



THE
ENTOMOLOGIST

An Illustrated Journal

OF

GENERAL ENTOMOLOGY.

EDITED BY JOHN T. CARRINGTON, F.L.S.

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“By mutual confidence and mutual aid

Great deeds are done and great discoveries made.”

POPE'S ‘*Homer*.’

VOLUME THE TWENTY-FIRST.

LONDON:

SIMPKIN, MARSHALL, & CO., STATIONERS' HALL COURT.

—
1888.

“ Beauties of Nature,—the passion of my youth,
Nursed up and ripen'd to a settled love,
Whereto my heart is wedded.”

ROBERT SOUTHEY.

“ What more felicitie can fall to creature,
Than to enjoy delight with libertie,
And to be lord of all works of Nature?
To reigne in th'aire from th'earth to highest skie,
To feed on flowers and weedes of glorious nature?
To take whatever thing doth please the eye?
Who rests not pleasèd with such happiness,
Well worthy he to taste of wretchedness.”

EDMUND SPENSER.

“ All nature is but art, unknown to thee ;
All chance, direction which thou cans't not see ;
All discord, harmony not understood.”

ALEXANDER POPE.

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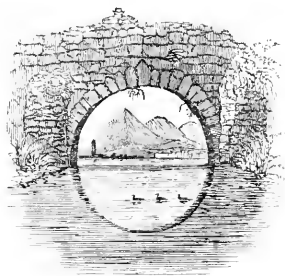
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THE ENTOMOLOGIST.

VOL. XXI.]

JANUARY, 1888.

[No. 296.

POST-GLACIAL INSECTS.

BY ALFRED BELL.

IN a recent number of the 'Entomologist' a question has been raised touching the succession in post-glacial times of certain species of *Lycæna*. So far as my own experience goes, insect remains are by no means common, and chiefly pertain to the Coleoptera. Of the thirty species given in the sequel, nearly all belong to this division of the insect world. It does not follow that Lepidoptera were not present during the post-glacial period, since they occur in beautiful preservation in deposits of much older date, both in England and on the Continent, but rather that the nature of the post-glacial soils is not favourable to their preservation, they being mostly gravel, peat, or marine muds and clays, inimical to the preservation of soft-bodied animals. Hence, if anyone knows of Lepidoptera retained in a fossil state, it will be of real service to Science if he will say where they were found, and under what conditions.

The proposition that one of the species came south, from Scandinavia, by way of Scotland, when these two countries, but not South Britain and the Continent, were united, is one that no student of post-tertiary geology will admit, geological facts being against such geographical arrangements.

It is a pity that in lists of fossils from the various peat and other deposits, nothing more definite than "elytra of Coleoptera" is usually recorded, because careful nomenclature would materially aid in determining the geological horizon in which such remains occur; *e. g.*, the peat at Lexden, near Colchester,

has yielded seven or eight species, all of which are at the present day Trans-Pyrenean, enabling us to correlate the Lexden peat with a marine deposit near Chichester, in which about a dozen of the shells are Lusitanian.

In the following lists I have quoted all the forms that have come under my notice, either by reading or personal research. It is probably incomplete, and I hope other and more experienced entomologists will fill up the gaps. For convenience I have placed them alphabetically.

POST-TERTIARY INSECTS.

Atopa cervina, Cambridge peat; *Agabus bipunctatus*, Cambridge peat; *Buprestis*, sp., Lexden; *Byrrhus*, sp., Mundesley; *Carbera nitens*, Garvel Park; *Cassida*, sp., Lexden; *Chrysomela*, Lexden, and Bielbecks, Yorkshire; *Cimex*, sp., Ulverstone; *Coccinella*, sp., Lexden; *Copris lunaris*, Mundesley; *Cossyphus*, sp., Lexden; *Curculio*, sp., Lexden; *Cyclonotum orbiculare*, Cambridge peat; *Donacia crassipes*, Mundesley; *D. linearis*, Norfolk Forest bed (pre-glacial), and Mundesley; *D. sericea*, Mundesley; *Dytiscus*, sp., Crofthead, in Glasgow; *Elatior linearis*, Mundesley; *Geotrupes*, sp., E. Scotland, in peat; *Harpalus ophonus* vel *argutor*, Mundesley; *Lacon murinus*, Mundesley; *Licinus*, sp., Lexden; *Notiophilus aquaticus* vel *palustris*, Arctic bed, Ostend, Norfolk; *Otiorhynchus*, sp., Garvel park, Clyde; *Pterostichus madidus*, Norfolk Forest bed; *Silpha dispar*, Norfolk Forest bed; *Timarcha*, sp., Norfolk Forest bed; *Dicera* (allied to *Tipula*), in a Crannoge, Wigtonshire; *Neuroptera* (traces of), Fen peats; *Phryganea* (cases of Caddis Fly), Lewes Levels.

140, Lower Marsh, Lambeth, London.

ENTOMOLOGY OF DELAMERE FOREST.

BY J. ARKLE.

FROM the Northgate, Chester, to Delamere, is ten miles by rail. In a few minutes we find ourselves at Delamere Station, from which the forest stretches to right and left, with a length of eight miles and an average breadth of three miles. Here and there we come upon a solitary habitation, or on a hamlet

with cottages thatched, and with whitewashed walls. From the Station the forest road stretches beyond the railway bridge to Hatchmere, a mile or so away. The road divides this part of the woods into sections of an opposite character. On the right the ground rises away with hill and hollow. The trees are chiefly oaks, and we leave the turnpike and wend our way, net in hand, among them. Were it spring-time we should find on the bark, *Pachnobia rubricosa*, a few of the commonest of the family *Tæniocampa*, such as *T. gothica*, *T. incerta*, *T. stabilis*, and *T. pulverulenta*, and *Amphidasys strataria* as a rarity; while we should capture *Hybernia leucophearia*, *H. marginaria*, *H. defoliaria*, and *Larentia multistrigaria*, with the aid of the net. But in July we only come across *Acronycta psi* and *Aplecta nebulosa*. The latter rests by day on the oak trunks, and its long, triangular shape can be seen a score or more yards off. In October, the same tree trunks are haunted by *Agriopis aprilina* and *Oporabia dilutata*.

Here are accidentally met two brethren of the net. They are strangers who have come from a long distance, having heard of the fame of the forest. At our invitation they join us, and we cross the road into the section of the forest on the left. The ground dips down into a broad and wooded valley, crossed at right angles by wide, deep ditches, some of which are full of nearly stagnant mud and noisome water. The trees in the drier portions are chiefly Scotch firs, and among the branches, in the hot sun, flit and sport innumerable *Bupalus piniaria*. There is, especially on the low-lying ground, an undergrowth of birch, and beneath this a carpet of heath and fern, of bilberry and moss. Among the firs, and from the ground, we occasionally raise *Eucosmia undulata* and in plenty, *Macaria liturata* and *Ellopiæ prosoparia*. The larvæ of the two last—with *B. piniaria*—can be beaten from the fir branches in September and October. Beat them with a long stick, and hold underneath an inverted umbrella. Before we leave the drier ground, with its pines, we disturb two or three *Noctua castanea*, and box them.

Among the birches, with their taller companions, the pines, are occasional clear spaces, where heath and wild flowers grow luxuriantly. Here we come upon the quiet little *Thecla rubi*, in its short trips among the herbage. There is a *Noctua* tasting the sweets of the heath blossoms. It is *Agrotis strigula*. We dive

in among the birches and beating commences, not for larvæ but for *Geometra papilionaria*. We form a line in which we stand, sportsman-like, some ten yards apart. We advance slowly, taking care to mark our path, and beat as we go. In addition to good luck with *G. papilionaria*, many other Lepidoptera are captured, as *Drepana falcataria*, *Lophopteryx camelina*, *Metrocampa margaritaria*, *Boarmia gemmaria*, *Asthena luteata*, *Acidalia bisetata*, *A. aversata* (with the banded form), *Cabera pusaria*, *Fidonia atomaria* in profusion, *Emmelesia alchemillata*, *Thera variata* var. *obeliscata*, *Hypsipetes sordidata*, *Melanthia ocellata*, *Melanippe rivata*, *M. galiata*, *M. montanata*, *Coremia designata*, *C. ferrugata*, *C. unidentaria*, *Cidaria corylata*, *C. truncata* (*russata*), *Larentia viridaria*, and *Camptogramma bilineata*.

The birches are prolific when beaten in the daytime for larvæ; and the umbrella again comes in useful. Among the captures are *Drepana falcataria*, *Dasychira pudibunda*, *Notodonta dromedarius*, *Acronycta psi*, *A. leporina*, *Amphidasys betularia*, and *A. strataria*. There are also ladybirds of few spots and many spots; while among beetles *Carabus violaceus* is a terrible fellow among the pupæ at oak roots, and, as we break up a rotten log, we find larvæ of *Rhagium bifasciatum*.

At last the birches are left behind, and we make for the forest lake of Hatchmere. As we plunge breast-high through the tall ferns we net fresh specimens of *Cidaria populata*. Here and there in the forest openings, *Pieris brassicæ*, *P. rapæ*, and *P. napi* float about like big snowflakes out of season, *P. napi* being especially abundant, and they form a pleasing contrast to the surrounding greenness. On one side of the mere is a moss with awkward bogholes, and there is a patch of the cotton grass. The little blue butterflies chasing each other, and almost entirely confined to this small area, are *Lycæna ægon*. *L. icarus* is met with as we pick our way, when the first *Nemeophila russula* rises from the heath. One of the party secures three males and an equal number of females. By-and-by there are numbers of *Polyommatus phleas*, and, as the ground gets drier, a few *Zygæna filipendulæ*, in metallic green and scarlet, sail over the trefoil. There is some surprise that we have not met with *Cænonympha typhon*. Tradition has it that this butterfly was once to be seen on this likely-looking heath. It still haunts the neighbourhood, but much farther afield. We

pay a visit to its ground, and find *typhon*—many on the wing—with a few just emerged, and drying their wings on the grass stems. Here and there are firs and birches, between which three or four *Saturnia pavonia* madly wing their way in the blazing sun. One of us picks up a fine specimen of *Arctia fuliginosa*, another a larva of *Bombyx rubi*. A few *Anarta myrtilli* and *Aspilates strigillaria* fall to the nets; and, at last, the setting sun and tired limbs proclaim that sport must close for the day.

2, George Street, Chester, October 18, 1887.

TORTRICES AND CRAMBI TAKEN IN 1887.

BY A. THURNALL.

IN looking over my diary I find that I have taken and bred 127 species of Tortrices in the season of 1887, of which the following are perhaps most worthy of notice:—

Tortrix diversana. Bred one female from a lot of larvæ rolling up the elm leaves; all the others produced *T. xylosteana*.—*T. branderiana*. Two specimens at rest on an aspen at Wanstead.

Dichelia grotiana, which is usually not rare, was represented by two specimens only.

Ditula semifasciana. Seven beaten from willow bushes, July 17 and 24.

Penthina capreaana. One beaten from the same bushes.—*P. sellana*. Two or three netted, May 17th. This is a very obscure species, and might be very easily passed over as a common *Dicrorampha*.

Antithesia salicana. Not rare on the willow trees round Hackney Marshes. I have not been able to find the larva yet.

Spilonota laricana. Several beaten from larch, July 3rd.

Sericoris bifasciana. Common in the neighbourhood of Wanstead at the end of June amongst Scotch fir.—*S. littoralis*. Very common amongst sea thrift at Shoeburyness, August 8th.

Euchromia purpurana. I found the recently discovered larvæ of this species not uncommonly where I met with the moth two years ago. They feed on the roots (externally) of *Sonchus arvensis* and *S. asper*.

Sciaphila sinuana (St.) One specimen at rest. The late Mr. Sang once bred it from a larva found feeding in flowers of the bluebell. And this plant was growing in great abundance where my specimen was found. I hope to meet with the larva next season.

Clepsis rusticana. Was not uncommon early in June in Wicken fen.

Phorapteryx paludana also occurred there at the same time.—*P. lactana*.

A few at rest on aspen trunks. Not met with before in this neighbourhood.—*P. mitterbacheriana*. Bred rather freely. The larva was particularly common this autumn.

Grapholitha nisanu. Fairly common and variable as usual; at rest on aspens.—*G. minutana*. One female, also at rest on aspen, July 10th; the first I have taken.

Phlæodes immundata. Very uncommon this season.

Pædisca oppressana. Very common, but local, resting on poplar trunks, July 2nd.—*P. occultana*. Rare. Beaten from larch when collecting *lariciana*, July 3rd.

Ephippiphora nigricostana. Larvæ very common in roots of *Stachys*.—*E. gallicolana*. Bred freely from galls collected in the winter.

Semasia janthinana. Eleven bred from larvæ found feeding in the fruit of the hawthorn in October, 1886. They prefer bark to pass the winter in.

Coccyx nigricana. Beaten freely from a single tree, *Pinus picea*, on which the larva feeds. I have not heard of its capture in Essex before. Although in all our lists this species is put in the genus *Grapholitha* (Tr.), it is really quite out of place, coming very close to *Coccyx hyrcinianu* and *C. distinctana*.

Retinia pinicolana. One only beaten from Scotch fir. *R. buoliana* was common.

Opadia funebrana. From something like eighty larvæ now all safely hidden away in some rough bark, I hope to breed at least a series.

Stigmonota interuana. The male swarming over the furze bushes; the female was much more sluggish.—*S. weirana*. A fine series bred; but the larva was not so common this autumn as it was in 1886.—*S. germerana* (Hb.). Not rare amongst some scrubby oaks. The larval habits are as mysterious as ever. I have looked in vain for it this autumn in a locality where the imago is common.—*S. roseticolana*. Bred freely from larvæ feeding in rose "hips." They prefer pieces of bark or dead bramble twigs to hibernates in.

Dicrorampha consortana. Bred sparingly from ox-eye daisy.

Catoptria albersana. Bred June 3rd from one of several larvæ found feeding in folded leaves of honeysuckle, September 23rd, 1886. The larvæ passes the winter in its "vaulted chamber," and pupates a short time before emerging.—*C. candidulana*. In its usual abundance amongst its food-plant, *Artemisia maritima*.

Eupœcilia maculosana. Larvæ common in unripe seed-heads of the wild hyacinth.—*E. ambiguana*. Bred from New Forest larvæ.—*E. rectisana*. Swarming in the "Salterns," and a few *affinitana*.—*E. implicitana*. Not uncommon amongst *Anthemis cotula*, in the immediate neighbourhood.

Argyrolepis zephyrana (Tr.) Taken on the wing, and bred from roots

of *Daucus carota*; very subject to *Ichneumons*.—*A. badiana*. Netted in July; but I failed again to breed it, although *P. lappella* came out in its usual abundance.—*A. æneana*. Bred from two localities in the county of Essex, and no doubt occurs in many places if well looked for.

Conchylis smeathmanniana. A single female emerged June 14th, the sole results from fifty or more larvæ. I afterwards found it swarming, August 6th, over *A. cotula*.

I found no rare species amongst the Crambi; but may just mention *Platytes cerussellus*, *Crambus pascuellus*, *C. perlillus*, and vars.: and one female of Mr. Tutt's new species, *C. contaminellus*, taken at Shoeburyness, August 8th. Many eggs were laid, and the larvæ are now apparently hybernating in silken tubes, mixed with sand, &c., at the grass roots.

Homacosoma sinuella. Fairly common.—*H. umbella*. Amongst *Anthemis cotula*, in the flower-heads of which plant the larvæ were feeding.—*H. binævella*. Two bred from thistle-heads gathered September, 1886.

