln's Inn Fields, Sept. 16, 1892.

ON BREEDING *PARNASSIUS DELIUS*.

BY LEONARD S. SELLON.

THIS year I have been fairly successful in rearing *P. delius* from larvæ, and venture to give the following account of my experiences.

I obtained sixty-two larvæ in May by searching the food-plant (*Saxifraga aizoides*) at an altitude of about 5200 feet. These were of all sizes, some nearly full-fed, others quite small. The first larva I obtained on May 17th, and it was then about half-grown; but some taken at the same altitude much later were still quite small. On the 24th of June I took six more larvæ at 6500 feet. These were also of various sizes.

These sixty-eight larvæ (with the exception of half a dozen, which I preserved) I fed on the growing plant of *Saxifraga aizoides*, and they all turned to pupæ, with the exception of four or five, which escaped from the cages. The food-plant grows in exceedingly moist situations, in fact often in the water; and I therefore kept the plants on which my larvæ were feeding very moist, by watering the whole cage, plant, larvæ, and all, very freely, at least twice a day.

The first larva *spun up*, among the food-plant, about the end of May. The cocoon is very slight, and the pupa can easily be seen through it.

The first imagines appeared on July 6th (one male and one female), and others followed through July until the 29th; after which date there were no more emergences until August 19th, when one male appeared. Altogether forty-two imagines were bred, of which twenty-four were males and eighteen females.

The following is a description of the larva:—Velvety, shining black, except between the segments. The head and legs are also dull black, without lustre. There is a conspicuous side line of spots, which in some specimens are orange, and in others lemon-yellow; on each segment there are three of these spots of different sizes, the middle one being the smallest, and the last much the largest. Above these spots on each segment are two very small shining dots of a bluish colour, the first of which is situated somewhat higher on the back than the other; also below the spots there is a similar dot, between the first and second spot.

The larva, as might be expected, is smaller than that of *P. apollo*.

The pupa has the same appearance as that of *apollo*, and has also a purple efflorescence, but is smaller.

Davos-Dörfli.

OBSERVATIONS ON *HESPERIA ACTÆON*.

BY REV. W. CLAXTON.

IT would be very interesting if some of your Dorsetshire correspondents would contribute some information about *Hesperia actæon*, and, in the hope of inducing them to do so, I send these few notes. My own acquaintance with this butterfly dates from about the year 1870, when as a boy I used to visit Lulworth for the purpose of taking it. At that time there was a spot (*not* undercliff) about a mile and a half to the east of the cove along the shore, where they were in great abundance, almost equal to that described by Mr. Douglas, and quoted by Stainton and Newman. In those days I only once visited the Burning Cliff, and found them not so plentiful as at Lulworth. After 1875, I did not go to Weymouth again till 1889, and in that year I immediately made for the spot in which *H. actæon* was so abundant in former years. To my dismay, there was not a single specimen to be seen, and the place itself seemed altered in character. Perhaps the food-plant had disappeared from that piece of ground. However, they were to be got, though not in great numbers, on two small tracts of undercliff in Lulworth Cove itself. In 1890 I found them very scarce, and in bad condition, though I went at the usual time, *viz.*, early in August, so that I supposed they might have emerged earlier than usual that year. In 1891 I could not get to Weymouth till September, and did not then try for *H. actæon*, as I thought they would be over. However, I saw one perfectly fresh specimen taken at Lulworth one day that I went there. I had been over the ground myself to see if I could find any of the larvæ, but I could see neither them nor the imagines. This year I determined upon a serious campaign against *actæon*, which I started by trying Lulworth on July 27th.

There was not a single specimen to be seen, though I was told by the waiter at the hotel that gentlemen had been taking them before that date. A week later I tried Lulworth again. This time it was a dull day, and I took one specimen in good condition. Meantime I had been twice to the Burning Cliff, and there found them tolerably plentiful, but at that time they were mostly males and in bad condition. After that I confined my attention entirely to the Burning Cliff, going there every two or three days for the next fortnight, and each time found what seemed to be a fresh batch both of males and females in splendid condition. The last date on which I went was August 13th, and on that day I took some of the most recently emerged specimens I got at all. I was careful to limit myself in the number I took each day, in order to avoid anything like extermination. I was rather surprised that I never met any other entomologist at the Burning Cliff, but I do not think that the exact spot where *H. actæon* lives is very well known. I discovered a spot unknown to me before, and, from the look of it, I should say untried by anyone else, where the species was much more abundant than in any of the other places I knew of.

On the whole, I think that *H. actæon* has become much less common than it used to be, but one would like to hear what other collectors have to say about it. At least I am sure that the halcyon days of Mr. Douglas have gone for ever. The butterfly has entirely disappeared from one spot where it abounded, and I find that one of the localities in Lulworth Cove has lately been converted into a fowl-run, so that I do not think there will be much chance for it there in future. I believe, however, that more localities might be found along the cliffs if carefully searched by residents, and at the Burning Cliff it is still fairly plentiful. It would be a thousand pities if this lovely little butterfly were to share the fate of *Polyommatus dispar*. I have never seen a more charming entomological picture than is presented by a newly-emerged specimen as it sits on a spray of bramble or stem of grass, with its semicircle of spots glowing in the sun almost like dots of gold.

They seem to prefer ground which is very much overgrown with tall rushes, and they are also fond of sitting on teasle-heads to suck the honey, and not unfrequently on thistles and brambles. On a dull day they do not fly at all, but they may frequently be found at rest among the rushes, and it is then easy to see whether the insect is in good enough condition to be caught or not.

They are not by any means too easy to catch, as, unless you take them as soon as you see them, their flight is most difficult to follow with the eye. And if you plump the net downwards over them, they often wriggle down into the long grass and get lost to sight. It is by no means easy to get really fine specimens. They are very active and pugnacious with other species of butterfly,

and I think they must be taken almost within the hour they emerge to be in really good condition; and even when so taken, there is a sort of beautiful fulvous bloom about them which seems to go off after they are dead. The males, when alive, are, I think, more beautiful than the females, but it is almost impossible to get them in perfection. Out of some thirty or forty males which I took, only one was quite beyond reproach. As soon as they have been out a little while, the spots seem to disappear. Lastly, as far as my experience goes, where you find *H. actæon* you will also find *Argynnis aglaia*, *Melanargia galatea*, *Satyrus semele*, *Lycæna corydon*, and, later on, *L. adonis*, in greater or less abundance.

Hartley Wintney, Winchfield.

A TOMATO CATERPILLAR (*HELIOTHIS ARMIGERA*).

BY J. ARKLE.

FRUITERERS and others who import Valencia tomatoes in the months of June and July will have noticed among the fruit an occasional caterpillar, about an inch and a half long, apparently quite smooth, greyish, but ornamented with blue or purple touches, and with a drab-coloured zigzag stripe along each side.

In this north-western part of the country the tomatoes arrive, from Spain, at Liverpool, packed in small shallow boxes. A number of these boxes, in their turn, fill a case, and, after the excise officer has tapped one or two, they find themselves diverging miles away to the various shops, where they are received by the retail dealers and dispensed to tomato-eating customers.

It was last year when I began an acquaintance with the caterpillar, which escapes, in the first instance, the eye of the swarthy packer in Valencia, and, lastly, the keen scrutiny of the Custom House officers at Liverpool. Two specimens were sent to me, with the several tomatoes in which they had nearly buried themselves; but, as I used an ordinary tumbler for a cage with a piece of glass over the top, the larvæ were drowned in the unhealthy juice generated under such insanitary conditions.

In June and July of this year I obtained about a dozen caterpillars, a number which was reduced to about six, through having to pass into non-entomological hands. I have a description of them in my note-book, which runs as follows:—Ground colour, dorsally, light brown or warm ochreous, beautifully striated with thin light brown and yellow lines; under side, legs and claspers a darker shade. Head light brown, reticulated with ochreous. Second segment black, reticulated with cream colour. There is a double very thin blue-black medio-dorsal line down the entire length of the caterpillar. On each side—below this delicate double line,

which is pencilled as if by an unsteady hand—there is a space or interval of the ground colour. Then succeed four or five more lines close together, and similar to the dorsal ones. Lastly, there is a broad waved drab or light ochreous stripe all along the side and containing the jet-black spiracles. Each segment has, dorsally, four jet-black minute spots or tubercles, each of which emits a black bristle. The whole dorsal surface is sparingly clothed with minute hairs. This is, I believe, the caterpillar of the male; that of the female is slightly greenish, the markings are almost similar but exceedingly faint, the conspicuous side stripe is absent or nearly so, and there are purplish oblique dashes or suffusions on the sides of each segment. The caterpillar of what I take to be the male has a bluish instead of a purplish appearance.

I kept the larvæ, this season, in a flower-pot half filled with soil, and placed them on a warm kitchen shelf. Any juice which might run from the food (a tomato or two) was therefore absorbed, and the soil turned out to be a natural place for pupation.

The first caterpillar disappeared on June 26th, and the first two moths emerged July 27th; a third appeared on the 15th of August, while a caterpillar I had kept out of doors appeared as a perfect insect August 11th.

Of the four moths I bred, two, I believe, are females. In this sex the upper wings are reddish, with two central, but indistinct, dark brown waved transverse lines. These lines include the black orbicular dot, and the adjacent pale circular reniform. The lower wings are straw-coloured, with a central dark brown crescentic mark. Parallel with the outer margins of upper and lower wings, in both sexes, is a broad dark brown band. The antennæ, in both sexes, are simple. The thorax, which has a thin longitudinal crest, is, in the female, of the same colour as the fore wings, while the body is straw-coloured, with a median dark brown shade. In the male all the wings, thorax, and body are straw-coloured; but the fringes of the upper wings are reddish, as in the female.

My next step was to get the moths identified, and in this I had every assistance from Messrs. Watkins and Doncaster, of the Strand, London, who not only named the insects, but enabled me to acquire much useful information respecting them.

The geographical range of the moth appears to be a wide one:—South Africa, India, some of the Indo-Malayan Islands, Australia, and notably the United States of America, where it attacks, in the larva state, the cotton crop. It also devours many other plants, such as Virginia creeper, potato, &c. It seems to occur but sparingly in this country (see Newman's 'British Moths,' p. 439). Had we a dryer climate, *H. armigera* might soon become a serious imported scourge to our gardeners and agriculturists.

Chester, Sept. 8, 1892.

Mr. Tugwell (Entom. x. 283) gives an interesting life-history of *Heliothis armigera*, and states that he reared the larva on geranium. In the autumn of 1875 larvæ of this species were found in the Isle of Wight feeding on the flowers of geranium; they seemed to have been common in the particular spot where they were found, and varied considerably in colour and markings (Entom. ix. 261). Some larvæ were found at Biarritz in October, 1881, feeding on flowers of the evening primrose, but they also ate honeysuckle flowers that were given to them. Subsequently, when brought to England, they were supplied with chrysanthemums, and exhibited a marked preference for the yellow varieties (Entom. xvi. 23) —ED.

NOTES ON RHOPALOCERA FROM ITALY, &c.

BY FRANK B. NORRIS.

BUTTERFLIES did not appear abundant on the Riviera when, towards the end of March, I arrived there. The most notable were:—

Thais polyxena, Schiff., var. *cassandra*, Hb.—At mouth of river Roya in April; caterpillars on *Aristolchia* in cane-brakes in May.

Euchloë eupheno, L., var. *euphenoides*, Stgr.—Rather common, here and there, at some considerable altitude; Cima D'Ours, May 12th; and above Villefranche at end of May.

Lycena baton, Berg., and *L. melanops*, Bdv.—At several places on coast where thyme flowered freely, and in Roya valley, April and May.

Vanessa egea, Cr.—Not rare; common at Finalmarina in May.

Melitæa aurinia, Rott., var. *provincialis*, Bdv.—On Cima D'Ours, May 12th.

Melanargia syllius, Hbst.—Abundant over grassy slopes at Villefranche and Ospedaletti throughout May; less common at Ventimiglia, near Andora, and Noli.

Passing over the Col di Tenda, and seeing for the first time *Lilium pomponium* in blossom, I arrived at La Certosa di Pesio on June 1st. The following is a list of butterflies seen and captured in this district:—

Papilio podalirius, L. (*sinon*, Poda).—Common. Specimens of the second brood measured 3.45 inches in expanse; the tails, $\frac{3}{4}$ inch in length.

P. machaon, L.—Two broods; fairly common.

Parnassius apollo, L.—Abundant June, July, August, and beginning of September, from 2800 to 6000 feet.

P. mnemosyne, L.—Swarmed during June and July, up to 5000 feet.

Aporia crataegi, L.—Meadows in lower valley; June.

Pieris brassicæ, L., *rapæ*, L., *napi*, L., and var. *bryoniæ*, O.—All common.

P. callidice, E.—Common on Monte Faschia, Gias del Ortiga, and highest green Alps, in July.

- P. daplidice*, L.—In Lower valley; June.
- Euchloë belia*, F., and var. *simplonia*, Bdv.—On Monte Bruseis, &c.; June 15th and later.
- E. cardamines*, L.—Common up to first week in August.
- Leucophasia sinapis*, L.—In early June. Ab. *erysimi*, Bkh.—Was the common form found in July. Ab. *diniensis*, Bdv.—Not rare; July, at Beinette.
- Colias phicomone*, E.—Very abundant on Cima Car, Monte Bruseis, and Passo Babane, in July and August.
- C. paleno*, L.—I feel sure I saw in July two or three specimens on Monte Mongioje, but a furious mountain wind prevented my taking anything.
- C. hyale*, L., and *edusa*, F.—Abundant. Ab. *helice*, Hb.—Was of frequent occurrence.
- Gonopteryx rhamni*, L.—Abundant all summer.
- G. cleopatra*, L.—Less common; July.
- Thecla betulae*, L.—Flying over chestnut trees, near the old castle of Chiusa, and having a strong predilection for certain trees, branches, and even leaves. Their flight was bold and rapid, and if by chance two met they circled round each other, up and out of sight. A pole fixed to the net, quite 20 feet long, was necessary to take them. The males measured on an average 1.75 inch. They appeared to fly chiefly from 9 a.m. to 11 a.m., and during the great noonday heat they were very inactive. First seen July 26th; worn or over by middle of August.
- T. spini*, Schiff.—Two broods, the second of which appeared towards end of July. Females of this brood often belonged to ab. *lynceus*, Hb., and I venture to suggest that the supposed hybrid, mentioned by Mr. F. Bromilow in the August number of the 'Entomologist' (p. 193), was one of this aberration. This insect was fond of elder-flowers.
- T. w-album*, Kn.—Not uncommon on and around wych-elms in Val Pari, Val Sestrera, and Val Cavallo; they also had a great partiality for the flowers of the dwarf upright elder. First seen July 24th and up to August 6th. I noticed this insect took to the flowers if the wind blew at all strongly.
- T. quercus*, L.—Occurred, generally singly, in the Certosa neighbourhood. First seen July 25th.
- T. rubi*, L.—Common in June.
- T. illicis*, E.—Generally distributed in June and July; they appeared fond of flowers of the white *Sedum*. Var. *asculi*, O.—Not at all rare.
- Polyommatus virgaurea*, L.—Abundant July, August, and into September; everywhere up to 5000 feet. Some females showed the usual white marks of the under surface of hind wings, also on the upper surface of same.
- P. dispar*, Haw., var. *rutilus*, Wer.—I was somewhat surprised and pleased to find this beautiful insect round the great springs of Beinette on July 29th. This species must have a great struggle for existence, I imagine, as all the marsh plants are cut down in August.
- P. hippothoe*, L., var. *eurybia*, O.—Abundant up to 6000 feet on marshy spots. Some few females were typical *eurybia*; others had fulvous brown markings, and apparently belonged to var. *stieberi*, Ger. Two specimens, male and female, were marked on the under sides with elongated black streaks, instead of the usual spots, on both upper and lower wings.
- P. alciphron*, Rott.—Very common. Var. *gordius*, E.—Much scarcer.

P. dorilis, Rott.—Frequently met with in June and August. Var. *subalpina*, Spr.—Here and there, high up, in middle of July. Females of this variety very scarce.

P. phleas, L.—Common. Ab. *eleus*, F.—In August, in lower valley.

Lycæna telicanus, Hb.—Not common; around the Beinette springs, July 18th and later.

L. argiades, Pall.—I had taken several females below Chiusa, but could find no males for several days, until, after a long search, I discovered them on August 18th flying in one spot in a large dry clover field, at more than a mile distant from the place where I had previously captured the females.

L. ægon, Schiff., *argus*, L., and *orion*, Pall.—All common in July and August.

L. orbitulus, E.—On highest pastures in July; scarce.

L. astrarche, Berg.—Common.

L. eros, O.—Not common; 6000 feet and over.

L. icarus, Rott.—Abundant.

L. amandus, Hb.—Beginning of June in Val Cravina; scarce.

L. escheri, Hb.—Abundant on damp spots in mountains.

L. bellargus, Rott.—Two broods.

L. hylas, E.—Frequent but local, high up. Females late in August in Val Cravina and under Monte Bruseis.

L. corydon, Poda.—Swarming in July and August. Some males were very white above.

L. meleager, E.—Here and there in July and August.

(To be continued.)

ENTOMOLOGICAL NOTES, CAPTURES, &c.

COLIAS EDUSA AND C. HYALE IN 1892.—A large number of communications have been received during September referring to the occurrence of these species in Britain. As many of the records came to hand too late to be inserted in the list, under their proper county heading, it was deemed advisable to defer publication of the whole until November.—ED.

PLUSIA MONETA BRED.—We are pleased to inform our readers that this species has been bred, on September 5th and 13th, by Mr. Gervase F. Mathew, who found pupæ on monkshood in a garden at Frinstead in Kent. Full particulars of this interesting and important event will appear in a paper by Mr. Mathew, which will be published in the November 'Entomologist.'—ED.

TAPINOSTOLA EXTREMA IN STAFFORDSHIRE: A CORRECTION.—I have to apologise to you and your readers for having too hastily recorded the capture of *T. extrema (concolor)*, (Entom. 197). I send you the insect, and I think you will allow that its close resemblance to the figure and description in Newman, and to the coloured figure in Morris, is some excuse for the mistake. I fully acknowledge that I ought to have taken further steps to identify the insect before recording it. Since writing to you last, I sent the insect to Mr. Farn, with whom I had been in correspondence. At the first look at it he was inclined to believe it really was *extrema*, but on further examination came to the conclusion that it was a worn specimen of *Miana*

arcuosa, a conclusion with which, I think, you will agree. With regard to Mr. Barrett's remarks, which appeared in your last issue, every one must agree that local lists should be subject to extremely close scrutiny; but I cannot quite agree with the whole force of his remark as to "how improbable the statement is," *i. e.*, that the insect in question should occur in Staffordshire. New insects are constantly turning up in unexpected places, and the "mosses" that are so common in this neighbourhood are probably remains of glacially-formed lakes that have filled up by the growth of vegetation, abound in marsh plants, and have, many of them, never been drained or much interfered with by man since their formation. I suppose the locality in which, when with Mr. Daltry, I took *Deiopeia pulchella* in June, would be about the last place in the country where we would expect to find it; and yet of that capture there can be no doubt. — F. C. WOODFORD; Market Drayton, Sept. 21, 1892.

[The specimen is certainly a worn male of *Miana arcuosa*, and it may be added that this is not the first time that examples of *arcuosa*, in indifferent condition, have been confounded with *Tapinostola extrema*, Hübner. With regard to the last-named insect, there is great difference of opinion among entomologists as to its proper status. Some are inclined to think that it is distinct from Guenée's *concolor*. Others contend that neither *extrema* nor *concolor* are entitled to rank as species; these argue that Hübner's figure 412 (*extrema*) badly represents *T. bondii*, Knaggs, and that *concolor* is only a local form of *T. fulva*. A third, and perhaps largest, section admit *concolor* to be synonymous with *extrema*, but regard the latter as perfectly distinct from *T. bondii* or *T. fulva*.—ED.]

SUGAR-CANE BORERS.—The 'Kew Bulletin' for July and August contains an important paper on insects injurious to the sugar-cane crops in the West Indies, but dealing more particularly with the "Shot-borer" (*Xyleborus perforans*). The author, Mr. W. F. H. Blandford, F.E.S., Lecturer on Entomology at Cooper's Hill, quotes and comments upon the observations and opinions of previous writers on the subject, and then proceeds to state his own views and conclusions. The *Xyleborus*, together with the "Weevil Borer" (*Sphenophorus sacchari*) and the "Moth Borer" (*Chilo saccharalis*), are figured on the plate which accompanies the paper.

ARGYNNIS PAPHIA, ABERRATION.—During a week's stay in the New Forest, Mr. J. H. Carpenter did good work with *A. paphia*. Among the white-spotted forms he captured is a very remarkable female, taken July 23rd last, which he has placed in my hands for description. The primaries have each two large white blotches; both are spreading, with white centres and blending into straw-yellow; the one occupying the centre of the wing surrounds the black markings, and is tinged with pale olive-green over the basal area; the other, which is subapical, is very white and clearly defined. The secondaries exhibit curious coloration, having a very large spreading pearly green blotch, reaching from the submarginal series of spots nearly to the base, the colouring of the blotch approaching that of var. *valesina*, but considerably lighter, especially on the right wing, having the outer and central portion whitish; some of the spots forming the median band are brown instead of the usual deep black. The under surface has the colouring and markings of the variation precisely similar to the upper surface. I captured a female on the 17th July, near the same part of the Forest, with the secondaries exhibiting almost the same variation in colour, but not quite so clear and white. Another of

Mr. Carpenter's captures is that of a male, with the apex of the right primary white. The var. *valesina* was in great abundance, and generally very deep in colour. I have succeeded in obtaining a large number of eggs from *valesina*; therefore, should I succeed in rearing a good number of imagines next season, I hope to be able to record in what proportion *valesina* reproduces *valesina*.—F. W. FROHAWK; Sept. 1892.

CATOCALA NUPTA, ABERRATION.—I have pleasure in recording the capture of an exceedingly fine form of *C. nupta*, taken at rest at Mitcham, Surrey, on August 27th last, by my friend Mr. Mark Winkley. The coloration of the secondaries is remarkable, having all the usual red colour replaced by a very delicate warm brown, and a purplish glow covering the entire surface of the wings; both the marginal and median bands are broader than usual, and finely shot with purple. The primaries are also considerably deeper in colour, the ground colour being of a deep smoky grey; the dark markings are strongly pronounced; the reniform is large and black, in strong contrast to the whitish blotch bordering the inner edge. Under surface: the secondaries are coloured as above, there being no trace of any red colouring, and all the black bands of primaries and secondaries are shot with purple. It is a large female, measuring $3\frac{3}{8}$ inches in expanse, and apparently freshly emerged.—F. W. FROHAWK.

EPINEPHELE HYPERANTHUS, VARIETY.—I captured a nice example of the lanceolate var. of this species in Denny Wood, New Forest, on July 18th last, the large lanceolate markings being very prominent.—JOSEPH H. CARPENTER; Streatham, Sept. 6, 1892.

VANESSIDE IN LANCASHIRE.—*V. cardui* and *V. atalanta* have both been common in Lancashire this year.—S. RENSHAW; Ash House, Stretford, Manchester, Sept. 9, 1892.

VANESSA ANTIOPA IN CAMBRIDGESHIRE.—*V. antiopa* was seen in a garden near here a short time ago. I have only seen two *V. polychloros* this year. *V. io*, *V. cardui*, *V. atalanta*, *V. urticae*, *Polyommatus alexis*, *P. alsus* (in chalk pits), *Thanaos tages*, *Pamphila sylvanus*, &c., have been extremely abundant here.—(Miss) MADGE A. WILSON; Guilden-Morden Vicarage, Royston, Cambs, Sept. 2, 1892.

LYCÆNA CORYDON IN EPPING FOREST.—It may be interesting to note that on the 22nd inst. I captured a freshly-emerged male specimen of *Lycæna corydon* at Fair Mead, Epping Forest.—J. BERNARD ARGENT; Woodford Wells, Aug. 23, 1892.

NOTE ON PARNASSIUS APOLLO IN SWITZERLAND.—Mr. Leech states (Entom. 218) that he has never seen *P. apollo* in Switzerland at a lower elevation than 4500 feet. I saw it this last summer, and in 1890 and in 1891, in abundance in the road between Aigle and Sepey, the latter place lying at an elevation of 3700 feet. I also saw it in abundance at the entrance to the Val d'Anniviers in all the aforesaid years. This would be at a height of about 3100 feet. It is also abundant in the road leading from Sion to Evolina, at an elevation of certainly not over 4000 feet. And, lastly, though this does not exhaust the places in Switzerland where it occurs at under 4000 feet, I saw several specimens when (in 1891) I was going up to Chaumont from Neuchatel. The former place lies 3850 feet above sea-level.—R. B. POSTANS; Eastbourne, Sept. 6, 1892.

DEIOPEIA PULCHELLA IN SOUTH WALES.—On the 8th June last a specimen of a *Deiopeia pulchella* was taken on the wing here by Mr. Oliver H. Jones, of Fonmon Castle, and brought in to me alive. The red spots on the wings are very much paler than is usually the case with foreign specimens. Another specimen of this insect was taken about a mile from here some twelve years ago by Mr. S. H. Romilly, and is, I believe, now in the collection of Lord Walsingham.—W. E. R. ALLEN; Porthkerry Rectory, Barry, Cardiff, Sept. 12, 1892.

DEIOPEIA PULCHELLA NEAR SOUTHAMPTON.—A very perfect specimen of the rare crimson-speckled *Deiopeia pulchella* was captured on June 10th, by Mr. L. Rybot in a field on the right bank of the Itchen, not far from Southampton.—'Nature,' June 16, 1892.

EUCHLOE CARDAMINES IN AUGUST.—When on a visit to Mr. G. F. Wilson's experimental gardens at Wisley, Surrey, on August 20th last, he informed me that on the Thursday previous (18th) both himself and his head gardener saw a male *E. cardamines*, which flew close by them. This he said was the second specimen the gardener had seen the same week. They were undoubtedly representatives of a second brood.—F. W. FROHAWK; Sept. 1892.

SPHINX PINASTRI IN SUFFOLK.—My sons and self, during the first portion of August, captured eleven specimens of *S. pinastri* during the daytime, sitting on the Scotch firs in some woods near here. We left several more, which were damaged specimens, on the trees. From a female we got several eggs, and have a nice quantity of larvæ feeding well on Scotch fir for the last ten days.—RENDELSHAM; Woodbridge, Sept. 4.

EREBIA ÆTHIOPS AT ARNCLIFFE.—On August 20th, 1892, I found *Erebia athiops* fairly abundant in an opening in a wood at Arncliffe, Yorkshire, at a height of about 1000 feet. Most of them were in bad condition. The opening was covered with *Geranium sanguineum*. *Charaas graninis* was also fairly plentiful upon ragwort (*Senecio jacobaea*).—H. WILDE; Clay Hill House, Enfield, Sept. 15, 1892.

COSMIA PALEACEA IN SHERWOOD FOREST.—As supplementary to Mr. Ferris' note (Entom. 222), re *Cosmia paleacea* (*Euperia fulvago*), my brother and I sugared for it at all its well-known headquarters in Sherwood, near to Edwinstowe, on the evening of August 25th last, and obtained but three specimens, all in a worn condition. As Mr. Ferris took it in numbers a fortnight earlier in the same district, I think we may put down its date of appearance as first week in August.—W. D. CARR; Lincoln, Sept. 2, 1892.

HADENA SATURA IN KENT.—On the 19th August, G. Parry sent me a fine female *H. satura* alive, and on the 24th a second specimen, a male; this he sent me also alive. It is seventeen years since he took a specimen before. On putting this fine addition in my cabinet, I was struck with the large patch nearer the outer margin being like some of my *H. atriplicis* in form, but nothing at all like my *Crymodes exulis* from Inverness-shire. By the way, I have two Noctuæ among my *C. exulis*, ticketed, "Captured in Shetland, by John Reunice, 1876." Mr. Briggs, when here, said he did not know them, and had never seen any specimens like them.—J. B. HODGKINSON; Ashton-on-Ribble, Aug. 31, 1892.

FOOD-PLANT OF *CELÆNA HAWORTHII*.—Like your correspondent, Mr. Searancke (Entom. 222), I should be glad to know of some other food-plant for *Celæna haworthii* besides cotton-grass. I took a nice specimen, flying over the heather in the bright sun, on August 22nd, and another in the same spot the following day. On the 24th another was brought to me, it having flown into one of the rooms at the top of the castle at night. I am the more anxious to know the food-plant of this species, as I obtained ova from the second which I took. As far as I have observed, no cotton-grass grows about here at all.—(Rev.) J. C. MACKONCHIE; Douglas Castle, Lanark, Sept. 2, 1892.

SIREX GIGAS AT CHICHESTER.—A very fine female *Sirex gigas* was taken here on August 24th. In some years they are plentiful in this locality.—JOSEPH ANDERSON, Jun.

SIREX JUVENCUS IN MIDDLESEX.—I had a female specimen of this sawfly brought me yesterday for identification by a friend, who had captured same in Belsize Park.—JOSEPH H. CARPENTER; Streatham, Sept. 6, 1892.

THE COLEOPTERA OF NORFOLK.—Mr. J. Edwards, of Colesborne, Cheltenham, is preparing for publication a list of Norfolk Coleoptera. The ordinary sources of information having been exhausted, he appeals to those who have collected in that county for lists of their captures.

CARSIA IMBUTATA AND CIDARIA POPULATA IN LANCASHIRE.—In August last I took a good many *C. imbutata* at the place where I took *Celæna haworthii*. *Cidaria populata* was common in the same locality, amongst them being a good proportion of dark varieties.—(Rev.) J. C. MACKONCHIE; Douglas Castle, Lanark, Sept. 2, 1892.

BUTTERFLIES IN THE ALPES MARITIMES.—On an excursion to a mountain near here, called the Pepiori (8774 ft. above sea-level), on July 18th last, I captured the following species of Rhopalocera, viz.:—*Pieris callidice* (several, abundant, but *passé*); *Colias phicomone* (three males); *Melitæa parthenie* v. *varia*, Meyer-Dür (three females, common); *Erebia melampus*, Esp. (or *cassiope*?, probably the former; one), and a single female specimen of *Canonympha iphis*, Hüb.; these latter seemed to be nearly over. Near the top I secured *Erebia mnestra*, Hüb., one male and two females; also *E. tyndarus* (type); this last species is not very common here, being usually replaced by the var. *dromus*, H.-S., or by a form intermediate between the typical insect and the above-mentioned variety. I also took two males and two females of *E. gorge*, Esp., and, near the top, a very fine example of the ab. *erynis*, Esp. I had the misfortune to break my net short at the handle at this juncture, but notwithstanding persevered. The great prize, however, was undoubtedly *Erebia lappona*, Esp., which I only saw at the summit itself. It was the only species on the wing, except a solitary *Vanessa cardui*. I took three specimens (a male and two females), all worn. As far as I am aware, it is new to the entomological fauna of the district.—F. BROMILOW; St. Martin Vésubie, Alpes Maritimes, France, Aug. 5, 1892.

NOTES ON THE SEASON: WINDERMERE.—Sugaring here, during June and July, has this year proved quite a success. I have been in Windermere since June 22nd, and from that date till the end of July I sugared nearly every evening with varying success. Some nights the patches of treacle

were absolutely swarming with moths, especially after heavy rain, and on one or two evenings with some thunder. From June 22nd to the end of July I took the following:—*Thyatira batis*, two. *Cymatophora duplaris*, several. *Acronycta ligustri*, one; *A. rumicis*, common, some fine dark specimens. *Leucania lithargyria*, common; *L. comma*, several; *L. impura*, several; *L. pallens*, one. *Xylophasia rurea*, very common and variable; *X. lithoxylea*, common; *X. monoglypha*, quite a pest, some very fine black varieties. *Apamea basilinea*, common; *A. gemina*, several; *A. didyma*, common. *Miana strigilis*, common. *Grammesia trigrammica*, several (I have not found this moth so far north before). *Rusina tenebrosa*, several. *Agrotis exclamationis* and *A. corticea*, the latter being very plentiful, and individual specimens very different. *Triphæna comes*, a few; *T. pronuba*, very common as usual. *Noctua augur*, quite a pest, especially after it had been out some time, as many specimens turned up so worn as to be hardly recognisable; *N. plecta*, very common; *N. c-nigrum*, two; *N. triangulum*, four; *N. brunnea*, common; *N. festiva*, very common and variable; *N. baia*, a few. *Calymnia trapezina*, a few. *Euplexia lucipara*, common. *Aplecta prasina*, one; *A. nebulosa*, very common; *A. tincta*, three. *Hadena dentina*, a few; *H. oleracea*, common; *H. thalassina*, very common, and in good condition till the first week in July; *H. rectilinea*, one (I have not heard of it being taken here before). *Gonoptera libatrix*, one or two hibernated specimens. *Mania typica*, very common. At light, from June 22nd to the present date, September 3rd, I have taken the following:—*Bryophila perla*, a few. *Hydracia nictitans*, several. *Xylophasia rurea* and *X. monoglypha*, very common. *Neuronia popularis*, common. *Charæa graminis*, very common. *Apamea didyma*, *Miana strigilis*, and *Agrotis corticea*, all very commonly. A specimen of *A. ashworthii*, which had been attracted to light, was brought to me from Llangollen by a friend. *Triphæna comes* and *T. pronuba*, common. *Noctua glareosa*, a few; *N. augur*, *plecta*, *brunnea*, *festiva*, *dahlia*, and *xanthographa*, common. *Calymnia trapezina*, common. *Polia chi*, common. *Cleoceris viminalis*, common. *Hadena dentina*, a few. *Habrostola triplasia*, several. *Plusia chrysitis*, one; *P. iota*, several; *P. pulchrina*, five; *P. gamma* came out about a week or so past in great abundance; *P. interrogationis*, one (I found the chrysalis of another spun up amongst some heather, which emerged the following day). *Amphipyra tragopogonis*, a few. As to Geometræ, amongst others, I have taken the following:—*Uropteryx sambucata*, *Eltopia prosapiaaria*, *Selenia illunaria*, *Odontopera bidentata*, *Crocallis elinguaris*, *Boarmia repandata* and *B. rhombodaria*, *Macaria liturata*, *Halia vuvaria*, *Lomaspilis marginata*, *Larentia didymata*, several different species of *Eupithecia*, *Melanthia albicillata*, *Coremia munitata*, *designata*, *ferrugata*, and *unidentata*, *Cidaria truncata* (very variable), *C. prunata*, *testata*, *populata*, *fulvata*, *dotata*, *Anaitis plagiata*, and *Tanagra atrata*, in great abundance.—A. M. Moss; Ellerthwaite, Windermere, Sept. 3, 1892.