Cryptoblabes bistriga. Larvæ common in one place on oak, October 6th and 7th.

Rhodophaa formosa. Larvæ very common on elm in September and October (beginning).—*R. adrenella*. Only one larva found this year.

177, Major Road, Stratford New Town, E., November 16, 1887.

NOTES ON THE JAPANESE SPECIES OF SILPHA.

BY GEORGE LEWIS, F.L.S.

THREE of the eleven species in my collection appear to be new, *viz.*, one species similar to *S. 4-punctata*, Linn., and two others somewhat similar to *S. thoracica* of the same author. Of the others, five are known as European, and four of these are common in England. Although eleven species may seem at first to be a few for Japan, I think the list is likely to be found fairly complete, as the conditions of life which are favourable there to saprophagous insects are limited. The crows and the foxes, and after them the ants, are very effective scavengers; and it is only on the coasts and in the populous districts that the pabulum necessary for the larvæ and imagos is sufficient, and where the species occur they for the most part congregate together, and easily fall into the hands of the collector. The peculiar species in Japan are, however, forest species, and pupate under bark, and new discoveries may be made eventually of species with similar propensities.

Silpha atrata, Linn., and *venatoria*, Harold, feed on snails; the former occurred at Hakodate, accompanied with *Cychnus convexus*, and eating *Helix pauper*, Gould. Dr. L. Von Heyden considers *S. sex-carinata*, Motsch., described from the Amur, to be a variety of *S. 4-punctata*, Linn.; and there is certainly nothing in Motschulsky's description to lead to an opposite opinion.

1. *Silpha japonica*, Motsch.; Etud. Ent., 1860, p. 12.—Is abundant on the coasts of all the islands, and in China.

2. *Silpha brunnicollis*, Kraatz; Deutsche Ent. Zeit., xxi., 1877, p. 106.—This species does not appear to extend north of Yokohama, but it is abundant in Kiushiu. All the specimens I found at Yokohama have the disc of the thorax black. It is found in Formosa and China.

3. *Silpha venatoria*, Harold; Deutsche Ent. Zeit., xxi., 1877, p. 346.—Seven examples were found at Subashiri near Fujisan, in May; and I bred it in September from pupæ found in rotten birches at Hakodate. Some specimens were also found in Sado.

4. *Silpha perforata*, Gebler; Nouv. Mém. Mosc., 1832, p. 49.—This Eurasian species is common in Yezo.

5. *SILPHA SILVATICA*, n. sp.—Oblongo-ovata nigra; thorace lateribus testaceis; elytris testaceis 4-nigro punctatis. L. 16-17 mill.

This species in general coloration agrees with *S. 4-punctata*, but it is one-third larger, and the elytral carinæ are longer and much more distinct. In *S. 4-punctata* the posterior black spot does not reach beyond the third carina; in *silvatica* the spot is more transverse and much larger, and one-third of its area is outside the third carina. In some specimens the dividing portion of the carina is yellow, and in others black. The head in the region of the eyes is one-third wider than in the Linnean species, and the prosternum is more finely acuminate posteriorly. One specimen was taken at Chiuzenji, and twelve others beaten off oaks at Junsai and Sapporo.

6. *Silpha sinuata*, Fab.; Syst. Ent., p. 75.—Von Harold has identified this species as occurring in Japan, and says the specimens (Deutsche Ent. Zeit., xxi., p. 346) are much larger than European examples. Some I possess are double the size, but I do not think they are specifically distinct. The form or species is very abundant everywhere, especially on the sandy coasts.

The synonymy of this insect—if ever worked out—will probably include more names than those given in the Munich Catalogue.

7. *Silpha rugosa*, Linn.; Fn. Suec. nr. 455.—This species is rare in Japan. In 1869 I obtained two specimens from Simabara, and one at Yokohama; and in 1880 I took three specimens on the sand-hills at Hakodate. On each occasion it was associated with *sinuata*, Fab.

The outlines of the three following species are very similar:—

8. *Silpha thoracica*, Linn.; Syst. Nat., ii., p. 57.—I bred this from two pupæ found under bark at Sapporo, and obtained two others by beating foliage. The specimens in no way differ from British examples, except in the interocular tubercle referred to below.

9. *SILPHA SUBRUFATA*, n. sp.—Breviter ovata; præcedenti similis; thorace rufo; elytris punctatis obscuro-rufis. L. 13 mill.

This species is very similar to *S. thoracica*, Linn. The elytra are relatively shorter, more or less rufous, and punctured throughout clearly and distinctly. There is no appearance of the corrugation or rugosities which are well-marked characters in *thoracica*, especially in the margins of the elytra. In *subrufa* there is a small tubercle between the eyes, which is not very well defined in the Japanese specimens of *thoracica*, but I have found it in an English example of the latter. Taken at Chiuzenji, Akita, and Sapporo. One specimen, bred from a pupa found in a rotten birch in August.

10. *SILPHA NIGROPUNCTATA*, n. sp.—Breviter ovata; thorace rufo, glabro, nigro-4-punctata. L. 13-14 mill.

This insect differs from the preceding in three important characters:—The thorax is free from hair or pubescence; with four black spots on its disc, arranged thus . . .; and the elytra are black, as in *thoracica*. *Silpha tetraspilota*, Hope, has similar thoracic spots; but Hope's species is altogether a different insect. Five specimens taken at Nikko, Miyanoshta, and Samegai.

11. *Silpha atrata*, Linn.; Fn. Suec. nr. 451.—Seven examples, taken in S. Yezo; the individuals are a little larger than English specimens.

NOTE.—*Necrophorus plagiatus*, Ménét, 1854; *Ptomascopus 4-maculatus*, Kraatz, 1877; *P. davidis*, Fairm., 1878; and *P. plagiatiipennis*, Lewis, 1879, are names of one species.

was in error when he wrote, *Deutsche Ent. Zeit.*, xxi., p. 104, "elytris autem rufobimaculatis." Each elytron has one red mark. I write this on the authority of Monsieur Antoine Grouvelle, who has seen the specimen from which Dr. Kraatz drew his description, in the collection of the late Count Mniszeck.

Wimbledon, September 19, 1887.

PROPOSAL FOR A NEW ENTOMOLOGICAL SOCIETY.

BY CORYNDON MATTHEWS, F.E.S.

SOME little time ago, on taking up a number of the 'Entomologist,' my attention was arrested by the motto which appears on the cover, and which no doubt I had seen each month since I first became a subscriber to the magazine, though it had never before attracted my notice. The motto states a general fact, of which there can be, of course, no doubt, though I think it is one particularly applicable to students of any branch of Natural History. On thinking over the principle of "mutual aid," an idea occurred to me which I should now like to put before the readers of the magazine; for it seems to me that although entomologists are, as a rule, a good-natured set of individuals, and generally ready to render each other assistance, yet an immense deal more might be done, by a little organisation, to carry out the mutual aid principle than has yet been attempted in this country.

In the first place, I should like to point out a few of the difficulties which frequently meet working entomologists, particularly beginners, those who are living in the country, and also those who are working at the more rarely studied orders of insects; and in the next place, to make a few suggestions towards a scheme which I think would tend materially to diminish them.

First then for the difficulties. Nearly every entomologist at some time or another during the year makes an excursion from his home, if only for a few days, with a view of prosecuting his favourite pursuit; but as soon as he has settled into the quarters decided on, presuming him to be a stranger to the locality, his troubles begin. He will, of course, desire to know which localities in the neighbourhood should be worked, and which would not repay him for the trouble; what literature

on the entomological fauna of the district exists; and if he can ascertain this, how he can manage to see or obtain it. Again, those beginning entomological work, who reside in the country, and have rarely an opportunity of meeting and consulting with other entomologists, frequently find great difficulty in ascertaining the names of many of the species they take, and become disheartened and discouraged, when a few minutes' conversation, or the inspection of their specimens by some one more advanced in the science, would effectually clear up all doubts.

So much for the difficulties; and now for my proposals for their removal. I would suggest that a new entomological society should be formed, to be called the London and Country Entomological Association, or with some title which would sufficiently distinguish it from the Entomological Society of London.

That the officers of the Association should consist of a President, Hon. Treasurer, and Hon. Secretary, and a small Committee of three or four persons resident in London.

That the subscription to the Association should be a nominal one (say 5s. per annum), and merely sufficient to cover the cost of printing and the hire of a room for meetings.

That bi-monthly, monthly, or quarterly meetings, should be held in London.

That country members should be entitled to take *or send* a limited number of specimens to any meeting of the Association, when they could probably be named by some one present.

That in each county some working entomologist should be appointed to act as Hon. Secretary for the county, and that such Secretary should endeavour to ascertain what literature there is bearing on the entomological fauna of the county, and where such literature can be inspected; that he should also obtain as many members as possible for the Association, and annually prepare a list of these, with their addresses, and with the subjects at which each is working, and that the Secretaries should also collect the subscriptions in their counties and remit them to London.

That the County Secretaries should be Honorary Members of the London Committee.

That at the beginning of each year the Committee should publish a list of members by counties, giving the address of each member, and stating the subjects at which he is working; such list to be furnished to every member free.

That on joining the Association each member should undertake to assist any other member by advice or information.

In conclusion, I would state that my idea of appointing County Secretaries is that this would materially lighten the work of the London Committee, and at the same time give these gentlemen an excellent opportunity of compiling a complete entomological fauna of their county. The suggestion for the publication of a list of members, with a record of the particular branch of Entomology which they are studying, is adopted from the annual report of the Société Française d'Entomologie. I need scarcely say that I am sure these suggestions can be readily improved on and supplemented, and that they will be accepted as only intended to elicit opinion as to whether such an Association as I have proposed could be practically formed and worked.

Erme Wood, Ivybridge, S. Devon, December 1, 1887.

ENTOMOLOGICAL NOTES, CAPTURES, &c.

COLIAS EDUSA IN CUMBERLAND.—Mr. Watson, of this village, who is not an entomologist, took a fine specimen of *C. edusa* in a field near here in August last. I have not previously seen this species with us for about ten years.—H. MURRAY; Lowbank Villas, Carnforth, Nov. 11, 1887.

VANESSA ANTIOPA WITH WHITE BORDERS.—I can endorse the statement of your correspondents (*Entom.* xx. 135, 156, 228), that the white border of *V. antiopa* is due to the fading of the yellow. Nearly all the hybernated specimens which I have captured here have white borders.—J. WARBURG; Villa Raphael, Cannes, December 8, 1887.

VANESSA ANTIOPA IN OXFORDSHIRE.—On August 14th last, in the woods at Nuneham Courtney, I saw a beautifully fresh specimen of *Vanessa antiopa* with yellow-bordered wings, evidently a Briton born and bred. I could not capture it, not having a net with me at the time; nor had I the wish to do so. Perhaps if *V. antiopa*, *Sphinx convolvuli*, and other rarities were not captured and slaughtered whenever seen by thoughtless collectors, they might again become as plentiful in England as they were of yore.

I sincerely hope that the energies of real entomologists will, ere long, be devoted to the preservation rather than the extinction, of rare and beautiful species. — W. J. HERMANN NEWMAN; 15, Park Crescent Oxford.

[It would appear highly improbable that collectors of insects see all the specimens of rare species in any one season, or that they even have opportunity of observing a thousandth part of what appears each year.—J. T. C.]

HERMAPHRODITE *LYCÆNA CORYDON*.—On Saturday, 30th July last, I captured at Blandford a distinctly hermaphrodite *Lycæna corydon*. The right pair of wings and half the body are male, the left female. I may mention that the insect has been inspected by several entomologists in the neighbourhood.—C. B. SMITH; 58, Rectory Road, Stoke Newington, London, N.

LYCÆNA CORYDON AWAY FROM CHALK.—In a note under this heading (Entom. xx. 265) Mr. J. Jenner Weir shows that *L. corydon*, although almost entirely confined to chalky soils in England, is by no means so particular on the Continent. An exactly parallel case occurs in *Helix pomatia* (the edible snail), which in England occurs only on the chalk, but in more southern latitudes is found on all sides, and in Germany is all-prevalent, to the exclusion of the commoner species in this country, *H. aspersa*. This fact has been said to be due to the greater amount of heat absorbed by limestone, and the consequent suitability of this soil for species in the most northern part of their range, while in hotter climates no such influence would be necessary. Whether this is so, and whether it holds good also in the case of the *Lycæna*, I cannot tell, but call attention to the similarity of the two cases with a view to furthering the solution of the problem.—T. D. A. COCKERELL; West Cliff, Custer Co., Colorado, U.S.A., November 2, 1887.

LYCÆNA CORYDON AWAY FROM THE CHALK —When collecting as a lad some twenty-five years ago, I used to find *Lycæna corydon* on the great oolite formation in a few localities: one of these I visited not long since, and was pleased to find this butterfly still in existence there. There is no chalk anywhere near for many miles and not in the same county. The spots are somewhat isolated and the area restricted, and the insect apparently has never extended its range. All entomologists who

have had opportunities of observing will be aware that all of the genus *Lycæna* found on the chalk are also found at times on some of the limestone formations. In this district, as an instance, we find *Lycæna minima* here and there on the mountain limestone, and it is well known to be abundant on the chalk. *Lycæna arion*, Newman states as being on the chalk in Wilts; and it is well known that one of its chief habitats was the Cotswold Hills, on the öolite, until the species was nearly exterminated in some places. So also with *Lycæna bellargus* of the present, and *Lycæna semiargus* of the past; both being found on the chalk and limestone. I suppose where the food-plant elects to grow there may probably be found the insect which feeds thereon. No doubt the *Lycænae* were at one time more abundant on the limestone, but as a rule these districts have been much more cultivated,—one does not find the beautiful stretch of downs of the chalk districts. — T. B. JEFFERYS; Clevedon, December 5, 1887.

THE OVIPOSITING OF SPHINGIDÆ.—Do not the hawk-moths generally lay their eggs while on the wing? I have seen *Smerinthus populi* do so; also in 1886 I watched *Macroglossa fuciformis* so doing. That was the only specimen of *M. fuciformis* I have seen here, though I have watched both the flowers of rhododendron and common bugle for it; but it must be plentiful, as I took numbers of the larvæ of all sizes in 1887. I also found three ova, two of which I reared to the pupa state. On the other hand, there are generally some *M. bombyliformis* to be seen at the flowers of lousewort in a certain field early in June; but I have never been able to find the larva. I watched one female, as I thought, ovipositing; but, though I collected and carefully searched the leaves of all the scabious plants round the spot, I could find nothing. Unfortunately the field is always made into hay, or I should have a better chance of finding them when full-grown.—C. A. SLADEN; Burghclere, Newbury.

SATURNIA PAVONIA COCOON WITH TWO OPENINGS.—It may be of interest to entomologists to hear that the cocoon of *S. pavonia* having two exits, which was exhibited by Mr. Tutt at a meeting of the South London Entomological Society (Entom. xx. 333), is not unique. I have a similar specimen of *S. pavonia* cocoon with two exits, which was spun by one of six larvæ found in the

South of France, full fed in June, 1885, from which the moths emerged in February, 1886 and 1887. This is the only instance of the kind I have met with. It would be interesting to know if the case is of frequent occurrence in this species. With regard to the *Bombyx trifolii* cocoon mentioned by Mr. Tutt, this case of *S. pavonia* can hardly be classed in the same category, as the larva of *B. trifolii* makes no regular exit to its cocoon, but leaves the moth to eat its way out. Perhaps this may be an instance of two closely adjacent cocoons, from which the two moths emerged at different ends.—J. WARBURG; Villa Raphael, Cannes, France, December 8, 1887.

CATEPHIA ALCHYMISTA.—With reference to the note of Mr. Goss (Entom. xx. 325), I had received the same information from Mr. Tugwell, and intended forwarding it to the 'Entomologist.' I have just come across one other capture by Mr. Harwood, of Colchester (Entom. viii. 185). This, therefore, brings the total up to four.—J. W. TUTT; Westcombe Park, S.E.

RUMIA LUTEOLATA VARIETY.—During the past summer season I took a fine specimen of *Rumia luteolata* with the usual markings well defined, but the ground colour is pure white. Newman does not record any variation in this species.—C. K. TERO; Kent Street, Grimsby, Lincolnshire.

NOTE ON COLEOPHORA THERINELLA.—The larvæ of these insects were unusually common this autumn on *Carduus arvensis*, and occasionally on *C. lanceolatus*, and were to be obtained in various stages of growth during the months of August, September and October. They hibernate either on the lower part of the dead thistle-stems on which the larvæ had fed, or among the grass, &c., at their roots, where they may be found during the winter months by carefully searching. Some of the larvæ do not attain their full growth till late in the spring. I once found in January no less than eighteen cases, containing the young larvæ of this insect, on a single stem. It is not an insect to rear; besides which, some years they suffer terribly from ichneumonids, and I generally find that when the larvæ are most numerous there are very few indeed that escape the ravages of these pests. The young larvæ that hibernate are comparatively free from their attacks.—WILLIAM MACMIN; 29, Carlton Road, Carlton Square, E., December, 1887.

CIDARIA RETICULATA MALFORMED.—I bred seven *C. reticulata* last season, but they were all cripples, five being so much so that I never attempted to set them. I tried the others, and made them as good as could be expected. I think this malformation must be owing to the very hot dry summer we had, for I never bred so many cripples of various species as this season. I have again taken the larvæ, and hope to be more fortunate next year.—H. MURRAY; Lowbank Villas, Carnforth, Nov. 11, 1887.

ENTOMOLOGICAL COLLECTIONS.—We have received several further contributions upon the educational value of collections of insects. It appears to us to be useless to further pursue the question from the point of view of setting-out insects. There are a number of our readers who evidently quite agree that, for scientific purposes, it is unnecessary to set insects before placing them in collections. In that opinion we also agree, to some extent, just as we think it desirable to have a poor text-book rather than no guide. After all it must be better to have a well-set and perfect collection of insects for reference, than one where the specimens are difficult of observation on account of the distortions, and uncertainty of correctly seeing all the parts, from the cramped positions usually assumed when the specimens are allowed to arrange themselves after death. Entomologists, like botanists, have, through generations of experience, come to carefully set out specimens for observation and comparison, because such practice was most convenient. Lepidoptera are decidedly more easily observed when set out, though flat-setting seems better than that generally adopted in this country. If left to themselves, much the larger portion dry with the posterior wings either partially or wholly covered by the anterior pair. Of course it is quite scientifically correct to keep a collection of insects in spirits of wine, like Crustacea; but there are few private students who can afford space for a separate vessel for each species so arranged, neither are they so accessible; nor could we afford to wait for them to dry when it is desired to compare with nearly allied species, even if such were possible after their immersion, Lepidoptera for instance. The whole question seems to be one of students and collectors. Each is useful to the other, and a collection of specimens has no more intrinsic scientific value to an entomologist than dictionaries have

for students of philology, and the better prepared in each case the more useful to the students.—JOHN T. CARRINGTON.

SETTING RHOPALOCERA.—The method of setting the under sides of Diurni, as suggested by Dr. Percy Rendall, is quite an old style. I think the position of the legs would be greatly improved by setting them in such a position as to represent the insect when settled; as Dr. Rendall says (*Entom.* xx. 320), “set them as they are so often seen settled on a flower-head;” but the legs as shown in the figure to me appear to have a very dead appearance. The Hesperidæ while settled, never, I believe, make their wings meet over the back, but generally hold them about the width of the thorax apart at the tips, and the hind pair still wider apart; therefore, to represent nature, such a position ought to be imitated in the setting. I think the most effective and instructive way of forming a collection is as follows, beginning at the top of a series:—Males upper and under sides, females upper and under sides, set in the usual manner to show all the wings, then a male and female each in a settled attitude, together with ova, the larva, and pupa to end the series; a collection so arranged would be well worth the time and trouble devoted to the setting, as symmetrical setting and perfection of the specimens is the beauty of a collection.—F. W. FROHAWK; Balham, December, 1887.

THE FEMALE OF *CLEDEOBIA ANGUSTALIS*.—It has seemed strange to me, but twice during the last fortnight and several times before, I have had notes from correspondents referring to the fact that the difference between the males and females of *Cledeobia angustalis* was unknown to them before I sent them both sexes. As these correspondents were entomologists advanced in the study, and many series of this species in cabinets seem to consist entirely of male specimens, I think a few remarks on the species might not be out of place in the ‘*Entomologist*.’ I have occasionally captured specimens of this species in different localities, but nowhere in such abundance as on the Deal sandhills. There it sometimes occurs in countless numbers; and this summer, had it not been that my attention was specially directed to other species, I could have captured any number. The males, from dusk until quite midnight, fly freely about, *Crambus*-like, from one grass culm to another, crawling rapidly up to the top of the culm on which they settle, from whence they take a short flight to another and

generally adjacent culm, repeating these gymnastic evolutions *ad libitum*. It seems that these are the specimens that most collectors get and our writers have described. The wings of these are ample, the insect active, but easily netted. The ground-colour varies from deep blood-red, through a somewhat slaty colour to grey, but the specimens are all males. At the time that the males are flying about, if the lantern be directed to the ground, not to the marram clumps so frequented by the males, a peculiar washed-out looking insect will be observed crawling about, its colour of a pale, yellowish or orange-grey, with faint traces of a band across the centre of the anterior wings; these wings very narrow and pointed, and apparently scarcely capable of flight. The hind wings also pale, of the same colour as the anterior wings, and also very narrow. The most remarkable fact about this insect is the comparatively exceedingly large abdomen, with its long protruding ovipositor. When freshly emerged, and the ovarium distended with eggs, the insect, as it crawls over the ground, drags its abdomen after it, and does not seem to have sufficient muscular power either to raise or depress it, its weight being too great. In this condition they never appear to fly. I have seen a good many specimens, but never remember having seen one fly, although when the eggs are laid, or partly so, the female may probably have sufficient power to be able to do so. I cannot find in the books I have that the female has ever been described. All our writers describe the male, but not the female.—J. W. TUTT; Rayleigh Villa, Westcombe Park, S.E., October 17, 1887.

GIANT LEPIDOPTEROUS LARVÆ IN AUSTRALIA.—In connection with the giant larva figured in the 'Entomologist' (Entom. xix. 97), it may interest some of your readers to know that larvæ of even larger proportions are found in New South Wales. The larva of *Chalepteryx collesi*, a large moth which has been unusually abundant during the past summer in the vicinity of Sydney, often attains the length of seven inches and is robust in proportion. This moth feeds on various Eucalypti, and is of a rich satiny brown colour; each segment, except the first, is furnished with eight yellow verrucose spots, which emit long brown bristles; the anal extremity, a yellow band on the first segment, and two additional verrucose spots on the second and third segments also give rise to bristles. The cocoon, as well as the

larva of this species, is armed with fine and exceedingly sharp bristles, which, if carelessly handled, readily penetrate the skin, causing considerable irritation. The larva of the beautiful swift (*Zelotypia stacyi*) measures eight inches when full grown, and I have seen several *Cossus* larvæ of similar dimensions. As Mr. Vincent Holt has asked and endeavoured to answer the question, Why not eat insects? it may not be out of place to add that in Australia the hairless larvæ of such insects as *Zelotypia*, *Hepialus*, *Charagia*, *Pielus*, and many wood-boring Coleoptera—particularly Longicorns and Rhynchophora—are eaten, either raw or cooked, by the aborigines and by not a few depraved members of the white community.—A. SIDNEY OLLIFF; Australian Museum, Sydney, N. S. Wales.

SCARCITY OF INSECTS IN 1887.—I am curious to learn whether the experience of other collectors of Lepidoptera coincides with my own concerning the dearth of insects, owing to the long drought from which we suffered during the summer of 1887. The want of moisture seems, however, to have had an effect of disturbing the normal dates of emergence. As an instance of this I quote the following facts:—*Triphæna ianthina*, usually so abundant at sugar, has been only represented by a single specimen. *Rumia luteolata*, *Metrocampa margaritaria*, *Pericallia syringaria*, *Phorodesma pustulata*, *Hemithea strigata*, which I have taken regularly for some years, have been notably absentees. *Eugonia alniaria* surprised me by coming to light, quite fresh, on October 7th, more than a month later than usual. *Dipterygia scabriuscula*, one of the few moths taken plentifully in June, appeared again in September; I have never heard of this insect being double-brooded. The only noteworthy insects that I found here for the first time, in 1887, are *Sesia tipuliformis* and *S. myopæformis*, the sun having been apparently favourable to their metamorphoses; I had searched for them in vain before, but this year they were found abundantly in my own garden, and proved to be most partial to privet-bloom. *Pterostoma palpina* was taken in June, and again in August. *Chærocampa porcellus* came to light in August.—WILLIAM POWLEY; Hounslow.

WILLIAM FARREN.—We regret to hear of the death of Mr. William Farren, of Cambridge, which occurred on 21st November last, his age being fifty-one. A notice of his entomological work will appear in our next issue.—J. T. C.

SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON.—*December 7th, 1887.*
—Dr. David Sharp, F.Z.S., President, in the chair. Mr. C. E. Stanley-Phillips, of Shooter's Hill; Mr. H. W. Barker, of Peckham; and Herr E. G. Honrath, of Berlin, were elected Fellows: and Lord Dormer, Mr. Francis Galton, F.R.S., and Mr. Frederic Merrifield were admitted into the Society. Mr. Jenner Weir exhibited, and made remarks on, twelve specimens of *Cicadetta hæmatoides*, collected last summer in the New Forest by Mr. Charles Gulliver. Only one of the specimens was a male, from which it was inferred that the males were more active than the females, and quickly retreated when disturbed. Mr. M'Lachlan exhibited a specimen of *Pterostichus madidus*, F., which he had recently found in a potato. It seemed questionable whether the beetle had been bred in the cavity or had entered it for predaceous purposes. Mr. Theodore Wood, Mr. Kirby, and Mr. Herbert Cox took part in the discussion which ensued. Mr. M'Lachlan also exhibited two specimens of a species of Trichoptera — *Neuronia clathrata*, Kol.—which occurred rarely in Burnt Wood, Staffordshire, and elsewhere in the Midlands. On enquiry he was informed that the two specimens exhibited had been found in the Tottenham Marshes by Mr. C. J. Boden. Mr. Porritt exhibited a series of specimens of *Cidaria truncata*, from Yorkshire, the Isle of Man, the Hebrides, and the South of England. The specimens from the two first-named localities were almost black. Mr. Verrall exhibited a specimen of *Mycetæa hirta*, Marsh., which was found devouring a champagne cork. The Rev. Canon Fowler remarked that certain *Cryptophagi* had the same habit. The discussion was continued by Mr. M'Lachlan, Mr. Jenner Weir, Dr. Sharp, and others. Canon Fowler exhibited specimens of *Acronycta alni* and *Leiocampa dietæa*, which came to the electric light on Lincoln Cathedral during the Jubilee illuminations. He also exhibited a specimen of *Harpalus melancholicus*, Dej., from Kingsgate. Mr. Billups exhibited, for Mr. Bignell, an interesting collection of British oak-galls. He also exhibited the cocoon and pupa-case of a South American moth from which he had bred 140 specimens of a species of Chalcididæ. Mr. O. Janson exhibited, for Mr. C. B. Mitford, a collection of Lepidoptera

from Sierra Leone. Mr. White exhibited a female specimen of *Composia olympia*, Butl., from Florida. He also exhibited, for Mr. Ralfe, a curious structure formed by white ants at Akyab, Burmah. Mr. Waterhouse exhibited a series of diagrams of the wings of insects, and read "Notes of observations on the homologies of the veins"—a subject to which he had given especial attention for some time past. Mr. Champion, Mr. Verrall, Mr. M'Lachlan, Dr. Sharp, Mr. Poulton, and others, took part in the discussion which ensued. Mr. G. T. Baker contributed "Descriptions of new species of Lepidoptera from Algiers." Mr. Gervase F. Mathew, R.N., communicated a paper entitled "Life-histories of Rhopalocera from the Australian Region." The paper was accompanied by elaborate coloured drawings of the perfect insects, their larvæ and pupæ. Mr. Frederic Merrifield read a "Report of Progress in Pedigree Moth-breeding, with Observations on incidental points." He also exhibited a large number of specimens of *Selenia bilunaria* (*illunaria*), &c., showing the results of the experiments he had been making. Mr. Francis Galton alluded to the close attention Mr. Merrifield had given to the subject, and complimented him on the neatness, ingenuity, and skill with which his experiments had been conducted, and on the results he had obtained therefrom. Prof. Meldola, Mr. Poulton, and others continued the discussion.—H. Goss, *Hon. Secretary*.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—November 24th, 1887. R. Adkin, Esq., F.E.S., President, in the chair. Messrs. J. Reindorp and W. H. Whiffen were elected members. Mr. Adye exhibited *Sphinx convolvuli*, *Catocala promissa*, *C. sponsa*, *Xylina ornithopus*, *X. semibrunnea*, and *X. socia*, from the New Forest. Mr. Mera, species taken on Wanstead Flats. Mr. C. A. Briggs, a fine variety of *Arctia caia*. Mr. Billups, a cocoon of a South American moth, the pupa being about the size of *Chærocampa porcellus*, from which 139 perfect specimens, 19 immature specimens, and 9 larvæ of a parasite of the genus *Smicra* had emerged. Mr. Billups also exhibited on behalf of Mr. S. Moseley, a case illustrating the life-history of the Hessian Fly (*Cceidomyia destructor*), with examples of infected straw; and on behalf of Mr. Bignell, a case of British galls, with gall-flies, and contributed notes. Mr. Fenn, on behalf of Mr. T. D. A. Cockerell, caddis cases, *Helicopsyche*, sp. ? a genus of Trichoptera, from Divide Creek, Garfield Co.,

Colorado, which closely resemble the shells of the genus *Valvata*. Mr. R. Adkin exhibited series of *Spilosoma mendica*, including males, varying in colour from creamy-white to smoky-brown, and females of the usual white form, bred from ova from Co. Cork; males of the creamy-white shade taken at light at Antrim; and bred males and females of the usual English type for comparison; and remarked that the light-coloured males were the var. *rustica*, Hub.; that it had been taken both in the North and extreme South of Ireland, but that he had no definite record of it from the central or western districts, and that it appeared to be very doubtful whether the usual smoky-black form of the male occurs at all in that country. Mr. West, of Streatham, exhibited specimens of Locustidæ from Switzerland.