NOTES FROM BATH.—*Lycæna bellargus* (adonis) has turned up here this season. I have never met with it before during the few years I have collected in this neighbourhood. *Plusia gamma* has been very abundant, and I took a few *P. iota* in June. Among other things, *Geometra vernaria* and *Phibalapteryx tersata* have been fairly common. Larvæ of *Euchelia jacobæ*, *Spilosoma menthastri*, and *Phalera bucephala*, are very abundant just at present. Altogether it is the best season I have had here, although some few species have been scarce, notably *Bryophila perla*, which is

usually very abundant.—PHILIP W. RIDLEY; 2, Camden Terrace, Bath, Sept. 12, 1892.

CAPTURES IN THE NEW FOREST.—During a week (August 4th to 11th) in the New Forest, near Brockenhurst, we captured, amongst others, the following species:—*Argynnis paphia* (abundant), *A. paphia* var. *valesina* (worn specimens), *A. adippe* (abundant), *A. aglaia* (1 female), *Vanessa polychloros* (3 females), *Limenitis sibylla* (worn specimens), *Apatura iris* (1 female, worn), *Satyrus semele* (abundant), *Thecla quercus* (abundant), *T. betulae* (1 male), *Lycæna argiolus* (2 males), *L. ægon* (abundant), *Rhodocera rhamnii* (abundant), *Colias hyale* (1 good male), *Liparis monacha* (a female), *Heliothis dipsaceus*, *Anarta myrtilli*, *Thyatira batis*, *Triphæna fimbria*, and several commoner kinds; also a larva of *Acronycta albi* (now spun up).—F. L. BLATHWAYT; Walney House, Aylstone Hill, Hereford, Aug. 20, 1892.

A CURIOUS PARASITE.—In the New Forest, last July, I netted a good series of *Epinephela tithonus* for the purpose of obtaining a well-marked series, and, upon taking them off the setting-boards, I observed something peculiar in the appearance of a very large female. This proved to be a worm; it has partially come out from between the jointure of the head and thorax. In colour it is light brown, polished; head blunt, and about the thickness of a coarse horse-hair. It emerged spirally, and I should say, if straightened, would be quite an inch and a half long; but how much is still in the butterfly I cannot say. Both are well preserved; the parasite lies over the body of its host, but in drying has slightly discoloured.—J. H. FOWLER; Poulner, Ringwood, Aug. 1892.

[This is probably a *Filaria*, one of the Nematode worms. Such parasites have been detected in beetles and earwigs. In some instances the worm has been found to measure fully two inches in length.—ED.]

THE ELECTRIC LIGHT.—I made some remarks in Entom. xxiii. 222, *re* the attraction of electric light for Lepidoptera in the case of the Eddystone lighthouse at the Naval Exhibition. I visited the same lighthouse (now being exhibited in the Botanical Gardens at Old Trafford) on the 19th of August, with a view to estimating its power of attraction, and I must confess was astonished at the number of moths present. Before ascending one could see them from below, flashing in and out of the rays in hundreds, and on reaching the top the place was full of them; some, apparently dazzled by the light, frantically flying in all directions, buzzing and banging in your face, up your sleeves, down your neck, everywhere. In every sheltered niche and cranny four or five were to be seen together, and especially was this so on the staircase, which was strewn with their partially cremated remains, the result of their all too successful attempts at self-immolation. The species were more remarkable for quantity than quality, as the following list will show. The genus *Triphæna* was the best represented, *T. ianthina* and *T. interjecta* being the only species not observed. *Xylophasia polyodon*, *Leucania conigera*, *L. lithargyria*, *L. pallens*, *Mamestra brassicæ*, *Apamea gemina*, *Caradrina morpheus*, *Agrotis nigricans*, *Noctua umbrosa*, *N. xanthographa*, and *Plusia gamma*, were all very abundant. The above were all I could identify during the five minutes I was there; but I have no doubt that anybody, spending even half an hour there, could add considerably to the list. The night was fine, with a gentle S.S.W. wind blowing.—DOUGLAS STUART STEWART; North Leigh, Prestwich, Lancashire, Aug. 22, 1892.

SUGAR AT CHESTER.—The season continued to promise so well that I was tempted, on the night of July 4th, to try sugar again in this neighbourhood. To those who are acquainted with our local geography, I may say I selected a spot new in my experience, *viz.*, the field just beyond Curzon Park. The ground is about 100 ft. above the River Dee, which is close by, and the treacle was applied to the isolated trees growing about. There was a slight breeze from the west, and a cool temperature. Contrary to all my previous ill-luck in the neighbourhood, moths literally swarmed to the treacle. The following is a list, arranged according to abundance:—*Miana strigilis* var. *æthiops*, *Agrotis exclamationis*, *Noctua augur*, *Triphæna pronuba* (fine forms), *T. orbona*, *Xylophasia monoglypha* (*polyodon*), *X. hepatica*, *Mamestra furva* (?), *Caradrina taraxaci* (*blanda*), *Acronycta rumicis*, *A. psi*, *Spilosoma lubricipeda*. *M. strigilis* exhibited three forms of the variety *æthiops*. The first has a broad steel-grey band, parallel with the exterior margin of the fore wings; the second has the fore wings suffused with rust-colour; the third form is altogether black. On the night of July 11th, I sugared again at the same place. There was a cold breeze from the south-east, and the moon rose about eleven o'clock. Altogether it was not such a favourable night as the preceding one. In addition to most of the species for July 4th, the following also came to sugar:—Type forms of *M. strigilis*, *M. furuncula*, *Hadena oleracea*, *H. pisi*, *Xylophasia lithoxylea*, *Noctua plecta*, *Mania typica*, *N. festiva*, *Tortrix corylana*, *Acidalia aversata*, and *Xanthosetia zægana*. My next sugaring visit to this locality occurred July 14th. It was a still, dark night. All forms of *M. strigilis* were comparatively scarce. Additional moths were *Leucania conigera*, *N. c-nigrum*, *N. triangulum*, and *Camptogramma bilineata*.—J. ARKLE; Chester.

SUGARING AT DULVERTON, SOMERSETSHIRE.—On the 24th July, I tried sugaring in a wood near the town, but not more than half a dozen moths came to it, though the night was apparently all that could be desired; but perhaps the enormous masses of honeysuckle about had superior attractions.—PHILIP DE LA GARDE; Dulverton, Somerset.

SOCIETIES.

SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—August 28th, 1892.—Mr. Richard South, Vice-President, in the chair. Mr. Frohawk exhibited a fine bred series of *Colias edusa*, Fb., all the females being tinged with green in the hind wings; also a living larva of *Carterocephalus palamon*, Pall. Mr. Carrington said few entomologists had had the good fortune to see the larva of this species, although he had an unpublished record of it dating as far back as the fifties. Mr. Carpenter, a series of *Argynnis paphia*, L., and var. *valesina*, Esp., amongst the former species was a beautiful variety of the male, the hind wings taking the character of *valesina*; also a series of *Epinephela hyperanthes*, L., with lanceolate markings; he stated that he had taken some hundreds in the New Forest this year, and found no variation. Mr. Macmurdo, a series of *Bryophila perla*, Fb., and remarked that the lichen on the wall from which they were taken varied considerably. Mr. Adkin said the variation appeared to him to arise from an increase in the size and tone of the darker markings; the whole of the specimens

being of a form in which the ground colour was white; he thought that in some districts the ground colour of the wings assumed a yellowish or buff tint. Mr. Turner, bred specimens of *Boarmia roboraria*, Schiff., and stated that he only successfully hibernated two larvæ, although they apparently did well till the early part of March. Mr. Adkin gave his experience of twenty-five larvæ sleeved on oak in his garden last autumn, and which in due course attached themselves to the twigs for hibernation. All went well till the middle of December, when the heavy gales dislodged them; and although they gradually regained their position, taking advantage of occasional mild days to do so, they did not appear to thrive afterwards, were restless, and did not take to their food well as the spring advanced. Mr. Turner's exhibit included *Apamea ophiogramma*, Esp., and a bleached variety of *Epinephele ianira*, L., from Leigh, Essex; he said that several specimens of this form had been taken in the Leigh district within the last few years. Mr. Allbuary, a lengthy series of *Colias edusa*, Fb., some remarkably fine specimens of the var. *helice*, Hb., *Deiopeia pulchella*, L.; also two bred specimens of *Vanessa urtica*, L., in one of which all the normal red colour was entirely replaced by a beautiful bright yellow, and was very much admired. Mr. Nussey showed a box of most interesting varieties,—*Lycæna bellargus*, Rott., and *icarus*, Rott.,—with the spots on the under side developed into broad streaks; *Polyommatus phlœas*, L., in which one specimen had only the central spot on the fore wing, and another with the hind wings of a dark fulvous brown; also a banded specimen of *Argynnis euphrosyne*, L., and the pallid form of *Colias edusa* var. *helice*, Hb. Mr. Hawes related his experience of collecting at Felixstowe and Folkestone during the middle of August, and reported the continued abundance of *Colias* and *Vanessa*, whilst *Pieris rapæ* and *brassicæ* were by hundreds on thistle-heads. At Folkestone he stated it was painfully evident that *edusa* and *hyale* had been hunted down by the schoolboys, who prowl about the Warren Hills at this time of the year from early morning till late afternoon. Mr. South, on behalf of Mr. Burkill, exhibited two well-executed coloured drawings of varieties of *Smerinthus tiliæ*, L.:—No. 1 represented an insect with pale brown fore wings, marked with reddish spots of the usual shape; hind wings fuscous grey-brown, with some irregular darker markings; and body of the same colour as fore wings. No. 2 represented an insect with greenish white wings, with the usual central markings dark green, and some touches of an intermediate shade of green between the central band and the base of the wing, and on the outer third of the wing; hind wings fuscous brown, outer and abdominal margins paler, the former edged with blackish, and the body of the intermediate green of fore wings. Mr. Adkin enquired if all the species of *Pieris* were well represented this season, as he had not seen *napi*. *Pieris brassicæ*, he observed, was in abundance, *rapæ* not quite so numerous, and *napi* exceedingly scarce. Mr. Tutt remarked that his son had met with the latter species freely, quite recently; and Mr. South said he still had a living pupa which had been in that stage for three months.

September 8th.—Mr. J. Jenner Weir, Vice-President, in the chair. Mr. Mark Winkley exhibited a beautiful variety of *Catocala nupta*, L., with the normal red colour of the hind wings pale brown, shot with

purple. Mr. Frohawk, *Satyrus semele*, L., bred from ova deposited by a female captured in the New Forest; one female with under side suffused. Mr. Fenn, a long series of *Cidaria truncata*, Hufn., bred from a female taken at Chattenden, and showing three distinct forms; also a female *Colias edusa*, Fb., with a broad black band, and another with faint yellow dots on the band. Mr. Tugwell exhibited *Spilosoma lubricipeda*, Esp., var. *radiata*, with the Yorkshire parents, and stated they had only been in pupa three weeks. Mr. H. Moore brought a box of grasshoppers collected in Spain, which included the blue form of *Ædipoda fasciata*. Mr. Carpenter, a specimen of *Sirex juvenus* taken in Belsize Park. Mr. S. Stevens, a new species of *Botys*, taken at Totland Bay in June last, allied to *fuscalis*; also typical *fuscalis* and *terrealis* for comparison. Mr. J. Jenner Weir exhibited specimens of *Vanessa cardui*, L., which he had reared from larvæ collected in July last at Westgate; the chrysalids, immediately after metamorphosis, had been subjected to a temperature of 57° Fahr., which was steadily maintained both day and night, and the result was that the imagines which emerged were all much darker than usual. This was brought about by the black occupying an extended area, and the row of five spots on the hind wings being not only increased in size, but often confluent. He also exhibited a specimen of *Epinephle ianira*, L., taken at Westgate, which had a well-defined ocellus on the upper side of the hind wings. Mr. Frohawk stated that he had never noticed an ocellus in this species on the hind wings before. Mr. Manger, a Longicorn taken fifty miles at sea off Borneo, and said it would be interesting to know how they carried their antennæ in flight; also *Vanessa cardui*, L., taken at sea thirty miles from Algiers; and a *Cicada*, twenty-five miles off Pointe-de-galle, Ceylon. Mr. Frohawk showed a species of gnat taken from the neck of a collie, and remarked upon the abundance of this insect at Chattenden. Mr. West (Greenwich) stated it was the same species which was a regular pest at Plumstead. Mr. Step also related his experience with this insect at Ashtead, which had stung him on the hands during his rambles, and immediately caused a painful swelling, which took some few days to reduce. Mr. Step exhibited two species of sea-anemones (*Tealia crassicornis*, Müller, and *Actinia mesembryanthemum*, Ellis), and made remarks thereon. Mr. Weir said he had kept an unhealthy-looking specimen, when taken, for twenty-one years.—H. W. BARKER and A. SHORT, *Hon. Secs.*

BIRMINGHAM ENTOMOLOGICAL SOCIETY.—September 12th, 1892.—Mr. G. H. Kenrick, V.-P., in the chair. The following were exhibited:—By Mr. Neville Chamberlain, a boxful of Lepidoptera, which he had recently collected in Inverness-shire. Mr. P. W. Abbott, a very long series of *Colias edusa*, collected at Freshwater, Isle of Wight, including half a dozen of the var. *helice*, and one specimen intermediate between the variety and the type. Mr. W. Harrison, two local specimens of *C. edusa*, also larvæ of *Sphinx ligustri*, taken at Trench Woods. Mr. R. C. Bradley, *Zygæna trifolii* var. *confluens*, and one specimen of *Emmelesia taniata*; both from Barmouth. Mr. G. H. Kenrick, *Plusia bractea*, from Scotland; and *Euperia fulvago*, from Cannock Chase and Sherwood Forest. Mr. Colbran J. Wainwright read a paper entitled "Isolation as a Factor in the

Evolution of Species," in which he pointed out the great effect which isolation had indirectly in assisting divergence from types, and also endeavoured to prove that directly it had a decided effect in producing divergence, contrary to Wallace's opinion, although that effect might be small, and at most able to produce species, not genera.—COLBRAN J. WAINWRIGHT, *Hon. Sec.*

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY.—*Sept. 12th.*—Mr. S. J. Capper, F.L.S., F.E.S., President, in the chair. Mr. F. N. Pierce, F.E.S., read a paper entitled "Some further researches upon the genital structure of Lepidoptera." The author described the different species in the genera *Acronycta*, *Agrotis*, *Noctua*, &c., and showed that in cases where the identity or otherwise of species was disputed the genitalia might often be used as a sure means of differentiation. The paper was illustrated by the author's preparations of these parts thrown upon a screen by the aid of the oxyhydrogen micro lantern, and by photographs and specimens of each species described. The President exhibited varieties of *Angerona prunaria*. Messrs. Gregson and Robson, challenge series of *Abraxas grossulariata*, showing variation produced by food. Mr. Scowcroft, varieties of *Xanthia cerago*. Mr. William Johnson, a fine variety of *Vanessa urtica*, which had the ground colour very pale; *Bombyx rubi*, with the bands absent; and *Orygia fascelina*, with a mass of dark scales near the centre of the costa of the fore wings. Mr. Prince, varieties of *Abraxas grossulariata*; and a specimen of *Colias edusa* nearly the variety *helice*, captured at Wallasey. Mr. Harker, *C. edusa* from Crosby. Mr. Crabtree, a long series of *C. edusa*, captured at Sidmouth, S. Devon, who remarked that he had only taken one var. *helice* among fifty-six *edusa*.—F. N. PIERCE, *Hon. Sec.*

YORK AND DISTRICT FIELD NATURALISTS' SOCIETY.—*August 10th, 1892.*—Mr. J. Hawkins exhibited imagines of *Apamea unanims*, *Hadena dentina*, *Bupalus piniaria*, including a very dark specimen of the latter, and one with ground colour yellow instead of white, from York; also living larvæ of *Acronycta leporina*, *A. menyanthidis*, *Eriogaster lanestris*, *Spilosoma menthastris*, *Panolis piniperda*, and *Acidalia remutata*, from York. Mr. W. Hawkins, *Acidalia scutulata*, *Lithosia mesomella*, and fine varieties of *Abraxas grossulariata* (bred). Mr. R. Dutton, *Cymatophora duplaris*, *Cidaria silaceata* (bred), *Ellopia fasciaria*, pale form of *Abraxas ulmata* (bred) from Doncaster, a long and fine series of *Epione vespertaria* (bred), *Epinephele hyperanthus* (minus rings), and varieties of *A. grossulariata* (bred), from York. Mr. W. Hewett, *Teniocampa gothica* var., *Demas coryli*, &c., from Burnharvie; a peculiar variety of *Asthena blomeri* from Sledmere, Yorks.; *Larentia casjata* from Coxwold, Yorks.; a beautiful pink-bordered variety of *Epione vespertaria* from York; *Zygæna lonicera* var. *semilutescens*, and two specimens with the five spots confluent (bred this season), from York; also *Spilosoma fuliginosa* var. *borealis*, bred from larvæ obtained near York. Referring to the latter, Mr. Hewett remarked that grey, brown, and black larvæ of this species had all produced one form. Living larvæ of *Acronycta alni* and *Papilio machaon* from Cambridgeshire were also exhibited.

September 14th.—Mr. S. Walker exhibited *Acronycta menyanthidis* (bred) from Darlington and Strensall Common, near York (one of the imagines from the last-named locality being very dark); *Triphaena subsequa*, taken by himself at sugar near Winchester, July 6th, 1892; *Notodonta*

carmelita (bred); a series of dark *Cleoceris viminalis*, bred from larvæ collected at Rokeby on Whit-Monday, 1892; *Aplecta herbida* and *A. tinctoria*, taken at sugar near Winchester, July 6th; *Luperina cespitis*, from Strensall Common, York; a bred series (from ova) of *Ennomos tiliaria* and *E. erosaria*; a bred example of *Anticlea sinuata*; two varieties of *Lobophora lobulata* and *L. hexapterata*, the latter being a very pretty form, with the central band of a pale ashy grey; both were taken this season near York. Mr. R. Dutton, *Geometra papilionaria*, taken early in August at Askham Bogs, York. Mr. W. Hewett, *Geometra papilionaria*, from Sandburn Common, York; bred specimens of *V. c-album* from Llandago; *Tephrosia consonaria* from Reading; *Epione apiciaria*, York; *Boarmia roboraria*, New Forest; *Ennomos alniaria* (bred), Kent; *Corycia taminata*, Challenden; *Selenia illustraria* (bred), Swansea; *Hydræcia petasitis* (bred), pupæ dug at Greatham, Hartlepool; *Miana exposita*, Hartlepool; *Acronycta aceris*, Deal; *Agrotis pyrophila* (type), Aberdeen; *Aplecta tinctoria*, Keswick; *Erebia cassiope*, Barrowdale, near Keswick; *E. blandina*, Forres; *Cænonympha davus*, Greenleighton Moss, Northumberland, and Benachie. Mr. G. C. Dennis, long series of *Agrotis corticea*, *A. tritici*, *A. præcox*, and *A. vestigialis*, recently taken by himself at St. Annes-on-the-Sea, Lancashire.—W. HEWETT, *Hon. Sec.*

REVIEWS.

Elementary Text Book of Entomology. By W. F. KIRBY, F.L.S., F.E.S. 2nd ed. Revised and augmented. Pp. 281; 87 pl. London: Swan Sonnenschein & Co. 1892.

WE are glad to see a second edition of this popular Introduction to Entomology. The work has already been favourably reviewed, and we have now nothing to add, beyond noting that some errors which had crept into the first edition have been carefully eliminated. The addition of a comprehensive Index to the work greatly enhances its value to the student.

The Lepidoptera of Dorsetshire. By C. W. DALE, F.E.S. 2nd ed. 8vo, pp. 76. Dorchester: Henry Ling. 1891.

THE first edition of this County List was published in 1886, and since that time no less than 130 additional species have been observed in Dorsetshire; of this number, 47 belong to the Gelechiidæ and Nepticulidæ alone. Altogether Mr. Dale enumerates 1432 species as found in the county; it is to be noted that only eight species of the Diurni seem to be absent. This list will be exceedingly useful, not only to those entomologists who may reside in or visit Dorsetshire, but to all who are interested in local faunæ.

Butterflies of the Riviera. By FRANK BROMLOW. 8vo, pp. 115. Nice: P. Conso & Co. 1892.

A VERY useful annotated list of the Butterflies of the Maritime Alps. The times of appearance of each species and localities where found are mentioned. In most instances the earlier stages are referred to, and the life-histories of many species are given. There is an Index of Species, Varieties, and Synonyms, and a list of the larval food-plants, with their English names.

THE ENTOMOLOGIST.

VOL. XXV.]

NOVEMBER, 1892.

[No. 354.]

PLUSIA MONETA BRED IN ENGLAND.

BY GERVASE F. MATHEW, F.L.S., F.E.S., &c.

FROM August 5th to September 16th I was staying at Frinsted Rectory with all my family, and during that time had frequent opportunities of collecting in the neighbourhood. Frinsted is prettily situated upon high ground about five miles from Sittingbourne, and commands extensive views of the surrounding country. On September 3rd I received the 'Entomologist,' where I read that *Plusia moneta* had again been captured at Tunbridge Wells, which, as the crow flies, is only about twenty-two miles from Frinsted. It was taken on July 13th, and another at Alton on the 12th; and as it is a double-brooded species, I thought at this time larvæ or pupæ might be found.

There were several large clumps of monkshood in the garden, so I went out at once, and on the very first plant I found a cocoon, spun up and quite exposed, upon the under side of a leaf. It was evidently a *Plusia* cocoon, was oval in shape, quite compact, and of a pale straw-colour—not a carelessly-made, flimsy thing like that of *P. gamma*, which has usually a deal of loose silk outside the cocoon, and, moreover, is generally enclosed in bits of its food-plant. Holding the cocoon up to the light, I could plainly perceive a *Plusia* pupa within, which, when the cocoon was touched, became very lively, and I felt convinced that what I held in my hand was no other than the cocoon of *P. moneta*, and of course was immensely pleased at my good fortune.

After this I searched all the other plants in the garden, but only found one more cocoon, which was of a slightly paler colour than the first, but just as compact, and containing a lively pupa. While looking for the cocoons I noticed several larvæ of *S. lubricipeda* and *H. oleracea* feeding upon the monkshood. The 3rd of September was a Saturday, and upon going into my dressing-room, at seven o'clock on Monday morning and looking into the box containing the two cocoons, I was delighted to see

that a *P. moneta* had just emerged. Its wings were small and crumpled, but by eight it had developed into a most lovely specimen. When at rest it sits very high upon its legs, and the long recurved palpi make it look very peculiar. Upon killing and setting it I found that its legs were very brittle and came off at the least touch.

After breakfast my governess and three elder children were sent to search the monkshood growing in the various cottage gardens in the neighbourhood, while I went farther off in another direction. A week's hunting produced five more cocoons, but I am sorry to say the moths had emerged from all of them—I was evidently a week or a fortnight too late. Nearly every night, until I left Frinsted, I watched the monkshood at dusk, and kept a bright light burning in one of the windows, but did not succeed in obtaining a perfect insect, though I have no doubt some were about. The nights during the latter part of our stay at Frinsted were cold and unfavourable for mothing, and sugaring was a complete failure. A couple of days before we left I beat two very small *Plusia* larvæ from monkshood, but whether they are *moneta* or *gamma* I cannot yet say; the latter was a perfect pest at night. The second moth, a most perfect specimen, emerged on the 13th.

H.M.S. 'Tyne,' Chatham, Sept. 19, 1892.

LIFE-HISTORY OF *CARTEROCEPHALUS PALÆMON*.

By F. W. FROHAWK, F.E.S.

(Concluded from p. 228.)

On October 3rd, one hundred and one days old; length the same as on Sept. 12th, but more robust, and the ground colour had changed to a very pale primrose-yellow, and the stripes of a slightly darker hue, the white lateral line showing clearly, and spiracles brownish; the head pale buff with a faint lilac tinge, with a black patch above the mouth and brownish at the sides, the black eye-spots and central line showing as before.

About the middle of October it prepared itself for hybernation by spinning two blades of grass together at the edges, so forming a tube, in which it remained perfectly motionless during the winter months; the two blades were united along one side, the other edges not quite meeting, but drawn round its body as close as possible, leaving a part of its dorsal surface exposed. In this enveloped state it remained absolutely quiescent from the middle of October until the 12th of March. During hybernation the colour had again changed, being on February 9th, 1892, a pale pearl-grey, and having a semitransparent appearance; the dorsal lines drab and clearly pronounced.

On March 12th it slightly advanced to the end of its hybernaculum, so that its head protruded. It so remained until March 21st, when it quitted its abode, and I then obtained another portrait of it; and upon again measuring it I found it had become less in length since it commenced hibernating, it then being (March 21st) three-quarters of an inch long; and the colour had also again changed to a delicate cream or very pale primrose, inclining to a pinkish hue, and the lines were pinky drab and very clearly defined, the subdorsal lines being separated by an almost pure white stripe; the head remained unaltered in colour. Since hibernation it did not feed at all, and generally remained quiet, lying along a grass-blade, which evidently was occasioned by the low temperature during the latter part of March.

April 1st, being warm and bright, I placed the plant in the sun, which soon revived the larva, as it began moving restlessly about, and soon began to spin the tips of the grass together. On the following day I noticed it remained in the same position all day, but at times moving its head from side to side, evidently still spinning more threads. On closely examining it on April 3rd, I found it in precisely the same position, but motionless, and prepared for pupation. It had drawn together with silk six blades of grass at the ends, forming a tent-like structure, and along the surface of one of the broadest a little carpet of silk was spun, upon which it rested with its head uppermost; a silk cord also encircled its body round the fourth segment.

On April 8th, at mid-day, it pupated. I observed it just in the act of casting the larval skin, which it quickly accomplished; by raising and curving its body it became detached from the shrivelled skin. When thus free it was only suspended by the cord around its middle, and then it at once began feeling for the silk on the grass with the anal segment (the larval skin still adhering to the silk) by lowering and curving the body over the slough until it reached the silk, when immediately some of the anal hooks anchored to it. It then remained quiet for about a minute, as if resting after its exertions, and then writhed itself to and fro, with evident labour, each time gradually pushing aside the slough, and again rested, which process it repeated several times, resting for about a minute between each effort, until it finally became quite firmly attached to the silk and the slough hanging by the side of the anal segment. The process of securing itself occupied about twenty minutes. The larva remained fixed for pupation at least five days. Altogether it was two hundred and eighty-nine days in the larval state. In three hours after pupation it assumed its final form and colour, having altered but very little in colour from the last coloration of the larva.

The pupa measures five-eighths of an inch in length, is fairly

cylindrical, but tapering to the anal segment. Dorsal view: the head is pointed in front in the form of a short conical beak; the eyes are rather prominent; the thorax is swollen in the middle, the widest part, and then gradually tapers towards the last segment, which is elongated and flattened. Lateral view: the beak is slightly upturned, the thorax convexed, and the segment next the thorax is rather swollen in the middle, so forming a rather decided depression at the base of the thorax, where the silken cord passes round; the body gradually tapering to the last segment, which terminates in a long compressed curved process furnished with long hooks; the wing-cases extend down two-thirds its length, and only very little, if at all, swollen; the antennæ and legs are but feebly modelled; the tongue is well defined, it is dusky at the base, blending into black at the apex; the colour is of a very pale primrose-yellow, shading into pearly grey, and semitransparent on the head, wings, and flap; a dark medio-dorsal line commences at the base of the beak and passes down the entire length, gradually fading off in the anal extremity; it is blackest on the head and first abdominal segment, and palest on the thorax, where it is light brown; there are two rust-red subdorsal lines, which run parallel from the base of the antennæ to the last segment; another similar line, united along the inner margin of the wing, passes over two spiracles, and then runs parallel with the subdorsal lines, passing just above the remaining five spiracles, which are indicated by brownish specks; at the base of the antennæ are two short and fine blackish streaks; the antennæ and wings are faintly outlined with dusky brown. In general appearance and colouring the pupa closely resembles a piece of dead, withered grass.

On May 16th the pupa began to change colour, the wings turning greyish and the eyes a deep pinkish purple, and finally became a dull leaden grey all over; and a female emerged on the 20th of May.

There is one thing worthy of mention in the habits of the larva—that is, it has the power of casting its excrement sideways with considerable force, as if propelled by a spring, sending it a foot or more, which undoubtedly is a means to prevent fouling its domicile.

CALLIMORPHA HERA.

BY G. C. BIGNELL, F.E.S.

I THINK any brother entomologist, after reading what I have to say on the captures of *Callimorpha hera*, must of necessity admit that it has established itself in South Devon, about 120 specimens having been recorded, including those mentioned in this paper.

The first capture in South Devon was by Mr. D'Orville, on August 14th, 1871, at Alphington, near Exeter, recorded in the 'Entomologist,' vol. v. p. 414. I knew the gentleman very well, and often visited his garden in which *C. hera* was caught; it adjoined a large nursery, where imported plants in great quantities were received from the Continent; and I therefore considered at the time that the capture was an accidental importation among moss, &c., used in the packing of bulbs, remembering that the larvæ would then be very small, in the autumn or early spring, at the time of importation. A figure, with description, and record of previous captures, were published in vol. vi. pp. 33—36 and 239. Other captures are recorded, but as they do not relate to my subject I shall pass them over. Ten years after, notifications of captures are made almost annually, *viz.*:—

In vol. xiv. p. 227, Mr. Herbert states that he caught a specimen of *C. hera* on the 19th August, 1881, in the Teignmouth road, near Dawlish.

In vol. xvii. p. 233-4, Mr. Brooks records its capture in Devonshire, and says, "The exact locality I would rather not name." Subsequent information proves, without doubt, it was not far from Dawlish. This was in August, 1882, and two of the moths were obtained. The following year he caught three, and in 1884 five, at "a distance of fully three miles from where the specimens of *C. hera* were taken in the previous year."

In vol. xviii. p. 297, the same gentleman records the capture of two more (1885), and mentions, "A gentleman from London, staying at Dawlish, has succeeded in taking two others;" and at p. 317, Mr. Jäger mentions that he captured one and saw one; he "hunted the ground in company with a friend from London," but does not mention any capture made by his friend; it may be two, as mentioned by Mr. Brooks.

In vol. xix. p. 250, Mr. Jäger records seven specimens from Starcross, Dawlish, and Teignmouth. The first capture took place on the 19th August, which escaped, while trying to box it, out of his net (1886).

In vol. xx. p. 230, Mr. Kane mentions the capture of one at Exeter, 15th August, 1887; and at p. 274, Mr. Jäger favours us with a note of his captures—six, and two sent him after leaving Dawlish.

In vol. xxi. p. 258, Mr. Auld records the capture of one at Dawlish; and at p. 274, Mr. Cook, of three specimens (1888).

In 1889 we have none recorded; 1890 is also passed over without a notice.

In 1891, Major-General Carden captured seventeen in five days at Teignmouth. The same year the vicar of a small parish, within the *hera* radius, captured and had brought to him over thirty specimens, most of them in a very dilapidated condition, as many were caught by village lads and carried in their hands a

mile or more to the parson; but perhaps, after all, they would not have been served so badly as one I saw this year, which had been crammed into a small pill-box by a boy, the said box constructed only to carry six pills. This reminds me that a young gentleman, who is now a medical student, when a lad attending school made his first capture of *hera* in the Starcross district twelve or thirteen years ago; the exact date not recorded.

A few observations for 1892, after the above, may be of interest also. On the 8th August, Mr. Jäger made his first captures, namely, two specimens, and according to promise duly advised me of the same; unfortunately I could not leave home just then, but I joined him on the 12th. That day we did not make any captures. On the 13th, Mr. Jäger captured two, and I netted one and saw two others, after beating the hedges both sides of lanes, up one and down another, until we must have walked over ten miles. The following day the proceeding was repeated over new ground, and three specimens only were discovered, of which we caught one; this was very near Exeter. The next day we started again, and this time without a single capture; but we saw a lad who had one in good condition, safely resting in his killing-bottle.

The weather during the four days was very boisterous, with a strong inclination to rain, and little sun at very short intervals. The result of our labour was, therefore, so very inadequate that I returned home. Mr. Jäger remained in the locality for some days after. His total captures amounted to twelve, of which only one could be called a good cabinet specimen. The clergyman previously referred to has obtained several this year; the exact number I do not know; a few coming to light. He has also two bred from larvæ found by his gardener. A gentleman from London has also visited the locality, and "taken a small series" in the vicinity of Dawlish. By the foregoing we have records of captures of *hera* from Exeter to Teignmouth, at least thirteen miles as the crow flies, and over fifteen by rail.

We have it also recorded that two captures were made at Hazlewood, a small village on the river Avon; and I have myself reliable information of two specimens taken near Plymouth a few years since. In considering this question it should be remembered that during dull and damp weather, of which we generally get a preponderance at this time of the year, the moth is very sluggish, and seldom flies unless disturbed. This, I think, is the reason that so few have been captured. On the other hand, in bright and sunny weather *hera* flies so strongly, and uses its wings so freely, that it might be mistaken for a wasted *paphia*, as indeed I did at Exminster, and I should not have known otherwise if it had not alighted; but it was off again before I could place my net over it.

I think the above-named captures, extending over so many years, will go to prove that *C. hera* has established itself in South

Devon, and that very many more captures would have been made had we, during the past ten years, had more genial weather.

Stonehouse, Plymouth, Sept. 14, 1892.

OCNERIA DISPAR IN ENGLAND.

BY RICHARD SOUTH.

THE earliest figure of *Ocneria dispar* in any English work on Entomology is, I believe, that by Wilkes in his 'Twelve New Designs of English Butterflies,' published in 1742. The insect was again figured by Wilkes, who, by the way, called it the "Gypsy Moth," in 1773, and subsequently by Harris in the 'Aurelian's Pocket Companion,' 1775, and by Donovan somewhere about the year 1800. Stephens, in 1829 ('Illustrations of British Entomology, Haustellata,' ii. p. 56), describes the species under the name of *Hypogymna dispar*, and says of it, "not common in the neighbourhood of London; it has occasionally been taken at Coombe Wood, but in the fens of Huntingdonshire it appears to abound, and may be taken in all stages at one time, as the imago frequently appears long before all the larvæ have changed into pupæ. It is said to have been introduced into Britain by eggs imported by Mr. Collinson; but the abundance with which it occurs near Whittlesea, and the dissimilarity of the indigenous specimens (which are invariably paler, with stronger markings) to the foreign, sufficiently refutes the opinion."

Curtis, referring to this species ('British Entomology,' 1862), observes:—"At the time Donovan wrote these moths were so rare that he could not obtain British specimens to figure in his work; it is not easy therefore to conceive the delight I experienced, when a boy, on finding the locality of the Gypsy Moth. After a long walk I arrived at the extensive marshes at Horning, in Norfolk, having no other guide to the spot than the *Myrica gale*; and on finding the beds of that shrub, which grows freely there, the gaily-coloured caterpillars first caught my sight; they were in every stage of growth, some of them being as large as a swan's quill. I also soon discovered the moths, which are so totally different in colour as to make a tyro doubt their being legitimate partners. The large loose cocoons were likewise very visible, and on a diligent search I found bundles of the eggs, covered with fine down from the abdomen of the females."

Stainton ('Manual Brit. Butt. and Moths,' 1857) remarks, "This species is apparently less common here than formerly," and gives Halton in Bucks and Stowmarket as localities, but indicates that the occurrence of *O. dispar* in the latter place was not regular.

In 1870 entomologists seem to have been a little troubled about the right of *O. dispar* to be considered a British insect, referring, of course, to those larvæ or imagines which were then found at large. In the 'Entomologist' for that year the species is frequently mentioned. Mr. Tratnan, of Bristol, found a small larva feeding on a plant of azalea, which had been brought into his house; this in due course produced a "splendid male, measuring two inches across the wings, and, besides being larger, was of a much richer and darker colour than the specimens usually seen in cabinets, bred 'in and in,' by collectors, from foreign insects" (p. 172). Mr. A. Davidson states that while passing, by coach, the side of Loch Mara, a larva of *O. dispar* fell from a tree on to his coat; and he considered that that fact should satisfactorily dispose of the question whether the species was indigenous or not (p. 213). Mr. Spiller records a male specimen captured in Butter Wood, near Odiham, and remarks, "It is both larger and darker than the bred specimens usually seen in collections" (p. 183). Mr. D. T. Britton reports larvæ "not uncommon on the straggling bushes of sloe, whitethorn, and wild rose" on the Essex marshes below Tilbury (p. 393). This statement is corroborated by Mr. R. W. Bowyer, who says that he found two larvæ "feeding on a rose tree" between Tilbury and Southend (p. 452).

Since the year last mentioned, records of captures of odd examples of the larva and imago in various places have been recorded from time to time, but it is perhaps unnecessary to refer to these in detail.

That *Ocneria dispar*, like its namesake, *Polyommatus dispar*, is extinct in Britain, there is, I think, no reasonable doubt; but when it became so we have no means of definitely ascertaining. This much, however, appears certain, that somewhere about the fourth decade of the present century the species began to decrease in numbers, and that towards the end of the "fifties" it had practically ceased to exist as a wildling in this country. *O. dispar* can now only be regarded as a semi-domesticated species in England, and complete degeneration of the stock, by the process known as "in-and-in breeding," is possibly averted by the periodical introduction of ova from the Continent.

There is not the least doubt that attempts have been made to re-establish the species in various parts of the country, but all these efforts appear to have failed. Probably most, or possibly all, of the larvæ and imagines found at large during the past forty years or so may have been the direct result of sundry "turning down" experiments.

As it does not seem possible to restock the country with *O. dispar* by what may be termed artificial means (which is perhaps fortunate for fruit-growers and other non-entomological members of the community), the inference would seem to be that

man had nothing to do with the introduction of the original stock into England. We know that the species has been abundant in the fen-lands, but we do not know whether it was always common there. One would suppose that if *O. dispar* abounded in any part of England towards the close of the eighteenth century or beginning of the nineteenth, Donovan would hardly have found it necessary to figure a continental specimen. Of course, it is quite possible that, although specimens were found from time to time in various localities about the country, the headquarters of the species was not discovered until after Donovan had published his book. Probably we should not be far wrong if we adopted this view; but, on the other hand, it must be admitted that there is nothing in the published facts connected with the English history of the species which conclusively disproves the statement that the origin of *O. dispar* in this country was due to the introduction of foreign ova.

In conclusion, it may be mentioned that the recent destructive hordes of *O. dispar* in certain portions of the United States are believed to be the descendants of imported stock. It appears that in 1868 or 1869 a gentleman interested in sericulture received some *O. dispar* in one or other of its early stages, and that some of the moths, subsequently bred, escaped. In 1889 the species had attained such alarming numbers in the State of Massachusetts that the governor despatched a message to the legislature, and the result of this was that 50,000 dols. were voted in 1890 for the purpose of exterminating the "gipsy moth." A large force of men were engaged to examine the trees in the infested districts, and mark those upon which eggs had been deposited. Other men, armed with flaming torches, followed the inspectors, and burned the eggs. Later on, when the young larvæ appeared, from eggs which had escaped the keen eyes of the advance guard and the heat of the blazing brand, these were played on by some fifteen spraying machines charged with a solution of Paris-green. A little over 25,000 dols. was expended during 1890, and the balance was utilised in a renewal of the campaign in 1891; but, although the strength of the enemy seems to have been greatly reduced, he still maintains his hold upon certain districts in the State referred to above.

NOTES ON RHOPALOCERA FROM ITALY, &c.

BY FRANK B. NORRIS.

(Concluded from p. 241.)

Lycæna damon, Schiff.—Abundant, locally, on damp spots in pathways under Cima Car, and in Val Sestrera; July and throughout August. I could never succeed in finding a female.

L. eumedon, E.—Common on flowers in June and July.

L. argiolus, L.—Frequently seen all summer. A female, taken August 31st, had the broad black margin to fore wings, so excellently figured in Mr. Barrett's new work, with the addition of a border of black dots to hind wings, and a discoidal spot on upper surface of fore wings.

L. semiargus, Rott.—Common, June and July.

L. minimus, Fuessly.—Appeared in successive broods.

L. cyllarus, Rott.—Early in June; numerous.

L. arion, L.—Locally common in June and throughout July; chiefly the var. *obscura* of Professor Christ. Some specimens measured 1.75 inch in expanse of wings.

L. euphemus, Ab.—Very abundant in all the wet meadows around the Beinette springs. First seen July 13th.

Nemeobius lucina, L.—Common in Val Pesio during June.

Libythea celtis, E.—Two or three only seen of this rare insect, with its peculiar habit of settling like a dragonfly on the summit of a dead twig; July.

Apatura iris, L.—A few in lower valley in June; they looked smaller than English specimens.

A. ilia, Hb., var. *clytie*, Hb.—Frequent in roads in August. Twice I saw one dip like a swallow into a pool of water. Var. *metis*, Frr.—August 30th, below San Bartolomeo.

Limenitis camilla, F.—Not uncommon along the river throughout the summer.

L. sibylla, L.—Scarcer; July and beginning of August.

Vanessa c-album, L., *polychloros*, L., *urticæ*, L., *io*, L., *antiopa*, L., *atalanta*, L., and *cardui*, L.—All common.

Melitæa cynthia, Hb.—Abundant on all the higher green Alps of the district throughout July.

M. didyma, O.—Below Chiusa and near Beinette, July, in flowery meadows.

M. cinxia, L.—Common in June everywhere.

M. phæbe, Kn.—Very numerous throughout the entire lower valley in August.

M. aurelia, Nick.—Common on higher mountains; July. Var. *rhatia*, Frex.—On Cima Car; July 5th. Var. *britomartis*, As.—Not rare. Some specimens, at great elevations, were so small and dark as to correspond to *M. asteria*, Frr.

M. parthenie, Bkh.—Common in damp meadows; July and August.

M. dictynna, E.—Scarcer than the above.

M. athalia, Rott.—Abundant.

M. deione, Hb.—Near Beinette; July 18th.

Argynnis paphia, L.—Very common. Ab. *valesina*.—Not rare. Our old friend of the New Forest seemed particularly partial to the dwarf elder flowers. These flowers proved very attractive to a large number of insects.

A. aglaia, L.—Swarming all summer. I took a splendid variety with heavy black markings, some more than a quarter of an inch in diameter; the whole upper surface very satiny, and the under side differed much from the type.

A. adippe, L.—Abundant. Ab. *cleodoxa*, O.—Very frequently met with.

A. niobe, L.—Abundant in Val Marguareis at the end of July and through August. Abs. *eris*, Meig., and *pelopia*, Bkh.—Not rare.

A. latonia, L.—Everywhere all the summer.

A. euphrosyne, L.—Early in June.

A. selene, Schiff.—Common, locally, over damp spots in June at San Bartolomeo; and later a second brood appeared in meadows near Beinette, and in Val Pesio up to La Certosa, end of July and August.

A. pales, Schiff.—Very common on all higher Alps.

A. amathusia, E.—June and July, frequent to 4000 feet.

A. dia, L.—Two broods, the second appearing in August.

A. daphne, Schiff.—Abundant in upper valleys; often seen on flowers of upright elder.

Melanargia galatea, L.—Swarmed all the summer.

Erebia epiphron, Kn.—Common on all mountains over 5000 feet. First seen June 6th, and continued through July. Var. *cassiope*, F.—Also common. Ab. *nelamus*, Bdv.—Very scarce; July 6th.

E. melampus, E.—Not very common on Monte Mascarone, &c., in July.

E. eriphyle, Frr.—Occurred very abundantly at the head of the Val Arpi, in Val Marguareis, and under summit of Monte Costa Rossa, &c. First seen July 11th, flying over grassy slopes.

E. stygne, O.—Frequent on all mountains above 4000 feet.

E. evias, Godt.—Meadows from 2800 to 6000 feet; June and July.

E. ceto, Hb.—Very common at about 4000 feet.

E. glacialis, E., ab. *pluto*, E.—On exceedingly steep slopes, covered with rocky debris, on sides of Monte Faschia, from 7000 to 8000 feet; and at Gias del Ortiga. Females were of a slightly brownish tint, and very sheeny.

E. lappona, E.—Common at considerable elevations in July.

E. tyndarus, E.—Abundant in same localities as preceding through July and August. Males and females, nearly invariably, had apical eyes on upper surface of fore wings pupilled.

E. gorge, E.—Common during July on rocky slopes in higher valleys.

E. goante, E.—Frequent in similar positions to preceding; very abundant on the Passo Babane, and in Val Marguareis in August.

E. athiops, E.—From 2500 to 4000 feet, in August. Some were of ab. *leucotania*.

E. ligea, L.—First seen July 15th; afterwards not uncommon in bushy places, up to 3000 feet.

E. euryale, E.—Abundant generally at higher elevations; but this and the preceding species frequently overlapped. Some specimens showed no trace of white streak or spot on under side; others were of ab. *adyte*, Hb.; and, again, others were without ocelli on under side of hind wings.

Satyrus hermione, L.—Frequent during July and August in lower valley.

S. alcyone, Schiff.—In higher shady places under Monte Bruseis in July.

S. circe, F.—In July and August, among chestnut trees above Chiusa.

S. semèle, L.—Scarce in July near Chiusa.

S. statilius, O.—At and above Chiusa from August 14th.

S. actæa, E., var. *cordula*, Hb.—Very abundant at considerable elevations over grassy slopes and rocky places, also occasionally lower in Val Pesio; July and August. Females varied greatly in depth of colouring above and below.

Pararge mæra, L.—Abundant, in successive broods.

P. hiera, F.—Very local, in Vals Pesio and Arpi, in June; a second brood, by no means numerous, occurred late in August.

P. megaræ, L.—Common.

P. egeria, L.—In shady lanes; rare, and nearly all of English type, *egerides*, Stgr.

Epinephile hyperanthus, L.—Very scarce; indeed one of the rarest butterflies of the district; in densely shaded spots in lower valley.

E. janira, L.—Abundant; occasionally a bleached form turned up in August.

E. lycæon, Rott.—First seen July 30th; very abundant from 2800 to 4500 feet.

E. tithonus, L.—Common in lower valley and around the Beinette district; July 18th and later. Females occasionally showed an anal eye on hind wings' upper surface.

Cænonympha pamphilus, L.—All through summer. Var. *lyllus*, E.—Not infrequent near Beinette.

C. arcania, L.—Exceedingly common; July and well into August.

Spilothyrus alceæ, E., and *althææ*, Hb.—Both very numerous on damp spots in mountains. The tuft of hair on under surface of fore wings of the latter species was very conspicuous.

Syrichthys carthami, Hb.—Abundant throughout July, settling on damp spots in mountain paths.

S. fritillum, Hb., var. *alveus* and var. *serratulæ*, H.-S.—Common.

S. andromedæ, Wall.—Not at all rare in Val Marguareis at end of June.

S. malvæ, L.—generally distributed.

S. sao, Hb.—Frequent; settling on damp spots under Cima Car and Monte Bruseis in July and August. Other specimens, apparently belonging to var. *cirsii*, M. D., flying amongst mint in higher valleys; and probably var. *carlinæ* and *S. cacaliæ*. But these must be finally determined later on.

Nisoniades tages, L.—Several broods. One specimen of ab. *unicolor*, Fr.

Hesperia thaumas, E., *lineola*, O., *sylvanus*, E., and *comma*, L.—All common. Var. *catena*, Stgr., of last species, not rare, above 6000 feet.

Ceterocephalus palæmon, Pall.—Common, on damp spots and herbage near woods, in June.

The valley of the Pesio is about twelve miles long, and runs downwards to the north. It rises in limestone mountains of considerable height, the culminating point being Monte Marguareis, 8800 feet in altitude. The view from many summits of the Piedmont plain, backed by the alpine chain from Monte Viso to Monte Rosa, is grand in the extreme. Many lateral valleys join the main valley throughout its entire length, each with its torrent. The lower valley is very park-like, and this characteristic continues as far up as Certosa, the meadows bordering the river being shaded by fine old chestnuts, and quantities of poplars, willows, walnuts, and fruit trees, whilst the slopes are covered with chestnut forests. Higher up beech and pines take the place of the chestnuts; and there is a rich sprinkling of ash, wych-elms and limes, and a thick undergrowth of hazel and laburnums, which last make a brave show in June. The hotel of Certosa, situated eight miles up the valley at a height of 2800 feet, is a huge, but very charming, cloistered old building; it was formerly a

monastery, and was suppressed by Napoleon in 1802. Embowered amid fine timber, and with the sound of many waters ever about it, it is essentially a cool, tranquil spot to spend the summer in; the hotel is well managed and comfortable, and the charges moderate. A mile and a half below is the village of San Bartolomeo, with an excellent inn (the Donna Bianca), and at the end of the valley, where it debouches on the lowlands, is the town of Chiusa, 2000 feet above the sea. Beinette is the nearest railway station on the Cuneo-Mondovi line. The highest shade temperatures noticed were 72° Fahr. in June, 79° in July, 77° in August, and now, in September, the maximum is about 70° Fahr. At night it rarely fell below 59°. Throughout the whole summer there was never a day when one could not go out with a fair prospect of taking something, for rain fell rarely, and chiefly at night. Botanically it is especially rich, and among many good things I may mention the rare yellow variety of *Fritillaria delphinensis*, *Saxifraga pedemontana*, *Silene cordifolia*, *Aconitum anthora*, *Asplenium fissum*, and *Ranunculus laceras*; this plant was discovered by Professor Billardi, of Turin, in 1793, and, although much sought for, it remained a lost plant until 1890, when a friend of mine rediscovered it, and this summer I was fortunate enough to find it in several new localities. *Zygæne* were common in great variety, as were dragonflies; and a Genoese professor, who was collecting Coleoptera, told me that this is a wonderfully rich district, and that he had found some beetles new to science here.

During the second week in June I made an excursion to the Isonzothal, in hopes of finding *Neptis aceris*, in which quest I was unsuccessful. However, *Argynnis hecate*, E., appeared a little way up the valley; *Erebia nerine*, Frr., near Tolmein, June 12th; *Pararge hiera*, Fr., and *Cyclopides morpheus*, Pall., between Gorizia and Canale, at a point below the road where springs run into the Isonzo. *Carterocephalus palæmon*, Pall., and *Lycæna orion* were common on Monte Metajur, thirty miles up the river. It is a lovely village, with its turquoise-blue river; and the botany is very interesting, *Saxifraga petraea*, *S. tenella*, and *Lilium carniolicum*, &c., occurring in the Caporetto district.

Later in June I drove over the Col Argentera to Barcelonnette, thence to Digne by Prunieres, and back *viâ* St. André to Allos, and by the new road over the Col D'Allos to Barcelonnette, whence by road to the Val Pesio—a delightful entomological tour through lovely country. The most notable butterflies taken were:—

Papilio alexanor, E.—Rather common eight miles from Prunieres; also, here and there, between St. André and Allos; and common at Digne.

Parnassius delius, E.—A little way above Vinadio.

Euchloë eupheno, L., var. *euphenoides*, Stg.—Several specimens on July 2nd at Barcelonnette, which seems very late.

Thecla acaciæ, F.—Near Condamine, June 24th ; and at Barcelonnette, July 1st. This always seems a rare insect, and by no means numerous where it occurs.

Lycæna sebrus, Bdv.—Above Barcelonnette, July 3rd.

L. eros, O.—Close by Lake Allos, and on the Col D'Allos ; July 2nd.

L. meleager ab. *steveni*, Fr.—A pair on June 28th above Digne, on slopes of Mont Cousson.

L. admetus var. *ripperti*, Frr.—Two specimens on blossoms of lavender, near Digne.

L. damon, Schiff.—Abundant at Barcelonnette, and Allos ; but I found no females.

Melitæa cynthia, Hb.—Not rare ; high up, near Allos.

Argynnis ino, E.—Common at Godessart, above Barcelonnette, on July 3rd.

Melanargia galatea, L., var. *leucomelas*, E.—Above Digne ; June 27th.

Erebia glacialis, E., var. *alecto*, Hb., and ab. *pluto*, E.—Common on rocky slopes above Godessart, Barcelonnette, July 3rd. This insect seems to be of an inquisitive disposition, which is fortunate, for it is impossible to move at more than a snail's pace on the difficult places it haunts. My net is made of black lisse, and by standing still and allowing it to blow in the wind I found the *Erebiæ* attracted thereto, and I was thus able to take a good series, often having several round me whilst I was pinning one.

E. gorge, E., var. *erynis*, E.—With the preceding, not uncommonly.

Satyris circe, F.—Very frequent near Digne ; as was *S. hermione*, L.

Cænonympha iphis, Schiff.—Common in larch woods, above Allos, on July 1st ; and at Barcelonnette.

C. arcania var. *darwiniana*.—Frequently met with in larch woods, above Barcelonnette, on July 2nd.

C. doras, E.—Between Barcelonnette and Prunieres, common, June 25th ; also near Digne.

Spilothyrus lavateræ, E.—Eight miles from Prunieres, abundant ; also near Digne.

Syrichthus fritillum, Hb., var. *carlinæ*, Rbr.—At the lagodella Madalena.

The sun's heat at Digne, on one or two days, was really dangerous, the shade temperature being about 95° Fahr., and I was glad to leave the hot stuffy town and the barren waterless mountains for higher ground. Among plants there I noticed *Senecio doria*, *Leuzea conifera*, and quantities of *Catananche cærulea* ; also *Glaucium phœnicia*. I regret that I was too late for *Thecla roboris*, *Lycæna iolas*, and *Erebia epistygne*, but it appears this has been an unusually early year at Digne.

On returning from Gorizia I stayed one night at Turin, and as the train arrived early in the afternoon I drove over to Veneria, and in the half hour an impending thunderstorm allowed, I succeeded in taking in the wet meadows of the park several *Cænonympha œdipus*, F. ; also *Thecla ilicis*, E., var. *æsculi*, O., on flowers of the watercress. *Vanessa polychloros*, L., was common, and on the way out *Apatura ilia* var. *clytie* frequently settled on the road.

I fear I have greatly trespassed on your space and your readers' patience, but I should like to ask, in conclusion, if any of the readers of the 'Entomologist' can furnish, from personal experience, localities and time of appearance for *Neptis aceris* towards its western limits. Perhaps there is only one brood (the autumn one) in Western Europe; but to attempt collecting in such a spot as the Isonzothal, in August, would be almost impossible, in such a year as this, when the thermometer has registered in that district $110\frac{1}{2}^{\circ}$ Fahr. in the shade.

Certosa di Pesio, Sept. 5, 1892.

NOTES ON VARIOUS SPECIES OF SATURNIIDÆ, &c.,
BELONGING TO THE GENERA *PHILOSAMIA*,
BUNÆA, *ANTHERÆA*, *GYNANISA*, *ANTOMERIS*,
AND *CARTHÆA*.

By W. F. KIRBY, F.L.S., F.E.S., Assistant in Zool. Dept., British Museum, S. Kensington.

Genus *PHILOSAMIA*, Grote.

Attacus cuningii, Hutton, and *A. vesta*, Walk., are two doubtful forms belonging to this genus. They have never been described, and should be erased from our lists.

Genus *BUNÆA*, Hübn.

Bunæa irius, Fabr.

This insect is said to come from India, but it was described from Francillon's collection, and, notwithstanding the usual accuracy of Fabricius in the matter of localities, was more probably a species from Sierra Leone, obtained from Smeathman. The description appears to indicate an insect allied to *Bunæa tyrrhena*, Westw., but larger.

Genus *ANTHERÆA*, Hübn.

Antheræa paphia, Linn. (*dione*, Fabr.; *simplicia*, M. & W.)

There is little doubt that Linné in his successive works confounded three species under the name of *paphia*, viz., *dione*, Fabr., *mylitta*, Drury (or some closely-allied form), and *polyphemus*, Cram. As, however, he quotes Petiver's figure of *A. dione* (Pet. Gaz. t. 20, f. 3) as typical, in both the 10th and 12th editions of his 'Systema Naturæ,' referring to a figure of Catesby's with doubt, Petiver's species must be regarded as typical, although in the 'Museum Ulricæ' Catesby's figure, with the locality, North America, is given as typical, and is conjoined with a figure of Rumphius', which is again quoted, with the additional locality Asia, in the 12th edition of the 'Systema.'

Aurivillius, however (Vet. Akad. Hand. (2) xix. (5) p. 148), figures a species from Amboina allied to *A. frithi*, Moore, from a specimen still existing in the Swedish museum, as the type; but I do not think this should set aside the original reference to Petiver, and the locality given, especially as Linné clearly indicates that he had more than one species before him when drawing up his detailed description in the 'Museum Ulricæ.'

Antheræa simplicia, Maass. & Weym., erroneously reputed to be an Indian species, was afterwards placed by the authors themselves as a synonym of *A. dione*.

Antheræa hübneri, Kirb.

Antheræa hübneri, Kirb., Trans. Ent. Soc. Lond. 1877, p. 20.

Except in colour, this species appears to be most nearly allied to *A. menippe*, Westw.

The following species, which appear in certain lists, have never been described, and are to be expunged from our lists:—*A. mezankooria*, *A. nebulosa*, and *Loepa swalica*.

Genus GYNANISA, Walk.

Gynanisa isis, Westw.

This species, probably from West Africa, is unique in the Museum of Science and Art at Dublin. It is usually considered to be a variety of the common South African *G. maia*, Klug, but the latter insect varies very little, and I have never seen a specimen at all resembling *G. isis*. Westwood's figure of the latter species is very characteristic (one of the best figures of moths in Jardine's 'Naturalist's Library'); and I am glad to take the present opportunity of publishing a detailed description of the original specimen, which I drew up some time ago:—

Exp. al., 144 millim.

Female.—Head and antennæ brown, a white spot beneath the scape of each antenna; thorax reddish brown, a narrow white stripe in front of the prothorax, and a broader one behind; abdomen yellowish grey. Front legs very short and shaggy, brown above and whitish beneath; the base of the tibiæ and the first joint of the tarsi also white. The wings pale grey, very coarsely scaled and speckled with brownish, a brown W-shaped band half-way between the base and the eye, which is black, irregularly oval, and its outer half filled with an irregular triangular space; beyond this run two oblique stripes from the costa to the inner margin, the first reddish brown, nearly straight, just beyond the eye, and the second dark brown, festooned; beyond this there are two broader suffused stripes before the hind margin, the innermost narrowest and least distinct; the outermost darker, broader, and slightly festooned; a dark festooned line precedes the dentated hind margin. Hind wings pink towards the base, followed by a very large eye formed of a black pupil, marked with bluish white towards its lower edge, surrounded with concentric rings of yellowish, black, buff, pinkish white, rusty red, and brown, the basal portion of the brown ring paler; outside this is a rather broad buff submarginal band, and then a brown white-speckled space extending to the hind margin. Under surface of both wings whitish grey, speckled with brown towards the margins; fore wings with the eye as

above, followed by two festooned darker bands; the innermost touches the eye, and is much expanded on the inner margin, where it touches a vinous blotch extending towards the base; the outer line is narrower and more festooned, but likewise of a rusty brown; the lowest crescent is the widest; beyond this is a third broader but obsolete dusky transverse band. On the hind wings the eye is reduced to a moderate-sized oval with a black centre, a yellowish inner and a black outer ring; the second zigzag rufous line of the fore wings is continued across the hind wings, and touches the outside of the eye; beyond it is a distinct but narrow zigzag brown line, and indistinct traces of a brown band between this and the hind margin.

Gynanisa maia is a much darker insect in both sexes, and usually rather smaller. Apart from colour-differences, the two bands beyond the cell are much wider apart (which is best seen on the under surface), and the inner band of the hind wings strikes the middle of the ocellus instead of touching its outer extremity. The specimen of *G. isis* may be slightly faded, but I think not to any appreciable extent.

GENUS ANTOMERIS, *Hüb.*

Antomeris janus, Cram. (*metzli*, Sallé.)

All the specimens in the British Museum differ from the figures of *janus*, Cram., and *metzli*, Sallé, which are considered to represent varieties of the same species, by the red band of the posterior wings being more or less discontinuous on the lower part of the inner margin, instead of uniting with the submarginal red band.

GENUS CARTHÆA, *Walk.*

Carthæa saturnioides, Walk.

This curious Australian species has considerable resemblance to some Noctuæ, with which Walker originally placed it. It has since been referred to the Saturnioidæ; but its long palpi will hardly permit of its being permanently retained in that family. Mr. Hampson has suggested to me that it is allied to *eupterote*; but for my own part I prefer to await the discovery of the larva before pronouncing any decided opinion as to its real affinities.

OBSERVATIONS ON EMYDIA CRIBRUM.

BY J. H. FOWLER.

THIS favourite little insect was first discovered by the late Mr. Dale some forty years ago, near the village of Parley, in Dorsetshire; and doubtless ere now most lepidopterists have a series to grace their family of Lithosiidæ.

Newman and Kirby both state that it is found in Hampshire; the former says in Dorsetshire also. Both are right, as it haunts the borders of each county. Stainton's 'Manual' gives Blandford

and the New Forest as localities, which I think decidedly wrong; I have a fair knowledge of each, but have never seen a specimen in either. It would be interesting to know whether it still exists in either of these localities. The former does not look at all a likely place, whilst the latter in many districts is similar to the present hunting-grounds.

Hundreds of acres of heaths around St. Leonards, where most collectors found *E. cribrum*, have been entirely destroyed by fire. These great fires are very weird, but grand at night; sometimes four and more are burning at once around here, the flames shooting up thirty and forty feet high. Undoubtedly they are caused by the commoners, as afterwards for a few years there is a good growth of bright green grass; but it will be many years before the heather is sufficiently grown again for *E. cribrum* to frequent.

In future I advise collectors to work from the village of Verwood, to within two miles of Ringwood, upon the heaths each side of the road, especially all around some old barrows, which are very conspicuous. I believe there are some good spots in the direction of Christchurch.

The species has been very scarce this season. I first collected upon the 8th of June, and netted thirteen, some worn, and a few days after eleven more; but by the end of the month it was almost over. Fortunately I obtained several females, one quite fresh and very fine, which kindly deposited ninety-seven ova, and all were fertile; I was quite surprised at the number.

The ova were laid on the 20th of June, upon a twig of *Calluna vulgaris*, in a pill-box, closely, in fact exactly, similar to the manner in which *Bombyx rubi* oviposits. They were most beautiful objects; in shape round, flattened at the base, and very large; colour brilliant pearly gold, changing to a rich purple after the fourth day, but retaining the pearly gloss until, and even after, the larvæ had hatched. Upon the 7th July the larvæ began to emerge, and continued to up to the 13th. The egg-shell formed the first meal, every scrap of which was devoured. Afterwards I had no difficulty in inducing them to eat either lettuce-leaves or groundsel; the former was preferred.

When first hatched the larva is pale brownish grey, hairy, slightly tufted; head jet-black. About the twelfth day the first skin is cast, when it becomes much darker, and after the second moult almost black; but as it grows the colours become visible, pale along the back between two rows of dark hairs, lateral stripes distinctly reddish, also between rows of hairs; under side dirty grey. Looking at the larva lengthwise, the hairs are tipped with grey. The larvæ have changed a third skin, but have not altered in appearance, and are now hibernating, thus proving that *E. cribrum* is not double-brooded, as many entomologists think.

The imago, as far as I have observed, has only one distinct

variety; it is unicolorous dark grey, with the nervules upon the superior wings paler. It is rare. The type has several shades of ground colour, but the two black streaks and four rows of spots, or interrupted bands, are most constant. A series of fifty, picked from quite 200, exhibits the following variation:—

Males. — 1. Ground colour nearly white, with indistinct markings; hind wings pale in central area, darker towards hind margins. 2. Ground colour almost black; nervules white, spots banded; hind wings dark. 3. Ground colour white and silvery, markings very distinct; hind wings pale. 4. Ground colour yellowish brown, markings always ill-defined; hind wings paler in central area. 5. Ground colour smoky and brownish; very scarce. The fringes in all cases are pale grey and unspotted.

The females are seldom so strongly marked as the males; they are larger, as a rule, and frequently granulated with dark grey scales, the spots being almost absent; the hind wings very dark, and without the central area being paler; but in a few specimens there is a pale dash running from near the anal angle towards the base, similar to *Lithosia mesomella*, although much finer.

From the above jottings it will be observed that *E. cribrum* ranges from almost white to black, with the addition of a brown form.

Ringwood, September, 1892.

ON THE EARLIER STAGES OF COLIAS HYALE.

BY F. W. FROHAWK, F.E.S.

On September 5th last I had the gratification of receiving a few ova of *C. hyale*, which Mr. R. Adkin most kindly sent me, with the information that they were deposited about Aug. 29th, by a female taken at Folkestone on the day previous; he has since also presented me with the parent, which is of the pale form. The eggs duly hatched, when I at once placed the young larvæ on a growing plant of Dutch clover (*Trifolium repens*), upon which they are still feeding. I therefore hope to be fortunate in rearing them to perfection, and able to report on the full life-history, as I believe *C. hyale* has been seldom bred in this country, and, so far as I am aware, its complete life-history is not published in any British work. Both the egg and young larva greatly resemble those of *C. edusa*; the chief differences are as follows:—

Egg.—The spaces between the keels are flat in *C. hyale* and are concave in *C. edusa*, the transverse ribs numbering about forty-six in *hyale* and about thirty-six in *edusa*; the colour is paler in *hyale*, especially at the ends.

Larva.—Anal segment: first subdorsal pair of tubercles shorter and set rather wider apart than those of *edusa*; the dark colouring above is smoky and suffused in *hyale*, which in *edusa* is sharply defined, angular and black; the general ground-colour of *hyale* is greener and darker than that of *edusa*. The main difference between the two species is not apparent until after the first moult, when the larva of *hyale* is covered with short blackish hair, *edusa* in the same stage being clothed with fine whitish pubescence.