December 8th, 1887.—The President in the chair. Messrs. W. White, A. J. Hodges, T. H. Leach, G. H. Verrall, F. Grut, F. J. Winkley, A. Waterhouse, H. A. Yardley, and G. B. Routledge were elected members. Mr. Sheldon exhibited examples of the spring and summer broods of *Scoparia angustea*, and called attention to the larger size of the summer brood, which led to a considerable discussion, Messrs. J. Jenner Weir, Carrington, Tutt and others taking part. Mr. Ince, a comparative series of *Nepa cinerea*, and remarked on the colour of the abdomen, ranging from red in some specimens to black in others. Mr. Tutt, examples of Micro-Lepidoptera, showing system of setting specimens unpinned, as advocated by Mr. G. Coverdale some time since. Mr. Fenn read notes received from Mr. T. D. A. Cockerell, on a case of mimicry between *Vanessa antiopa* and a species of Locustidæ, observed by him in the Colorado Rocky Mountain region.—H. W. BARKER, *Hon. Sec.*

NORTH KENT ENTOMOLOGICAL SOCIETY.—The pocket-box exhibition of insects bred or captured during the past year, or those not previously exhibited, was held by the members of the above Society, on Thursday, November 24th, 1887, at the Royal Assembly Rooms, New Road, Woolwich. There was a very good attendance, and the principal exhibitors were:—W. G. Dawson, collection of Micro-Lepidoptera, including many Crambites. The President, Mr. Smith, preserved larvæ and Macro-Lepidoptera, including a long series each of *Thecla w-album*, *Sesia asiliformis*, and series of *Tanagra atrata*, one being

a pale variety (nearly white), which was captured by Mr. Nussey. J. Knight's exhibit included upwards of 350 species, the majority being taken from the immediate neighbourhood. H. Webb, vars. of *Argynnis euphrosyne*, *Zygæna filipendulæ* with confluent spots, *Lycæna corydon* from Plumstead marshes, *Sphinx convolvuli*, Ichneumonidæ, Coleoptera, &c. Messrs. Knight and Allbuary, chiefly coast species, and a fine variety of *Arctia villica*. H. J. Sargeant, *Sphinx convolvuli*, *Cucullia chamomillæ*, *Amphipyra pyramidea*, &c. Mr. Holmes, some very good vars. of *Arctia caia*. W. Webb, Lepidoptera from South America, Noctuæ, &c., and a locust taken in Plumstead marshes in August. J. Race, *Trochilium crabroniformis*, *Macroglossa stellatarum*, *Geometra papilionaria*. Mr. Nussey, autumn species, and a brilliant collection of Lepidoptera from South America.—H. J. WEBB, Secretary; 5, Downes Place, Plumstead.

 REVIEW.

Rhopalocera Nihonica: a Description of the Butterflies of Japan.
By H. PRYER. Yokohama: Published by the Author.
Part I.

THE author states that Mr. Distant's excellent 'Rhopalocera Malayana' suggested to him to attempt a similar illustrated book on the Butterflies of Japan.

The first part contains three plates, drawn and lithographed by native artists, and the belief of the author that they will be found to compare most favourably with those of foreign publications is fully justified. Mr. Pryer modestly admits that he could not hope to produce as complete a work as Mr. Distant's; but when the disadvantages under which he labours are fully considered he may be congratulated, so far as the issue of the first part enables one to judge, in having produced a well illustrated work, accompanied with most interesting letterpress, valuable both to the systematic and biological entomologist; this is executed in both languages, English and Japanese, and in this respect is a literary curiosity.

One of the most interesting subjects dealt with is what Mr. Pryer terms "temperature forms:" these he considers due to

the exceptional amount of change in climate which takes place during the year; to give an instance—*Papilio machaon*, Lin., first appears as an imago in March, about the size of, and closely resembling, the British insect; in this stage it is the *P. asiatica* of Butler. The wing expanse is then about 3·40 inches. As the summer advances the successive broods increase in size and depth of coloration until the *P. hippocrates* form of Felder is produced; this much darker form is about 5·40 inches in the expanse of wings, or two inches more than the specimens of the spring emergence. *Papilio xuthus* and *P. xuthulus* are placed as one species, the former being the later emergence.

Aporia crategi attains a much larger size than in England, reaching a wing expanse of 3·23 inches.

Mr. Pryer errs in suppressing the names for local forms; unless these are used where well-marked geographical races are spoken of, the correct meaning could not be conveyed. The *Pieris rapæ* figured is the topomorphic variety, named *P. crucivora* by Butler, and differs so much from the European *P. rapæ* that some authors have deemed it a variety of *P. brassicæ*.

The insect figured as *P. napi* is sufficiently different from the European form to warrant the retention of a sub-specific name, if not a specific, although it unfortunately happens that the *P. megamara* of Butler is the first emergence of the *P. melete* of Menetries. It is in its two homeomorphic forms totally unlike the British species. The spring form does not, like the British, lean towards *B. bryoniæ* in duskiness; and the late emergence has even less resemblance to the British summer emergence. Quite a third of the upper wing of the female figured is black, and the size would exceed the average English specimens by at least half an inch in the expanse of wing.

Similar remarks will apply to the figures of *Leucophasia sinapis*. Judging from analogy, fig. 7, plate 2, is a spring form; and fig. 8, if of the same species, is from a specimen of the summer emergence. The former has been named *L. amurensis* by Menetries, and the latter *L. vilibia* by O. Janson.

It will be seen that the book is full of both interest and instruction, and is a real addition to our knowledge of the Rhopalocera of Japan.

The book is uniform in size with Mr. Distant's.—J. J. W.

THE ENTOMOLOGIST.

VOL. XXI.]

FEBRUARY, 1888.

[No. 297.]

LEPIDOPTERA OF THE OUTER HEBRIDES.

By RICHARD SOUTH, F.E.S.

MR. McARTHUR, who was last year (1887) in the Island of Lewis from May to September, has added considerably to our knowledge of the lepidopterous fauna of the Outer Hebrides. Eighty-eight species of Macro- and thirty species of Micro-Lepidoptera are represented in the collection he has brought from Lewis.

Checked by Mr. Jenner Weir's list of the species captured in the island by Mr. Meek's collector in 1881 (Entom. xiv. 218), I find that Mr. McArthur's captures comprise seventy-three species not named in that list; while, on the other hand, some thirteen species taken in 1881 do not appear to have been observed in 1887.

The additional species are:—

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|---|--|
| <i>Pieris brassica</i> . Rare. | <i>Apamea leucostigma</i> . One specimen only. |
| <i>Epiuephele ianira</i> . Not common. | <i>Celæna haworthii</i> . Rare. |
| <i>Spilosoma fuliginosa</i> . Rare. | <i>Caradrina quadripunctata</i> . Rare. |
| <i>Hepialus hectus</i> . Not common. | <i>Agrotis restigialis</i> . Common. |
| <i>Bombyx rubi</i> . Very common. | <i>A. cursoria</i> . Common. |
| <i>B. quercus</i> var. <i>callunæ</i> . Rare. | <i>A. tritici</i> . Common. |
| <i>Saturnia pavonia</i> . Very common. | <i>A. aquilina</i> . Not common. |
| <i>Dicranura rinula</i> . One example only. | <i>A. agathina</i> . „ |
| <i>Tapinostola fulva</i> . One example only. | <i>A. lucerneæ</i> . Rare. |
| <i>Hydræcia nictitans</i> . Rare. | <i>Noctua glaucosa</i> . Common. |
| <i>H. micæa</i> . Rare. | <i>N. neglecta</i> . Not common. |
| <i>Charæas graminis</i> . Rare. | <i>N. xanthographa</i> . Not common. |
| <i>Mamestra furva</i> . Rare. | <i>Xanthia citrægo</i> . Only one specimen. |
| | <i>Dianthorcia nana</i> . Very rare. |

- Cleoceris viminalis*. One example.
Hadena glauca. Two specimens.
Anarta melanopa. Rare.
A. myrtilli. Common.
Rumia luteolata. Very common.
Cabera pusaria.
Abraeus grossulariata. Common and very typical.
Ligdia adustata.
Oporabia filigrammaria. Common.
Larentia flavicinctata. Two only.
L. viridaria. Common.
Emmulesia alchemillata. Only one.
E. adaequata. Common.
Eupithecia venosata. One wasted example.
E. castigata. Common.
Thera simulata. Some very light-coloured forms were taken.
T. jirmata. Rare.
Hypsipetes sordidata. Rare.
Melanippe sociata.
M. fluctuata. Very rare.
Coremia minutata. Not common.
Cidaria immanata.
- C. testata*. Not uncommon.
C. populata. Common.
Scoparia ambigualis.
Crambus ericellus.
C. perlellus.
Phycis fusca.
Tortrix rosana.
Rhacodia caudana.
Penthina marginana.
Sericoris littoralis.
S. lacunana.
Mixodia schulziana.
Cnephasia musculana.
Clepsis rusticana.
Bactra lanceolata.
Phloxopteryx hiarcuana.
Phloxodes tetraquetrana.
Hypermezia cruciana.
Pedisca corticana.
P. solandriana.
Dicrorampha plumbeana.
Catoptria fulvana.
Synathisis argacanthella.
Eupeccilia angustana.

Species not observed in 1887 :—

- | | |
|--------------------------------|----------------------------------|
| <i>Apamea basilinea</i> . | <i>Cidaria suffumata</i> . |
| <i>A. gemina</i> . | <i>Scoparia angustea</i> . |
| <i>Aplecta occulta</i> . | <i>Tortrix palliana</i> . |
| <i>Hadena thalassina</i> . | <i>Pardia tripunctana</i> . |
| <i>Odontoptera bidentata</i> . | <i>Sericoris urticana</i> . |
| <i>Dasydia obfuscaria</i> . | <i>Grapholitha subocellana</i> . |
| <i>Coremia ferrugata</i> . | |

All the species are interesting, and the majority show more or less local variation; but the most noteworthy perhaps in the entire collection are :—

Lycæna icarus.—Some males of a very rich blue, and with distinct black marginal spots on the upper surface of hind wings.

Nemophila plantaginis.—Examples of the white variety (*hospita*).

Agrotis cursoria.—Specimens very close to that figured from Shetland (Entom. xvii. pl. i. fig. 3).

Melanippe sociata.—Judging from first impressions, one would certainly say this was a distinct species; but, although the dark grey colour with which the insect is suffused suggests

something new, a careful examination of the lines and other markings prove it to be a local form of *M. sociata*. The woodcut of the male insect here given will convey a better idea of



this Hebridian form than the most elaborate description. I would propose that this form should be known as var. *obscurata*.

Melanippe montanata.—Some of the specimens are more or less silvery white in colour of ground; others have the band interrupted below the middle, and in one or two examples the band is represented by a dot or small patch of dark colour on the costa only.

Camptogramma bilineata.—Referring to the Hebridian form of this species (Entom. xiv. 218), Mr. Jenner Weir says, "The primary wings, though not strictly grey, have the appearance of being washed with that colour." This feature is forcibly exhibited in the specimens brought from Lewis last year, which may be briefly described as follows:—Ground colour pale ochreous, abundantly sprinkled with brown atoms, and marked with numerous dark brown zigzag lines. These, together with three white lines and the pale ochreous ground, in conjunction with the dark brown ornamentation, give the primaries a greyish brown appearance. The hind wings appear golden brown, with a number of darker brown lines most closely approximating from the middle to the base of the wing. As is often seen in the type, the space between the second and third white lines on the fore wings is more or less completely filled up with blackish scales.

Although *Emmoleisia albulata* was not uncommon, no example of the white variety *hebridium* was seen by Mr. McArthur in Lewis last year.

12, Abbey Gardens, St. John's Wood, London, N.W., January, 1888.

DISTRIBUTION OF LEPIDOPTERA
IN THE OUTER HEBRIDES, ORKNEY, AND SHETLAND.

By RICHARD SOUTH, F.E.S.

The following table is compiled from notes and papers by Messrs. Briggs, Weir, Dr. Buchanan White, and others in the 'Entomologist,' 'Scottish Naturalist,' &c. The order of columns is that of numerical rather than geographical sequence.

RHOPALOCERA.

	Ork.	O. Heb.	Shtl.		Ork.	O. Heb.	Shtl.
PIERIDÆ				SATYRIDÆ			
<i>Pieris brassicæ</i>	+	+		<i>Epinephele ianira</i>			+
<i>P. rapæ</i>	+			<i>Cœnonympha typhon</i>	+	+	+
NYMPHALIDÆ				LYCÆNIDÆ			
<i>Vanessa atalanta</i>	+		+	<i>Lycœna icarus</i>	+	+	
<i>V. cardui</i>	+		+				

HETEROCERA.

SPHINGOIDÆ				<i>Miana fasciuncula</i>			+
<i>Acherontia atropos</i>	+		+	<i>M. bicoloria</i>	+		
<i>Sphinx convolvuli</i>	+		+	<i>Celœna haworthii</i>	+	+	+
<i>Macrogl. stellatarum</i>	+			CARADRINIDÆ			
CHELONIDÆ				<i>Stilbia anomala</i>	+		
<i>Nemeop. plantaginis</i>	+	+	+	<i>Carad. quadripunctata</i>	+	+	+
<i>Arctia caia</i>	+			<i>Rusina tenebrosa</i>		+	
<i>Spilosoma fuliginosa</i>	+	+		NOCTUIDÆ			
HEPIALIDÆ				<i>Agrotis vestigialis</i>		+	
<i>Hepialus humuli</i>	+	+	+	<i>A. suffusa</i>	+	+	+
<i>H. vellela</i>	+	+	+	<i>A. cursoria</i>		+	+
<i>H. lupulinus</i>	+			<i>A. tritici</i>		+	
<i>H. hectus</i>		+		<i>A. aquilina</i>		+	
BOMBYCIDÆ				<i>A. agathina</i>		+	
<i>Bombyx rubi</i>		+		<i>A. strigula</i>	+	+	+
<i>B. quercus</i>	+	+		<i>A. simulans</i>	+		
SATURNIDÆ				<i>A. lucerneæ</i>		+	+
<i>Saturnia pavonia</i>	+	+		<i>Noctua glareosa</i>	+	+	+
DICRANURIDÆ				<i>N. augur</i>	+		
<i>Dicranura vinula</i>		+		<i>N. c-nigrum</i>	+	+	+
CYMATOPHORIDÆ				<i>N. brunnea</i>		+	
<i>Cymatophora or</i>		+		<i>N. festiva</i>	+		
LEUCANIDÆ				<i>N. festiva v. conflua</i>	+	+	+
<i>Tapinostola fulva</i>		+		<i>N. dahlîi</i>	+		
APAMEIDÆ				<i>N. baia</i>		+	
<i>Hydrœcia nictitans</i>	+	+		<i>N. castanea</i>	+	+	
<i>H. micacea</i>	+	+	+	<i>N. xanthographa</i>	+	+	+
<i>Xylophasia rurea</i>	+	+		<i>Triphœna comes</i>	+	+	
<i>X. monoglypha</i>	+	+	+	<i>T. orbona</i>			+
<i>Charœas graminis</i>	+	+	+	<i>T. pronuba</i>	+	+	+
<i>Mamestra furva</i>	+	+	+	ORTHO SIDÆ			
<i>M. brassicæ</i>	+		+	<i>Pachnobia hyperborea</i>			+
<i>Apamea basilinea</i>	+	+	+	<i>Tœniocampa gothica</i>	+		
<i>A. gemina</i>	+	+		<i>Xanthia citrago</i>		+	
<i>A. unaminis</i>	+			<i>X. circellaris</i>	+		
<i>A. leucostigma</i>		+		HADENIDÆ			
<i>A. didyma</i>	+		+	<i>Dianthœcia nana</i>		+	+