The ova are deposited singly in an erect position, with the base terminating in a bulbous patch of glutinous substance firmly adhering to the leaf. The ovum is one-twenty-fourth of an inch high; the greatest diameter is about one-third its height; in form it is elongate-ovate, attenuating at both ends, which are rounded; just below the summit it is very slightly concaved; there are from nineteen to twenty-two longitudinal keels, mostly running the entire length, but some originating at different intervals from near the summit to about one-third down; the spaces between the keels have a flattened surface, and are most delicately but irregularly ribbed transversely by about forty-six in number. The colour, when first laid, is a pearly yellowish white, which gradually deepens in colour; when three days' old the summit is transparent, white and glassy, shading into yellow for one-fifth down, where it deepens into clear rosy orange, which colour prevails over the whole of the median area, occupying three-fifths; the basal fifth is pale, similar to the crown, but not so transparent; the colouring thus remains unchanged until about thirty hours before hatching, when it gradually becomes deeper, and finally turns to a purplish leaden colour, rather opaque; the shell has a very glittering, silvery appearance, and is exceedingly delicate.

I am also indebted to Mr. F. W. Hawes for ova given me on September 22nd, which were deposited on the 20th. Thereby I have been enabled to note the change in colour from the beginning. He informs me they were precisely similar in colour, when first laid, to those of *C. edusa*.

The first two eggs of those laid on August 29th hatched on September the 8th; the remainder hatched the next day, the egg-stage occupying about ten days.

The larva makes its exit by eating a hole in the shell at the side near the crown. Soon after emergence it sometimes eats a portion of the shell. Directly after it emerges it measures one-sixteenth of an inch in length; the body appears to be perfectly cylindrical; the segments are transversely wrinkled, and the whole surface of the body is very finely granulated, each granule or wart being extremely minute and black; the ground colour is ochreous yellow; the black warts are so densely sprinkled over the surface that the larva appears of a dull olive hue; the head is

black, granular, and somewhat shining; both the head and body are beset with a number of short, club-shaped tubercles, which are particularly glassy and white; they are shortest and stoutest on the head and along the subdorsal surface of the body, excepting those on the first and last segments, where they are longest and finest, especially the last pair on the anal segment, which are hair-like; those forming the subdorsal series are very short and pyriform; the legs are whitish and semitransparent; the claspers are the same colour as the body.

When quite young it feeds on the upper cuticle of the leaf, close to the midrib, and after each meal it returns to the midrib, along which it rests in a stright position, with its head furthest from the spot where it feeds; it is very sluggish in its movements.

When a few days old it eats through the leaf, completely perforating it. At ten days old, and before moulting, it measures one-eighth of an inch long, and is of a pale ochreous tinged with green and rather shining. The first one fixed itself for moulting on the 18th September, by spinning a layer of silk along the midrib, and thereon remained until it moulted for the first time, on the 21st September.

After the first moult the colour is olive-green, with subdorsal longitudinal lines of pale whitish green, which is principally composed of a series of warts, which also run in oblique short lines along the side; there is also a whitish lateral line, and a number of tiny pale warts which are sprinkled over the body and head, all emitting rather short blackish hairs, those on the first segment being the longest and curved forwards; the head is olive-green mottled with dark olive-brown. Its first meal, after moulting, consisted of a portion of its cast skin.

On Sept. 25th, when seventeen days old, it measured, while at rest, three-sixteenths of an inch; the colour was then of a greyish or smoky-green, with a rather dark medio-dorsal stripe, and an indistinct, pale, subdorsal line, chiefly composed of pale warts, as previously mentioned; the body is smoother than when before described; the hairs are black. It feeds by generally beginning at the end of the leaflet.

The second moult took place on Oct. 3rd. Very soon after, and before feeding, it measured one-sixth of an inch; the head very pale green, and the body clover-green, the segments deeply wrinkled transversely, the whole body and head being densely studded with pale greenish white warts, each having a black centre and emitting a black bristle, giving the larva a very dark or blackish green appearance; the warts are situated very close together, and principally run in longitudinal rows, indicating pale subdorsal lines; there is a whitish green lateral stripe; the under surface appears rather darker smoky green than the upper

surface; the head gradually becomes duller, and finally assumes an ochreous or olive-green.

On the 13th October, and thirty-five days old, it measured one-fourth of an inch long; the body almost cylindrical, being slightly dilated along the lateral line, and rather attenuating to the anal extremity; the second and third segments are stoutest; the colour is of a deep clover-green; the segments are clearly defined, and have each five or six transverse wrinkles, each wrinkle bearing a number of pale shining warts with a black centre, and each emitting a moderately long black bristle; the warts are placed in longitudinal rows down the dorsal surface; there is a pale yellowish white superspiracular stripe; the spiracles are black, and situated along the lower edge of the stripe; the head is pale ochreous green, and, like the body, is studded with black centred warts, and black hairs curving forwards; the legs are dusky, and the claspers green; the anal flap has a central blackish blotch. It rests in a straight position, but upon any disturbance it elevates the anterior half of its body, and remains in a curved attitude for a few minutes, and then attains its former posture. It feeds principally by day, preferring the sunshine.

On 18th October the larvæ evidently entered into hybernation, having remained quietly resting upon a layer of silk spun down the centre of the leaflet, until placing them in a temperature of 73° in the sun on the 23rd, when, after about an hour, two became somewhat restless, and slowly moved on to the adjoining leaflets; and after moving sluggishly about, and without feeding, both returned to their respective resting-places, and took up precisely their former positions. Another larva fed a little during the mid-day sun; but all have since remained perfectly quiet, although they have been under similar conditions of temperature.

(To be continued.)

APORIA CRATÆGI: A DISCLAIMER.

I MUCH regret to find, by a letter received from my old friend, Mr. Webb, that he considers that in my note on the above insect (Entom. 233) I meant to impugn his veracity and good faith.

Not only had I no such meaning, but I do not think that, read as a whole, my note should bear such a construction; but, lest others should have been led into the same error as Mr. Webb, I take this the earliest possible opportunity of emphatically disclaiming any such meaning with regard either to himself or Mr. Carrington.

C. A. BRIGGS.

55, Lincoln's Inn Fields, Oct. 21, 1892.

COLIAS EDUSA, C. HYALE, &c., IN ENGLAND IN 1892:
ADDITIONAL RECORDS.

Bedfordshire.—*C. edusa* was very abundant in a field in the middle of the village of Clapham at the beginning and middle of August. The field was planted with peas, oats, and barley, plentifully besprinkled with thistles and various wild plants, but no clover. The first time I visited there was, I think, August 10th, when I captured twelve specimens, males, and one female. Two of the males were worn so pale that, when flying, I took them for var. *helice*. Altogether I saw captured in this field about fifty specimens, but only heard of one being a female. It was fairly plentiful in fields near the road leading from Bedford to Bromham, and from Bromham to Turvey. I took a splendid specimen of var. *helice* on the road from Barford (Great) to Blunham in the middle of August. On June 2nd of this year I took a hibernated female of *C. edusa* on some chalk hills near Harlington, and on August 12th I took one female near the same place. I have seen no more. I took one or two males near the village of Milton, and one specimen of var. *helice*.—H. W. TOMLINSON; 52, Chaucer Road, Bedford, Sept. 6, 1892.

Berkshire.—Of the occurrence of *C. edusa* in this county, I have no notes, except near the north border. In and near Bagley Wood, and at Ferry Hinksey, I took several specimens during August, and saw many others. While at Kingston Bagpuze, early in the month, I was shown a fresh specimen, which had just been taken. On Sept. 15th I saw four rather worn examples at Cumnor, and succeeded in taking one female, although I had no net.—F. W. LAMBERT; 17, Woodstock Road, Oxford.

C. edusa has been common at Reading this season. The earliest taken, to my knowledge, was a female, in my back garden, July 29th; and on the 31st I saw three, one pair *in cop.*, on the railway-bank near my house; Aug. 28th I took twenty (all males) and two *hyale*.—W. E. BUTLER; Hayling House, Oxford Road, Reading.

C. edusa was fairly plentiful during the month of August near Inkpen, in Berkshire.—JOHN C. BELL; 87, Darent Road, Stamford Hill, N.

At an estimate, from 200 to 250 *C. edusa* have been taken here, with about a score of *C. hyale*, and about as many var. *helice*; so that *edusa* may be termed fairly common; the variety and *hyale* somewhat scarce.—J. CLARKE; 26, Zinzan Street, Reading, Sept. 2, 1892.

Berks and Oxon.—I saw one *C. edusa* on Whit-Monday, June 6th. On July 29th I saw a male flying in one of the principal streets of Reading; the same day I went into the country, and took two males. Since then I have taken between fifty and sixty, and seen many others, the males being in excess of females as three to two. Of the var. *helice*, I netted two and saw another. *C. hyale* is scarce; I caught one and saw another.—J. CLARKE; Reading, Sept. 2, 1892.

Cambridgeshire.—I took thirteen specimens of *C. edusa* last month (August), and one on May 30th. Only two were females.—(Miss) MADGE A. WILSON.

Odd specimens of *C. edusa* were seen here in June. In August they were plentiful in the clover-fields just out of the town, and I have seen two or three in the middle of the town. Var. *helice* also occurred sparingly, and I know of about ten *C. hyale* taken in this district by Messrs. Jones,

English, and Flete, of this town. *C. edusa* is still flying in good condition.—W. FARREN; Fern House, Union Road, Cambridge, Sept. 19, 1892.

Cheshire.—My brother saw a specimen of *C. edusa* flying by a roadside, but, being on a tricycle, he could not secure it.—S. RENSRAW.

Whilst hunting to-day (Sept. 17th) for dragon-flies, on the heaths at Oakmere, in the Delamere Forest district, I saw a *C. edusa* coming straight towards me. It settled for three or four minutes on a blade of grass, nearly in the centre of a moss or bog, just a few yards away. I got almost within striking distance, and then it rose and continued its straight flight to the east, in which it seemed considerably helped by the western breeze. I need hardly say I got a good wetting, and when I got free of the bog, and to the top of the hill beyond which the butterfly had disappeared, the mysterious insect was nowhere to be seen. It was a brilliant and perfect specimen, evidently fresh from the chrysalis. I am not aware that *C. edusa* has been observed in the Chester district since 1877. *Vanessa atalanta* occurred plentifully to-day, not only on the heaths (on ragwort flowers), but also in the forest on the ferns and oaks. *Plusia gamma* was on the wing all day, and, I should think, all night, as it was very busy when I left, after dark. I took some fine specimens of *Hadena protea* from the oak-trunks. My dragon-fly captures were *Æschna juncea* and *Sympetrum scoticum*.—J. ARKLE; Chester, Sept. 17, 1892.

Cornwall.—On the 25th of August last, while staying at Falmouth, I had the pleasure of capturing a fine specimen of *C. edusa* near the Castle Drive. I saw many others, but, having no net, I was unable to capture more. *V. atalanta* and *V. io* were also very plentiful.—BERTRAM TALLIN; 41, King Street, Plymouth, Devon, Sept. 17, 1891.

Devonshire.—*C. edusa* is very plentiful here. I took a few isolated specimens prior to August 10th. On that day, in rather over an hour, I took fifteen, including one var. *helice*, in a small clover field of eight or nine acres. I went there the next morning for an hour, and took ten more *C. edusa*, including two of var. *helice*. Again, in the same field on the 20th, I took twenty-three, and two more of *helice*. *C. edusa* can now be taken anywhere and everywhere in this neighbourhood, and the bulk of the specimens are still fresh, as if just emerged. Other collectors round here have been equally fortunate with *C. edusa*, and I have heard of two or three more specimens of var. *helice*. *C. hyale* has not been seen, so far as I can learn. *Cynthia cardui* is fairly common here this season, but not plentiful. *Plusia gamma* a perfect pest.—E. F. STUDD; Oxtou, Exeter, Aug. 26.

Whilst staying at Lynton, in N. Devon, I succeeded in capturing twelve male specimens of *C. edusa* during the month of August.—S. RENSRAW.

During my stay at Budleigh Salterton, S. Devon, I found *C. edusa* fairly plentiful, the insect making its first appearance on July 28th. I saw three specimens of the var. *helice*, of which I succeeded in capturing two, both fresh and in capital condition.—HERBERT F. HUNT; 14, Thistlewaite Road, Clapton, N.E., Sept. 13, 1892.

Since my return from Cornwall, I have seen *C. edusa* and *V. atalanta* very common in the neighbourhood of Plymouth.—BERTRAM TALLIN; 41, King Street, Plymouth, Devon, Sept. 17, 1892.

I found *C. edusa* very plentiful at Teignmouth, S. Devon. I also caught one example of var. *helice*.—E. H. WORSEY; Woodlands, The Park, Cheltenham, Oct. 6, 1892.

C. edusa was fairly abundant in the neighbourhood of Braunton Burrows, amongst ragwort, during the last fortnight in August, in the proportion of

about one female to six males. — CHAS. BARTLETT; Branscombe, Redland Green, Bristol, October, 1892.

I hear that *C. edusa* was common at Instow, N. Devon, and my brother writes me that he has frequently seen it in his garden at Buckland Dinham, near Frome, Somerset.—GERVASE F. MATHEW, H.M.S. 'Tyne,' Chatham, Sept. 20.

Dorsetshire.—*C. edusa* has been excessively abundant at Weymouth. I saw them the first day I went out there, 27th July, a few, and on many subsequent days by hundreds. The var. *helice* occurred sparingly.—W. CLAXTON; Hartley Wintney, Winchfield, Sept. 3, 1892.

Visiting Swanage, Aug. 15th and 19th, with my friend Mr. S. Kipping, we found *C. edusa* fairly plentiful, taking between us some sixty odd specimens, seven of which were females. The only example of the var. *helice* noticed fell to my net.—F. W. LAMBERT; 17, Woodstock Road, Oxford.

I saw *C. edusa* for the first time this year on May 25th at Blandford. I noticed it in that neighbourhood from that day till the 17th of June, and again on the 25th of July and 3rd of August, during which month the butterfly appeared in much greater numbers than before.—J. H. WARD; Rectory, Gussage St. Michael, Dorset.

Essex.—On August 12th I saw one example of *C. edusa* on the rifle range at Rainham, Essex.—WALDEGRAVE; 20, Bryanston Square, W., Sept. 2, 1892.

On the 23rd of August I captured four *C. edusa*, two males and two females, and saw about forty others, on a piece of rough ground near the rifle range at High Beech, Epping Forest. On the 24th I saw another fly across the road near the 'Wake Arms.' The greater proportion of those seen appeared to be males.—R. LADDIMAN; 25, Hellesdon Road, Norwich.

C. edusa and *C. hyale* have been fairly plentiful here this year during the latter half of August, this being the first time I have seen *C. hyale* in the neighbourhood. The males of *edusa* were much in excess of the females, the average being ten males to one female. The variety *helice* was not seen.—F. KERRY; Harwich.

My brother observed *C. edusa* in plenty and one *C. hyale* at Southend.—CHARLES SPELLER; Hornsey Lane, N.

C. edusa was not uncommon at Walton-on-the-Naze in August, and a fresh female specimen of *C. hyale* was taken by Master Egbert Smith, a young friend of mine.—(Rev.) F. A. WALKER.

During the past week I caught, besides many good specimens of *C. edusa*, a fine example of the var. *helice*.—J. BERNARD ARGENT; Woodford Wells, Aug. 23, 1892.

I have taken *C. edusa* commonly here during August and September, in clover fields and on the railway banks. I have taken altogether between forty and fifty *C. edusa*, one var. *helice*, and seven *C. hyale*, which is, unfortunately, rather damaged. All over this part of Essex, and further down the line, it has occurred commonly.—E. BAXTER; The Park, Hutton, near Brentwood, Essex, Oct. 7, 1892.

Gloucestershire.—Several specimens of *C. edusa* have been taken at Stoke Gifford, in Gloucestershire.—CHAS. BARTLETT; Branscombe, Redland Green, Bristol, October, 1892.

Hampshire.—I have noticed a great number of specimens of *C. edusa* here since the beginning of August, but have not come across any *hyale* or

the var. *helice*. Though I have collected here for six years, I have not seen *C. edusa* here before. I have also noticed great quantities of *Vanessa atalanta* and *V. io*, but only a few *V. urticae*, and not a single specimen of *V. polychloros*, although this is rather a good place for them. *Cynthia cardui* I have also seen in fair numbers, including one pale variety. As for the commoner blues, coppers, &c., they have been positively swarming; but *Gonepteryx rhamni* has been conspicuous by its absence, at least I have not seen one. The other day, in a small paddock with a lot of thistles in flower, I saw a beautiful sight: it was literally alive with butterflies,—*io*, *cardui*, *alexis*, *phlaeas*, &c.,—a very happy sight for one who could admire without itching to bring out the net. And while on this point, is it not rather a pity that such large numbers should be netted directly any intermittent specimen appears commonly? I see one gentleman says he has netted eighty-seven specimens of *C. edusa*. I think he would have benefited science more had he let the rest go, when he had sufficiently stocked his collection. — CECIL LAW; Archfield, Hants. [It is probably a desire to assist entomological friends with specimens that induces one to capture long series of a species which but rarely appears in profusion in this country.—ED.]

At Bournemouth *C. edusa* has been fairly abundant, my box showing a picked dozen, among other things, for a morning's work. During ten days there I only saw three *helice*, two of which were captured.—HUGH E. HOPKINS; 153, Camden Grove North, Peckham, Sept. 3, 1892.

C. edusa was so very plentiful during the latter part of July, August, and early September in all parts of S. Hampshire, that a good series could easily be obtained, ranging from the dark orange, with the warm varying glow, to the light *helice*, which variety, however, was not in due proportion to the type. A feature of the visitation was the preponderance of males over females, the ratio being about 5·1. I captured one light male, not much larger than a fine specimen of *C. phlaeas*; and Mr. Larcom and myself managed to secure a good number of the variety. *C. hyale* appeared sparingly, but I managed to obtain a fairly good series. They occurred rather freely in a lucerne field at Westend, near Southampton, and I had the pleasure of capturing five there in less than a hour. Mr. Larcom and I each took a specimen of the white variety. — W. H. MACKETT; Science and Art School, Gosport.

One specimen of *C. edusa* seen at Southsea on Aug. 21st, and two at Hayling Island on the 23rd.—E. R. CHAMBERS.

I took three females of *C. edusa*, including one var. *helice*, in the New Forest in August last. — HENRY A. HILL; 132, Haverstock Hill, Hampstead, N.W., Oct. 5, 1892.

I saw a specimen of *C. edusa* flying over the heather at Bournemouth at the beginning of July. Soon after that several were seen at Swanage, where the species was very plentiful on Aug. 5th, but there were no *helice* to be seen. During August *C. edusa* was to be seen even in the gardens at Bournemouth, I hear. I have noticed that *Macroglossa stellatarum* and *Uropteryx sambucata* were both unusually plentiful this year, whilst I found *Argynnis adippe* far more common than usual during July in the New Forest.—(Rev.) J. C. MACKONCHIE; Douglas Castle, Lanark, Sept. 2.

Herefordshire.—From Aug. 20th to Sept. 14th we captured, near Hereford, seventy specimens of *C. edusa* (sixty-two males, eight females), besides missing several others:—August 20th, twenty-eight males, four females; 22nd, nineteen males; 25th, six males, two females; 30th, two

males; Sept. 5th, one male; 8th, four males; 14th, two males, two females.—F. L. BLATHWAYT; Hereford, Sept. 14, 1892.

C. edusa appears to have been fairly common, during August and September, in this county; a friend informed me it was first observed during the early part of July. Two brothers stated that they captured, in two days about the middle of August, about one hundred specimens, and I have heard of smaller numbers having been taken by other collectors. I do not think the species was so abundant as it was in 1877. There was then no occasion to seek for it; it was to be seen on every railway embankment, or even in the streets of a town.—J. B. PILLEY; 2, High Town, Hereford.

Hertfordshire.—*C. edusa* has been fairly common here during the month of August. A friend of mine has also collected, at Sandgate, a number of *C. edusa*, one of the var. *helice*, and one specimen of *C. hyale*. *Vanessa cardui*, *V. io*, and *V. atalanta* were common here during August, *V. atalanta* being exceedingly abundant.—R. DYMOND; Ferney House, Southgate, Herts, Sept. 14, 1892.

One example of each sex of *C. edusa* taken near Harpenden on the 8th of September, and a female on the 14th.—E. R. CHAMBERS.

Kent.—I witnessed the capture of three specimens of *C. hyale* in a field of lucerne. The insect was fairly abundant, but before to-day (with one doubtful exception) I have not seen it, though *C. edusa* is plentiful in this locality. My son, who captured them, had to give smart chase, as their flight was rapid.—M. CHAMPNEYS; Tankerton-on-Sea, Whitstable, Kent, Aug. 26, 1892.

C. edusa has been abundant in the marshes in this district during the past month, but one particular clover field, some acres in extent, has been the most highly favoured. My son and I have taken a long series, much varied both in colour and markings; also about twenty-five of the var. *helice*, including a few grand intermediate forms. One of the male *C. edusa* that we have captured is of a pale lemon colour (the under side being lemon-green), and a female is primrose coloured, quite distinct from either the type, var. *helice*, or intermediate forms. I may add that most, if not all, are in "bred" condition, and that the majority of the males have the hind wings much suffused with rosy purple. It has evidently been an "*edusa* year." Many hundreds might have been taken in this field alone. We occasionally, of course, visited other spots in the neighbourhood, but did not find the species so numerous, although there were a good many about, and an occasional *helice* was met with.—E. SABINE; The Villas, Erith, September, 1892.

While walking on Blackheath this afternoon my son saw a specimen of *C. edusa* fly leisurely by, but, not having a net at the time, he was unable to secure it. I have no previous record of the species in this immediate neighbourhood since August, 1877.—ROBT. ADKIN; Lewisham, Sept. 10.

C. edusa has been fairly common at Ashford and district. I captured some fine females, which sex was common in clover fields. I also took two examples of var. *helice*, and I succeeded in capturing eight specimens of *C. hyale* on Aug. 20th., *Vanessa cardui* and *V. atalanta* were fairly common in clover fields.—D. CHITTENDEN; Willesborough Lees, Ashford, Kent, Oct. 1, 1892.

On Sept. 3rd I saw one *C. edusa* on the sand-dunes at Deal.—A. SICH; Villa Amalinda, Burlington Lane, Chiswick, Sept. 21, 1892.

I have not seen many *C. edusa* around Bexley Heath myself, but while I was on my second visit to Sussex, a friend worked a patch of clover near

Dartford Heath, and captured over thirty specimens, including one of var. *helice*, and one *hyale*, in an afternoon. I went to the same spot about a week later, but the clover had been cut, and there was not a single *edusa* to be seen.—P. T. LATHY; Warren Road, Bexley Heath, Kent, Oct. 3, 1892.

I noticed the first *C. edusa* on July 30th, at Chatham Dockyard, and throughout August, and up to the 15th instant, it was common both at Chatham and the neighbourhood of Sittingbourne; and I even saw it on several occasions in the streets of Chatham and Brompton. A large number might have been captured, and I secured a very fine series, including six of the var. *helice*, and also a remarkable variety of the female, of the ordinary colour, but with very deep and unspotted marginal bands. The first *C. hyale* was observed in Chatham Dockyard on August 16th, and from that time, up to Sept. 15th, it was noticed sparingly both in the neighbourhood of Chatham and Frinsted, and three dozen of them were captured. Among this number there was only one female. The weather during this period was not very favourable for them, for there were a number of dull or wet days, and the nights were often very cold—so cold that I fancy many of the butterflies must have perished. As a rule, when the bright days occurred, I was employed on duty on board my ship, or else I should probably have obtained a good many more.—GERVASE F. MATHEW; H.M.S. 'Tyne,' Chatham, Sept. 20.

C. edusa was very plentiful about Tunbridge Wells this season. I also took a very fine example of the var. *helice* and one *C. hyale*.—H. W. SHEPHEARD; Walwyn, Glensyde, Bidborough, near Tunbridge Wells.

I captured two males and one female *C. edusa*, and two examples of *C. hyale*, at Broadstairs, in August.—HENRY A. HILL; Hampstead.

At Folkestone, on July 22nd, I took one freshly-emerged male of *C. edusa*, in the Warren; and on August 17th, in company with two friends, we took a large number; also a few var. *helice* and *C. hyale*.—W. E. BUTLER; Hayling House, Oxford Road, Reading.

Several males of *C. edusa*, taken in a lucerne field near Ramsgate during the last week of July and first week of August. Three females (one var. *helice*) were captured on the 11th August, and eight males on the 13th.—E. R. CHAMBERS.

Lancashire.—On Aug. 26th I saw a fine female *C. edusa* taken that day by a boy in a field near my house. I do not think *C. edusa* has been seen in this neighbourhood since 1877; a friend of mine then took two of the type and one var. *helice* about a mile from here.—B. H. CRABTREE; The Oaklands, Grange Avenue, Levenshulme, Manchester.

Upwards of sixty specimens of *C. edusa* have been taken here this year. I am also informed that a considerable number have been taken at Arnside, near here. Of those taken by myself, two in every five specimens were females, in beautiful condition. *Vanessa cardui* has been very common during the autumn.—GEO. A. BOOTH; Fern Hill, Grange-over-Sands, Oct. 6, 1892.

I have not seen *C. edusa* since the 8th of June till somewhere about the middle of August, near How Hall, Ennerdale, where I was staying during August. I missed it, but on returning home I took eleven, and one was given me (all but the latter caught between Sept. 4th and 10th). The males were in exact proportion of three to one female; one of the latter was var. *helice*, in good condition.—JOHN WEBSTER; Barony House, St. Bees, *viâ* Carnforth; Sept. 24, 1892.

Leicestershire.—Three specimens of *C. edusa* were taken near Bottesford

—two on Sept. 10th and one on Sept. 18th. I saw several others near the same places.—WM. G. THELSON; Shelton Hall, Newark, Sept. 20, 1892.

Lincolnshire.—During our drive from Mansfield to Edwinstowe a lovely *C. edusa* fluttered over the hedge, and dropped on a bright yellow frond of bracken. A cloud fortunately obscuring the sun for a few minutes allowed the net to be fixed, and the insect captured. It proved to be a freshly emerged male. Walking back to Mansfield next morning, one more *C. edusa* was taken in rather a tattered condition. *Vanessa cardui* and *V. atalanta* were fairly common. An entomological friend informs me that three specimens of *C. edusa* were taken near Lincoln last week, and two near Market Rasen, on the edge of the wolds, on Saturday.—W. D. CARR; Lincoln, Sept. 6, 1892.

Thirty or forty *C. edusa* have been taken in the neighbourhood of Market Rasen since 22nd August, including the var. *helice*.—W. LEWINGTON; Market Rasen.

Middlesex.—On the 2nd of August I noticed a specimen of *C. edusa* flying along the railway bank just outside Westbourne Park Station. On the 21st of the same month I saw a male *C. edusa* round a clump of flowering shrubs in a corner of Highbury Fields; exactly a week later (on the 28th) I observed another specimen of this butterfly settling on a flower in the same clump of bushes. Of other species, I have this season come across, in London, *Vanessa urticae* and *V. atalanta*.—HAROLD HODGE; 2, Essex Court, Temple.

On August the 22nd I saw a specimen of *C. edusa* fly across Cambridge Road, near the Cambridge Heath Railway Station.—R. LADDIMAN; 25, Hellesdon Road, Norwich.

On Saturday, Sept. 24th, while on my way to play cricket, I captured, in Victoria Park, E., a fine specimen of *C. edusa*, a female, and perfectly fresh. The insect was not twenty yards from where cricket was being played, and was easily secured.—W. E. LANE; 9, Teesdale Street, Hackney Road, E., Sept. 27, 1892.

A fine specimen of *C. edusa* var. *helice* was taken by a friend of mine in his garden on Stamford Hill on August 28th, and is now in my cabinet.—(Rev.) J. S. ST. JOHN; 42, Castlewood Road, Stamford Hill, Oct. 21, 1892.

Two specimens of *C. edusa* were taken by a friend on Hampstead Heath this autumn.—HENRY A. HILL; Hampstead.

On Sept. 8th I took a female *C. edusa* in a garden here. Lepidoptera are more than usually abundant in this neighbourhood this year, and I think the same may be said of ichneumons.—A. SICH; Chiswick.

I took one example of each sex of *C. edusa* on Northwood Common on the morning of August 20th, and I noticed two other specimens flying along the embankment of the Met. Rail. between Pinner and Harrow. On the 22nd of August I saw one flying along the railway embankment between West Hampstead and Kilburn. I captured a female specimen and saw two others in a field near Dudden Hill, Cricklewood, on August 23rd. While on Northwood Common (Sept. 15th), I noticed a specimen of *C. hyale* fly over a gate into an adjoining field at the northern end, whither I followed it; but, on starting it afresh, unfortunately missed my stroke, when it became wild, and disappeared. It seemed in very faded condition.—(Rev.) F. A. WALKER, D.D.; Dun Mallard, Cricklewood, Sept. 15.

During the latter part of August I have noticed a few *C. edusa* in a nursery ground at Clapton, but they now seem to have disappeared.—HERBERT F. HUNT; 14, Thistlewaite Road, Clapton, N.E., Sept. 13, 1892.

A long series of *C. edusa* has been taken by a working engineer between Willesden and Sudbury. A fine specimen was taken in the garden here on the morning of September 28th.—H. ROWLAND-BROWN; Oxhey Grove, Harrow-Weald.

During the months of July and August I captured many perfect specimens of *C. edusa*, but only one *C. hyale*, a female. *Vanessa (Cynthia) cardui* were plentiful in early summer, but have now disappeared; while *V. atalanta* and *V. io* are still on the wing. All these insects have been very numerous in the neighbourhood of Harrow, and to my knowledge over fifty *C. edusa* specimens, chiefly males, have been secured.—CHAS. RHOADES SMITH; Greenhill, Harrow-on-the-Hill, Sept. 14.

Norfolk.—On Aug. 17th I saw a specimen of *C. edusa*, a male, at rest on a knapweed flower (*Centaurea*) in a lane near South Walsham, but failed to capture it.—R. LADDIMAN; 25, Hellesdon Road, Norwich.

Northamptonshire.—*C. edusa* was out very early in fields near the road leading from Olney to Yardley, Hastings, on Aug. 7th.—H. W. TOMLINSON; 52, Chaucer Road, Bedford, Sept. 6, 1892.

During the ten or twelve years I have been collecting, I have only known of one specimen of *C. edusa* caught in this county before this year. Now, however, they are abundant in almost every clover field I have visited. The first I saw was on Aug. 22nd, a much worn male. On Aug. 23rd my brother caught several (only two females), all in splendid condition, except one female, which was most dilapidated. Since that time we have caught as many as we require, including one var. *helice*, and have seen many more. They are all perfect, most of them having the beautiful iridescent bloom still on them. The males seem very much more numerous than the females. Along with *edusa* an enormous number of *Vanessidæ* and *Plusia gamma* were at the clover.—EUSTACE F. WALLIS; Inglebrook, Kettering.

Notts.—Two males were taken by my brother and myself near Edwinstowe on Aug. 25th and 26th, and a good many specimens have been captured in gardens and fields in and around Nottingham.—J. W. CARR; University College, Nottingham, Oct. 3, 1892.

A male specimen of *C. edusa* was captured on August 21st at Cotham, near Newark, Notts.—WILLIAM G. NELSON; Shelton Hall, Newark, Sept. 20, 1892.

I saw a specimen of *C. edusa* here on August 28th, which is the first I have noticed since 1877, when they were fairly plentiful.—DOUGLAS H. PEARSON; Chilwell, Notts.

Oxfordshire.—During August *C. edusa* was not uncommon in the near vicinity of Oxford, and also in various parts of the county. On the 26th, Mr. O. V. Aplin, of Bloxham, near Banbury, wrote me, "*C. edusa* in numbers in clover fields just outside village; netted seven, including one female, in less than an hour on the 24th; saw a great many." I also have specimens from Bletchingdon and near Stow Wood. Between Shabington and Waterperry Woods, about eight examples were noticed by a friend of mine. Of some sixteen specimens I took, two only were females.—F. W. LAMBERT; 17, Woodstock Road, Oxford.

(To be concluded.)

NOTES ON THE SYNONYMY OF NOCTUID MOTHS.

BY ARTHUR G. BUTLER, F.L.S., F.Z.S., &c.

(Continued from p. 214.)

Catocala.

I have not the least doubt that Walker's *C. nuptula* and Grote's *C. alabamæ* are females of Cramer's *C. grynea*. Walker's *C. nuptula* is more distinct in character than Grote's *C. alabamæ*; both have the black border of the secondaries interrupted; but this character will not hold, as an example from Zeller's collection has the border only united on the margin by a hair-line.

I cannot quite see my way to clearly distinguishing between *C. cratægi*, *pretiosa*, and *mira*; I cannot find out where one leaves off and the other begins.*

I think it very doubtful whether my *C. xarippe* from Japan will hold its position as a species distinct from *C. paranymphea*: the characters upon which it was separated are certainly variable, and a long series of Japanese specimens may completely link it to *C. paranymphea*.

Catocala prægnax.

♂ *Catocala prægnax*, Walker, Lep. Het. xiv. p. 1213, n. 66 (1857).

♀ *C. obliterated*, Ménétries, Cat. Mus. Petrop. iii. p. 159, pl. xvii. fig. 3 (1863).

♀ *C. esther*, Butler, Cist. Ent. ii. p. 243, n. 8 (1877); Ill. Typ. Lep. Het. ii. p. 40, pl. xxxiii. fig. 9 (1878).

China and Japan. Type in Col. B. M.

Walker's type is a very worn male from North China. The figure, by Ménétries, is evidently taken from an equally worn female, as the most important markings are slurred over, and the brown shades brought into prominence as markings. The Japanese type belongs to the white-spotted, pale-belted variety, to which we possess a perfect gradational transition in our series of specimens.