	Ork.	O. Heb.	Shetl.		Ork.	O. Heb.	Shetl.
<i>Dasytopia templi</i>			+	<i>T. firmata</i>			+
<i>Epunda lutulenta</i> var.				<i>Hypsipetes ruberata</i>	+		
<i>lunenburgensis</i>	+			<i>H. trifasciata</i>		+	
<i>Cleoceris viminalis</i>	+	+		<i>H. sordidata</i>	+	+	
<i>Euplexia lucipara</i>	+			<i>Melanthia ocellata</i>	+	+	
<i>Phlogoph. meticulosa</i>	+			<i>Melanippe hastata</i>		+	
<i>Aplecta occulta</i>	+	+	+	<i>M. sociata</i>	+	+	
<i>Crymoda exulis</i>			+	<i>M. montanata</i>	+	+	+
<i>Hadena adusta</i>	+	+	+	<i>M. fluctuata</i>	+	+	+
<i>H. glauca</i>	+	+		<i>Coremia munitata</i>	+	+	+
<i>H. dentina</i>	+	+	+	<i>C. designata</i>	+		
<i>H. oleracea</i>			+	<i>C. ferrugata</i>		+	
<i>H. pisi</i>	+			<i>Camptogra. bilineata</i>	+	+	+
<i>H. thalassina</i>	+	+		<i>Cidaria miata</i>	+		
XYLINIDÆ				<i>C. truncata</i>	+	+	
<i>Calocampa vetusta</i>	+			<i>C. immanata</i>	+	+	+
<i>C. exoleta</i>	+			<i>C. suffumata</i>		+	
PLUSIIDÆ				<i>C. prunata</i>	+		
<i>Habrostola tripartita</i>	+			<i>C. testata</i>	+	+	+
<i>Plusia gamma</i>	+		+	<i>C. populata</i>	+	+	
<i>P. iota</i>	+			<i>C. fulvata</i>	+		
<i>P. pulchrina</i>	+			EUBOLIIDÆ			
HELIOTHIDÆ				<i>Carsia paludata</i>	+		+
<i>Anarta melanopa</i>		+	+	<i>Anaitis plagiata</i>	+		
<i>A. myrtilli</i>	+	+		PYRALIIDÆ			
ENNOMIDÆ				<i>Scoparia ambigualis</i>		+	+
<i>Rumia luteolata</i>		+		<i>S. atomalis</i>	+		+
<i>Odontoptera bidentata</i>		+		<i>S. murana</i>		+	
BOARMIDÆ				<i>S. angustea</i>		+	+
<i>Boarmia repandata</i>		+		<i>S. alpina</i>	+		+
<i>Dasydia obfuscaria</i>		+		<i>S. pallida</i>	+		+
CABERIDÆ				<i>Nomophila noctuella</i>	+		+
<i>Cabera pusaria</i>		+		<i>Herbula cespitalis</i>	+		+
FIDONIDÆ				BOTYDÆ			
<i>Scodionia belgiaria</i>	+	+		<i>Scopula lutealis</i>	+		
<i>Ematurga atomaria</i>	+	+		<i>S. prunalis</i>	+		
ZELIENIDÆ				CRAMBIDÆ			
<i>Abraxas grossulariata</i>		+		<i>Crambus pratellus</i>	+	+	+
<i>Ligdia adustata</i>		+		<i>C. pascuellus</i>			+
LARENTIIDÆ				<i>C. ericellus</i>		+	
<i>Opor. filigrammaria</i>	+	+		<i>C. margaritellus</i>		+	
<i>Cheimatobia brumata</i>	+			<i>C. perlellus</i>		+	+
<i>Larentia didymata</i>	+	+	+	<i>C. culmellus</i>	+	+	+
<i>L. cæsiata</i>	+	+	+	<i>C. hortuellus</i>			+
<i>L. flavicinctata</i>		+		PHYCIDÆ			
<i>L. salicata</i>	+			<i>Phycis fusca</i>		+	
<i>L. viridaria</i>	+	+		TORTRICIDÆ			
<i>Emmel. alchemillata</i>		+		<i>Tortrix rosana</i>		+	
<i>E. albulata</i>	+	+	+	<i>T. palleana</i>		+	
<i>E. minorata</i>	+			<i>Peronea variegana</i>	+		
<i>E. adæquata</i>	+	+		<i>P. hastiana</i>	+		
<i>Eupithecia venosata</i>	+	+	+	<i>P. caledonia</i>	+		
<i>E. satyrata</i>	+	+		<i>Rhacodia caudana</i>	+	+	
<i>E. castigata</i>		+		<i>Teras contaminana</i>	+		
<i>E. nanata</i>	+	+	+	<i>Dictyop. la-flingiana</i>	+		
<i>E. vulgata</i>		+		PENTHINIDÆ			
<i>E. minutata</i>	+			<i>Penthina marginana</i>	+	+	
<i>E. lariciata</i>		+		SPILONOTIDÆ			
<i>E. sobrinata</i>	+	+		<i>Pardia tripunctana</i>		+	
<i>E. pumilata</i>	+	+		SERICORIDÆ			
<i>Thera simulata</i>	+	+		<i>Sericoris littoralis</i>	+	+	+
<i>T. variata</i>		+		<i>S. urtica</i>		+	

CLOSTERA ANACHORETA.

BY THE REV. JOSEPH GREENE, M.A.

I AM very anxious to once more re-open the question, "Is *Clostera anachoreta* an indigenous British insect?" I have never thought it to be so. My last communication to 'Entomologist' was in 1881, nearly seven years ago. As it is necessary to my enquiry, and as probably most of your present readers know little as to the particulars of its appearance in this country twenty-eight years ago, I reproduce it here: "In the year 1859, Dr. Knaggs announced that he had discovered eleven larvæ of this, till then, reputed British species. Ten pupæ resulted, and eggs were produced in due course. These, more or less, were distributed among various entomologists (myself included), and they having, in their turn, obtained eggs, the insect was bred for some years in such vast numbers as to become an absolute drug, and people ceased to keep up the brood any longer. Can any of the numerous readers of the 'Entomologist' inform me whether it has ever been taken since then in a 'state of nature?' I observe in the 'Zoologist' (1863, p. 8694), a notice from Mr. Sidebotham, that he had taken a larva at Folkestone, very near the place where Dr. Knaggs made his discovery; and a similar notice from Mr. Meek, in the 'Ent. Mo. Mag., (i. 123). These instances are all that I can discover, and they do not answer my question in the way I desire, as these larvæ were found in the same place as Dr. Knaggs's, and the 'home-breeding' had, perhaps, scarcely fallen through" (Entom. xv. p. 117). Two, and only two, replies to my question appeared in the same volume (pp. 133—160). The latter I dismiss for the present. The first was extremely interesting, and very much to the purpose. From it I make the following extracts:—"In answer, &c., I send an account of my own experience. In September, 1861, my father found a larva feeding on poplar, in some small plantations below West Cliff, Folkestone; but I did not recognise the species till the pupa hatched on April 27th, 1862. . . . This larva of *C. anachoreta* and the subsequent ones of this species we found in 1862—3, were only on this 'balsam poplar.' In the autumn of 1862 my brother and I found twelve larvæ; one died when young, the other eleven changed into pupæ, all of which hatched in the

following spring. . . . In October, 1863, we found *Notodonta ziczac*, *N. dictæa*, and one larva of *anachoreta*, which we did not keep as we had bred them in plenty. During that month we turned out eighty-four nearly full-fed larvæ of *anachoreta*, but not all bred from the same parents, in different places among these plantations. We put the larvæ on the same species of poplar we had first found them on, in order thoroughly to establish the species there; but *since that date* we have neither of us seen the larva of *anachoreta* there, although we have been at Folkestone every autumn up to the present time, . . . not having seen an *anachoreta* larva for eleven years, I was deceived in the spring of 1874, by finding some young larvæ in these plantations, which proved to be those of *S. salicis*."—T. H. Briggs, May 14th, 1881. (The italics are mine).

From the above it will readily be seen that, even in its birth-place, the insect steadily diminished in numbers, until in 1864 it disappeared altogether, though eighty-four full-grown larvæ had been distributed in the locality; and though carefully sought for eight successive autumns, not a single specimen was taken. It is further to be observed that the *one* larva taken by Mr. Sidebotham, and that by Mr. Meek, were both captured at the *original* locality and prior to 1864.

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

I said, in the commencement of this paper, that I did not believe *anachoreta* to be an indigenous British insect years ago. Still less do I believe it to be so now. All who had the oppor-

tunity of breeding it, after its discovery in 1859, must agree with me in saying that it was a most *prolific* insect. I myself have had three broods within twelve months, and, as mentioned above, the larvæ multiplied to such an extent that collectors grew tired of it, and ceased to keep up the breed. Now, from about 1854 to 1864 was one of the most (if not the most) energetic periods in the history of British Entomology (Lepidoptera). At no time, during my forty years' experience, has there been a more numerous or more skilled body of collectors, larva hunters, pupa diggers, &c. And yet I am asked to believe that an "indigenous" British insect, which has two or three broods in the year, whose larva is easily detected, and whose food is found all over the country, could have eluded the searching gaze of hundreds of keen-eyed collectors before 1859, and finally have turned up in *one* spot in England, with a reduced family of eleven! Again, is it credible that an *indigenous* insect so prolific as *anachoreta*, and whose larva could so easily be found by a practised hand, should so completely disappear after 1864 (when the home breeding ceased) that no record of its capture, either as imago, pupa, or larva can be found up to the present time, a period of twenty-three years? This statement is of course subject to correction. But unless it be very considerably modified, I unhesitatingly express my conviction that *Clostera anachoreta* is not a British insect. It may be asked by some of your readers who may trouble themselves to read these lines, "Is it not a fact that some insects will re-appear after long intervals?" To which I reply undoubtedly, but not, I venture to think, under the conditions above referred to. If it be further asked, "How then do you explain Dr. Knaggs's discovery?" I answer in one word "importation." Any one acquainted with my friend and correspondent Dr. Knaggs would not dream of even hinting at his taking part in any such transaction; but that *C. anachoreta*, in one or more of its stages, was ignorantly or intentionally introduced into this country about 1858 or 1859 is my fixed conviction. Hence its *non*-appearance before those years; hence its *dis*-appearance after 1864.

Rostrevor, Clifton, Bristol, January 2, 1888.

NOTES ON THE MACRO-LEPIDOPTERA OF SOUTH DEVON.

BY W. FRANCIS DE V. KANE, M.A., M.R.I.A.

WHEN recording my capture of *Callimorpha hera*, near Woodbury, South Devon, in your September number, I promised to communicate a list of species taken in that neighbourhood. The list now appended is composed of captures by myself or residents whose collections have been examined and identified by me, and localities ascertained. Exeter is, I find, considered not to be a prolific locality for Lepidoptera; and from the long residence of the late Rev. J. Hellins in that city, and the existence of a local society, one would conclude that the immediate vicinity at least has been well worked.

Nevertheless, I believe the district lying four or five miles to the south is worthy of more careful investigation. Having had no experience in England hitherto, I am no judge of the comparative richness of localities there; but certainly there are few parts of Ireland which would seem to offer such a number of interesting species.

Arriving at Winslade early in August, I found the country scorched and parched with the drought. *Lycæna icarus* was very plentiful, and showing what I have noticed abroad, that the insect had suffered in size from the dry condition of the herbage. The larvæ of the genus *Lycæna*, for the most part, delight in a succulent condition of their food, and the dry level wastes of Spain and the South of Europe produce a numerous but undersized progeny. By the haunts of a stream near, I was delighted to find *Hadena dissimilis* in some numbers, and *Pterostoma palpina* among various commoner species.

Near Woodbury, I took, as already recorded, a specimen of *Callimorpha hera*. I cannot help thinking that this beautiful insect has found its way hither from Jersey, as fishing-smacks and luggers are constantly in the estuary of the Exe, either wind-bound or with a cargo of fruit from that island. *Zonosoma porata* I also took in some numbers. A specimen of *Stilbia anomala* turned up at Budleigh Salterton. At Exmouth I could not do much collecting. On the sand-hills I noticed that various burrowing Hymenoptera were extremely numerous and of various species.

On the Warren, which I regretted to find so greatly curtailed in size by the encroachments of the sea during the last twenty years, *Mesotype virgata* is to be found.

At Chagford, on the elevated table-land of Dartmoor, I found a very promising country, but was prevented by unsuitable weather during the few days of my stay from doing much work. I took, however, *Neuria reticulata* and *Acidalia marginepunctata*, the occurrence of the latter somewhat surprising me both as to time and place. The appearance of a second brood this year has also already been recorded (E. M. M.) in Norfolk. I had considered this moth as a sea-coast insect, but, doubtless, in this as in other instances in zoology as well as botany, elevation corresponds to a large extent as to climatic conditions and general environment with the sea-shore.

A pleasant day or two at Ivybridge gave me the opportunity of making the personal acquaintance of several entomological correspondents in and about Plymouth, whose fauna is being elucidated by them, as to Diptera, Hymenoptera, and Lepidoptera. I shall therefore only record the occurrence of *Stauropus fagi*, a larva of which was swept into the net of one of our party, in the course of a pleasant ramble in Erme Wood, and most generously presented to me by the captor. In referring to the pleasant acquaintances made in South Devon, I cannot help expressing my hope that such of them as have opportunity, especially about Topsham and Exmouth, will do their duty toward the locality, and diligently explore the repertory of ivy and sallow thereabouts, as neither autumn nor spring species are represented in the following list.

W. stands for Woodbury; C. for Chagford, Dartmoor; those unmarked are from the vicinity of Topsham; abt. abundant.

RHOPALOCERA.—*Leucophasia sinapis*, W., abt. *Argynnis euphrosyne* and *selene*, W., abt. *Argynnis adippe*, one specimen, Dartmoor. *Vanessa polychloros*, scarce. *Epinephèle hyperanthus*, ab. *arete*. *Lycæna argiolus*, W., abt. *Syrichthus malvæ*, ab. *taras*, W., not rare.

HETEROCERA.—*Acherontia atropos*, not rare. *Sphinx convolvuli*, very abundant last autumn. *Smerinthus ocellatus*, occasional specimens. *Macroglossa bombyliiformis*, W., not very rare. *Sesia cynipiformis*, *Nola strigula*, *Lithosia mesomella*, one specimen each. *Callimorpha hera*, one specimen, W. *Arctia villica* and *Spilosoma mendica*, not common. *Cossus ligniperda*, abt. *Pterostoma palpina* and *Notodonta chaonia*, occasional

specimens. *Xylophasia hepatica*, not rare. *Neuria reticulata*, C., one specimen. *Stilbia anomala*, one at Budleigh Salterton. *Caradrina morphheus* and *Agrotis corticea*, not rare. *Aplecta advena* and *Hadena dissimilis*, not rare. *Heliothis peltigera*, *Catocala nupta*, and *Toxocampa pastinum*, one of each. *Bomolocha fontis*.

GEOMETRÆ. — *Ellopiä prosapiaria*, abt. *Eurymene dolabraria*, occasional. *Pericallia syringaria*, not abundant. *Biston hirtaria*, not rare. *Nemoria viridata*, not rare, W. *Zonosoma porata*, abt. *Z. punctata*, not rare. *Eupisteria obliterata*, abt., W. *Acidalia marginepunctata*, C. *A. imitaria*, abt. *A. emarginata*, abt. *Numeria pulveraria*, not rare, W. *Larentia olivata*, occasional. *Emmelesia decolorata*, locally not rare. *Eupithecia coronata*, one specimen. *Lobophora halterata*, occasional. *Thera firmata*, not rare. *Melanthia bicolorata*, not rare. *Anticlea rubidata*, rather abundant. *Phibalapteryx vittata*, occasional. *Cidaria picata*, rather abt. *Mesotype virgata*, not rare on Exmouth Warren.