Catocala nymphæa.

Noctua nymphæa, Esper, Eur. Schmett. p. 158, pl. 105, fig. 4 (1787).

Catocala persimilis, Warren, Proc. Zool. Soc. 1888, p. 314.

Var. *C. dotata*, Walker, Lep. Het. xiii. p. 1212, n. 65 (1857).

Europe, "New York," India. In Coll. B. M. I doubt the correctness of the locality, "New York," for this species.

* A specimen of this form in Zeller's collection is labelled as *C. polygama*, Guen., and I am not sure that it is an error; the two forms are terribly close. I thought I had discovered a difference in the post-median line of primaries, but it varies.

I have tried to distinguish *C. communis*, Grote, from *C. neogama*, Abb., even as a variety, but can discover no points of any importance; *C. snowiana*, on the other hand, is far more like *C. piatrix*, though much darker. Knowing what I do of the variability of European and Japanese forms, it would not surprise me to find that *C. subnata* and *piatrix* were both varieties of *C. neogama*. American students, however, should be the best judges of their own species. But for the admitted identity of *C. snowiana* (the most distinct form of the lot), I should not presume to suggest the possible specific identity of such a well-marked form as *C. piatrix* with *C. neogama*; at the same time, apart from the general tint of the primaries, it differs less from *C. neogama* than *C. phalanga* does from *C. palæogama* or *C. scintillans* from *C. innubens*. In the Zeller collection were two specimens labelled as *C. neogama*, one of which is certainly *C. piatrix*, as shown by the colouring of the primaries and the continued black angular band on secondaries. Grote gives *C. zoe* and *C. uxor* as varieties of *C. ilia*, and perhaps he is right in so doing; but *C. albomacula*, Edw., is much nearer to typical *C. ilia* than *C. zoe*, for it only differs in having the reniform spot wholly white. In this instance I unhesitatingly declare it to be a variety. I don't feel so sure about *C. zoe*; it differs in pattern.

Grote rightly sank *C. walshii* as *C. junctura*, but his *C. arizonæ* is nothing else; the markings are identical. *C. semirelictæ*, Grote, is, in my opinion, nothing but a badly faded example of the white-spotted form of *C. unijuga*; if the red of the secondaries were restored and the primaries darkened there would be nothing to distinguish it by; the form of the black band across the secondaries has a different appearance at first sight, owing to the drooping of these wings, but, as a matter of fact, it differs less in outline than some of our other examples of *C. unijuga*.

Apart from the unquestionably variable character of the black band across the secondaries, I see no reason why *C. pura*, *meskei*, and *beaniana* should not be all one species (I am satisfied that the two last are one); and it would not take much to persuade me that *C. hermia* was no more than a well-marked variety. The last mentioned is, in any case, nearly allied to *C. adultera*, Ménétr. (a transitional form to *C. unijuga*). From Lord Walsingham's Californian collection we obtained an example of *C. hermia*, the primaries of which are like *C. meskei*, male, or (if anything) a little less defined in marking. In some copies of Ménétries' Catalogue, *C. adultera* is uncoloured.

I have no doubt that *C. grotiana* is a form of *C. briseis*; but whether it is locally constant, or is merely a variety in which the white band across the disc is a little better marked, I am unable to say; it differs no more than other admitted varieties of species in the genus. I should not be surprised to hear that both had been proved by breeding to be forms of *C. mariana*.

C. unicuba, Walk., said to have been collected in N. India, is certainly identical with *C. nupta* of Europe, and *C. zalmunna*, Butl., from Japan, cannot be separated from a fair series of the European *C. electa*. *C. selecta*, Walk., is the form of *C. amatrrix*, without blackish patches on the primaries.

Apart from its superior size, I fail to see how *C. dilecta* is to be distinguished from *C. sponsa*; it agrees on both surfaces, and varies in the same way. *C. dula*, Brem., on the other hand, though like it on the upper surface, is totally dissimilar below. I do not feel satisfied of the distinctness of *C. angusi* and *C. residua*, Grote; and I certainly believe that *C. resecta* is no more than a slight variety of *C. desperata*. With a series of eleven examples before me, I have not been able to discover one constant character by which to distinguish them. In typical *C. resecta* the reniform spot tends to become slightly browner, and the whitish stripe across the disc a little more zigzag, than in typical *C. desperata*; but these points are variable.

POLYDERMIDÆ.

BLENINA, Walk.

Eliochroea, Walk.*Blenina chrysochlora*.

Eliochroea chrysochlora, Walker, Lep. Het. Suppl. 3, p. 934 (1865).

Amphipyra? *laportei*, Felder, Reise der Nov. Lep. iv. pl. cxi. fig. 28.

Ceram. Type in Col. B. M.

Felder and Rogenhofer's error in referring this species to *Amphipyra* is not worse than my own. I referred a *Triphæna* (*T. curtipalpis*) to *Eliochroea*, and a *Triphænopsis* (*T. opulenta*) to the same genus. It requires some little study of the neuration of the *Noctuites* to enable anyone to place the species correctly; pattern and coloration are repeated in different families, and even the length of the palpi does not guide one infallibly.

The genus *Plotheia*, hitherto referred to the family Hypogrammidæ, is scarcely distinct from *Blenina*, and most certainly stands next to it. Mr. Hampson has clearly shown that all the Ceylonese forms are variations of one species. It may be divided into fairly well-marked forms thus:—

Plotheia frontalis, Walk., = *canescens* and *basifascia*, = *guttulosa*, = *cinerascens*, Walk.

Var. *a.* *P. decrescens*, Walk., = *onusta*, = *signata*, = *subglauca*, Walk.

Var. *b.* *P. spurcata*, Walk.

Var. *c.* *P. velata*, Walk., = *imprimens*, Walk.

Var. *d.* *P. concisa*, Walk., = *lichenoides*, Felder.

Var. *e.* *P. lativitta*, Moore, = *lichenoides*, Moore (not Felder).

Var. *f.* *P. griseovirens*, Moore.

Var. *g.* *P. albivitta*, Walk.

Var. *h.* *P. albotecta*, Walk.

Var. *i.* *P. plagiata*, Walk.

Var. *j.* *P. rudivitta*, Walk.

Var. *k.* *P. lata*, Walk.

Of these forms the least constant are *P. velata* and *P. griseovirens*, which those who delight in giving names to sports and melanistic forms would, doubtless, separate into new varieties. Personally, I think too much has already been done for this one species.

Diomea orbicularis and *chloromella* (referred to *Plotheia* by Mr. Moore) cannot remain in this genus.

Pandesma sublimis, Felder, and *Agriopsis marmorifera*, Walk., must be placed under *Bamra*, Moore. An allied, but distinct, genus will include *Dandaca biformis*, Walk., *Pandesma hemodi*, Feld., *Pandesma virens*, Butl., *Dandaca eurychlora*, Walk., and *Felinia terminigera*, Walk.

(To be continued.)

MELISSOBLAPTES GULARIS, ZELLER, A NEW GRANARY PEST.

By J. H. A. JENNER, F.E.S.

In September, 1891, a friend gave me some samples of rice, termed in the trade "Polished Japan Rice," which had recently arrived in London by several steamers from Japan. The samples contained several cocoons constructed of rice-grains, loosely spun together with silk; in some instances as many as fifty or sixty grains were thus loosely attached. As I did not closely examine the contents of these cocoons, I am unable to say whether the tenants were then in the larva or pupa stage. They, however, remained quite quiescent until the beginning of June last, when two moths emerged. My friend, Mr. C. O. Waterhouse, has kindly identified them as *Melissoblaptes gularis*, Zeller,* a species scarce in collections, and "of the habits of which very little is known."

It is quite possible that this species may become a serious nuisance to granary keepers, as I am told that the ordinary method of sampling rice in London would not have exposed the mischief, which was only discovered when the bags containing the rice were turned inside out, the cocoons adhering in most instances to the inside of the bag. A few bags laid by unexamined would, therefore, be not unlikely to lead to the permanent establishment of the insect in this country.

4, East Street, Lewes.

* Hor. Ent. Ross. xiii. p. 74, pl. i. fig. 26, pl. ii. fig. 27 (1877).—Ed.

ENTOMOLOGICAL NOTES, CAPTURES, &c.

VANESSIDÆ IN SOUTH WALES.—*Io, atalanta, urticae*, and *cardui* have simply been swarming, and many of them have been of large size. *Grapta c-album* has turned up in the neighbourhood, Mr. Howe having caught one and seen several about a week since. On July 24th I saw a specimen of this species at Abergavenny.—G. A. BIRKENHEAD; Penarth.

ARCTIA FULIGINOSA, SECOND BROOD.—I am now having the pleasure of witnessing the emergence of the second generation of this species from the female I took on Barry Island on May 14th. The first imagines I had from the ova laid by this female began to emerge on July 16th. On the 22nd a couple paired, and the female began laying ova on the 24th, which hatched on the 31st. The larvæ fed up well on dock leaves, and commenced spinning about August 28th, the first imagine emerging September 18th, another on the 23rd, and another to-day. At the present time I have some fourteen or sixteen pupæ, and many larvæ ready for spinning; others much smaller. I must say I have kept them indoors upstairs, and probably this may have been the reason of the second batch of imagines, which have thus made three broods in the year.—G. A. BIRKENHEAD; Downs View, Penarth, Sept. 24, 1892.

EARLY APPEARANCE OF HYBERNIA DEFOLIARIA.—On September 26th I took a specimen of the above off a lamp. This is the earliest I have ever seen it. The earliest record from my note-book is October 8th.—W. G. BUTLER; Hayling House, Oxford Road, Reading.

ABUNDANCE OF THE LARVÆ OF PIERIS BRASSICÆ.—The larvæ of this butterfly are simply swarming here. I never saw anything like it before. In some gardens whole rows of broccoli have had their leaves reduced to shreds, nothing but the ribs remaining; and cabbages, savoys, and brussels-sprouts have also been badly eaten. Borecole seems to have escaped. In flower gardens various species of *tropæolum* have suffered greatly. About two hundred yards from my house there are three or four whitewashed houses standing in a garden, and the walls of the houses present a sight which I shall not easily forget, for they are so thickly studded with larvæ, pupæ, and yellow masses of *ichneumon* cocoons (*Apanteles glomeratus*, L.) that I do not believe it would be possible to find a clear space two inches square anywhere upon them. Have these larvæ been as abundant elsewhere?—GERVASE F. MATHEW; Dovercourt, Oct. 10, 1892.

LARVÆ OF SATURNIA PAVONIA (CARPINI) ON BIRCH.—I have now about twenty cocoons of *Saturnia carpini*, of which the larvæ were reared entirely on birch (*Betula alba*). I found a nest of them, very young, on a small birch tree on 9th June, some of which I took and sleeved, and left nearly full-fed when I went for my holiday on July 25th. On my return early in September they had all spun up on the muslin or among the leaves. I cannot find any mention of birch as a food-plant of *carpini* in the books.—W. CLAXTON; Hartley Wintney, Winchfield, Sept. 17, 1892.

ERRATIC APPEARANCE OF CERURA VINULA.—Seven larvæ taken on poplar in August of 1888 all formed cocoons on same piece of wood, and being subject to the same atmospherical conditions have since emerged:—one in June, 1889; one in June, 1890; one in June, 1891; one in May,

1892. The remaining three are still in the chrysalis state.—M. FITZGBBON; Kilrock House, Howth, Co. Dublin, Sept. 25, 1892.

EARLY PUPATION OF *SMERINTHUS TILIÆ*.—On May 27th I got eggs from *Smerinthus tiliæ*, which hatched out in a week; and the first full-fed larva went down, in fifty-three days from the laying of the eggs, on July 18th. The rest followed at intervals for about three weeks longer.—W. CLAXTON; Hartley Wintney, Winchfield, Sept. 17, 1892.

LARVA OF *POLYOMMATUS ALCIPHRON* VAR. *GORDIUS*, *Stgr.*—I found a larva of this species, full-fed, on *Rumex acetosa* (sheep-sorrel dock), in the crevice of a wall here. It measures exactly seven lines in length. In comparing my example with that described and figured in Dr. Hofmann's recent work on European caterpillars, I find it does not appear to differ in any respect from that of the type *Alciphron* figured, either in coloration or markings. In this connection it is interesting to note that the var. *gordius* entirely replaces the typical form throughout the district. Is this not rather a late period of the season at which to find the species? It is generally stated to occur in April and June.—F. BROMILOW; St. Martin Vésulie, Alpes-Maritimes, S. France, Oct. 2, 1892.

VARIETIES OF BUTTERFLIES.—On August 4th I took a beautiful variety of *Polyommatus alexis* at Botley, similar to one figured in Newman. A pretty variety of *Chrysophanus phlæas*, having on each of its front wings a white silvery blotch, was captured by me at Fort Rowner, Gosport, on August 16th.—W. H. MACKETT; Science and Art School, Gosport.

ABUNDANCE OF *EREBIA BLANDINA*.—While staying in Upper Wharfedale, Yorkshire, this year, I took *Erebia blandina* in great numbers. On August 16th I took eight specimens, in an open patch of ground about thirty yards square, in Grass-woods near Grassington. It was a dull close day, and raining nearly all the time I was in the wood; but it was not actually raining at the time I took the specimens. On the 18th, being a splendid day, I went to the same place, and found a fresh lot had come out, the majority being perfect specimens. There were literally hundreds; sometimes three on a flower. I took one smaller than the rest. About a fortnight later I saw *Colias edusa*, on the road between Wheldrake and York.—C. E. LAMB; Lindley Lodge, Nuneaton.

DEIOPEIA PULCHELLA IN THE HASTINGS DISTRICT.—I am glad to be able to add two more instances of the occurrence of this moth to those noticed by your correspondent Mr. W. W. Esam (Entom. 220). One specimen was taken at Battle by Miss D. M. Raper; and another was observed at Guestling in the last week of August.—E. N. BLOOMFIELD; Guestling Rectory, Sept. 19, 1892.

DEIOPEIA PULCHELLA AT FOLKESTONE.—I have a fine female specimen of *D. pulchella*, which was taken here on August 17th. It measures nearly two inches across the wings. It is the largest specimen I have ever seen.—W. J. AUSTEN; Radnor Street, Folkestone.

LARVA OF *MACROGLOSSA STELLATARUM*.—My brother and I took over a dozen larvæ of *Macroglossa stellatarum* at Westgate last July. One of these, of the dark green form, had the horn at the tail curved downwards, like that of the larva of *Sphinx ligustri*. The imago produced was rather dark, but otherwise normal.—ALFRED SICH; Chiswick.

CHEROCAMPA CELERIO IN DORSETSHIRE.—I have this morning taken a specimen of *Cherocampa celerio* at rest inside my bedroom window.—O. W. BENTHALL; Osborne Rectory, Sherborne, Dorset, Oct. 1, 1892.

CHEROCAMPA CELERIO IN KENT.—A fine specimen of *C. celerio* was taken in a shop in this town on the evening of October 21st, and is now in my possession. Last autumn, whilst watching flowers of *N. affinis*, I saw a small dark Sphinx, which I took to be *celerio*, hovering over the flowers. It returned twice, but, from the celerity of its movements, I was unable to catch it.—C. VIGGERS; 36, Hardinge Road, Ashford, Kent, Oct. 25, 1892.

HESPERIA LINEOLA.—I was too late for the larva of this species this season, as I did not return from Hong Kong until the 6th July, and then spent about three weeks in North Devon and Somerset, and did not get to Dovercourt until the 23rd of the month. The next day was mostly dull, but I went out and found seven fine *lineola* sitting on grass, and one worn *linea*. The 25th was very dull and cold; but the 26th was bright, with a strong easterly breeze, and upon reaching the locality I found *lineola* in fair numbers, and soon boxed about a hundred of them. However, I was quite ten days too late, for many of the males were much worn, and only about one in three worth taking.—GERVASE F. MATHEW; H.M.S. 'Tyne,' Chatham, Sept. 19, 1892.

SPHINX CONVULVULI IN 1892.—Records have been received as follows:—

Devon.—A specimen of *Sphinx convolvuli* was brought to me by Mr. R. Gibbons, who took it on a paling adjoining the Exmouth Golf Links on September 21st.—JOHN M. CRIPPS; Belle Vue, Exmouth, Devon.

Hampshire.—I beg to record a fine female specimen of the above, found in a shop here on September 6th, which was given to Mr. Claxton, who has been staying here for a few days. It is almost a perfect specimen, being a little rubbed at the tips of the wings. I have never heard of the species occurring in the New Forest before, and have not seen any others this year, though I have searched for it several times at Christchurch.—J. M. ADYE; Brockenhurst, Sept. 19, 1892.

Kent.—On September 21st Mr. Andrews, the Bexley Heath naturalist, took a slightly worn female *Sphinx convolvuli*, crawling on the asphalt in front of his shop.—P. J. LATHY; Warren Road, Bexley Heath, Kent, Oct. 5, 1892.

I captured a fair specimen of *Sphinx convolvuli* on August 26th at Seabrook.—D. CHITTENDEN; Willesborough Lees, Ashford, Kent, Oct. 1.

Middlesex.—On the evening of Sept. 6th I caught a splendid specimen of *Sphinx convolvuli* (female) on the wing at the foot of Grove Hill, Harrow.—C. RHOADES SMITH; Greenhill, Harrow-on-the-Hill, Sept. 14.

Suffolk.—This morning a lady friend brought me a fine male specimen of *Sphinx convolvuli*, which was found on a newsagent's shop window almost in the centre of the town. It is two inches and a half across the wings from tip to tip.—GEO. CLOUT; St. Margarets, Ipswich, Suffolk.

EMMELESIA ALBULATA DOUBLE-BROODED.—A specimen of *E. albulata*, in very good condition, has just flown to the window of my sitting-room, whence it was quickly transferred to a cyanide-bottle. Newman and Stainton both give it as being single-brooded, and such I have always hitherto found it to be. These occasional second broods are very interesting, but to me quite unaccountable in a season like this; for although it

has been an "*edusa* year," yet there has been a remarkable absence of warmth and sunshine, in this part of England at any rate, ever since the middle of June.—(Rev.) G. H. RAYNOR; Panton Rectory, Wragby, Sept. 17, 1892.

ACRONYCTA ALNI NEAR TUNBRIDGE WELLS.—I found a larva of this species this season in the Tunbridge Wells district. It is now safely in pupa.—H. W. SHEPHEARD WALWYN; Glensyde, Bedborough, near Tunbridge Wells.

EUGONIA (ENNOMOS) AUTUMNARIA (ALNIARIA) AT CHICHESTER.—Two specimens of the large thorn, *Eugonia (Ennomos) autumnaria*, were taken by Mr. Patterson, of the Theological College, at a lamp here, on September 17th; and another by myself on September 20th. This insect is a female, and although not actually on the lamp, it seems to have been attracted by it, as I found it in the porch of the neighbouring villa to my own, in which a very brilliant lamp is suspended. I always had the idea that males only were attracted by light.—JOSEPH ANDERSON, Jun.; Chichester.

XANTHIC VARIETY OF ARCTIA CAIA (CAJA).—I have had the pleasure of adding to my collection a male of this moth, bred this season, in which the usual red colour of the lower wings is replaced by a bright and clear yellow. The body is of the same colour, and the ring also on the thorax.—JOSEPH ANDERSON, Jun.; Chichester.

PLUSIA MONETA IN SURREY.—I took two specimens of this species in our garden, at sugar, on June 11th.—ALEX. DISTANT; Purley, Surrey.

LYCENA (POLYOMMATUS) ARION IN THE FOREST OF DEAN.—Whilst riding through the Forest of Dean on my bicycle, when returning from Brecon, I saw several *Polyommatus arion*, but as I had no net with me I was unable to capture any of them.—E. GORDON C. BROOKE; 6, Queen's Villas, Queen's Road, Cheltenham, Sept. 22, 1892.

LARVA OF DEILEPHILA GALII AT CHISWICK.—On the 13th inst. my brother, Mr. Frank Sich, jun., found a larva of *Deilephila galii* on the common red fuchsia in a garden here. The following is a rough description of the larva:—Ground colour of the body almost black; there is an indication of a pale dorsal line, and below this on each side a series of large cream-coloured spots; below these again several small pale dots on each segment. The head and a shield on the second segment, as well as the anal flap, are dull red; the horn is brighter red. I placed the larva in a flower-pot with earth and leaves, and am glad to say that it has now begun to spin up. I have never heard of *D. galii* in this district before, though it has been taken occasionally in Middlesex (Entom. xxi. 210, 274).—ALFRED SICH; Villa Amalinda, Burlington Lane, Chiswick, Oct. 17, 1892.

COLIAS EDUSA AND VANESSA C-ALBUM IN NORTH STAFFORDSHIRE.—I have not had the good fortune of seeing a specimen of *edusa* this year in my own immediate neighbourhood, but I hear of it having been taken or seen in North Staffordshire. Mr. Ernest W. H. Biagg has, I believe, reported to the 'Entomologist' the capture of a female in a turnip field near Cheadle; and Mr. F. C. Woodforde saw one on June 7th at Belton-Moss, and another, a male, close to the town of Market Drayton, on Sept. 26th. Both these localities are on the Shropshire border of the county. But

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 specimen, darkly marked, and in perfect condition. This is only the third time 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.

HYBRID OF *THECLA SPINI* AND *T. ILICIS*.—The specimens I referred to (Entom. 193) as hybrids of these species are probably really var. *lynceus*, as suggested by Mr. Frank B. Norris (Entom. 240), to whom I am greatly obliged for directing my attention to this form of *T. spini*. Unfortunately, when writing the note, I was in the Riviera, and had only a few works at hand to refer to, the greater part of my little library being at Nice. I should, however, be very glad to hear further on the subject before correcting this in the new edition of my pamphlet which I am preparing.—F. BROMILOW; Avalon, St. Maurice, Nice (France).

SIREX JUVENCUS AT NORWICH.—On September 13th a male specimen of this sawfly was brought to me, which was taken in a street in this city.—ROBT. LADDIMAN; 25, Lower Hellesdon Road, Norwich, Oct. 1892.

SIREX JUVENCUS IN NOTTS.—On October 8th a fine specimen of *Sirex juvencus* was brought to me. Unfortunately the man who captured it had cut off its head, being in bodily fear of its formidable "sting." I have not met with this species here before, though several specimens of *S. gigas* have been taken.—DOUGLAS H. PEARSON; Chilwell, Notts, Oct. 17, 1892.

A CURIOUS PARASITE.—Prof. Bell has kindly informed me that the parasitic worm, referred to *ante*, p. 247, is a *Gordius*, not a *Filaria*.—RICHARD SOUTH.

PYRAMEIS (*VANESSA*) *CARDUI*.—The larvæ of this butterfly were very plentiful at Instow, North Devon, between the 6th and 19th of July; and I also took them at Buckland Dinham, Somerset, and at Dovercourt, Essex, afterwards, so that they appear to have been generally abundant this year. They were found on various kinds of thistles, and a few on nettle. The perfect insect was to be seen in numbers at Frinsted, in clover fields, up to the end of August, but after that time they nearly all disappeared.—GERVASE F. MATHEW; H.M.S. 'Tyne.'

PYRAMEIS (*VANESSA*) *ATALANTA*.—This beautiful butterfly was also more than usually abundant in the larva state in the localities above mentioned; and young larvæ just hatched and full-grown larvæ were to be found at the same time; while worn and fresh imagos were also to be seen on the wing.—ID.

GORTYNA *OCHRACEA*.—The pupæ of this species were in great abundance last month in the stems of various kinds of thistles and ragwort growing in the extensive waste ground in Chatham Dockyard. The first moth appeared on August 30th.—ID.

EUPITHECIA ABSINTHIATA, &c.—In Chatham Dockyard there is a large extent of waste land, some 300 acres I should think, which is overgrown by a variety of wild plants, such as ragwort, sea-aster, *Chenopodium*, *Atriplex*, various thistles, &c. Upon the former, at the present time, the larvæ of *E. absinthiata* simply swarm; I have beaten a hundred from one plant, and they vary to an extraordinary degree, some of the varieties being very beautiful. They are also to be found on sea-aster, but not in such numbers; and upon this plant another *Eupithecia* larva occurs. It is more slender than *absinthiata*, and may be *oblongata*, though I am in hopes some of them will produce *scabiosata*, which I have frequently taken at rest here upon sheds and palings. *Atriplex* and *Chenopodium* are frequented by larvæ of *E. subnotata*, *Pelurga comitata*, *Hadena trifolii*, *H. pisi*, and *H. oleracea*; and the thistle-stems, besides having produced pupæ of *G. ochracea*, are inhabited by larvæ of *Myelophila cribrum*.—GERVASE F. MATHEW; H.M.S. 'Tyne.'

NOTES FROM THE CHANNEL ISLANDS.—*Pieris daplidice* has ceased to exist here now; and *Deilephila euphorbiæ* is to be found in very limited numbers. I have been informed lately by Mr. Piquet, of Jersey, that thirty years ago one might have taken any number of these insects. The case proves itself by the numbers this collector has in his possession. He has kindly favoured me with a series of both species. From this a question arises, are Jersey insects British? Morris, in his 'British Butterflies,' evidently thinks them so by the way he speaks of *P. bœtica*, viz., ". . . as likewise in the Channel Islands, on which account also it has a claim to our list."—W. J. KAYE; Dudley House, Bagot, Jersey, Sept. 16.

NOTES ON THE ENTOMOLOGY OF HOLLAND.—I am forwarding you some statistics of the entomology of the Hague, where I have been chaplain during July. I am free to confess that the entomology of Holland is very disappointing in number of species and also in individuals in by far the great majority of cases; less productive, in fact, than the ordinary run of country places at home. Rhopalocera:—*Pieris brassicæ*, *P. rapæ*, and *P. napi*, abundant. *Vanessa atalanta*, possibly about twenty specimens seen, mostly in wood of royal park, one caught at Wykerbrug; *V. cardui*, one caught, the only one seen, close to Zuyder Zee, about a mile E. of Amsterdam outside the Muider Poort; *V. polychloros*, two seen, one caught at Wykerbrug, between the Hague and Leyden; *V. urticæ*, possibly four or five seen, one caught. *Satyrus semele*, possibly four or five seen, one caught at Scheveningen on the sandhills, also on the downs at Katuigli, N.W. of Leyden; *S. ianira*, possibly ten or twelve seen, Scheveningen, Wykerbrug. *Chrysophanus phlœas*, two caught, the only two specimens seen. Heterocera:—*Macroglossa stellatarum*, Scheveningen, two specimens. *Arctia menthastri*, one taken, the only one seen; *A. lubricipeda*, one taken, the only one seen. *Liparis auriflua*, about six seen; *L. chrysoorrhœa*. *Plusia gamma*, fairly common, also at Scheveningen on the sandhills; *P. festuæ*. *Mamestra brassicæ*, one specimen; *M. persicariæ*. *Acronycta tridens*, two or three, also taken at Linne Straad outside Amsterdam. *Leucania phragmitidis*, *Xylophasia polyodon*, *Acronycta megacephala*, *Liparis chrysoorrhœa*, *Abraxus ulmata*, *Melanippe biriviata* (I am not quite certain of this as the specimen is worn), and *Botrys urticata*, the Hague. Neuroptera:—*Æschna grandis*, the Hague and Wykerbrug. *Libellula striolata*, the Hague. Diptera:—*Calliphora erythrocephala*, *Eristalis arbustorum*, *E. tenax*, *E. sepuichralis*, *Helophilus trivittatus*, *Musca*

domestica, *Lucilia cæsar*, *Scatophaga stercoraria*, *Sarcophaga mortuorum*, *Hæmatopota pluvialis*, *Platychirus clypeatus*, *Syrphus ribesii*, *Leptis lineola*, *L. scolopacea*, *Ctenophora bimaculata*, *Sarcophaga* sp. incert., Tipulidæ two sp. incert., the Hague. *Chloromyia formosa* and *Chilosia* sp., Amsterdam. Hymenoptera:—*Bombus lapidarius*, *B. ageorum*, *Anthophora quadrimaculata*, and *Megachile* sp. incert., the Hague. *Lampronota setosa*, Wykerbrug. *Bombus agrorum*, Amsterdam; *B. lapidarius*, Scheveningen. Coleoptera:—*Aromia moschata*, Wykerbrug. *Gastroidea viridula*, *Philonthus politus*, and *Telephorus melanurus*, the Hague. *Polyphyllia fullo*, *Coccinella septempunctata*, *Cteniopus sulfureus*, and *Cryptocephalus sericeus*, Scheveningen.—F. A. WALKER; Dun Mallard, Cricklewood.

LATE APPEARANCE OF ABRAXAS ULMATA.—When beating for larvæ in Brockley Coombe, Somerset, October 3rd, I disturbed a specimen of *A. ulmata*, evidently only just emerged. The full-grown larvæ were exceeding abundant.—W. K. MANN; Clifton, Bristol, Oct. 19, 1892.

ERRATA.—In the note on *Colias edusa* (Entom. 220), "of six specimens taken in the Thames Valley, five were males and one female," should read "five were females and one male." P. 226, line 16 from bottom, for "seventeen-twentieths" read "seven-twentieths." P. 233, line 6 from bottom, for "specimens" read "specimen." P. 245, line 22 from top, for LANCASHIRE read LANARKSHIRE. P. 262, line 11 from top, for "Ab." read "Hb."

SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON.—October 5th, 1892.—Henry John Elwes, Esq., F.L.S., Vice-President, in the chair. Mr. W. H. Yondale, F.R.M.S., of Cockermouth, was elected a Fellow. Mr. C. O. Waterhouse exhibited a specimen of *Latridius nodifer* feeding on a fungus, *Trichosporium roseum*. The Rev. A. E. Eaton sent for exhibition the male specimen of *Elenchus tenuicornis*, Kirby, taken by him on the 22nd August last, at Stoney Stoke, near Shepton Montague, Somerset, and described by him in the 'Entomologist's Monthly Magazine,' Oct. 1892, pp. 250–253. Mr. McLachlan stated that another specimen of this species had been caught about the same date in Claygate Lane, near Surbiton, by Mr. Edward Saunders, who discovered that it was parasitic on a homopterous insect of the genus *Liburnia*, and had also described it in the Ent. Mo. Mag., pp. 249–250. Mr. J. M. Adye exhibited, for Mr. McRae, a large collection of *Colias edusa* and the var. *helice*, and *Colias hyale*, all taken in the course of five days' collecting in the neighbourhood of Bournemouth and Christchurch, Hants. There were twenty-six specimens of the variety *helice*, some of which were remarkable both in size and colour. He stated that Mr. McRae estimated the proportion of the variety *helice* to the type of the female as one in fifty. Mr. Adye also exhibited two specimens of *Deiopeia pulchella*, recently taken near Christchurch. The Chairman, Mr. Hanbury, Mr. Jenner Weir, and Mr. Merrifield commented on the interesting nature of the exhibition, and on the recent extraordinary abundance of *Colias edusa* and the var. *helice*, which was probably not exceeded in 1877. Mr. Dallas Beeching exhibited four specimens of *Phusia moneta*, lately taken in the neighbourhood of Tunbridge Wells. Mr. Gervase F. Mathew sent for exhibition two speci-

mens of *Plusia moneta* and their cocoons, which were found at Frinsted, Kent, on the 3rd September last. It was stated that Mr. Mathew had found seven cocoons on the under side of the leaves of monkshood, but that the imagos had already emerged from five of them. Mr. Rye exhibited a specimen of *Zygana filipendula* var. *chrysanthemii*, and two varieties of *Arctia villica*, taken at Lancing, Sussex; also dwarf specimens of *Euchloë cardamines* from Wimbledon; a variety of *Thecla rubi* from Bournemouth; and varieties of *Coccinella ocellata* and *C. oblongo-guttata* from Oxshott. Mr. A. H. Jones exhibited specimens of *Argynnis pales* var. *isis*, and var. *arsilache*, the females of which showed a tendency to melanism, recently taken at Campfer, in the Upper Engadine; also melanic forms of *Erebia melampus*, and a specimen of *Erebia nerine*, taken at Bormio, at the foot of the Stelvio Pass. Mr. Elwes exhibited specimens of typical *Erebia melas*, taken by himself at Campiglio, in the Western Tyrol, on the 25th July last, at an elevation of 7000 feet; also specimens of the same species from Hungary, Greece, and the Eastern and Central Pyrenees. He stated that the supposed absence of this species from the Alps, which had seemed to be such a curious fact in geographical distribution, had been first disproved by Mrs. Nicholl, who discovered it at Campiglio two years ago. He also exhibited fresh specimens of *Erebia nerine*, taken at Riva, on the lake of Garda, at an elevation of about 500 feet; also specimens of the same species, taken at the same time, at an elevation of about 5000 feet, in cool forest glades; and remarked that the great difference of elevation and climate did not appear to have produced any appreciable variation in this species. Mr. Elwes also showed a pair of *Dasydia tenebraria* var. *wockearia*, Stgr., from Campiglio, which appeared to him to be sufficiently constant and distinct from the typical form to be treated as a species. Mr. G. T. Porritt exhibited two fine varieties of *Abraxas grossulariata*, bred by Mr. George Jackson during the past summer from York larvae; also, on behalf of Mr. T. Baxter, a curious Noctua taken on the sandhills at St. Anne's-on-Sea on August 20th last, concerning which a difference of opinion existed as to whether it was a melanic form of *Agrotis cursoria* or of *Caradrina cubicularis*; also a small dark form of *Orgyia antiqua*, which had occurred in some numbers at Longridge near Preston. Mr. A. Eland Shaw exhibited a specimen of *Mecostethus grossus*, Linn., taken lately at Irstead, in the Norfolk-broad district. He stated that this was the first recorded capture of this species in Britain since 1884. Mr. C. G. Barrett exhibited a specimen of *Syrichthus albeus*, caught in Norfolk, about the year 1860, by the Rev. J. H. Marsh; a beautiful variety of *Argynnis euphrosyne*, caught this year near Godalming, by Mr. O. Latter; and a series of varieties of *Ennomos angularia*, bred from a female taken at Nunhead. Mr. P. Crowley exhibited a specimen of *Zygana filipendula* var. *chrysanthemii*, taken last August at Riddlesdown, near Croydon, by Mr. Murton Holmes. Lord Walsingham sent for exhibition several specimens of larvae of *Sphinx pinastri* and *Aphomia sociella*, preserved by himself, which were intended for presentation to the British Museum. The larvae of *S. pinastri* had been sent to him by Lord Rendlesham, who obtained them from ova laid by a female which he had captured in Suffolk last August. Mr. de Nicéville communicated a paper entitled

“On the Variation of some Indian Euplæas of the subgenus *Stictoplaea*”; and Captain E. Y. Watson exhibited, on behalf of Mr. de Nicéville, the specimens referred to in this paper. Colonel Swinhoe, Mr. Hampson, Mr. Poulton, and the Chairman took part in the discussion which ensued. Mr. W. Bateson read a paper entitled “On the Variation in the Colours of Cocoons and Pupæ of Lepidoptera; further Experiments.” Mr. E. B. Poulton read a paper entitled “Further Experiments upon the Colour-relation between certain Lepidoptera and their surroundings.” Miss Lilian J. Gould read a paper entitled “Experiments on the Colour-relation between certain Lepidopterous larvæ and their surroundings; together with Observations on Lepidopterous larvæ.” A long discussion ensued, in which Mr. Jenner Weir, Dr. Sharp, Mr. Merrifield, Mr. Poulton, Mr. Tutt, and the Chairman took part.—H. Goss, *Hon. Secretary*.

SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—
 September 22nd, 1892. — C. G. Barrett, Esq., F.E.S., President, in the chair. Mr. Robert Adkin exhibited *Oxyptilus distans*, Zell., and *O. pilosella*, Zell., taken near Dover this summer; also, on behalf of Mrs. Hutchinson, of Leominster, a small collection of Micro-Lepidoptera from Cornwall, including *Diasemia literata*, Scop., a remarkably brightly-marked form of *Herbula cespitalis*, Schiff., said to be exceedingly local. Mr. South, a variable series of *Grapholitha cinerana*, Haw., taken on the borders of Middlesex, between Northwood and Rickmansworth. He stated that the species was abundant on the trunks of two grey poplars (*Populus canescens*) at the end of July and first two weeks in August. Mr. South also exhibited *G. nisella*, Clerck., and the varieties *pavonana*, Don., *boeborana*, Fab., *rhombifasciana*, Haw.; and remarked that although some specimens of the latter species varied in the direction of *G. cinerana*, they could always be distinguished by the different shape of the outer edge of the basal patch. Two examples of *petrana*, Hüb. (= *cuspidana*, Haw.), a form which was generally considered to be a variety of *nisella*, were found with *cinerana*. As the basal patch of these specimens agreed with that of *cinerana*, he was inclined to think that *petrana* was a form of *cinerana* rather than of *nisella*. Mr. Fenn stated that both these species of *Grapholitha* were abundant on poplars in Kent. Mr. Barrett observed that he always understood that *G. nisella* was associated with willow, and that the occurrence on poplar was new to him. Mr. Fenn exhibited *Plusia gamma*, L., and a fine series of *Orgyia antiqua*, L., with dark forms. Mr. McArthur, the life-history of *Sesia scoliiformis*, Bork., from Rannoch; also *Hepialis humuli*, L., from the Shetlands, with the var. *hethlandica*. Messrs. Frohawk and Carpenter, a long series of *Vanessa atalanta*, L. Mr. Frohawk referred to the small white spot in the red band which was generally thought to indicate the female, but he showed females with and without the white spot, and one male which had this spot fairly well defined. Mr. Barren showed *Vanessa cardui*, L., *Colias edusa*, Fb., and *C. hyale*, L., taken at Blean this year. Mr. Carpenter made some observations upon the abundance of the larvæ of *V. atalanta* on Streatham Common, and remarked upon the variation in size; some were full-fed, whilst others were quite small. A discussion then ensued as to the double-

broodedness of this species, in which Messrs. Carpenter, Tutt, Fenn, Barrett, Carrington and Frohawk took part.

October 13th.—The President in the chair. Mr. James, of Uphill, Folkestone, was elected a member. Mr. Adye, on behalf of Mr. W. MacRae, exhibited large numbers of *Colias hyale*, L., *C. edusa*, Fb., and var. *helice*, Hb., a portion of the result of five days' collecting in the neighbourhood of Bournemouth and Christchurch; and Mr. Adye read some notes as to the proportions in which *helice* and *hyale* occurred as compared with *edusa*; he also expressed an opinion that the explanation of *edusa* not occurring two years in succession was principally due to the ova, which he stated were always laid on the upper surface of clover-blades, being destroyed by the grazing of sheep and cattle, and the action of mowing machinery. A discussion followed, and the members taking part therein were of opinion that this explanation was entirely inadequate. Mr. Adye also exhibited living larvæ and pupæ of *C. edusa*, and two specimens of *Deiopeia pulchella*, L., from Christchurch. Mr. Henderson also showed a specimen of this species, taken by him at Hayling Island. Mr. Dennis, a variety of the under side of *Lycæna bellargus*, Rott., the ground colour being white, and the marginal spots only represented. Mr. B. W. Adkin, a series of *Epinephele ianira*, L., from Scilly, the males having the orange blotch on the fore wings, and the females the fascia on the hind wings, very pronounced. Mr. Fenn, *Lithosia muscerda*, Hufn., from Sandwich; a beautifully banded example of *Acidalia aversata*, L.; and a box of examples of *Vanessa urtica*, L., picked from between four and five hundred, and showing very slight variation. Mr. Tugwell, a specimen of *Melanippe hastata*, L., with the usual central fascia reduced to a spot; varieties of *Colias edusa*, Fb.; and a pale series of *Hypsipetes ruberata*, Fr., from Hartlepool. Mr. C. G. Barrett, forms of *Polia chi*, from Sheffield; a dark variety of *Argynnis euphrosyne*, L., taken by Mr. Oswald Latter at Godalming; and specimens of *Syrichthus alveus*, Hub., taken by the Rev. Mr. Marsh in Norfolk; also dark specimens of *Eugonia quercinaria*, Hufn., bred from ova obtained from a female taken at Nunhead. Mr. Oldham, among others, dark varieties of *Acidalia bisetata*, Hufn., male of *Odonestris potatoaria*, L., of the colour of the female; *Nonagria cannae*, Och., and pupa-case. Mr. Frohawk, a specimen of *Sesia sphegiformis*, Fb., and stem of alder with pupa-case projecting, and remarked that the day before the insect emerged the pupa broke through the bark and remained a short time in the sun, subsequently withdrew, and did not emerge until the following day. Mr. R. Adkin, a series of *Vanessa c-album*, L., consisting of specimens reared from larvæ received in June last, and others of the same brood received as imagines from Mrs. Hutchinson, of Leominster, together with a series of the autumn brood; also a female example of the spring brood, having the under side coloration of the autumn brood, but resembling the form of the earlier emergence on the upper side; and he read notes referring to the known differences in the colour of the under side, pointing out a distinction in the markings on the upper side of the two broods. He also exhibited a series of *Dianthæcia nana*, Rott., from the Scilly Isles, with examples from North Devon and the North of Ireland for comparison. It was pointed out that one of the specimens from Scilly closely resembled the supposed

Irish *D. compta*, Fb. Mr. Tutt mentioned that the *Botys* exhibited at a previous meeting was *Botys fuscalis*, Schiff., and was not therefore a new species, as had been suggested at the meeting and so reported.—H. W. BARKER and A. SHORT, *Hon. Secs.*

BIRMINGHAM ENTOMOLOGICAL SOCIETY.—*Oct. 10th, 1892.*—Mr. R. C. Bradley in the chair. Mr. A. W. Walker, Ingleside, Harborne Road, Edgbaston, was elected a member. The following were exhibited:—By Mr. P. W. Abbott, *Colias edusa* from Wyre Forest, one specimen; *Triphana subsequa* from Freshwater, Isle of Wight; and *T. orbona*, for comparison with them. Mr. E. W. Wynn, from Wyre Forest, bred series of *Vanessa io* and *V. c-album*; two bred *Notodonta chaonia*, and a single specimen of *Sesia cynipiformis*; also, from Cannock Chase, a bred series of *Vanessa cardui*, and one *Colias edusa* from Meriden, near Coventry. Mr. R. C. Bradley, nice series of *Philonicus albiceps* and *Thereva annulatus* from Barmouth. Mr. W. Harrison, insects taken at Frankley, near Harborne, quite close to Birmingham, including *Cidaria testata*, *Thyatira derasa*, &c.; also, from Wyre Forest, *Eucosmia undulata*, one *Phorodesma bajularia*, &c. Mr. A. H. Martineau read a paper on the social ants, in which he gave some account of the various species, and of the most interesting facts in their life-histories, habits, &c. He showed nests of *Lasius flavus*, *L. niger*, and *Myrmica ruginoides*, with many individuals in each; also mounted specimens of several other species.—COLBRAN J. WAINWRIGHT, *Hon. Sec.*

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY.—*October 10th.*—Mr. S. J. Capper, F.L.S., F.E.S., President, in the chair. Mr. J. T. Moore, A.L.S., was elected an honorary member, and Mr. J. H. Stott, of Newcastle, Staffordshire, an ordinary member of the Society. Mr. S. L. Mosley, of Huddersfield, read a paper entitled "Vegetable Galls and their makers." The author referred to the difficulty in breeding these insects, and spoke of the theory of the ancients, who, because they could not understand how a caterpillar could be inside a gall which had no opening, believed that the egg must have been deposited in the seed of the plant. He remarked on the scarcity of literature on the subject, and described and exhibited specimens of many of the galls and their makers, including some species new to Britain. The President exhibited a rich variety of *Epione apiciaria*. Mr. Arkle, *Heliothis armigera*, bred from imported tomatoes. Mr. Collins, some nice forms of *Acronycta leporina*. Mr. Gregson, series of *Agrotis ashworthii*, *Polia nigrocincta* and *Dianthæcia casia*, bred and captured by himself this year. Mr. Harker, two specimens of *Hadena saturata* from Aberdeen. Mr. Jones, Lepidoptera captured in Ireland, including some nice Irish forms. Dr. Ellis, series of *Cassida sanguinolenta* and *Bembidium saxatile*. Mr. Newstead drew attention to a record of *Polyommatus bætica* captured at Heswall, Cheshire, by Master McFee, in 1886 or 1887, which had lately come under his notice.—F. N. PIERCE, *Hon. Sec.*

YORK AND DISTRICT FIELD NATURALISTS' SOCIETY.—*October 12th, 1892.*—Mr. G. C. Dennis, President, in the chair. Mr. George Jackson exhibited a number of very fine varieties of *Abrawax grossulariata*, bred this season from larvæ obtained at York. Mr. E. G.

Potter, *Colias edusa* (including a specimen of the variety *helice*) from Sandown, Isle of Wight, 1892; *Zygæna meliloti*, *Boarmia roboraria*, *Hyria auroraria*, from the New Forest, &c. Mr. Robert Dutton, *Agrotis obelisea* from the Isle of Wight; *Colias edusa* from Sidmouth, 1892; and *Boarmia cinctaria* from the New Forest. Mr. W. Dutton, *Arctia fuliginosa* from the Isle of Man; *Notodonta carmelita* from Marlow; *Trichiura cratægi* from Wolverton; *Noctua sobrina* from Aberdeen, 1891; *Agrotis saucia* from the Isle of Wight, and *Dianthæcia nana* from Aberdeen. Mr. W. Hewett, *Colias hyale* from Dartford; a fine variety of *Vanessa atalanta* (bred) from Canterbury; very dark specimens of *Agriopsis aprilina* (bred) from Durham; *Epunda lutulenta*, and its var. *lunenburgensis*, from Sligo; also *Stilbia anomala* from Sligo; *Cloantha solidaginis* from Dernelough, Aberdeenshire; fine forms of *Xanthia cerago* (bred) from willow-catkins obtained at Bishop's Wood, Selby; thirty-one specimens of *Polia chi*, including several of the var. *olivacea* from Durham, var. *obscura* from Mr. Mansbridge of Horsforth, and numerous intermediate forms connecting *olivacea* and *obscura* with the type, from Durham, Nottingham, Aberdeen, Kirkham Abbey (Yorks.), Horsforth and York; dark specimens of *Cidaria immanata* from Inverurie; and *Cidaria russata* from Linlithgow; also two lead-coloured varieties of *Melanthia rubiginata* from Linlithgow.—WILLIAM HEWETT, *Hon. Sec.*

REVIEWS.

A Synonymic Catalogue of Lepidoptera Heterocera (Moths). By W. F. KIRBY, F.L.S., F.E.S., &c. Vol. I. Sphingæ and Bombycæ. 8vo, pp. xii, 951. London: Gurney & Jackson, 1, Paternoster Row. Berlin: R. Friedländer & Son. 1892.

As early as 1877 Mr. Kirby announced, in the preface to the Supplement of his 'Catalogue of Lepidoptera Rhopalocera,' that he was preparing a similar work on the 'Moths of the World.' The long time which has elapsed before the appearance of the first volume of this work is hardly to be wondered at, when we regard the great extent and difficulty of such a labour. The volume before us contains only the Sphingæ and Bombycæ, 29 families in all, some of which are divided into subfamilies. Some families of doubtful position, which are frequently placed with the Sphingæ or Bombycæ, such as the *Ægeriidae* and *Thyrididae*, have been omitted, as well as certain others which undoubtedly do not belong here, *e. g.*, the *Euschemidae* and a large portion of the *Melameridae*, which have been proved by the metamorphoses really to belong to the Geometræ, as well as the types of the old family *Chrysanthidae*, which are now usually classed as Pyrales. The author has, on the other hand, retained the anomalous family *Uraniidae*, in the present volume (although it rather interrupts the sequence of families), obviously by reason of the affinities of the larvæ, with those of the *Agaristidae*, &c. We quite concur with him in this arrangement, and it is a source of the greatest wonderment to us that any authors of the present day should still con-

tinue to follow the antiquated arrangement of Guenée in placing them beside the Geometræ.

Much yet requires to be done, before even an approximate natural classification of the Moths shall have been arrived at; and extensive and numerous changes must, naturally, precede this desirable result. Hence we anticipate that many genera, and possibly even families, now included among the Sphinges and Bombyces, will eventually be shifted into different positions. There remains, probably, also, much to be done in eliminating synonyms.

How far Mr. Kirby is correct in placing the true *Sphingidæ* between the *Notodontidæ* and *Bombycidæ*, instead of at the head of the series, remains to be seen. It may interest British entomologists to note that *Endromis versicolor* is here put into the small family *Bombycidæ*, with *Bombyx mori* and its allies.

Part of the preface is taken up with Mr. Kirby's exposition of the rules which he has followed *re* the vexed question of nomenclature, on which we fear opinion will long remain divided.

Notwithstanding the occasional errors unavoidable in a work of such dimensions (and it is only fair to the author to say that in glancing through the book we have noticed none of any importance), the extreme usefulness of a work such as the one before us, to all students of Lepidoptera, cannot be over-estimated.

According to the scheme announced in the preface, the work is to be completed in five volumes:—I. Sphinges and Bombyces. II. Noctuæ. III. Geometræ and Pyrales. IV. Micro-Lepidoptera. V. Appendix, up to date, and general index of genera and species.

We learn, also, from the same source, that the remainder of the work is in an advanced state, but even so, considering the expense of publication and the time required to prepare so large a mass of material for the press, we fear that some years must elapse before this Catalogue can be completed.

Rhopalocera Exotica; being Descriptions of new, rare, and unfigured Species of Butterflies. By H. GROSE SMITH & W. F. KIRBY. Vol. I.; with 60 hand-coloured plates. 4to. London: Gurney & Jackson. 1887—1892.

For many years Hewitson's great collection of Lepidoptera, now in the British Museum, remained unequalled in the world, and its treasures were illustrated by him in his well-known beautiful works, 'Exotic Butterflies,' and 'Illustrations of Diurnal Lepidoptera.' Since his death, large collections of butterflies have continued to be received from all parts of the world, and two of his surviving friends have undertaken the present work, in order to present the scientific world with a series of illustrations of rare and beautiful species (chiefly selected from the rich collection of Mr. Grose Smith), in a style nearly uniform with Hewitson's 'Exotic Butterflies.'

Certain alterations will be noticed in the arrangement of the book; thus, instead of the letterpress belonging to each plate being limited to a single unpagged leaf, it is allowed to extend to as great a length as is necessary to fully describe all the species figured. Again, the pagination is made consecutive throughout each separate genus, or at least family, illustrated.

The authors confidently expect to find ample materials to continue the work as long as they feel inclined to do so.

The volume before us contains careful figures and descriptions of nearly 200 butterflies belonging to the families and subfamilies Papilionidæ (Papilioninæ and Pierinæ), Nymphalidæ (Danainæ) Acraeinae, Heliconinæ, Nymphalinæ and Morphinæ), and Lycænidæ. Among them are some extremely remarkable and beautiful species, such as *Ornithoptera victoriæ* and *Morpho helena*; but the most valuable part of the book, from a scientific point of view, is perhaps the section on the hitherto little known or studied groups of African Lycænidæ, to which 17 out of the 60 plates are devoted, illustrating nearly half the total number of butterflies described in the volume. By far the larger proportion of the species figured in other parts of the work are likewise from Africa or Madagascar.

We may add that the work is being continued in quarterly parts, each containing three coloured plates of butterflies with the accompanying letterpress.

OBITUARY.

WE regret to record the death of MR. HOWARD W. J. VAUGHAN, which occurred at Woodford Green, Essex, on the 18th of October, 1892, in his 47th year. Mr. Howard Vaughan was born at Hackney, on the 18th April, 1846, and was educated at private schools. He adopted the law as a profession, being admitted a solicitor in 1869, in which year he also joined the Entomological Society of London. On his parents removing to Kentish Town in 1860, he made the acquaintance of Dr. H. G. Knaggs, whose house at that time was one of the chief entomological centres, and he consequently, at a comparatively early age, found himself in the full tide of London entomology. Although he had some knowledge of Coleoptera, his chief study was Lepidoptera, of which Order (excepting the Tineæ) he amassed a singularly rich collection, his Tortrices being especially fine. He was an ardent collector, and was the means of introducing *H. sawicola*, *H. senecionis* and *T. pryrella* to our lists, but the first-mentioned has failed to retain its rank as a species. As a rule, however, he was diffident in recording his discoveries, frequently allowing others to reap the honours to which he was entitled. For some time, in conjunction with Mr. Lovell Keays, he edited the entomological department of 'Young England,' the popular periodical in which the publication of Newman's Moths was commenced. In the winter of 1889-90, a fit, rapidly followed by others, warned him that his end was probably approaching; and in April and May, 1890, his collection was sold at Stevens's, several of the lots fetching unprecedented prices, the gross total of the three days' sale being £831 18s. After his seizure in 1880-90, he never was really well, and, slowly breaking, ultimately died, after a few days' illness. His remains are interred in the City of London Cemetery at Ilford, Essex. Those who knew him in his former years, and especially the few who shared in his collecting excursions, will mourn the loss of a genial friend and enthusiastic entomologist.—C. A. B.

THE ENTOMOLOGIST.

Vol. XXV.]

DECEMBER, 1892.

[No. 355.

EDITORIAL.

THE present number completes the twenty-fifth volume of the 'Entomologist,' and in this connection it may be interesting to note that exactly fifty years ago the concluding number of volume I. was published.

Although this Journal has been before the entomological public since 1840, it has only just now completed its twenty-fifth volume. The reason of this is twofold. In the first place the 'Entomologist' was for twenty-two years merged in the 'Zoologist'; secondly, several of the earlier volumes comprised two years.

Putting aside volume I. (1840-1842), the fact remains that of the magazines devoted to the consideration of insects published in Great Britain, the 'Entomologist' is the oldest extant, and still maintains the high position it has held for so long a period.

The volume for 1892 is in all respects a worthy companion of those of previous years; and this satisfactory result is largely due to the valuable assistance rendered by numerous contributors and correspondents, to all of whom we take this opportunity of tendering our sincere thanks.

Although extra pages have frequently been furnished during the year, we have been unable to fully meet all the demands upon our space, and consequently have often been obliged to postpone the publication of important papers.

It seems highly desirable that the number of pages in each monthly issue should be permanently increased; but, unfortunately, this is not practicable just at present. If, however, all

those who have so cordially assisted the 'Entomologist' in the past will kindly continue to give us their support, and, may we venture to suggest it, use their influence to increase the circulation of the Journal, why then it may be possible for us to give 28 or 32 pages every month, instead of the usual 24 pages.

In the new volume for 1893 it is proposed to make some alterations in the arrangement of contents. Thus, for example, the various items which now find a place under the general heading, "Notes and Captures," will be grouped under special heads.

It will be noticed that in the present volume (and also in those for 1890 and 1891) the index has been considerably amplified, thus adding to the usefulness of the work without increasing the cost to subscribers. It was not thought necessary to index every species mentioned in the volume, but none of interest have been omitted.

We are glad that the Exchange department continues to be useful to a large number of our readers. Lists of duplicates and desiderata are always welcome, and, if possible, will be inserted in the issue for the month following that in which they are received. It may be added that only notices sent to us for publication appear in the exchange pages.

THE EMERGENCE OF THE *CERURAS*.

BY T. A. CHAPMAN, M.D.

IN the 'Entomologist,' vol. xxiii. pp. 91—94, I referred to this subject in connection with the remarkable habits of *H. milhauseri*, especially with a view to questioning whether some beginnings of the structure and habits of that species might not exist in the *Ceruras*. Last spring I obtained some pupæ of *C. vinula*, in hope of learning something more; and though I observed little that is not well known, I may put my notes together, as science is so long and life so short, that a slight advance may be worth maintaining. I was only successful in observing two or three emergences, and only one of these at what was the critical moment, and in this case I interfered so as to spoil the observation, the chief further knowledge gained being that I *had* so interfered.

Some pupæ are able to turn round in their cocoons, but I think the majority have their backs to the tree and their fronts to

the exposed portion of cocoon, and are practically fixed in that position. Then all the cocoons I have examined (thirty or forty) have a decidedly thinner place over the front of the head; it is larger than the cross section of the pupa; it contains fewer chips, and, held against the light, is quite translucent, whilst the rest of the cocoon is opaque; this is the portion of cocoon that is operated on for emergence.

I stated (*loc. cit.*) that the pupæ of our *Ceruras* were fairly rounded in front; in this I was decidedly in error, for *vinula* has nearly as pronounced a keel on the head as *C. multiscripta*, to which I referred. Our "kittens" are much smoother, though the same structure is indicated. It was observing this structure of *vinula* that tempted me to try to make further observations. I made a detailed description of this portion of the pupa of *vinula*, but I may omit it, as I made no observations that connected any habit with any peculiarity of this portion of the pupa.

The dehiscence of the pupa consists in the thorax splitting dorsally, and the division proceeding to either side separating the wings from the first three abdominal segments; the antennæ cases sometimes adhere to the wings, sometimes separate; the leg and mouth part coverings form a separate piece, whose apex tends to adhere to wings and abdomen. But the head-covering, consisting of the ridge (or keel) and hollow on either side of it, the eye-covers (including the glazed side portion), the face down to a certain incision, and a small portion below which is probably the labrum, separates as a distinct portion, and adheres to the moth in its proper position, during the whole period of emergence and until the head is quite clear of the cocoon, and often even after the moth has completely escaped, and is always found outside the cocoon. During this period the rudimentary proboscis is very visible as two short white papillæ, free from any hairs, and it is just above the base of these that the softening fluid exudes. This fluid is stated to be acid; this I did not test, but I found it to be colourless and tasteless, and it evaporated without residue; applied to the material of cocoon it softened it, but not at all rapidly. The moth makes many rotatory movements after the splitting of the pupa case, no doubt in order to smear this fluid over the necessary area of the cocoon, and we here see how little further is wanted to reach a habit similar to that of *milhausevi*, especially as the smearing process and delay for softening takes a considerable time, probably more than five minutes, possibly half an hour. This appears also from the amount of fluff rubbed about inside the cocoon in many cases. The moth keeps quite dry, and the head-cover is dry outside, but moist within, when removed from the newly-emerged moth; its function appears to be to protect the front of the moth during the movements of smearing, and as a strong medium for applying the final breaking

force to the cocoon. This use of this portion of the pupa-case is by no means confined to *Cerura*, but is common to many moths that have to break through cocoons or out of the ground. It has, however, nothing to do with the actual distribution of the fluid, so far as my observations were decisive. I made one other observation that added a new point to be explained, *viz.*, that when the moth emerged it often brought with it pieces of very delicate tissue that I passed over at first as being portions of the inner divisions of the pupa-case; they proved, however, to be bits of the inner lining of the cocoon. The wall of a sound cocoon appears to be homogeneous; but in a cocoon where I stopped the moth before breaking it open, but after softening it, this inner layer of very fine membrane is quite visible. I could not help framing several theories as to this, but as I know no more than I have stated, the theories may for the present remain in abeyance.*

Firbank, Hereford, Oct., 1892.

DESCRIPTION OF A NEW SPECIES OF *ELATER*.

By REV. H. S. GORHAM, F.Z.S., &c.

ELATER MINIATUS, n. sp.

Elater pomonæ, Waterh., Trans. Ent. Soc. v., n. s., p. 90;

Rye, Ent. Mo. Mag. ix. p. 268; Ent. Ann. 1874, p. 97.

Elater pomonæ, Candeze, Mon. Elat. ii. p. 455; Seidlitz,

Faun. balt. p. 119; *nec* Stephens, Mand. iii. p. 257; Man.

Brit. Col. p. 179.

Ater, nigro-pilosus, elytris coccineis, prothorace nitido minus dense punctulato, basi transversim impresso, supra scutellum foveolato, antrorsum angustato, tarsis rufis. Long. 9—10 millim.

This is the species generally known to us as "*Elater pomonæ*," and apparently regarded as such by Candeze, Seidlitz, and others, perhaps on the authority of Mr. G. R. Waterhouse; but Mr. E. C. Rye, now nearly twenty years ago, pointed out the discrepancies between Stephens' description in the 'Manual of British Coleoptera' and the specimen regarded by Waterhouse as its exponent in Stephens' collection. There was, however, it should have been observed, a specimen in the same collection, and under the name "*pomonæ*," which perfectly accords with

* I do not know that my observations confirm or otherwise Mr. Latter's discovery that the softening fluid contains hydrate of potassa; but the tastelessness of the fluid, the trifling residue on its evaporation, so that a drop on a glass-slide left barely sufficient trace to show where it had been, and more particularly the rapidity with which it evaporated to absolute dryness (potash hydrate being deliquescent), appears to point to the necessity for further research on this as on other parts of the subject.—T. A. C., Nov. 15.

Stephens' description, and has been, and probably correctly, referred to *E. præustus*, Fab.

Elater miniatus is at once distinguished from this species, or from any other species except *Elater sanguineus*, Lin., by the fact that the thorax is clothed with black pile, and that the elytra are red, without the least sign of black tips. From *E. sanguineus*, I imagine the size alone is sufficient to separate it, and no one has, as far as I am aware, referred it to that species.

Although Rye appears to have received small specimens of *E. lythropterus* from the New Forest, from Turner, I have not myself seen such. *E. miniatus*, under the name of "*pomonæ*," is now, according to my experience, the commoner species near Brockenhurst, where I have obtained it from Mr. Gulliver, and have also met with it on several occasions, but it is (as indeed at the present time any "*red Elater*" is) far from common. Nine specimens are now in my collection, and I may have given away one or two; and these are all I have obtained, and I have not seen it from other places. Mr. Rye considered this was the species obtained by Hardy in Sherwood Forest. In the face of the fact that neither Candeze nor Seidlitz recognised this as a new species, if indeed they have seen specimens of it at all, and that (see Rye) Thomson referred it to *pomorum*, I think any statement as to its occurrence on the continent will require corroboration. The sculpture of the thorax—which in *E. lythropterus* is a close, almost confluent somewhat granular punctuation, but here is a much more sparse, distinct puncturing, with a shining smooth interstitial surface—will probably be found of most use in separating it from other allied species. It should be also observed that Stephens expressly says his "*pomonæ*"—and which appears to be a single specimen of *E. præustus*—came from Darenth Wood. Barmouth is only given on Hope's authority, and may of course refer to some other species. I have not myself seen any other example of the true *E. præustus*, which is, at all events, a very scarce species in this country.

Shirley Warren, Southampton, Nov. 4, 1892.

INDOOR LIGHT.

BY MAJOR JOHN N. STILL, F.E.S.

IT is not to be supposed that this form of using light, as an attraction for insects, is equal to systematically arranged outdoor light; at the same time, it has many advantages over the latter. There are some persons who can with safety employ indoor light, who dare not, for various reasons, venture to stand about in woods, fens, or under lamp-posts by night. Besides, the convenience of

using indoor light is great; the window is easily lighted up, and again extinguished if not attractive, and all the necessary paraphernalia is at hand. Various are the modes and apparatus used; and although every collector may employ those means which his fancy dictates, from the solitary candle to the electric light, I shall only describe the light which I have used, and the rules which have guided me for some years, with success, in various country districts.

The Room.—When available, an empty room is the best, with white walls; if there are two windows in it, either light up both or darken one; but two windows having different aspects are excellent, if both are lighted, and plenty of help present. There must be no window of another room, facing the same direction, with a light showing; any outside light is fatal, either from other houses or gas-lamps.

The Window.—This should always be an upstairs one, but not over a glass verandah or conservatory, as these cause reflection, and the moths are apt to settle on the glass, and not come up to the light. Sash-windows are the best, but I have used French windows on the ground-floor successfully enough. When a bow-window is used the sides must be darkened. Some of the most prolific nights that I ever had were in a large whitewashed stable-loft, with the window taken bodily out. Casement-windows are the most unsatisfactory. Whatever kind of window is used, I find it best to have it as wide open as possible, and let the insects come well into the room, when they can be either netted or boxed at once.

The Situation.—The window should overlook as open an extent of lawn, field, or moor as can be obtained, and if there is a wood in the vicinity, so much the better. The aspect of the window is of no great importance; I have, however, found N. and W. the best.

The Light.—Outside and just under the window I hang one of Messrs. Watkins and Doncaster's excellent benzoline lamps; on each side (also outside), a strong carriage-lamp; on a small table, placed opposite the centre of the window, a lamp with a most powerful reflector; and immediately behind this, but standing higher, a lamp of fifty-candle power. These together throw an immense volume of light; every shrub, conifer and hedge within two or three hundred yards throws its shadow, and the light is seen at a great distance, the outside lamps extending widely the semicircle of light. My experience has been that the stronger the light the greater the result. Always have another lamp on the wall opposite the window, as moths when in the room will at once fly towards it. Be most careful to see that there is no oil on the outside of the lamps, and use wire-gauze tops over the chimneys.

The Time.—May 15th to 31st, 10 p.m. to 12; June, 11 p.m.

to daylight; July, 11 p.m. to daylight; Aug. 1st to 15th, 10 p.m. to 1 a.m.; Aug. 15th to Sept. 15th, 9 p.m. to 12.

The Night.—The uncertainty of the result of using indoor light must be plain to those who have tried it. It is quite impossible to foretell a good night. Great results will only occur occasionally, and to those who use perseverance with their oil. On warm, dark, quiet nights, the greater the chance, but often such nights are a failure. Again, excellent results are frequently obtained on a moonlight night, darkened occasionally by passing clouds; dark nights with warm summer rain are good, and even with heavy rain, particularly after a drought. The slightest frost renders light useless. Hill-mists sometimes are good, but fogs are bad. Wind is the greatest enemy of light; however favourable in all other respects, anything like wind renders the attempt hopeless. Besides Lepidoptera, many orders of insects are represented on a good night at light, and it is most interesting to note the time of arrival of the various species, as well as their behaviour in the room. Sphinges fly up and down the walls. Most of the Bombyces, Noctuæ, and large Geometræ dash past the light and circle round and round the ceiling. Some Noctuæ settle at once anywhere; others seek concealment by hiding behind pictures, shutters, &c. The smaller Geometræ fly round about the lights; while the Pyralides, Crambi, Tortrices, and Tineæ settle on the lamps, or where the light is thrown on the table, walls, or window. Some species rarely enter the windows, but fly up to the light and depart again; these I have had to net by means of a ladder outside. If the walls of the house and crevices of the windows are examined next day, some of the last night's visitors are usually to be found there at rest. Bats hawk backwards and forwards in front of the window, destroying no doubt many a prize. There is a vast amount of pleasure and excitement, as well as knowledge, to be derived from a first-rate night at indoor light. I well remember persuading a non-collector to try it one night in the country, and he reluctantly accepted the invitation. Within a short time of commencing operations, his pipe was thrown down, and he was rushing wildly about, with his coat off, netting moths, and, remaining until daylight, he proved himself to be an invaluable auxiliary.

Horrabridge, November, 1892.

COLIAS EDUSA, *C. HYALE*, &c., IN ENGLAND IN 1892:
ADDITIONAL RECORDS.

(Concluded from p. 282.)

Shropshire.—I have seen two specimens of *C. edusa* close to Market Drayton, one on the 6th of June and the other on Sept. 27th. — F. C. WOODFORDE; Market Drayton.