Sloperon, Kingston, Co. Dublin, December, 1887.

NOTES ON THE NOTODONTIDÆ.

BY THE REV. BERNARD SMITH.

No. 4.—*NOTODONTA CHAONIA* AND *N. TRIMACULA*.

THIS species is rather more plentiful here than its congener *trimacula*. Still *N. chaonia* has not been found in the perfect state, which the other has been occasionally. Again, *chaonia* is the earlier in its appearance by a month. The moth is very local, and seems to prefer detached oaks of moderate size, on which the larva has been found, by the aid of a short ladder, up to the very summit. These trees are either in open spaces in woods, or shaded by larger trees near them.

The larva, which is very subject to be stung by ichneumons, is easily distinguished by the double lateral stripe of sulphur-yellow, which passes even round the anal segment. The best time to beat for it is from the 18th to the 30th of June in most years. It may also be found by searching, and when we have found the right tree, by the beating tray. It is a difficult species to pair in confinement. The best chance is when a female has emerged one day before a male follows. *Notodonta trimacula*, on the other hand, is not hard to pair, if "sleeved" on the growing tree.

When we have got fertile eggs of *N. chaonia* our difficulties are not ended. They will hatch, say, in twelve days, and unless

their food is ready at hand they will refuse to eat. As oak leaves are hardly opening yet, this is another difficulty. The moth does not always emerge the following spring, and then the pupa is apt to die. So that *N. chaonia* is hardly likely to become common.

There is not a variety of *chaonia* as there is of *trimacula*.

In looking for the larva it is well to note that it is generally lying under a leaf, along the midrib, so that it is rather conspicuous. Still I have always beaten three for one that I have found by search. The same trees are found to produce this larva year after year,—a remark which has been made of *Cirrhædia xeram-pelina* and other rare insects.

Notodonta trimacula, with its var. *dodonea*, is a species not so confined to the South. It is found, for example, in Sherwood Forest, Notts, the larvæ nestling in the deep wrinkles of the bark of its aged oaks during the day. The larva is more active than that of *chaonia*. The spiracular line is yellow, interrupted with pink as the larva approaches maturity. This moth appears early in June, and is more easy to obtain ova from than its congener; but for this purpose the parent moths should be sleeved together on the growing oak, and the ova, which are pale green, will be laid in bunches among the leaves, and will hatch and produce their larvæ in about twelve days, if the branch is sufficiently shaded from the sun. The larva buries, to turn to a smooth brown pupa, in a soft cocoon of silk and earth, preferring, it is said, the angles of the roots, where the pupa is not unfrequently dug in September and October. I have known this moth to remain two years, and even three, in pupa.

This moth deserves a long series to show its beauty and variety. The female varies less than the male, and is less liable to grease.

The food of the larva is sometimes said to be birch as well as oak; but I have no knowledge of its feeding except on oak (*Quercus robur*). It is very desirable to have at least one oak of a good size in your garden, to ensure sufficient shade in order to rear the two species above described with any success. A stiff loamy soil, of sufficient depth, is required, to produce green succulent leaves in abundance, when eaten down year after year by hungry larvæ. During the late dry season I also syringed my trees in the evenings with very good effect, especially against honeydew.

To see a *N. chaonia* emerge from its cocoon on an evening towards the end of April is very striking. The majesty with which it marches to the top of the cage, and poses, to allow its wings to grow, is quite singular. The male is apt soon to grow so restless, especially if the evening is warm, that it will often destroy itself the first night. The female is more sedate, but less so than *dodonea*.

I once found two ova laid on oak bark in a shady spot. They are white and conspicuous, and have been found on fronds of fern, owing to some accident.

To obtain this insect in any numbers, recourse must be had to the beating-tray, and it seems to occur more freely in the New Forest than anywhere else. Marlow Common is also a good hunting-ground for it; as are Burnham Beeches and Stonor Park, in the same neighbourhood. Although the larva when young is easily confounded with that of *dodonea*, yet the large green head of the former is a sufficient mark to distinguish it; and when full grown it is much stouter and more glossy, and altogether different.

Marlow, Bucks, November, 1887.

AN ENTOMOLOGICAL WINTER CAMPAIGN IN SPAIN AND NORTH AFRICA.

By G. DIECK.

ON the 5th January I arrived in Gibraltar, and hastened to take a walk on the rock, from whence I hoped to see Tangier and Algeciras, the places I intended to visit next. On my way I took the opportunity of fishing out of the reservoir some floating beetles: among them the scarce *Asida inquinata*, *Carabus beticus*, *Pristonychus beticus*, *Geotrupes marginatus*, *Cyrtonus*, *Eumolpus*, were specially to be noticed; except for these and *Ocypus olens*, *Orthomus barbarus*, and a variety of *Licinus silphoides*, a few Halticidæ, by sweeping, *Attalus ulicis*, and *Baridius opiparis*, one example, there was little sign of activity in the fauna.

When I arrived at the summit of the rock a far greater joy awaited me. Wherever the eye turned, on all sides the most

delightful landscapes were spread out; to the north the snow-covered Andalusian mountains; to the east and west the rocky shores, with their numerous creeks and cliffs, washed by the deep blue sea; to the south, as if to shake hands with the Morocco coast in the distance; far below was the picturesque Bay of Gibraltar, studded with ships, and above it the beautiful Algeciras, the land of my longing, the classic ground of science, for here Natterer, Rambur, Will and Harold, and many colleagues, lived and collected.

A second walk led to the stretch of downs, which in the north-west of the town stretches away to Algeciras and San Roque. Here were found plentifully, *Erodium tibialis*, *Zophosis suborbicularis*, *Pachychila salzmännii*, *Pimelia fornicata* (variety with small weak sculpture); more rarely, *Isocerus ferrugineus*, *Ammophthorus rugosus*, and other sand beetles; while in the neighbouring cattle-pastures were found *Chrysomela diluta*, *Dermestes sardous*, *Sitones discoideus*, *Brachinus bœticus*; more seldom. *Lebia pubipennis* and *Singilis bicolor*. As I wished to pass some time for the quieting of my mind after my unpleasant experience in Malaga, before I again trusted myself in Andalusia, I determined to go for some weeks out of the way of the Revolution, and to settle at Tangier. There is almost daily steam communication with Tangier by means of the garrison provision-boats, which have to provide the fortress with meat and field produce from Morocco: I therefore soon found an opportunity of crossing, and got over after about a two hours' passage. My fears of finding in Morocco only indifferent provisions were, however, groundless, for the town of Tangier possesses two French and two English hotels, which equal, or even surpass, the Spanish Fondas in comfort. I also found the personal safety of the solitary traveller much less in danger than in Spain, for during my stay there of several weeks I experienced nothing but kindness from the country people, without ever—as so often happened in Spain—being the least annoyed by beggars. In short, I had no cause of complaint of any kind during the whole time I had to reside in this interesting country, while I discovered a (to me) perfectly new and extraordinary insect fauna. The country round Tangier may properly be divided into two geological districts, and according to this division of the ground, the fauna and flora also naturally divide themselves.

West of the town to Cape Spartel, the land consists, with the exception of the sandy coast line, of rich chalk and marl, and has, consequently, a particularly varied flora and fauna; while to the east, the sand-hills of the coast stretch away inland, only intersected by two small streams, along the banks of which a strip of alluvial soil has been deposited. This side is naturally much poorer in the number of species which occur, while in the number of individuals, it is much richer than the clay district. Among the grass on the sand-hills were found thousands of *Isocerus ferrugineus*, *Helops pallidus*, *Pachychila salzmanni*, 2 *Tentyria*, *Trachyscelis*, *Ammophthorus*, *Phalerii*, more rarely some *Erodia*, 2 *Scarites* (the *Scarites* and *Pimelia* appear to be particularly infested by the thread-worm, for I have often found as many as two on one specimen), 1 *Zophosis*, 2 *Pimelia*, 2 *Brachycerus*, *Leichenium variegatum*, and many others. Several varieties of *Cicindela flexuosa* and *C. maroccana*, were flying about in considerable numbers in sheltered places on the 13th January. The blossoming bushes of *Genista monosperma* furnished *Apion cretaceum*, *Cnerrhinus ludificator*, *Litargus coloratus*, *Pria pallidula*, Er., and some *Cryptophagi*, while under stones and the leaves of the aloes, lived *Adelostoma*, *Tagenia*, and in separate places several newly described (?) *Thylacites*.

More frequently I visited the western district, which I traversed for the most part from the Zocco, that is, a gate by the market-place, in the road leading to Cape Spartel. On this road one first crosses a short sandy tract, which at the time was still used as the town cemetery, and then after some ten minutes walking the chalk soil is reached, and with it the area of a deserted graveyard, and under the numerous scattered gravestones here lying around a very excellent Coleoptera-fauna was concealed. Under the very first stone which I raised was a new blind species of Curculionidæ (?), which I afterwards described as *Crypharis robusta*; with it were found on the under side of the stone, *Ctenistes barbipalpis*, Fairm., and *C. integricollis*, Fairm., lately suppressed by de Sauley, as varieties of *C. aubei* and *C. ghilianii*, as well as the new *Tychus miles* and *T. armatus*, Sauley. I also captured here in great numbers, *Scydmaenus promptus*, *S. spissicornis*, *S. intrusus*, *S. conspicuus*, *Bryaxis opuntiae*, *Cossyphus dejeanii* and *C. pygmæus*, *Brachinus testaceus*, Ramb., *Ophonus planicollis*, *Apotomus rufus*, *Ditomus gracilis*, and a form very

nearly related to it, but which, perhaps, is only the other sex; more rarely there were *Bryaxis dentiventris* and *B. hemiptera*, Sauley, *Scydmaenus maroccanus* and *Helferi* var., *Amblystomus mauritanicus*, *Platyтарus mauritanicus*, the important *Asida sulcata*, *Timarcha rugosa*, and *Anisorhynchus barbarus*, a number of *Achenii* and *Lathrobii*, *Tachys algericus*, *Tychius elephas*, Kr., *Ptinus obesus*, and some other species; very scattered *Platyderus gregarius* and *P. alacer*, *Carabus barbarus*, *Cephenium bicolor*, Sauley, n. sp., *Tychus jacquelinei*, and *Euplexus afer*, Sauley; and among ants, tolerably plentiful, *Paussus favieri*, *Merophysia carinulata*, Ros., and *Cholorocera formiceticola*, Ros. Another quarter of an hour's journey brought me to a small mosque, in which the country people said their prayers, and were accustomed to deposit their offerings, consisting for the most part of incense and tapers. Near by the remains of old walls testified that here stood formerly a gate of old Tingis, which in the time of Hannibal might have been a town of 200,000 inhabitants, and, as the numerous ruins showed, had extended for three leagues along the sea-shore. From here the road leads on through a broad river valley called Bubana, and formed by the Guadlighthouth, the Rio de los Judios of the Spanish colonists.

On the banks of this stream we found numbers of *Chlœnii*, principally *C. velutinus*, *C. spoliatus*, and a species of the genus unknown to me, and probably not occurring in Europe. In the *Genista* brought down by floods the usual shore beetles, *Heteroderes algerinus* and *Amblyderus scabricollis* were naturally not wanting, but the greater number of the insects occurring here consisted of *Staphyliniidae*, *Aphodii*, and *Cryptophagi*. One *Lithonoma* was also found, which, however, I was not able to distinguish from *S. andalusica*, likewise a single *Colaphus rufifrons*. On the other side of the river were very damp clay unploughed fields, which were noticeable for their profusion of large stones, which apparently would conceal highly interesting creatures. The first stone which I raised I let almost fall again from joyous surprise, for under it the whole creeping animal world of the neighbourhood appeared to have made their rendezvous. There were *Siagona jenissoni*, in a swarming crowd, mixed up with *S. dejeani*, *Chlœnius azureus*, *Pœcilus cupripennis*, *P. numidicus*, *Calcar elongatum*, a host of *Brachinus angustatus*, and *B. testaceus*, Ramb., *Cossyphus dejeanii*, *C. incostatus*, *C. pygmaeus*; running

about in the midst were gigantic centipedes, uncomfortable long-legged *Scolopendri*, also a *Scorpio mauritanicus* with malignant protruded sting; while a wonderful thing, the extraordinary rare *Salamander pleurodeles*, appeared to be looking at me very reproachfully, because I wished to drive him from such a productive hunting-ground. I had not, however, time to delight myself long with this sight, so immensely full of enjoyment to an enthusiastic naturalist, for it was before all things necessary to capture the active insects before they could disappear into their hiding-places, which nine-tenths of them generally succeed in doing. One can easily believe that under such circumstances I did not rest until the last stone in this productive locality had been two or three times turned over, and was often obliged, in order to bring back my captures (when all bottles and boxes were filled), to use my pockets and pin them up in them.

On leaving the foot of the valley the path rises with the ground, and the soil and fauna change considerably. The former is here slightly mixed with sand and overgrown with asphodels, at that time in bloom, and much low brushwood. This locality appeared to me a likely place for finding eyeless beetles, and as I was already assured by the capture of *Crypharis* that blind beetles were to be found at Tangier, I set to work, by means of an iron lever, to raise the stones which were fixed the deepest in the earth, and after barely a quarter of an hour's work I had the satisfaction of discovering a new *Anillus (massinissa, m.)*, which was soon followed by a new species of *Silvanus (Typhlocharis silvanoides, m.)*, and a new *Crypharis (tingitana, m.)*. As most of the readers of these lines will probably never have had an opportunity of observing these interesting insects in their natural state, I will add some words about the capture of them. As soon as a stone has been turned over, one must hasten to inspect the under side of it, giving only a secondary attention to the damp space beneath it. Suddenly the searching eye perceives one, then two *Anilli* rise sleepily upon their fore-legs, apparently incommoded by the warm rays of the sun, never experienced until now; they flourish their delicate antennæ in the air, turn themselves first to the right and then to the left, without knowing where, until they suddenly hurry away in the most doubtful anxiety. The inexperienced collector would be contented to arrest these fugitives and then turn to another stone, but he would in this way have

overlooked the best. He must remain a little while at one stone, and examine for five or ten minutes every square inch of its under side, every unevenness, every crevice of it, and even then in a yet unobserved chink a *Typhlocharis* will slowly and cautiously raise its head, and make a wary step towards a cooler corner, when suddenly some obstacle, which we at first sight take for a tiny clod of earth or small splinter of wood, stops its way, but which now shows signs of life, and extends first one and then two legs, and appears still to be uncertain whether it shall contemptuously ignore the unexpected hindrance, or whether it shall seek for itself another nook, where it may continue without interruption its *dolce far niente*. This tiny clod of earth was in reality a *Crypharis*, which in earth-coloured dress, with its legs convulsively contracted under its body, thought itself secure and undiscoverable in its retreat. Undoubtedly two of the four specimens of my *Crypharis tingitana* were found in the chinks of the stones; and certainly one specimen, as I have already remarked in the description, in the bulb of an *Asphodelus Anillus* also was found in considerable numbers in the cavities left by the stones, where, as soon as it encountered the sun's rays, it dexterously made its retreat, and then could be no more obtained; whereas *Typhlocharis* seemed to confine itself almost exclusively to the under side of the stones. Besides these eyeless beetles, there were found under the same stones, in tolerably plenty, *Ditomus gracilis*, *Scarites saxicola*, Bon., *Ditomus cephalotes*, and an *Otiorhynchus* allied to *affaber*; more rarely *Chlœnius azureus*, *Hybalus tingitanus*, *Adelostoma*, and a *Pedinus*. I probably visited this extraordinary locality ten times, and when finally, near or far, there was no other stone to turn over, I had the satisfaction of having carried off from their native fields 200 *Anilli* and 70 *Typhlochari*.*

(To be continued.)