A rather small specimen of *C. edusa*, measuring only $1\frac{3}{4}$ in. across the widest part, was taken in a field on Sept. 17th. It was the only one seen by me in the neighbourhood.—E. H. BLACKMORE; 13, Bull Ring, Ludlow, Salop.

Somerset.—*C. edusa* has appeared in fair numbers in this district. The first specimen I observed was a male in good condition on the 24th of July.—PHILIP W. RIDLEY; 2, Camden Terrace, Bath, Sept. 12, 1892.

Staffordshire.—A female specimen of *C. edusa* was captured close to the town of Cheadle, about the middle of last June.—E. W. H. BLAGG; Cheadle, Staffordshire, Sept. 20, 1892.

Suffolk.—Two specimens of *C. edusa* were seen at Southwold, Suffolk, on the 1st of September.—WALDEGRAVE; 20, Bryanston Square, W., Sept. 2, 1892.

C. edusa has occurred in quantities here, and *C. hyale* in plenty. I never saw so many butterflies of the common sorts as there are this year.—RENDELSHAM; Woodbridge, Sept. 4, 1892.

Since my note in October number *Colias edusa* has been taken in large numbers by a cousin of mine at Waldringfield near Woodbridge. Among them were eleven specimens of the variety *helice*, varying considerably in tint. *Colias hyale* appeared in fair numbers, and in a series of twenty-five taken, yellow, white, and intermediate forms were shown. One very small specimen was taken. One male *edusa*, although quite fresh, has the wings very thinly scaled, giving it a pale appearance; and the black spot on the fore wings, on being held up to the light, is almost transparent.—RUSSELL E. JAMES; Chesterville, Hornsey Lane, N., Sept. 14, 1892.

I saw one specimen of *C. edusa* in a sand pit near here on July 29th. On Aug. 9th I took four on a railway bank near Wickham Market Station, and since then it has been very plentiful. Males have been more numerous than females. I have not seen *C. hyale*, but I hear two or three have been seen in this neighbourhood; var. *helice* I have neither seen nor heard of. *Vanessa cardui* has been very common, and I have counted as many as five specimens of *V. atalanta* on one bunch of thistles. I took three specimens of *V. polychloros* during August. *Plusia gamma* has been a perfect nuisance here.—RANDOLPH L. HODGSON; Campsea Ashe Rectory, Wickham Market, Sept. 14, 1892.

Whilst driving with Sir W. Hyde Parker and Mr. L. G. Fisher, of Long Melford, between Melford and Cavendish, on 11th August last, we saw a specimen of either *C. hyale* or *C. edusa* var. *helice*. Coming back to Ipswich, *viâ* Bury St. Edmunds, I saw *C. edusa* on the railway banks. The next day I saw *C. edusa* again on the railway banks on the way to Southwold, and I saw specimens again at Southwold. I believe *C. edusa* has been plentiful nearly all over Suffolk, and about a fortnight ago I saw a specimen in the town here.—E. F. BRISHOPP; 32, Museum Street, Ipswich, Oct. 6, 1892.

Surrey.—I have not done much Entomology, but I have seen five or six stray specimens of *C. edusa*, near Stoke D'Abernon, Surrey, between August 5th and 27th, where, I do not believe, it has been seen since 1877. On August 20th I went to Box Hill, and found *C. edusa* fairly numerous. I also took one *C. hyale* and a splendid specimen of *helice*.—WALDEGRAVE; 20, Bryanston Square, W., Sept. 2, 1892.

On the 15th August I observed a very fine specimen of *C. edusa* flying along the railway bank on the Croydon side of Anerley Station, and on the 20th August I netted one fine female on a hill near Dorking, and saw one

male on the same hill on the same day. I cannot quite agree with the editorial note that the present year bids fair to rival that of 1877; at all events, so far as I am personally concerned, it certainly will not, for I find, upon referring to my diary of that year, that my son and myself, on the 4th and 6th August, netted, in one clover field, 215 *edusa* and 11 *helice*. — W. D. CANSDALE; Sunny Bank, South Norwood, S.E., Sept. 3, 1892.

C. edusa has been abundant here, and I took one var. *helice*. About Aug. 26th *Drepana falcataria* and *D. lacertinaria* came to light. Is this usual? *Plusia gamma* has been very common, unusually so. — ANANDA COOMARA SWAMY; Walden, Worplesdon, Guildford, Sept. 3.

I took one *C. edusa*, a male, at Dorking on May 28th, and saw another a few days afterwards. I heard of some four or five others having been seen in the neighbourhood. On June 15th I took a worn female at Marlborough. Since the 6th of August I have taken ten, six males and four females, all in splendid condition, in one field not more than a mile from the parish church at Dorking. — FREDERICK FLOOD; Denfield, Dorking, Sept. 16, 1892.

During the last half of August, I found *C. edusa* common in the clover fields, &c., in the neighbourhood of Leatherhead. They were accompanied by large numbers of the "whites" and *Plusia gamma*, *Vanessa cardui* being also common. One specimen of the var. *helice* of *C. edusa* fell to my net, and one *C. hyale*. *C. edusa* are getting scarce and much worn; *V. atalanta* is appearing in unusual numbers. (At p. 221, line 15, for "Selcombe" read "Salcombe)."—R. M. PRIDEAUX; Ashted, Epsom, Surrey, Sept. 20.

As early as June 4th I netted one *C. edusa* on the railway bank between this and Epsom; on the 4th July two in the same place; and from that time till the close of August they were very common, as my brother Mr. S. Kaye has informed me.—W. J. KAYE; The Court, Worcester Park, Surrey, Oct. 15, 1892.

On Sunday, 14th August, I journeyed down to Caterham Valley in search of *C. edusa*. It was a beautiful sunny morning, though a boisterous wind was blowing, which made running after such insects as *edusa*, on loose and stony ground, rather irksome. However, I managed to net eight very fine examples of this lovely butterfly, seven being males and only one female. I went down again on the following Sunday, with the result that I captured twenty-five specimens, only three of which were females. It struck me then as being very odd that the number of males should be so greatly in excess of the females, but during the last few weeks the sexes have appeared in fairly equal numbers. Nearly all the girls and boys whom I met out on the hills with their nets appeared to have one or more *C. edusa* in their boxes. The insect is now very much scarcer; indeed, on Saturday, Sept. 17th, I only saw nine examples in all, four of which I took. On this same date I was fortunate enough to take four beautiful specimens of *C. hyale*, two being found *in cop.* on a long stalk of dry grass. This insect (*hyale*), I understand from entomologists who reside near this delightful valley, is generally taken every season, though very sparingly.—F. J. ROBINSON; Surrey Cottage, Water Lane, Brixton, S.W., Sept. 26.

Sussex. — I can fully endorse Mr. W. W. Esam's statement as to the abundance of *C. edusa* and *Vanessa cardui* in the neighbourhood of Eastbourne. During my visit, the middle of last month, I secured four specimens of the var. *helice* of *C. edusa*, and saw two others; I also caught a very prettily-marked female, in which the light markings in the borders of both wings are more numerous and pronounced than usual, and form a con-

tinuous series of spots; the margins of the wings also appear to be rather more rounded than usual.—HENRY D. SYKES; The Cedars, Enfield.

At Bognor, Sussex, during August, *C. edusa* was very abundant in most of the fields where the ragwort was in flower. Of forty specimens of *Colias* that I took, eighteen were males, sixteen females, four very good specimens of var. *helice*, and two of *C. hyale*. One of the females was without the usual yellow spots on the border of the wings. One male measured a little over an inch from tip to tip of its wings. *Macroglossa stellatarum* was very abundant also. *Vanessa atalanta*, *V. io*, and *V. urticae* were very plentiful, but *V. cardui* was very scarce. *Plusia gamma* was extremely abundant. Among the geometers, I took *Eupithecia coronata*, *Thera firmata*, *Melanippe procellata*, *M. unangulata*, *M. galiata*, and a rather worn specimen of *Anticlea derivata*, &c. Of the Noctuæ, *Triphæna interjecta* was fairly common in a lane near Bognor.—HERBERT C. GENTRY; Marian House, Goulton Road, Lower Clapton, Sept. 3, 1892.

I found *C. edusa* very plentiful during August in a clover field at Forest Row, on the borders of Ashdown Forest, Sussex, and I caught over two dozen, four being females; but no *helice* or *hyale*. Mr. B. C. Hartley, of West Dulwich, showed me one specimen of *helice* and two of *hyale* caught by him near Washington, Sussex.—R. A. DALLAS BEECHING, F.E.S.; Tunbridge Wells.

On the Sussex coast, between Worthing and Littlehampton, *C. edusa* has been very common throughout August, my brother and I netting a nice long series, including four var. *helice*, on the morning of the 10th, all in perfect condition. They were about in hundreds, and we had no trouble in capturing them, as they were continually flying past.—HUGH E. HOPKINS; 153, Camden Grove North, Peckham, S.E., Sept. 3, 1892.

I had the good fortune to take two specimens of *C. hyale* in the neighbourhood of Eastbourne last week. I also saw two more specimens in the boxes of other collectors, captured in the same neighbourhood.—HENRY D. SYKES; The Cedars, Enfield, Aug. 23, 1892.

In such a truly "*edusa* year" as the present one has proved, it may perhaps be hardly worth while recording the appearance of this butterfly. I had heard the reports during the summer of the unusual abundance of specimens in various parts of the country, but was quite unprepared, when I arrived here about the middle of August, to find them in such phenomenal numbers. On the downs they seemed quite as plentiful as the common whites, and I was frequently gladdened by the sight of a clouded yellow careering along the Brighton streets. I have only had three or four days' collecting, but was fortunate enough to secure a lovely example of the female variety *helice* at Polegate, and two more in this neighbourhood. *Vanessa cardui* has turned up again in great quantities after an absence of several years.—W. H. BLABER; 34, Cromwell Road, West Brighton, Sept. 17, 1892.

C. edusa has been very common here in the meadows and gardens on the downs, especially near Beachy Head, and it has even been seen in the centre of the town. Hybernated specimens were fairly common in Abbott's Wood in the spring, but I have seen none here. Of the var. *helice*, I have taken eight specimens, but in rather poor condition, owing to the fact that I discovered their haunt rather late. *C. hyale* has by no means been so plentiful, one specimen captured by my brother at Abbott's Wood being the only one seen.—T. BROMLEY, JUN.; Bineham, St. Leonard's Road, Eastbourne, Sept. 2.

About the middle of August, while staying at Brighton, I observed a great number of *C. edusa* on corn stubbles on the outskirts of the town. I took twelve males and four females, besides one fine specimen of the var. *helice* (pure white ground), in about one hour and a half. I think that it is a fact worthy of notice that all the *Colias* which I saw were flying inland away from the sea, a fact which makes it possible that their appearance was due to migration.—H. E. L. CHADWICK; Hadlow Castle, Tunbridge, Kent, Sept. 22, 1892.

I have been much interested reading accounts in your September number of the unusual abundance of *C. edusa* this year. When driving between Brighton and Lewes, the beginning of August, I noticed several fly across the road. I never saw the species here before, though I have travelled over the same ground at that particular season for some years past. I took the earliest opportunity of going in search of some, and found, I may say, hundreds in a wheat field near Stanmer. As the corn was being cut, it was easy to get at them, and I might have taken any number. They were principally males, for I only took one female, and was unable that day to obtain another. A day or two after I found females more plentiful, and the specimens all beautifully fresh, evidently having recently emerged. There was also a fair sprinkling of *C. hyale*. I remarked especially the unusual brilliancy of the male *Polyommatus adonis*. So many of the butterflies this year (above all the blues) I find attacked by some bright red insects; so thickly on the bodies of some, it seemed a wonder they lived, and appeared to fly as easily as without these unpleasant visitors.—(Mrs.) ARGENTINE BASHFORD; 36, Brunswick Square, Brighton, Sept. 16, 1892.

I was staying at Pulborough during the first week in August. *C. edusa* was on the wing, but not in any quantity, five being the largest number I saw in one day. I went there again, on the 18th August, to spend a few days; *C. edusa* was then very common, especially in meadows near the Arun, and on the railway embankments.—P. T. LATHY; Warren Road, Bexley Heath, Oct. 2, 1892.

Five specimens of *C. edusa* seen near Hastings between June 3rd and 6th.—E. R. CHAMBERS; 28, Southampton Buildings.

Several beautiful specimens of *C. edusa* var. *helice*, and one or two *C. hyale*, were among our captives. *C. edusa* was last seen here on Oct. 4th.—JOSEPH ANDERSON, jun.; Alve Villa, Chichester.

Wales.—I captured, on Sept. 14th, a fine male specimen of *C. edusa* in a lane running through a plantation above Pen-y-worlod, near Hay, Breconshire; also, on June 7th and Aug. 17th, I saw two specimens of *C. edusa* at Llanfairfechan, Carnarvonshire, on sunny banks near railway.—A. M. PATESHALL THOMAS; Llanthomas, Hay, Breconshire, Sept. 10.

A specimen of *C. edusa* was taken at Tenby in the spring.—HENRY A. HILL; Hampstead.

C. edusa was common at Usk, in Monmouthshire, at the end of August.—E. T. BISSHOPP; Ipswich.

C. edusa has been very plentiful about here since about the 12th of August, nearly two hundred having been caught by the members of the Penarth Entomological and Natural History Society; several of the var. *helice* having been met with. Of fifty *edusa* that I have caught, twenty-one are females, many in magnificent condition. Some of the females have a rich glossy appearance on the dark portions of the wings.—G. A. BIRKENHEAD; Penarth.

In addition to the localities already recorded where *C. edusa* has been

abundant this season, I am able to give Carmarthenshire and Pembrokeshire. On Aug. 22nd I noticed it all along the railway for more than twenty miles between Tenby and this county. *Vanessa atalanta* and *V. urticae* have also been very plentiful, and I have also seen several *V. cardui* and *V. io* — T. B. JEFFERYS; Langharne, Carmarthenshire, Sept. 13, 1892.

A friend of mine, E. A. Sanders, caught a fine specimen of *C. hyale* on Sept. 2nd, in South Wales.—E. GORDON C. BROOKE.

I have just had a letter from an entomological friend, who tells me *C. edusa* has been abundant on the Welsh coast; also common inland, in N. Wales, Merionethshire.—J. ARKLE; 2, George St., Chester, Nov. 20, 1892.

Warwickshire (North).—On Sept 3rd, 1892, I found a male specimen of *C. edusa* near Spade Mill Pool, Sutton Park. It was in good condition, and seemed to have just emerged from the pupa.—J. MOORE; 223, Great Russell Street, Birmingham.

Wiltshire.—I saw two *C. edusa* at Chippenham, and one at Box, Wilts, on Sept. 26th.—CHAS. BARTLETT; Branscombe, Redland Green, Bristol.

C. edusa has been abundant in the neighbourhood of Colne, N. Wilts, during the latter part of August, though females were somewhat scarce, the proportion of males to females being about seven to one. One female which I secured was unusually small, measuring only one inch and eleven-sixteenths from tip to tip.—(Rev.) J. E. TARBAT; Whitby Villa, Reading.

I was down home, in Wiltshire, about the middle of August last, and I found *C. edusa* fairly common. The place where they congregated chiefly was a large piece of waste ground in some allotment land, which had not been cultivated this year, and was entirely overgrown with thistles and other wild flowers. When the sun was shining it had a wonderfully bright appearance, for the place was literally alive with insects. *Vanessa io* and *V. urticae* simply swarmed. There were also *Lycana icarus*, *Polyommatus phlaeas* and *Plusia gamma* in fair numbers; and a good sprinkling of *Pyrameis cardui*, an insect of very uncertain habits—some years I have not seen a single specimen. I only saw two specimens of *edusa* var. *helice*, neither of which I was able to capture. All insects were in splendid condition.—(Rev.) T. B. EDDRUP; Newchurch-in-Rosendale, Manchester.

Worcestershire.—Since coming here (Tenbury), on the borders of Worcestershire and Shropshire, I have seen a few *C. edusa*.—W. CLAXTON; Hartley Wintney, Winchfield, Sept. 3, 1892.

Yorkshire.—On May 29th last I captured a fine female specimen of *C. edusa* in Edlington Wood, near Doncaster, Yorks. It was flying down a clearing in the wood, and its condition was as if just emerged.—E. G. POTTER; York.

Several specimens of *C. edusa* were taken last month in the neighbourhood of York, but, so far as I am aware, neither the var. *helice* nor *C. hyale* have put in an appearance. *Vanessa atalanta* has been very common, and *V. cardui* fairly so.—WILLIAM HEWETT; 12, Howard Street, York, Oct. 21, 1892.

My boy, Stanley Harris, brought a specimen of *C. edusa* in one day from the fields by the Ure, over against Hawes, in Upper Wensley Dale. As an old collector, well acquainted with the North Riding, I believe this wild and bleak locality for *C. edusa* is quite new. We took it at Richmond in 1875 (I think it was), but that is further down dale, and quite a different climate.—C. ALEX. HARRIS; The Hermitage, Worcester Park, Oct. 24.

Ireland.—I wish to record the appearance here, on Aug. 28th, of a

single specimen of *C. edusa*, an insect I have never seen here before. Mr. Birchell gives "east coast" among other localities, so that the occurrence so far north may not be unprecedented. *Vanessa cardui* has been common this year; previously not more than one or two seen in a season. *V. atalanta*—usually not abundant—in great numbers this year. *Plusia gamma* not more frequent than usual, I think. A single specimen of *Sphinx convolvuli* may also be worth noticing. Since writing the above, a second specimen of *C. edusa* was captured here on Sept. 22nd. These are the only two I have seen or heard of about here—M. FITZGIBBON; Howth, Co. Dublin, Ireland.

Scotland.—On Aug. 24th last I was on a hill called Whistlefield, a few hundred feet above Loch Long, Dumbartonshire, when, to my surprise, I saw *C. edusa*, a single specimen only, flying over the heather. It was a male, in good condition.—GEOFFREY HUGHES; Woolston Vicarage, Southampton, Sept. 22, 1892.

I saw a male specimen of *C. edusa* which was taken at Forgendenny, near Perth, on Aug. 25th; captured by Mr. Hendry, Caledonian Road, and is now in the possession of his brother-in-law.—R. LAWSON; 10, High Street, Perth, N.B.

My brother-in-law informs me that he had seen an example of *C. edusa* on a mountain in Scotland near Row, not very far from Glasgow. The date was either the 19th or 20th of August.—F. C. WOODFORDE; Market Drayton.

Whilst staying at New Abbey (Kirkcudbrightshire), in September, I took a perfectly fresh male, and saw one other, both on the 23rd.—L. S. BRADY; Mowbray Villas, Sunderland, Oct. 18, 1892.

Channel Islands.—*C. edusa* has been literally swarming in Jersey this year, as likewise in the other Channel Islands, I learn from communications. I have taken *helice* and every other variety of this interesting insect.—W. J. KAYE; Dudley House, Bagot, Jersey, Sept. 16.

NOTES FROM THE NEW FOREST AND SWANAGE.

By E. G. ALDERSON.

ON July 22nd I set out, with Mr. E. B. Charles, for the New Forest. We had previously had an indifferent week's sport in Sherwood, and were fully resolved to make up for its shortcomings in a more productive locality. From the first we were favoured with glorious weather, hot enough to satisfy the most inveterate entomological grumblers. The brilliant sunshine by day was invariably followed by those close dark nights in which Noctuæ most thickly do congregate upon sugar; and altogether our experiences were in pleasant contrast to those of our week in the midlands.

There was a brave show of butterflies. Of course *Gonepteryx rhamni* and the common "whites" and "Satyrs" were in plenty, but of the latter *Satyrus semele* seemed hardly so common as in former seasons. *Argynnis paphia* was a nuisance, and *A. adippe*

was more abundant than I have ever seen it before in the Forest. We took a few fine *A. aglaia*. This beautiful species, however, was far rarer than its congeners, and was altogether outnumbered by *A. paphia* var. *valesina*. It was evidently a *valesina* year; everywhere one was sure to see its dusky form sailing down the ridings. *Melanargia galatea* was still abundant in one spot. On our first day in the Forest *Colias edusa* was sighted, and I had the pleasure of taking it for the first time since 1877; a capture which brought back many pleasant memories of that marvellous season when "clouded yellows" were as common as blackberries, even in Nottinghamshire. *Limenitis sibylla* was abundant, but difficult to get in good condition. Of the Vanessidæ, *Vanessa io*, *V. atalanta*, and *V. urticæ* were of course common; and both *V. cardui* and *V. polychloros* were in unusual numbers. Of the latter species we got some splendid examples; one tree in particular, from which sap was exuding, being a safe draw.

This same tree was also tenanted by an old male *Apatura iris*, whose downfall I eventually compassed as he sallied forth to do battle with a venturesome *L. sibylla*, which had dared to invade his quarters. Although we saw scores of "emperors," this was our solitary capture. They were out in force; on our first day we saw no fewer than fourteen, all hopelessly out of reach, except one, which Mr. Charles unfortunately missed. Frequently in our walks abroad we saw three or four at once, battling together high in air, but apparently they were quite aware of the presence of danger below, and never gave us a chance.

The oaks in several places were alive with *Thecla quercus*, and we employed one dull morning very profitably in beating them out. *Lycæna ægon*, *L. alexis*, and *L. agestis* were common; and among the Hesperidæ, *Hesperia thaumas*, *H. sylvanus*, and *Nisoniades tages* were taken in greater or less abundance.

My companion had never taken *H. actæon*, so we went down to Swanage on the 26th July, in order to look it up. As the Rev. W. Claxton, whose article on the species, in the 'Entomologist' for October, I have read with much interest, expresses a fear for the future of *actæon*, I am glad to be able to assure him that we found this beautiful "skipper" still abundant at Swanage, in company with *Melanargia galatea*, *Colias edusa*, *Eubolia bipunctaria*, *Zygæna filipendulæ*, and *Macroglossa stellatarum*. By way of parenthesis, I may remark that revisiting Swanage on August 5th, I found *H. actæon* still commoner, and *C. edusa* in wonderful profusion, with a fair sprinkling of var. *helice*.

Sugaring was good business in the Forest, the nights being uniformly favourable. From the first *Catocala promissa* came on freely, and on July 30th was joined by *C. sponsa*. Several *Triphæna fimbria* were taken, and one *T. interjecta*. *Gonophora derasa*, *Thyatira batis*, and *Aplecta nebulosa* were common; while, of course, *Amphipyra pyramidea*, *Noctua brunnea*, *Cosmia trape-*

zina, *Euplexia lucipara*, and *Xylophasia polyodon* came in countless myriads every night, with an occasional *Mania maura* or *Leucania lithargyria*; *Boarmia repandata* var. *conversaria* also turned up twice at the sugar.

Of miscellaneous captures we had a fair show. Once or twice *Liparis monacha* and *Calligenia miniata* came down the riding where we had sugared, and were duly secured. We took one *Geometra papilionaria*, several *Pseudoterpna cytisaria*, a lot of pretty forms of *Ennomos erosaria*, a pair each of *Selenia illustraria* and *Tephrosia crepuscularia*; *Aspilates citraria* (at Swanage), *Selidosema plumaria*, *Phytometra ænea*, *Anarta myrtilli*; two *Bombyx quercus*, one a fine female, which I netted, after a hot chase, close to Lyndhurst Road station; and one *Platypteryx unguicula*.

After our bad luck in Sherwood, we were well satisfied with our spoil, our want of success with *A. iris* being our only cause for regret. The solitary capture recorded above constituted our only claim to the title of regicides. A very disreputable old male he was, too; still he was my first emperor; and seeing he was likely to die of extreme old age, I helped him on the road to dissolution. But if this species is as common next season, may I be there to see.

Worksop.

NOTES FROM THE NORTH-WEST COUNTIES.

By J. ARKLE.

A YEAR ago, in a contemporary, I read of an entomologist who went in early July to Penmaenmaur, and who had the good fortune to take not only *Agrotis ashworthii*, but *Acidalia contiguaria*. Both species, if I recollect rightly, were taken off the rocks. To those unacquainted with the district, I may say that Penmaenmaur, Llanfairfechan, and Aber are on the line of rail which skirts the coast away to Holyhead. They are in Caernarvonshire, just round the Great Orme's Head, and they command a fine view of Puffin Island and Anglesey, which are just opposite, and of the entrance to the Menai Strait. The three places will be about two miles and a half from each other.

Early in July of this year I went to visit an old friend from London, who was staying at Llanfairfechan for a few weeks. Speaking entomologically, the net was out of the question, for, independent of other considerations, the weather was dull and threatening, and the temperature not quite up to one's expectation for July. The conditions were, however, very favourable for rock-hunting, and every effort was consequently made to come across the two species of Lepidoptera referred to.

The immediate features of the inland are, first, a belt of trees

and brushwood rising a few yards away from the shore; then the rocky heights; and, lastly, the mountain tops, many of which rise 3000 feet. Farther away, and nearer the Strait, is Carneydd Llewellyn, claimed by the guide-book, according to the latest survey, to be 9 feet higher than Snowdon. But Snowdon has upon its summit an artificial cairn 15 feet high, and so it tops its ambitious rival by just 6 feet. Search we did, from the sea-level to cloudland, but we saw neither *A. ashworthii* nor *A. contiguaria*. In the belt of vegetation, and in quarries and rocky places, *A. incanaria* was a common insect. It is fond of resting by day on the growths of ivy which climb up the rock-faces, and its neat little grey wings spread out like a fan upon a bright green leaf make a pretty picture. But if good insects are not to be had, the holiday-maker can find a world of enjoyment in the grand scenery of this delightful part of "Wild Wales." There is the Fairy Glen, with its waterfall, near Penmaenmaur. It lies hidden in a bosky wood just past the Dwygyfylchi Hotel, which hostelry the reader may glibly quote to the intending visitor as a place where every care is bestowed on man and beast. I took a fine specimen of *Aplecta nebulosa* off the little rustic wooden bridge just below the fall. It was quite as light coloured as the specimens I take at Tan-y-Bwlch, in Merionethshire. Whether at Penmaenmaur, or Llanfairfechan, or Aber, the only Acidaliidæ I met with were *A. incanaria* (common) and *A. aversata*. At Llanfairfechan *Nudaria mundana* was a common moth; the other species were such as are generally distributed. On the bare mountain tops there seemed to be a total absence of not only insect, but animal life. Even vegetation, with the exception of the short mountain-grass, almost as close and short as the pile of velvet, was reduced to the smallest limits. The few types included the beautiful stag's-horn moss, creeping among the short grass; and by the mountain-springs, where the water is cold and pure, grew rare and curious forms of blossoming water-plants. Now and then a cloud enveloped us, and, passing away with the breeze, left a tiny sparkling drop on every grass-blade. It is best to wait till the cloud has passed, for there may be an ugly scaur near, at the bottom of which lies a silent, sullen, and desolate lake.

For scenery of its kind, nothing can surpass a walk up the woody Aber Glen to the celebrated waterfall. Here the parsley fern grows luxuriantly. Skipping about on the short herbage I found numerous specimens of *Crambus culmellus*, all of which were very much smaller than the type. In short, the whole district, if properly worked and in favourable weather, would no doubt be very productive to the entomologist; but as my time was up, and the skies showed no signs of clearing, I left this beautiful neighbourhood on the 19th, and with almost empty boxes. It was a memorable day of cold, and wind, and heavy rain. Of butterflies I had seen none, their only evidence

being an empty pupa-case of *Vanessa urticæ* hanging from a stone wall.

On the 23rd I started from Chester to Lancaster. A railway collision, which happened on the way, nearly prevented this chronicle, but I turned up amongst the lucky. On reaching my destination I found a letter from my friend Mr. Murray, of Carnforth, arranging a trip to the Witherslack Mosses, which lie about six miles to the south-east of Lake Windermere in Westmoreland. The weather had cleared up, and three of us did our best in the tropical heat among the brilliant insects, which literally swarmed in that sheltered corner of the Mosses, just by the Summerhill Farm, *alias* "Far-Away." Our route was as follows:—Lancaster to Arnside *viâ* Carnforth, then a walk across the Kent estuary along the railway bridge, then along the river embankment to the right, and so on to the 'Derby Arms' Inn, Witherslack, and "Far-Away." All along the embankment *V. urticæ*, *Epinephele ianira*, *Lycæna icarus (alexis)*, and *Eubolia limitata (mensuraria)* were abundant; but of the "meadow-browns" I saw no "bleached" specimens. A fine dragonfly, one of the *Æschnidæ*, rose from the ditch below, but it gave me no chance of further identification. I saw another specimen during the day, but failed to capture it. On the flat, rocky spot covered with St. John's wort, where we turned off the embankment to the left and so on through the fields to the 'Derby Arms,' we found any number of *Tortrix rufana*. They were fresh from the chrysalis, and in many cases almost red in colour. Other captures here were *Gnophos obscuraria (obscurata)*, *Anaitis plagiata*, *C. falsellus*, *C. inquinatellus*, and *C. selasellus*. One Fritillary was seen on the way to the inn, probably *Argynnis aglaia*. On the borders of the Mosses foxgloves grew freely. From the flowers of isolated plants I got a large number of nearly full-fed larvæ of *Eupithecia pulchellata*. On the rocky hillside we netted, among the ferns, a few specimens of *Tanagra atrata (chærophyllata)*. But it was on the Moss itself, in the corner aforesaid, where cotton-grass, heath, and bog-myrtle are about equally mixed, that the winged assembly was most numerous and brilliant. There were *Nemeophila russula*, *N. plantaginis*, *Anarta myrtilli*, *Hyria muricata (auroraria)*, *Acidalia fumata*, *Carsia paludata var. imbutata*, *Phycis fusca (carbonariella)*, and *Mixodia schulziana*, all fresh from the chrysalis, with the exception of *A. fumata*, and in abundance, if we except *P. fusca*. Females of *N. russula* were as abundant as the males. A few late specimens of *Cænonympha typhon (davus)* were on the wing, and many were in capital condition. Attendant nuisances were *Ematurga atomaria* and *C. margaritellus*. A couple of hours here under the burning sun and intense heat compelled us to beat a retreat on the 'Derby Arms,' where, our flasks being empty,

we were glad to restore the equilibrium in shandygaff. By and bye, under the kind direction of Mr. Murray, larvæ of *E. constrictata* were taken from flowers of wild thyme, close by the roadside at the bottom of the hill, a hundred yards or so from the inn. Here, also, I netted a few fine specimens of *L. astrarche* (*agestis*) var. *salmacis*. Wherever we came across nettles in the neighbourhood we found larvæ of *V. io*. The day closed with a call, on our way home, at Mr. Murray's, Carnforth, where my companion and I enjoyed a look at our friend's fine collection of Lepidoptera, stuffed birds, and eggs. In his garden stands a breeding-house for Lepidoptera, whilst immediately around are growths of sallows and other shrubs, upon which were feeding unconfined larvæ of *Saturnia pavonia* (*carpini*), *Dicranura vinula*, &c.

(To be concluded.)

ENTOMOLOGICAL NOTES, CAPTURES, &c.

THE AUTUMN FORM OF VANESSA C-ALBUM BRED FROM SPRING LARVÆ.—Cases of the 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, and the following—which took place amidst surroundings so nearly approaching those that would affect an insect in a wild state—is, on that account, perhaps worth putting on record. *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 later brood is dark greyish brown. In June last I received from my valued correspondent Mrs. Hutchinson, of Leominster, six full-fed larvæ of this species, which at once pupated among the currant-leaves with which they had been supplied for food, and were placed in a large open cage, fully exposed to the weather, except for the protection afforded by a board placed over the top of it to keep off the worst of the rain. Four imagoes, of the usual summer form, emerged between the 2nd and 7th of July; the temperature then fell considerably below the average for the time of year, and no more emergences took place until the 15th, when the fifth butterfly attempted to leave the pupa, but failed to clear itself of the shell or to expand its wings. On the 17th the mean temperature was just 20° below the average, with rainy weather, and there was little improvement in this respect until the 22nd, and on the 23rd the last imago appeared, a fully developed female, but distinctly of the autumn form.—ROBT. ADKIN; Lewisham, Nov., 1892.

CHAROCAMPA CELERIO IN SUSSEX.—On Friday last I received a fine female specimen of *Charocampa celerio*, taken at Brighton, last month, at rest on a bathing-machine, by the custodian of the towels, &c. The insect is on an enormous common pin, which detracts from its otherwise splendid

condition. It spans three inches and a quarter across the wings.—A. COWPER FIELD; 81, Wiltshire Road, Brixton, S.W., Nov. 9, 1892.

SPHINX CONVULVULI IN SUSSEX.—A specimen of *S. convolvuli* was captured here at the end of last September.—W. M. CHRISTY; Watergate.

AGROTIS SAUCIA AND DASYCAMPA RUBIGINEA.—I am able to record the appearance of *Agrotis saucia* here in some numbers. Up to the middle of October, when I had to leave off trying, I took sixteen at sugar, as follows:—Sept. 20th, one; 24th, one; 27th, three; 30th, two; Oct. 5th, two; 6th, six; 10th, one. These are all the nights, except three, that I could go out, so that I think it must have been fairly plentiful. Among the captures are four very light brown, without a trace of reddish. On Oct. 7th I had the pleasure of taking a single *Dasycampa rubiginea*.—(Rev.) W. CLAXTON; Hartley Wintney, Winchfield.

HELIOTHIS ARMIGERA AT CHICHESTER.—Somewhat singularly, simultaneously with the appearance of Mr. Arkle's interesting article on *Heliothis armigera* in the September number of the 'Entomologist,' I was engaged in identifying a moth, taken here at light on the 28th of that month, and which I determined to be that species. Wishing to certify myself I forwarded it to Mr. Tugwell for verification. He very kindly did this, and wrote that there was no doubt as to the moth being *H. armigera*. It is unfortunately in poor condition, as Mr. Tugwell informs me most of the captured specimens are.—JOSEPH ANDERSON, Jun.; Chichester.

ENNOMOS AUTUMNARIA (ALNIARIA), &c., IN KENT.—While sugaring in Kent, in the middle of September, this year, I took a female specimen of *Ennomos alniaria* newly emerged. I kept it alive on the chance that I might find a male, which I did on the following day. Both specimens were cripples, the female having one of the under wings spoiled and the male all four. I placed both together, and kept them alive for a week, but failed to get any ova. The male was much smaller than the female; the markings and colour were alike, the only difference I noticed being the feathered antennæ of the male. The male managed to escape; the female I have kept for reference if required. Near the same place I saw a few wings of the same species, and I believe specimens of *E. alniaria* could be obtained in numbers if properly searched for. In the same place I also took *Vanessa cardui*; *V. atalanta*, common; *Colias edusa* and *C. hyale*, plentiful, but rather rubbed; one female *Gonepteryx rhamni*, perfect, the only one I saw; *V. io*, common, but in bad condition; five specimens of *Macroglossa stellatarum*, flying over larkspur. At sugar I took *Cosmia diffinis* (one), *Agrotis saucia* (plentiful), and several common Noctuæ. In the month of July, this year, in Leytonstone, I took *Apamea ophiogramma*, flying over the flowers in my garden; at the end of August I took a single specimen of *Thyatira batis*, in perfect condition, just as it left the sugar.—JAS. GARROW; 3, Wolseley Terrace, Birkbeck Road, Leytonstone, E., Oct. 9, 1892.

LARVA OF POLYOMMATUS ALCIPHON VAR. GORDIUS.—The supposed "Larva of *Polyommatus alciphron* v. *gordius*, Stgr.," described by me (Entom. 288), I now find to be nothing but a fine *P. phlæas*, female, which emerged, on Oct. 30th last, in my puparium. *P. gordius* is certainly very abundant at St. Martin-Vésudie during the season; in fact, far more so than the well-known *phlæas*, whence, I suppose, my mistake. The speci-

men of this latter, now before me, has two or three extra spots, and appears rather larger than most specimens I have seen.—F. BROMILOW; Avalon, St. Maurice, Nice, S. France.

ARE JERSEY INSECTS BRITISH?—*Apropos* of Mr. W. J. Kaye's letter (Entom. 202) when making the tour of the Channel Isles, in 1860, in the company of my father, I clearly recall a difference of opinion between him and the late Dr. J. S. Bowerbank, who was our fellow-traveller in Guernsey and Sark, and in quest of Spongiadæ, especially in the Gouliot caves of the last-named island; Dr. Bowerbank maintaining that the Channel Island Fauna should be regarded as British, and my father holding the contrary view, and considering that Malta and Gibraltar had an equal claim. It is certain that some of our rarest British Rhopalocera are, or at any rate were, as common in Jersey as on the Continent; for example, I captured six specimens of *Argynnis latona* and three of *Pieris daplidice*, certainly, in St. Ouen's Bay. The prevalence of *Lacerta viridis*, unknown in Britain, but widely distributed on the Continent, and of many continental species of plants, lead me to the conclusion that the Flora and Fauna of the Channel Isles, or of Jersey at all events, should be classed with the Continental rather than with those of Britain.—F. A. WALKER; Dun Mallard, Cricklewood, N.W.

N.B.—Mr. Piquet pointed out to me several local plants in the vicinity of St. Heliers, and sent me afterwards many larvæ of *Deilephila euphorbiae*. All unfortunately died, however, in the autumn of 1860, before reaching the pupa stage, and Mr. Piquet wrote shortly after to say that he had likewise lost his own batch, so that the failure, or epidemic, that season would seem to have been general.—F. A. W.

MALE *versus* FEMALE MOTHS AT LIGHT.—With reference to the interesting note of Mr. Anderson, jun. (Entom. 290), I beg to say I have found males to far outnumber females in my captures at gas-lamps. The following are illustrations from my last six years' experience:—*Pæcilocampa populi*: about a score of males taken every year; two females in the six years. *Neuronion popularis*: about a score of males each season; one female in the six years. *Asteroscopus sphinx (cassinea)*: about a dozen males each season, but never a female I regret to say. *Eugonia abiararia (tiliaria)*: males about a score every year; two females, all told. *Himera pennaria*: about a score of males captured yearly; no females in the six years. Generally, I believe, males fly more than females; and I think this is only natural, in spite of the usual greater wing development in the females,—always excepting the apterous species. My experience shows this rule of flight to be equally applicable to butterflies. Take, for example, the testimony of the *Colias edusa* pages in the November 'Entomologist.' It may be urged, possibly a greater number of males are actually born. I can only say a long breeding experience shows me that the sexes are pretty equal; in fact, I have noticed the females sometimes show a numerical superiority.—J. ARKLE; Chester.

ARCTIA CAIA: SECOND BROOD OF LARVÆ.—“July 21, 1892. Bumper's Lane, near Chester. Took a larva of *A. caia* in its second or third skin. Found two dead ones, evidently of the same brood, apparently glued to grass stems, as if for the purpose of moulting. The living larva died July 27th.” The caterpillars referred to in this extract from my note-book

would be the progeny of early moths of the same season. Had they lived they would have produced, in the autumn, a second brood of the perfect insect, — a matter which, I have reason to believe, is not of very rare occurrence. — J. ARKLE; Chester. [They would more likely have produced parasites.]

MIGRATION OF *PIERIS BRASSICÆ*, AT HARWICH. — We have had an immense immigration of *Pieris brassicæ* from the Continent. On Thursday, Aug. 11th, and for several days after, thousands were to be seen coming over the sea; large numbers were drowned. The lobster-catchers, who fish about five or six miles from the shore, told me that you could not look anywhere over the sea without seeing white butterflies making for the shore. The larvæ have swarmed in countless numbers; no one in this neighbourhood ever remembers a similar visitation before. Ichneumons have destroyed the greater part of the larvæ; out of two hundred that I counted at the Phoenix Hotel, at Dovercourt, I found only thirty-seven pupæ, the other 163 having been destroyed by the ichneumon flies. — F. KERRY; Harwich, Nov. 14, 1892.

HOMALOPLIA RURICOLA. — I have pleasure in recording the occurrence of this rare lamellicorn at Streatley. On Aug. 26th I picked up a single example on a grassy hill-side, and also one specimen of *Chrysomela hamoptera*. — F. W. LAMBERT; 17, Woodstock Road, Oxford.

NOTODONTA DROMEDARIUS. — I beat a larva of this species from hazel on September 9th. Is not this an unusual food-plant? — GERVASE F. MATHEW; H.M.S. 'Tyne,' Chatham.

NOTES ON LEPIDOPTERA IN SHROPSHIRE. — *Pieris napi* has simply swarmed about here, while *P. brassicæ* and *P. rapæ* have been rather uncommon. *Argynnis paphia* has been very plentiful up to August 28th, when I saw about a dozen; while next day there was not one to be seen, nor has there been one seen since. *Vanessa io*, *V. atalanta*, and *V. c-album* have been and still are very numerous, *V. atalanta* in particular. Another very common butterfly is *Pararge megæra*; while, on the other hand, some of the commonest species seen were very scarce here, such as *V. urticae*, of which I have only seen 1 specimen; *Epinephle ianira*, 3 specimens; *E. tithonus*, 2; *E. hyperanthus*, 2; *Cænonympha pamphilus*, 2; *Polyommatus phlœas*, 2; and *Lycæna icarus*, 1. I have only seen 1 specimen of *V. cardui*, which I captured on August 28th, and 1 *Lycæna arion* on August 30th on a turnpike road. The above were seen by me in this neighbourhood since the 1st of August, and I have been out nearly every fine day from that date to the end of September. I may add that an unusual number of larvæ of *Arctia caia* were seen crawling along the paths and roads. — E. H. BLACKMORE; 13, Bull Ring, Ludlow, Salop.

NOTES FROM THE KENTISH COAST. — I was staying with a friend, in the vicinity of Folkestone, during August, and found the season very good. *Colias edusa* was fairly common, and we secured a good series, amongst them being two var. *helice*. We never even saw *C. hyale*; but *Vanessa cardui* and *V. atalanta* swarmed everywhere. The above locality seems to be very rich in Sphinges. I took two larvæ of *Acherontia atropos* on a small patch of potatoes close to the sea, on Aug. 15th; one of them, stung by an ichneumon, died, but the other I succeeded in rearing, and obtained from the pupa, on Oct. 14th, an imago measuring four inches and seven-

eighths across. We also took twelve larvæ of *Chærocampa elpenor* from one ditch, while the larvæ of *Smerinthus ocellatus* and *Sphinx ligustri* we found in abundance. During the first week in August we also captured about twelve imagos of *Macroglossa stellatarum*, in poor condition.—R. H. BYRNE; 47, St. John's Park, N.

LEPIDOPTERA IN SOUTH WALES, ETC.—The following Lepidoptera appeared unusually abundant during my stay in South Wales, chiefly in Carmarthenshire, from the end of June until the end of September:—*Pieris rapæ*, *P. napi*, *Vanessa atalanta*, *V. urticæ*, *V. cardui*, *Epinephele tithonus*, *Polyommatus phlæas*, *Hesperia thauwas (linea)*. *Colias edusa* I have separately reported; it might be seen, during August and September, by the coast, river-side, o'er hill and dale. I may add that I saw the last specimen in Gloucestershire, on the Cotswolds, on Oct. 11th. *Macroglossa stellatarum* was also more abundant, in Wales, and *Nomophila noctuella* exceptionally so. Of injurious Lepidoptera, *Eupithecia rectangulata*, *Abraxas grossulariata*, and *Pionea forficalis* and its larvæ, were over-abundant. The gooseberry and currant bushes in one locality suffered excessively from the larvæ of the sawfly, *Nematus grossulariæ*.—T. B. JEFFERYS; Clevedon, Nov. 2, 1892.

NOTES ON LEPIDOPTERA AT CHICHESTER.—My captures in May were *Hemerophila abruptaria*, *Cilix glaucata (spinula)*, *Emmelesia albulata*, and at light *Dianthæcia carpophaga*. At the end of the month hibernated *Vanessa cardui*, and *Colias edusa* were very numerous. In June I took *Acronycta aceris*, *Hepialus humuli*, the females of the latter varying much in size (some being scarcely larger than the males, others twice the size) and the markings in some specimens were very faint and indistinct, but others very rosy and pronounced. In the garden *Sesia tipuliformis*, flying round or settled on the leaves of currant and raspberry bushes. In July, *Melanippe procellata* and *Macroglossa stellatarum*. On the 29th of this month I first saw the new brood of *Colias edusa*. Looking over my captures of this butterfly I notice one male with borders quite black, the wing-rays also being streaked with black. It is quite different from the type. The band in some, on the contrary, is thickly dusted with yellow scales. In September, sugar attracted *Catocala nupta* (a few), not in such good condition as in former years, and, after several years' disappearance, *Agrotis saucia*, varying considerably; *Agrotis suffusa*, *Noctua c-nigrum*, *Caradrina taraxaci (blanda)*, *Hydræcia micacea* (also at light). In addition to the *Eugonia (Ennomos) autumnaria* recorded (Entom. 290), my brother took a male at light on Sept. 26th.—JOSEPH ANDERSON, Jun.; Alve Villa, Chichester.

CAPTURES AT FOLKESTONE.—The entomological section of the Natural History Society of the Currie Schools have taken, during last term and the latter half of September, 167 species of Lepidoptera in the district. The following is a small selection:—Rhopalocera: *Colias edusa*, *Thecla rubi*, *Lycana argiolus*, and *Nemeobius lucina*. Heterocera: *Deiopeia pulchella* and *Plusia moneta*; also *Sphinx ligustri*, *Chærocampa porcellus*, *Macroglossa stellatarum*, *Cossus ligniperda*, *Chelonia plantaginis*, *Dicranura bifida*, *Notodonta dictæa*, *Angerona prunaria*, *Geometra papilionaria*, *Iodis vernaria*, *I. lactearia*, *Phibalapteryx tersata*, *Acronycta ligustri*, *Tapinostola (Chortodes) bondii*, *Xylophasia sublustris*, *Caradrina alsines*, *Tryphæna fimbria*, *Xanthia cerago*, *X. silago*, and *Cosmia pyralina*.—E. G. FELLOWS (Sec.)

LEPIDOPTERA IN THE SOUTH OF FRANCE.—Although the season is now practically over, here, there are still a few species to record. Yesterday I saw several *Colias edusa*, a *Vanessa cardui*, *Pararge ægeria* v. *egerides* (Stgr.), two, and one *Macroglossa stellatarum*. This latter hibernates in dwelling-houses, and may often be met with in disused clothing, &c., during the winter months. I also took *Lycana bætica* (Linn.), a worn male, and an example of *L. telicanus* (Lang.), female, likewise in a dilapidated condition: I am informed that two specimens of the former insect were observed in the neighbourhood on the 10th ult.; it is certainly rare. The species seems chiefly to frequent gardens. I remember I took a female, very fresh, on October 8th, just five years ago. *L. telicanus* is usually fairly common on waste ground. Is it not probable that the species feeds on other plants besides *Lythrum salicaria* and *Calluna*, as neither of these occur in any abundance in the district? I am surprised not to have met with *Charaxes jasius* (Linn.), which is to be seen at this date in most years, though I have not yet succeeded in capturing it! It has a high, soaring flight, and is fond of settling on the figs which are laid out to dry in the sun.—F. BROMILOW; Nice, France, Oct. 13, 1892.

ERRATA.—Pp. 267, 269, for *Antomeris* read *Automeris* throughout. P. 268, l. 17, for *Loepa swalica* read *Loepa sivalica*. P. 269, l. 14 from bottom, for *Saturnioidæ* read *Saturniidaæ*. P. 269, l. 12 from bottom, for *eupterote* read *Eupterote*.

SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON.—November 2nd, 1892. — Frederick DuCane Godman, Esq., F.R.S., President, in the chair. The President announced that the Society had acquired a new oxygen lantern, and that the cost of it had been generously defrayed by Mr. H. J. Elwes, Prof. Meldola, Mr. R. McLachlan, and Mr. E. B. Poulton. Mr. S. Stevens exhibited, for Mr. J. Harrison, of Barnsley, and read notes on, a beautiful series of *Arctia lubricipeda* var. *radiata*, which had been bred by Mr. Harrison this year. Mr. G. T. Bethune-Baker exhibited specimens of *Polyommatus dispar* var. *rutilus*, taken in England by his father about sixty years ago. He stated that it was generally believed that this form of the species was confined to the Continent, but his specimens proved that it formerly occurred in England. Mr. C. G. Barrett exhibited dark varieties of *Acronycta leporina*, bred by Mr. J. Collins, of Warrington; also a white variety of *Triphæna pronuba*, taken at Swansea by Mr. W. Holland. Mr. M. Jacoby exhibited a specimen of *Sagra femorata*, from India, with differently sculptured elytra, one being rough and the other smooth. Mr. J. A. Clark exhibited a long series of remarkable varieties of *Liparis monacha*, bred from a pair, one of which was taken in the New Forest, and the other on the Continent. Several of the specimens were as light in colour as the typical form of the species; others were quite black; and others intermediate between these two extremes. The Rev. J. Seymour St. John exhibited a monstrosity of

Abraxas grossulariata, and a specimen of *Taniocampa stabilis*, with a distinct light band bordering the hind margin of the upper wings. He stated that he had bred both specimens. Mr. E. B. Poulton exhibited two series of imagos of *Gnophos obscurata*, which had been subjected to dark and light surroundings respectively. The results were seen to be completely negative, the two series being equally light. Mr. F. Merrifield showed a number of pupæ of *Pieris napi*. About eight of them, which had attached themselves to the leaves of the cabbage plant on which they were fed, were of a uniform bright green colour, with light yellowish edgings; of the others, those which had attached themselves to the black net covering the pot, or the brownish twigs which supported it, nearly seventy in number, were dark coloured, with dark spots and lines. The remainder were of a green colour, much less vivid than that of those which had spun up on the leaves, with numerous dark spots and lines on them. Mr. R. Adkin exhibited three bred female specimens of *Vanessa c-album*, two of which belonged to the first brood, and the third to the second brood. One of the specimens of the first brood was remarkable in having the under side of a very dark colour, identical with typical specimens of the second brood. He thought the peculiarity of colouring in this specimen had been caused by a retarded emergence from the pupa, due to low temperature and absence of sunshine. Mr. F. W. Frohawk exhibited a series of striking varieties of *Satyrus hyperanthus* bred from ova laid by a female taken in the New Forest in July last. Mr. F. D. Godman exhibited a specimen of *Amphonyx medon*, Cr., received from Jalapa, Mexico, having a pouch-like excrescence at the apex of its body. Mr. McLachlan, Mr. H. J. Elwes, and Mr. Poulton commented on it. Mr. C. J. Gahan communicated a paper entitled "Additions to the Longicornia of Mexico and Central America, with notes on some previously recorded species." Mr. W. L. Distant communicated a paper entitled "Contributions to a knowledge of the Homopterous family Fulgoridæ." Mr. Oswald Latter read a paper (which was illustrated by the Society's new oxy-hydrogen lantern) entitled "The Secretion of Potassium-Hydroxide by *Dicranura vinula*, and the emergence of the imago from the cocoon." The author stated that the imago produced, probably from the mouth, a solution of caustic potash for the purpose of softening the cocoon. The solution was obtained for analysis by causing the moths to perforate artificial cocoons made of filter-paper. Prof. Meldola said that the larva of *D. vinula* secretes strong formic acid, and Mr. Latter had now shown that the imago secretes potassium-hydroxide, a strong alkali. He said he had long been familiar with the fact that the secretion from the imago of *D. vinula* was alkaline to test-paper, but he had never investigated its composition; and he also stated that the fact that any animal secreted a strong caustic alkali was a new one. Mr. Merrifield, Mr. Hanbury, Mr. Gahan, Mr. Poulton, and Prof. Meldola continued the discussion. Mr. H. J. Elwes and Mr. J. Edwards read a paper, also illustrated by the oxy-hydrogen lantern, entitled "A revision of the genus *Ypthima*, principally founded on the form of the genitalia in the male sex." Mr. McLachlan said he attached great importance to the genitalia as structural characters in determining species, and he believed that he

could name almost any species of European Trichoptera simply from an examination of the detached abdomens of the males. Mr. Osbert Salvin said he had examined the genitalia of a large number of Hesperidæ, with the view of considering their value in distinguishing species, but at present he had not matured his observations. Mr. Jacoby, Mr. Bethune-Baker, Colonel Swinhoe, Mr. Lewis, Dr. Sharp, Mr. Hampson, and Mr. Champion continued the discussion. Mr. S. H. Scudder communicated a paper entitled "New light on the formation of the abdominal pouch in *Parnassius*." Mr. Elwes said he had based his classification of the species of this genus largely on the structure of this abdominal pouch in the female. It had been considered doubtful whether the fluid which formed this pouch was secreted by the female or the male, but he always thought that it was secreted by the latter, as after pairing the male frequently died from exhaustion. He was glad to find that Mr. Scudder had now proved this supposition to be correct. Mr. Jenner Weir remarked that a similar abdominal pouch was to be found in the genus *Acræa*; and Mr. Hampson referred to specimens, in Mr. Leech's collection, of a male of one species of *Parnassius* taken *in copulâ* with a female of another species, in which the pouch peculiar to the species to which the female belonged had been formed, and, not fitting the claspers of the male, had come away from the female on the specimens being separated, and remained attached to the male.—H. GOSS & W. W. FOWLER, *Hon. Secs.*

SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—
October 27th, 1892.—C. G. Barrett, Esq., F.E.S., President, in the chair. Mr. Hugh Main, of East Greenwich, was elected a member. Mr. Bristowe exhibited *Zygana trifolii*, Esp., intermediate between the normal form and the yellow variety; and a variety of *Argynnis paphia*, L., in which the spots had coalesced and formed streaks. Mr. C. Fenn, *Tortrix rosana*, L., from Aberdeen and Eltham, and remarked that there was some doubt as to the Aberdeen specimens being referable to this species, and Mr. Barrett said he considered them to be *T. rosana*. Mr. R. Adkin showed *Odonestis potatoaria*, L., bred from larvæ collected in Sussex, the series showing considerable variation; he also called attention to the wings of some of the females being much scalloped, but still retaining complete fringes. Some observations were made by members upon the probable causes of this. Mr. Barrett exhibited two specimens of *Nonagria concolor*, Gn., one taken in the Yaxley Fen district thirty or forty years ago, and the other recently captured in a locality in the Midland Fen district, and forwarded by Dr. F. D. Wheeler for comparison; also, specimens of *N. helmanni*, Evers., *N. fulva*, Hb., *N. bondii*, Knaggs, and *Miana arcuosa*, Haw., which approached closely to *N. concolor* in colour. Mr. Fenn, referring to the *Eupithecia* from Paisley, and which Mr. Tugwell at a previous meeting referred to *E. castigata*, remarked that it had now been ascertained that the larva was a pine-feeder, and therefore it could not be *E. castigata*, Mr. Tugwell said he understood that the specimens were found on pine trunks, but that the larvæ fed on heather, and he had this year reared the species on heather. Mr. Carpenter said the specimen of *Argynnis*

paphia recently exhibited by him was a female, and not a male example as recorded.

November 10th, 1892.—The President in the chair. Mr. R. South exhibited portions of two broods of *Coremia ferrugata*, Clerck, and of two broods of *C. unidentaria*, Haw., and read notes thereon, pointing out the differences between the two forms of the first-named species, and the differences between them and the last-named species and that he had been led to the conclusion that although it was probably correct to keep *unidentaria* specifically distinct from *ferrugata*, it might not be equally correct to place together the two forms exhibited by him as *ferrugata*; and he asked the members to endeavour to work out the life-history of any varieties of this species of which they might obtain ova. Mr. Goldthwait mentioned having recently reared imagines from a captured *unidentaria* which all followed the female form. Mr. Fenn said he had always found both species breed very constant, and he had never bred intermediate forms. Mr. W. de V. Kane exhibited *Stauropus fagi*, L., taken in Ireland; a damaged example of *Notodonta bicolor*, Hb., taken at a new locality; a photograph of the pupa of *Dianthæcia barrettii*, Dbl., and said he felt certain, from the structure of the pupa, that it belonged to the *Dianthæcia*. Among other things in Mr. Kane's box were some curious forms of *Fidonia atomaria*, Tr.; *Bryophila muralis*, Forst., varying to very black forms; light forms of *Boarmia cinctaria*, Schiff.; a *Cymatophora* or, Fb.; melanic forms of *Xylophasia monoglypha*, Hufn.; densely black forms of *Camptogramma bilineata*, L.; peculiarly bronzed and black examples of *Hadena oleracea*, L.; and dark *Agrotis lucerna*, L. Mr. Kane pointed out that these four species were captured in a damp and dark locality, and all showed a strong melanic tendency. Some interesting notes were contributed by Mr. Kane upon his exhibits, and a discussion followed. Mr. Purdey, of Folkestone, among others, the banded form of *Cidaria suffumata*, Hb.; long series of *Cidaria truncata*, Hufn., reared from ova, and including some beautiful varieties; a specimen of *Colias hyale*, L., taken at Folkestone in 1891; *Peronea comariana*, Zell., closely resembling *P. variegana*, Schiff.; and a long series of *Eupithecia stevensata*. Mr. Purdey stated that Mr. Webb had been unable to get the larvæ of this insect to feed on juniper, and Mr. Purdey said that it did not occur at the same time as *E. sobrinata*. Mr. Mera, varieties of *Lycæna icarus*, Rott., and *L. bellargus*, Rott., and some very fine varieties of *Abraxas grossulariata*, L. Mr. Oldham, a very dark specimen of *Hadena oleracea*. Mr. R. Adkin, *Hypsipetes sordidata*, Fb., and *Melanippe fluctuata*, L., and contributed notes. Mr. Herbert Williams, living larvæ of *Colias hyale*, L., from a female captured in England, and stated that he had obtained one pupa. Mr. Billups, the dipteron, *Stratiomys potamida*, Mg., and its rare hymenopterous parasite *Smicra sispes*, Sp., both having been captured in the Plumstead Marshes.—H. W. BARKER & A. SHORT.

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY.—November 14th. The President, Mr. S. J. Capper, F.L.S., F.E.S., who occupied the chair, referred to the death of Mr. J. T. Moore, who was one of the original members of the Society. Mr. John Watson, 177, Moss Lane, East Man-

chester, was elected a member of the Society. Mr. W. R. Scowcroft, of Manchester, read a paper entitled "Switzerland, a Naturalist's Paradise," in which he described a nine days' journey through Switzerland, and gave an account of the Lepidopterous and Coleopterous insects seen and captured, one of the most interesting being pale dimorphic forms of female *Colias palæno*, similar to the var. *helice* of *Colias edusa*. In all, seventy species of butterflies, fifty-nine species of moths, and forty species of Coleoptera were taken. The paper was illustrated by the specimens captured. The President exhibited a gynandromorphous specimen of *Halias prasinana*. Mr. Newstead, *Vedalia cardinalis*, which was imported into Alexandria in 1885 by Prof. Riley, of U.S.A., as a means of exterminating *Icerya egyptiaca*, a Coccid injurious to orange trees, under the supervision of Admiral Bloomfield; also the specimen of *Polyommatus batica* captured at Heswall by Master M'Fee in 1886 or 1887. Mr. Gregson, *Sesia scoliæformis* and *Æcophora grandis* from North Wales. Mr. Harker, a pale variety of *Triphæna orbona*, with the transverse lines very strongly marked. Mr. Jones, autumnal Lepidoptera. Mr. Prince, two varieties of *Bombyx rubi*, the wings of which were sub-diaphanous and the middle line distorted. Mr. Stott, a number of Coleoptera from the Swiss Alps. Mr. Newstead also exhibited a case containing the life-history of *Anthonomus pomorum*, the apple-blossom weevil.—F. N. PIERCE, *Hon. Sec.*

THE CAMBRIDGE ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—*Oct. 28th.* Mr. A. M. Moss in the chair. Mr. J. Rickard was elected a member of the Society. Mr. Wells exhibited a fine series of *Colias edusa* var. *helice*, from Sidmouth; and some good varieties of *Smerinthus tiliæ*, bred from pupæ dug up at Cambridge, one being dark slate-grey, with the posterior wings nearly black; the best variety, however, was one quite normal in marking, but with all the wings much suffused with bright crimson, the usual dark green blotches in the anterior wings standing out like crimson velvet. Mr. Farren, a long and varied series of *Xanthia aurago* and *Stauropus fagi*, including the black variety of the latter from Reading; also *Callimorpha hera* and its var. *lutescens*, from Devon. Mr. Moss exhibited a box of Lepidoptera from Windermere and neighbourhood, and stated that he had this year found the larvæ of *Cidaria reticulata*, taking twenty-seven in one afternoon: he exhibited a larva which he had preserved; this apparently, having faded somewhat in colour, was a very pale yellowish green, with a pink line on the back from the second to the fourth segment, and dots of the same colour on some of the last segments, supporting a conclusion that in a living larva the hue might extend the whole length. Mr. Moss said they appeared to feed almost exclusively on the seed of their food-plant (wild balsam), entering the seed-pod about the middle; in the daytime they were to be found resting at full length along the midrib on the under side of the leaves. Mr. Jones, some parasitical insects from a gannet (*Sula bassana*).—WM. FARREN, *Hon. Sec.*

BIRMINGHAM ENTOMOLOGICAL SOCIETY.—*Nov. 14th, 1892.*—Mr. R. C. BRADLEY in the chair. The Secretary called the attention of the Society to the death of two of its members, Messrs. J. T. Harris, of Burton-on-Trent, and Robt. Allday, of Handsworth. These were the first losses by death the Society had experienced. The following were exhibited:—Mr. W. Harrison, living larvæ of *Trochilium apiformis* from Arley; also

preserved larvæ of the same species. Mr. C. J. Wainwright, the genus *Dioctria*, including *reinhardi* from Wyre Forest, *rufipes* from Sherwood Forest and Sutton, and *baumhaueri* from Sherwood Forest. Mr. R. C. Bradley, series of *Limnobia bifasciata* and *Amalopsis littoralis* from Wyre Forest.—COLBRAN J. WAINWRIGHT, *Hon. Sec.*

THE ENTOMOLOGICAL CLUB.—A meeting of this Club was held at the Grand Hotel, St. Pancras, on October 4th, 1892. Dr. Philip B. Mason in the chair. Mr. R. Adkin, of Lewisham, was elected an Ordinary Member of the Club. Dr. Mason exhibited a specimen of *Hercyna phrygialis*, Hübn., a Pyralid new to the British List, which he stated was from the collection of the Rev. A. Matthews, who obtained it from Turner on his return from one of his collecting trips in Scotland. Mr. S. Stevens exhibited a *Botys* which he thought might prove to be a new species, but some of the members present considered the specimen to be a large form of *B. fuscalis*.—RICHARD SOUTH, *Hon. Sec.*

OBITUARY.

WILLIAM THOMPSON died at Stony Stratford, Bucks, on the 13th of October, 1892, in the 75th year of his age. For over fifty years Mr. Thompson had been interested in Lepidoptera, and has left a collection of the British species in that Order, which is almost if not quite perfect, and includes many varieties. Among his other communications to this Journal is one in which he recorded the discovery, in 1879, of *Pyralis lienigialis*, Zeller, at Stony Stratford. He had a large circle of correspondents, by many of whom his death will be felt as a personal loss.

The Rev. ALBERT HENRY WRATISLAW died at Graythwaite, Southsea, on the 3rd of November, 1892, aged 70 years. Educated at Christ's College, Cambridge, Mr. Wratismaw graduated third classic and a senior optime in 1844. He was a fellow and tutor of his college, and was appointed Head Master of Felstead School in 1852, and of King Edward the Sixth's School, Bury St. Edmund's in 1855. This latter position he held with distinction until 1879, when he retired. From 1879 until 1887 he resided in Pembrokeshire, where he held the college living of Manorbier. Mr. Wratismaw studied both Lepidoptera and Coleoptera, but he was probably best known to entomologists as the first to detect, or perhaps it would be more correct to say rediscover, *Dianthacia irregularis (echii)* in this country. He was not a frequent writer on entomological subjects, but he contributed several notes, both to the Ent. Mo. Mag. and Entom.; his 'Reminiscences of Entomology in Suffolk' attracted the attention of lepidopterists to the district around Tuddenham St. Mary, in that county. Some four or five years ago his sight failed him, and his valuable collection passed into the possession of Mr. J. B. Hodgkinson.

THE ENTOMOLOGIST

Illustrated Journal

GENERAL ENTOMOLOGY.

Handwritten Chinese text, likely a title or subtitle in Chinese characters.

With illustrations in color and black and white.

Volume XXV, Number 1, January, 1892.

Published for the Entomological Society of America, by the American Entomological Society, 17th Street, New York, N. Y.

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LONDON.

Printed and Published by the Entomological Society of America, 17th Street, New York, N. Y.

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WITH THE ASSISTANCE OF

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It is to be regretted that some of our contributors have not been able to send us their illustrations, and that some of our illustrations have been delayed or not sent at all.

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Illustrated Journal

OF
GENERAL ENTOMOLOGY.

EDITED BY RICHARD SUTHERLAND

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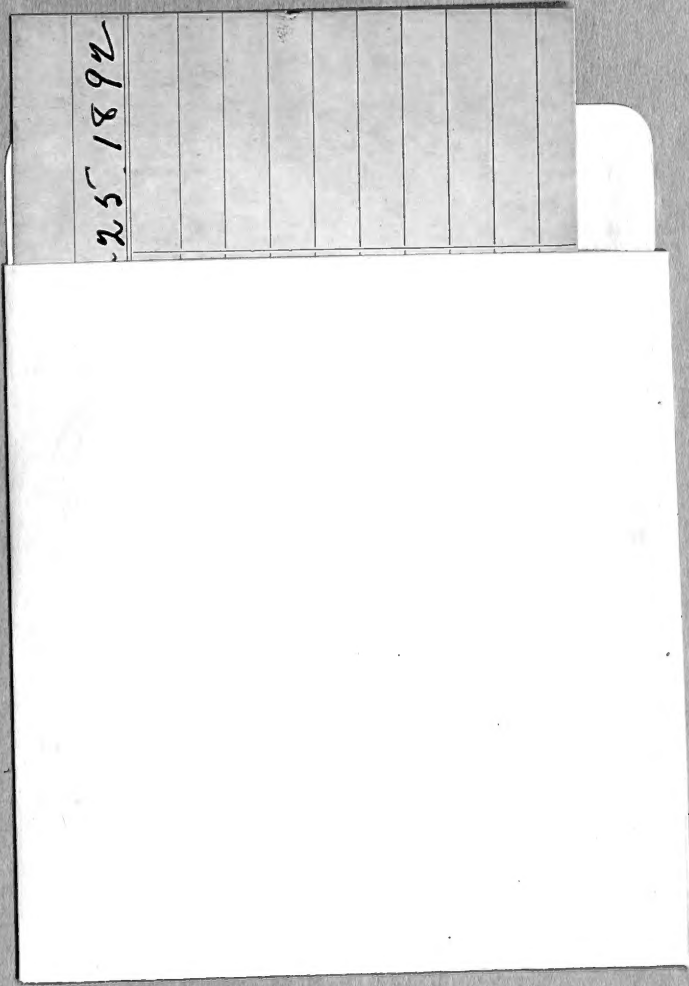
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