* Extract from Berl. Ent. Zeit. xiv. (Translation communicated.)

CONTRIBUTIONS TOWARDS A LIST OF THE VARIETIES
OF NOCTUÆ OCCURRING IN THE BRITISH ISLANDS.

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

MANY of the Lepidoptera are very variable, and none more so than our British Noctuæ. Some species, fairly common in Britain, differ entirely from the types on the Continent of Europe, and in some instances our ordinary forms have been named by Continental lepidopterists as varieties of the typical forms occurring with them. A very large percentage of British collectors know nothing of Continental Lepidoptera; hence they do not know how far our species agree with, or differ from, the forms generally distributed on the Continent of the same species. Many others have no idea of the range of variation of many generally-considered constant species, obtainable in certain districts of our own islands. Thanks in a great measure to Mr. South, there seems to be a much wider view prevailing than used to be the case, and many now take up the study of local forms of certain species, and are not satisfied with a series of six, eight, or ten specimens of each species, in fine condition, perfectly set, about which they know otherwise nothing. The majority of Continental lepidopterists take up the study from a much broader point of view than we generally do, and all treat Britain as a part of the European area. Our insects, therefore, find a ready place in their collections, and we find Continental lists containing large numbers of named varieties which are very frequently of British origin, such names being unfamiliar to lepidopterists in this country. Many of our lepidopterists object to any addition to the names already in our list, but those who really wish to take up the study from a scientific standpoint will see how necessary it is to keep in touch with Continental lepidopterists, especially as far as our own British species are concerned.

What does one learn from the statement "light" or "dark" form? What does it imply? It is much better to give every distinct form a varietal name and call it by such name. Now, if I capture an unfamiliar form of any species, and do not know whether such form has been captured previously or not, searching through our old entomological literature is like searching for the

proverbial "needle in the bundle of hay"; for if such a form should have been captured and noted, it would most probably be without a distinctive name and described as "a pale form," "a pretty form," or something equally vague. Naming varieties can easily be carried to extremes, and a local form should be compared, before a varietal name is given, with others of the species from many different localities.

I have spent a great deal of time studying the works of the old British and Continental authors, and working out the named varieties of those species that occur in Britain, and it is with the hope of inducing other lepidopterists to pay special attention to the local forms which occur in these islands, to chronicle such, and to extend their study to European forms generally, that I have determined to write a series of papers in the 'Entomologist' upon the principal varieties of those species of Noctuæ which occur in Britain, whether such varieties occur in Britain or not. Many collectors get a form of a species, sufficiently distinct in itself, but, having filled up their series with their own captures, never compare it with others, especially if it be a common species and not likely to be useful for exchange; hence they do not know that those of their own neighbourhood are at all different from forms attainable elsewhere. A more extended study of the subject may be the means of enlarging our knowledge of local forms, and show that widely distributed species have certain variations more widely distributed than is generally supposed.

In such a comprehensive article there must be necessarily a great many sins of omission and commission. I appeal to the readers of the 'Entomologist' who can help me, either with reference to named varieties in works or the loan of specimens of local forms, to do so, as a means of making these notes as clear as possible. Such help will always be most gratefully acknowledged.*

My friend Mr. Cockerell has written an article (Entom. xx. 150-152) embodying to a great extent my own views on the subject of varietal nomenclature. As no one has objected to his

* [We have much pleasure in endorsing Mr. Tutt's request for assistance in this most desirable work. It will be necessary that all communications on the subject should be sent direct to Mr. Tutt, Rayleigh Villa, Westcombe Park, Blackheath, London, S.E.—ED.]

article or attempted to combat the view taken, I may, I believe, presume that the article meets the general views of most lepidopterists on the subject.

As many of our lepidopterists are still accustomed to consider the Cymatophoridæ as a constituent branch of the Noctuæ, I have included that family in the list.

CYMATOPHORIDÆ, H.-S.

This family does not seem subject to a very great deal of variation, and when it occurs is generally produced by the transverse lines crossing the anterior wings, coalescing and forming continuous bands. In some cases the ground colour is variable.

Gonophora, Brd., *derasa*, L.

α. var. *intermedia*, Brem.—This variety is of an ashy grey colour (*cinerascens*, Staudinger), and is only recorded, so far, from the eastern part of Dr. Staudinger's European fauna district, Amur and Armenia. Dr. Staudinger thinks this variety may be the *gloriosa* of 'Guenée's Noctuelles,' v. p. 12.

β. var. *derasoides*, Dobrée in litt.—"A very distinct variety, of a purple shade of grey, and no trace of white. From the Amur district."—Mr. N. F. Dobrée, in litt.

Cymatophora, Tr., or, F.

α. var. *flavistigmata*, mihi.—Like the var. *scotica*, but the stigmata of a decided yellowish-orange colour. Captured with the ordinary Rannoch forms by Mr. Salvage in Rannoch, 1884.

β. var. *scotica*, mihi.—The ground colour of a paler grey, the costa often tinged with pink, and the lines both before and beyond the discoidal spots more strongly marked than in southern specimens. The females are much better marked than the males; the central area is in them generally very clear, and the union of the transverse lines into banded form more complete. On the other hand, the stigmata are generally less distinct in the northern form than in our southern specimens. This species is one that presents a reversed order of the general condition obtaining amongst Scotch Lepidoptera, where melanism is so prevalent. In a long series (24) of Rannoch specimens I have none so dark as my Kent specimens.

Cymatophora, Tr., *duplaris*, L.

α. var. *argentea*, mihi.—The ground colour of this variety is of a silvery white, instead of the prevailing grey, the transverse lines being very distinct. This form bears a slight, superficial resemblance to the allied *C. fluctuosa*. I have to thank Mr. Kane for specimens which came from Ireland. I have since received similar specimens from Lincolnshire.

β. var. *obscura*, mihi.—The anterior wings of an almost unicolorous leaden grey. Occurs in Rannoch.

Cymatophora, Tr., *diluta*, F.

Var. *nubilata*, Robson and Gardner's List (1885).—The ground colour is much darker than in the type, and the dark transverse lines which cross the anterior wings are united so as to form three (three or four, Robson) decided bars across the anterior wings. The colour of the bars and basal blotch is a rich chocolate-brown. My specimens were obtained in Yorkshire, and came from Mr. J. Harrison, of Barnsley. The form is figured in Newman's 'British Moths,' p. 240 (upper figure).

Asphalia, Hb., *flavicornis*, L.

Var. *scotica*, Staudinger.—The ground colour is of a very much darker grey than in the type, although the ordinary markings are very distinct. It is the usual Rannoch and Perth form, hence its name. I have also received it from Yorkshire, where it is occasionally captured with the type.

Asphalia, Hb., *ridens*, F.

Var. *interrupta*, mihi.—In this variety the base is pale, the dark, central, transverse band on the anterior wings is broken up by a pale patch extending through it from the costa to the inner margin, the dark band being represented by two dark lines on either side of this pale patch. The type is figured in Newman's 'British Moths,' p. 243, and has a dark central band across the anterior wings. I have specimens of var. *interrupta* from all localities whence I have obtained the type.

BRYOPHILIDÆ, Gn.

This small family is subject to a very great deal of variation, owing to the suffusion of the anterior wings with coloured scales,

and the difference in the depth of colouring of the ordinary markings. Our two common species, *Bryophila muralis* and *B. perla*, are especially variable, as is also *B. algæ* on the Continent of Europe.

Bryophila, Tr., *muralis*, Forst.

Of this species there are several distinct forms, joined by intermediate varieties. That figured in Newman's 'British Moths,' p. 244, is the type and is suffused with green.

α. var. *par*, Hb.—This variety is without the dark markings which characterise the type; the green is of a very pale shade and much mixed with grey, giving the insect a very mealy appearance. It is not so common as the type, but occurs occasionally in most (if not all) localities with it. I have this variety from Cardiff, and have captured it at Folkestone, Deal and Sandwich.

β. var. *viridis*, mihi.—Like var. *par*, this has the black markings very indistinct, but there is in addition a total absence of the grey colour which gives var. *par* its mealy appearance. The whole of the fore wings are of a very rich green colour. I have beautiful specimens from Folkestone, captured by Mr. Austin, and some exceedingly rich specimens captured at the same place by Mr. Wellman are in the cabinet of Mr. Tugwell.

γ. var. *flavescens*, mihi.—Like the type, but with the ground colour of a yellow shade instead of green. I used to think these were faded until I bred specimens from larvæ taken at Deal which had no green in the ground colour.

δ. var. *pallida*, mihi.—Marked like the type, but the ground colour of a pale whitish grey. I have this form from Deal and Folkestone.

ε. var. *obscura*, mihi.—The ground colour of a dull brownish grey, markings obscure, as in var. *par*, and a little darker than the ground colour. It is the darkest and most obscure form of the species I have seen. The type of this var. was captured by Mr. Austin at Folkestone. I took one specimen of the same form at Sandwich, in August, 1886. Herr Hoffmann (Hanover) has specimens of this variety in his collection from the Simplon (Swiss Alps).

Bryophila, Tr., *impar*, Warren.

Impar must not be confounded with *B. muralis*, var. *par*, Hb., as it is quite distinct from that variety. Many lepidopterists

consider this a local form of *muralis*, but with this opinion I am not inclined to concur, as those types that I have seen have the transverse markings somewhat different to those in *muralis*, but this difference may not hold in a long series.

Bryophila, Tr., *perla*, F.

α . var. *flavescens*, mihi.—In this variety the whole of the anterior wings are strongly suffused with ochreous or orange-coloured scales. I have taken a long series of this very pretty form at Deal. On some walls it is almost as common as the type. These walls are covered with orange-coloured lichens, and there seems little doubt that in this case the orange-colour of the variety is protective.

β . var. *suffusa*, mihi.—The grey reticulations and marbling, which are pale in the type, are in this form very dark bluish black, and suffuse the whole of the wing, absorbing almost all the usual markings; the discoidal spots are, however, very dark. The hind wings have the space between the two black parallel lines very much obscured, so as to form a broad dark band; the veins of the hind wings very dark. I have a fine series of this form from Strood and Deal. The few Yorkshire specimens I have of *perla* are all of this form. There is no doubt that this form is Guenée's var. A., 'Histoire des Insectes,' v. 28.

γ . var. *distincta*, mihi.—The ground colour is white, and the discoidal spots dark grey. A grey shade directly under the orbicular, four short dark dashes near the centre of the costa, a short basal streak and a grey shade on the costa near the tip of the wing, are the only markings. The form is almost entirely without the grey marbling of the type. I have six specimens in my own series, four from Strood and two from Deal. I have occasionally seen a specimen in other series, but the form is by no means common.

Bryophila, Tr., *algæ*, F.

α . var. *mendacula*, Hb. 520.—This variety is "smaller, paler, and greyer than the type."—Stdgr.

β . var. *calligrapha*, Bkh.—The anterior wings "much suffused with yellow or orange scales."—Stdgr.

γ . var. *degener*, Esp.—The anterior wings of this variety are "unicolorous, and of a dark green colour."—Stdgr.

BOMBYCOIDÆ, Bdv.

The chief genus of this family is the *Acronycta*. In this genus we find two distinct types of ornamentation, the typical forms having a pale grey or white ground colour with black or brown markings; the varietal forms are more or less suffused with the darker colour to the exclusion of the paler ground colour, thus making the markings more obscure, and giving the insect a much darker or banded appearance.

Moma, Hb., *orion*, Esp.

Var. *runica*, Haw.—Less strongly marked than the type and has altogether a lighter appearance. There is a figure of this variety in Newman's 'British Moths,' p. 247. Mr. Newman's remarks, p. 248, show that he believed this variety would ultimately prove to be a distinct species.

Acronycta, Och., *tridens*, Schiff.

Var. *virga*, mihi.—The ground colour rather darker than in the type; the space in the anterior wings between the hind margin and the transverse line containing the ψ -like mark much suffused with dark scales, giving it the appearance of a band, the space between the black basal streak and the inner margin much suffused. There is a figure of this variety in Newman's 'British Moths,' p. 248, second figure.

Acronycta, Och., *psi*, L.

α . var. *bivirgæ*, mihi.—The anterior wings darker than in the type, the space between the hind margin and the transverse line containing the ψ -like mark completely suffused with black scales; the basal part of the wing also completely suffused, so that the insect has the appearance of two bands crossing these wings. This beautiful variety was captured on the racecourse at York by Mr. J. T. Carrington, and is now in the collection of the late Mr. Sidebotham.

β . var. *suffusa*, mihi.—The whole of the ground colour is much suffused with dark scales, giving the insect a very dark appearance. The posterior wings are also much darker than in the type in both sexes. This is the form generally, if not always, taken in the London district, and occasionally found in

most of the woods within a few miles of the metropolis. I have never taken the pale type in my own district (Blackheath), although it is common enough in Darent, Chattenden, and other woods only a few miles off, in which the var. *suffusa* is rarely seen.

γ. var. *cuspis*, Stephens (non Hb.).—There is a continental species of this name closely allied to *A. psi*, which species (*cuspis*, Hb.) Stephens undoubtedly considered the variety of *psi* he described to be. This proved not to be so. Stephens' name therefore has been retained as the varietal name to *psi*. His description is :—“Very similar to the last (*A. tridens*), but rather larger, cinereous, with a black lateral thoracic line; anterior wings greyish white, a little tinted with luteous, with a strongly ramose black lineola at the base, and a powerful black undulated posterior striga, in which are two black ψ-like marks; the stigmata are nearly as in the last (*tridens*), and the cilia whitish ash, spotted with black; posterior wings whitish, with a dusky central lunule; a transverse striga beyond the middle and posterior fimbria.” I have specimens in my cabinet labelled Chattenden, July, 1885 and 1886, which answer exactly Stephens' description; also one taken on the Shooter's Hill Road in July, 1886. The specimens are all large and characteristic.

Acronycta, Och., *leporina*, L.

α. var. *bradyporina*, Tr.—This was treated by our early lepidopterists as a distinct species. It is very much suffused, and has scarcely any trace of the white colour which characterises the type, the colour of the anterior wings being of a dark uniform grey. The black markings are of necessity less pronounced, and blend with the general ground colour. This variety is represented in the second figure in Newman's ‘British Moths,’ p. 251. The type of this species, *leporina*, has the ground colour of a pure white. Most of our specimens would be referred by Continental lepidopterists to var. *bradyporina*. Nearly all my series are of the grey form. In Entom. x. 129, the late Mr. Prest writes :—“I have taken *A. leporina* for nearly twenty years, but never took the pale form near here (York); ours are all the variety *bradyporina*.” Mr. Dobrée, of Beverley, also tells me that is so throughout the E. Riding of Yorkshire. In Entom. x. 93, the late Mr. Nicholas Cooke writes :—“In this neighbourhood (Liscard) we take *leporina* of a tolerably

deep grey colour; at Loggan it is beautifully white, with the characteristic marks dark."

β. var. semivirga, mihi.—The same ground colour as in the type, but the space between the undulated transverse line parallel to the hind margin, and the hind margin, is suffused with black scales, especially towards the line. This gives the variety the appearance of having an exterior band, although not so broadly developed as in the almost parallel varieties of *psi* and *tridens*. This variety is represented in Newman's 'British Moths,' fig. 3, p. 251. It may be worthy of remark that *tridens* has only a banded variety, *psi* and *leporina* both banded and suffused varieties, while the remainder of the genus have only, so far as we at present know, suffused varieties.

γ. var. rosea, Engr.—Guenée describes a variety under Engramelle's name "*La Rose*," as having "the superior wings and abdominal incisions of a bright rose," and says of it, "this charming variety is very rare."

Acronycta, Och., *aceris*, L.

Var. *candelisqua*, Esp.—This also is a very dark suffused form, the suffusion consisting of an immense number of brown scales scattered over the wings. All the markings are very obscure, being almost lost in the darker ground colour, with the exception of the transverse line, which shows up distinctly as a series of dusky arches or curves across the wing. This was also considered as a distinct species by our early lepidopterists. Newman figured it in 'British Moths,' p. 251, second figure.

Acronycta, Och., *megacephala*, De Geer.

α. var. turanica, Stldgr.—A species of this name is found in Staudinger's list between *euphrasiæ* and *rumicis*. The locality given is Turkestan. Mr. Dobrée writes me that this so-called species "is nothing more than a light-coloured form of *megacephala* from Turkestan."

β. var. rosea, Engr.—Guenée describes this variety as follows:—"Superior wings of a pale (whitish) rose, with all the markings very distinct." He also says, "this variety is frequently reproduced. I have seen several examples."

(All our British specimens of this species are darker than those from the South of Europe and Asia.)

ENTOMOLOGICAL NOTES, CAPTURES, &c.

ABUNDANCE OF PIERIDÆ.—I can fully corroborate the accounts which have lately appeared in the 'Entomologist' about the abundance of the Pieridæ during the past summer. I have hardly ever seen them before in such extraordinary numbers as they were at the beginning of August last. On the 6th of that month I was at Hurstpierpoint, and in going along a lane I came upon a small pool, the remaining water in which had apparently only just been dried up, for the mud was just moist. This was covered with scores of "whites," which were regaling themselves upon its foul delicacies, while a perfect cloud were hovering in the air above. It was a remarkable sight, for they must have been in countless numbers, as this white cloud of hovering butterflies caught my attention when some distance from the pool. I was not altogether surprised at the phenomenal abundance of the butterfly this season after the enormous quantity of larvæ that I noticed last autumn (Entom. xix. 299). This autumn, however, although the imagos have been so plentiful all the summer, I have seen hardly any larvæ at all, and have been struck by their entire absence in some localities. I have not, I may add, seen *Colias edusa* at all this year, and have found *Vanessa atalanta* remarkably scarce, having seen only about six specimens in all. I have also failed to meet with a single *V. cardui* for the second summer running, although I found it so common in 1885 wherever I collected.—W. H. BLABER; Beckworth, Lindfield, Sussex, November 3, 1887.

COLIAS EDUSA.—I had not seen a living specimen of *Colias edusa* since the great year 1877, until the year before last, when I captured a fine specimen of var. *helice* in the "Devil's Ditch," close to Newmarket Heath. Last year my late father saw two in "Flem Dyke," Fulbourn, one of which was captured by a young friend collecting with him.—W. FARREN; 14, King's Parade, Cambridge.

VANESSIDÆ IN THE BLACK COUNTRY.—Although I have been a collector of Lepidoptera for a great number of years in this part of Staffordshire, I never saw *Vanessa io* till 1884, when I saw a few specimens flying about in the August of that year. In July, 1885, I found four numerous broods of larvæ, about two

miles from this town. From this I came to the conclusion that it would establish itself here. The next season, through a long severe attack of illness, I was debarred from making any observations whatever. During the present season I have been able to take the field again, and I was much pleased to find that *V. io* was flying in various parts of the district in great plenty. On August 28th, while taking a walk along a brook-side which runs among the old pit mounds so numerous here, I saw it in good numbers in company with *V. urticæ* and *Polyommatus phleas*, and with several species of dragonflies, flying along the brook-side, the whole forming a picture rarely to be seen among these dreary wastes, where very few flowers are to be found growing. The damp tufts of grass, and the coltsfoot leaves growing by the side of the stream, seemed to be the attraction. I have also found *V. atalanta* and *V. urticæ* in great abundance. Other species of Lepidoptera have been more abundant this season than formerly, more especially *Pieris rapæ* and *P. brassicæ*, the former in countless numbers, both in the larval and perfect state; a great number of the larvæ have been destroyed by ichneumons.—THOS. HILL; 15, Russell Street, Willenhall, October 13, 1887.

LYCÆNA CORYDON IN CUMBERLAND.—This butterfly used to occur at Grisedale, at the foot of Saddleback, in Cumberland. I have seen some specimens taken there by the late Mr. Hope, of Penrith. That is a locality far away from chalk.—J. B. HODGKINSON; Ashton-on-Ribble, Lancashire, December, 1887.

DIURNI, &C., IN SWITZERLAND.—The following notes, taken in Switzerland during the past month of July, of some of our own Lepidoptera, may be of interest. *Papilio machaon* I saw throughout the month in lower and upper valleys, also near towns, but, as far as I was able to observe, not very abundant; on July 8th I noticed a female laying eggs on the wild carrot; on one occasion I noticed this butterfly at a somewhat high elevation, namely, on the Riffelberg, near Zermatt, over 7000 feet above the sea. *Pieris rapæ* swarmed at the lucerne and clover fields in cultivated districts; on the evening of July 29th, after sunset, several specimens of this butterfly came wearily from off the lake of Neuchâtel, having evidently crossed from the opposite bank miles across. On July 13th I saw three fine male specimens of *Euchloë cardamines* near Zermatt. *Colias edusa* and *C. hyale*

appeared to be just coming out at the end of the month near Berne, but were not to be seen in any numbers. On July 28th I watched a female of *Vanessa c-album* depositing eggs on the leaves of the wych elm. Worn specimens of *V. antiopa* were seen in small numbers at the commencement of the month in one locality only, the beautiful borders of the wings being much tattered and discoloured. *V. urticæ* was very abundant in one or two valleys. One specimen only was seen of *V. atalanta* and *V. cardui*. *Lycæna icarus*, with the exception of two specimens, did not appear until the end of the month; there appeared to be no stragglers of the early brood. On July 8th I saw a female *Lycæna arion* deposit eggs on the wild thyme; the plant appeared a somewhat larger kind than our own. *L. semiargus* was partial to moist situations, sometimes in open places of that character in woods; I was quite unable, however, to watch any females depositing eggs. *L. ægon* was very abundant in a few localities visited. Of the Heterocera my observations were confined to those seen by day or the early evening. On July 10th *Cossus ligniperda* was seen at rest on elm. *Leucoma (Liparis) salicis* I noticed in great numbers on July 11th over sallow bushes, branches being covered with them. On July 17th *Ematurga (Fidonia) atomaria* was abundant at Gletsch, near the Glacier du Rhone. I also noticed near here some dark specimens of *Nemcophila plantaginis*, the yellow colour on the lower wings being absent. *Tanagra atrata (chærophyllata)* might be seen flitting about in almost countless numbers in several valleys amongst the long grass. Referring to the "whites," it appears a remarkable season for them in *this* country. On the Cotswold Hills in many places they now swarm,—in gardens, fields, and woods,—more particularly *Pieris rapæ*; fifty have been counted at one small plant of lavender.—T. B. JEFFERYS; Clevedon, Cirencester, August 9, 1887.

SPHINX CONVOLVULI TWO YEARS IN PUPA.—In August, 1886, a friend found two larvæ of this insect, which he promptly placed in a box for me, without food of any description. One, however, survived, and managed to pupate. I expected the imago to emerge this season (1887), but it did not, and is now to all appearances perfectly healthy, but has not manifested any intention of altering its present condition. Is it an unusual thing for this insect to spend more than one year in the pupa?—

M. STANGER HIGGS; The Mill House, Upton St. Leonard's, Gloucester. [It is most unusual to find the larvæ of *Sphinx convolvuli* in this country. Is our correspondent quite sure of its identity? Many moths lie over their usual season for emergence, and remain for a second year or more in pupa; and doubtless this might happen with *S. convolvuli*.—Ed.]

SPHINX CONVOLVULI ABUNDANT IN CORNWALL.—During September I captured thirty-eight specimens of *Sphinx convolvuli* here, and let others go. They were all hovering about the flowers of *Nicotina affinis*. The most I took in one evening was eight specimens.—H. W. VIVIAN; Bosahan, Helston, Cornwall.

SPHINX CONVOLVULI.—I observed this species on the evening of August 28th, and again September 7th, 1887, flying over the flowers of marvel of Peru (*Mirabilis jalapa*) in my neighbour's garden, and a friend of mine had a specimen brought him which flew into a house near here. The flower named is particularly attractive to this insect, and should be grown by collectors desirous of taking it. In 1875 a very large number of this species were captured, flying over a patch of the plant in a nursery-garden close to Victoria Park Station on the North London Railway. The place is now a railway-siding for coals, &c., which are not likely to attract either *convolvuli* or collectors.—C. J. BIGGS; 3, Stanley Terrace, West Ham Park, E., December 20, 1887.

PUPATION OF COSSUS.—Adverting to the question of *Cossus ligniperda* pupating in the earth (Entom. xx. 231—234), I might say that I have had several larvæ given to me during the last three years, which were dug up from a cottage-garden near Stamford Hill, north of London. They were some distance from any tree, and I have now four found in the same way. Neither Newman nor Morris give the time when they pupate, and Merrin's 'Lepidopterists' Calendar' leads me to think that the pupa is to be found from November to May; but those I have bred did not change till some time in May, and the perfect insects came out about six weeks later. As Merrin points out, the larva is very subject to mildew, which means certain death.—F. MILTON; 164, Stamford Hill, London, N.

ASSEMBLING OF MALES OF BOMBYX QUERCUS.—On August 1st last I bred a crippled female of *B. quercus* from a pupa which had

remained in the cocoon all the winter. I was staying at Groombridge, and the day being very hot and one suitable for collecting Diurni I started off to walk to Crowborough Beacon, a distance of some miles. Thinking that perhaps the female might attract a male or two on the way I took her with me, having first placed her in a chip-box with a piece of gauze over the top instead of a lid, and this box was in turn placed inside a small zinc collecting-case and consigned to one of my pockets. I met with several butterflies on the way, and had entirely forgotten that the *B. quercus* female was in my pocket, until, having arrived at Crowborough and whilst standing on the stone which marks the spot where the beacon fires were lighted in the old days, I was surprised to see a male flying round and round, dashing towards me, and then again going away in a most excited fashion. I was at a loss to account for this strange conduct, until I recollected the female which I had placed in my pocket on starting, and which doubtless was now the cause of the wild performance. My attempt to net this individual was unsuccessful, after which he took his departure. I now took the female moth from my pocket and from the zinc box; and having arrived at the southern slope of the beacon, which is very heathy and scattered with numerous gorse bushes, I sat down, after placing the chip-box containing the moth on the top of a gorse bush close by. I had hardly been settled three minutes before I observed a male flying wildly around and gradually approaching the box, whereupon I netted him. As long as I remained at the spot, which was for about half an hour, there was a constant flow of suitors for the moth imprisoned in the box, there being sometimes as many as three at the same time all darting about and encircling the bush on which I had placed the box. On my return journey I carried the female in my net, and succeeded in luring several males from the hedges as I passed. The sudden and unexpected way in which they appeared was most remarkable, for one could never see whence they came. One would see a large insect careering wildly about in front; the next instant it would dash past, but immediately turn and follow in my wake; and if I placed the box on the ground (which I generally did when I saw a male approaching) it gradually drew, in a zigzag flight, near the object of its attentions, and when close to the box it would perform a regular war-dance on the ground, jumping up and down as if it

were possessed of springs on its feet. It was quite a laughable sight to see one of these insects thus engaged dancing in this manner. By the time I had reached home I had attracted by this one female no less than twenty-two males, six of which I netted.—W. H. BLABER; Beckworth, Lindfield, Sussex, Nov. 18, 1887.

BOMBYX RUBI.—On October 8th, as I was crossing Bexley Heath, near Ipswich, with my friend W. H. Collins, we saw some larvæ of *Bombyx rubi* in the grass and took 131 of them, which we intend to try and rear; another friend has also taken 100, and there remain now on the heath many more. Is not this abundance rather extraordinary?—A. C. FREEMAN; 38, Foundation Street, Ipswich, Suffolk.

CIDARIA SAGITTATA.—When my late father and I were collecting in the "Fen," the year before last, we secured a good many larvæ of *C. sagittata* about the Fen, and one day my father came upon an isolated plant of *Thalictrum flavum* right off the Fen, made up of about eight stems. He noticed it was eaten very much, and took about 150 larvæ of *sagittata* from it, and we ultimately took from that single plant upwards of 400 larvæ; they had eaten all the seed-heads and leaves, and even the bark of the stems. They were of all ages, so I have no doubt some had already gone down to pupate.—WM. FARREN, Jun.; 14, King's Parade, Cambridge.

NOTODONTIDÆ DOUBLE-BROODED.—Mr. Lea may be interested to learn (Entom. xx. 275) that I captured on the 23rd August last, at Wandsworth Common, two fairly perfect specimens of *Notodonta dictæa*, a moth which appears normally during May and June. I may also mention the occurrence here of a fresh *Gortyna ochracea* on the 7th October, and two very fresh specimens of *Miselia oxyacanthæ* on the 19th ultimo. Besides these examples, I have noticed many others less striking; and from their frequency I am inclined to think that none of the insects belonged to second broods, but had merely suffered retardation of their emergence, and I may add that I failed to meet with any of the moths at their usual times of appearance.—J. SUTTON; 19, Shelgate Road, Wandsworth Common, S.W., October 26, 1887.

ACRONYCTA ALNI IN SUSSEX.—During my stay at Groombridge last summer I found, on August 29th, a larva of *A. alni*, which was crawling on the doorstep of the house. Unfortunately it

proved to be ichneumonid, and died, after feeding on sawfly for a few days.—W. H. BLABER; Beckworth, Lindfield, Sussex.

ACRONYCTA RUMICIS DOUBLE-BROODED.—On July 20th last I found a larva of this insect feeding on bramble. It spun up almost directly, and on the 6th of August the perfect insect emerged. Is it not an unusual thing for this moth to be double-brooded?—G. BAILEY; 16, Kensington, Bath, December 8, 1887.

THE FEMALE OF CLEDEOBIA ANGUSTALIS.—With reference to the note by Mr. Tutt (Entom. 17, 18), I may mention that I have had abundant proof that the female of *C. angustalis* is, at all events under certain conditions, quite capable of flight; though, as a rule, it seems very loth to make use of its wings. I have, at different times, taken an occasional specimen on the wing; and on an oppressively hot afternoon, July 25th, 1885, I noticed that the females were flying rather freely between 4 and 6 p.m., with a peculiar zigzag flight. This phenomenon was in all probability due to the excessive heat, and is particularly mentioned in my diary as an "unusual occurrence." Although the males are so common, and easily procured through exchange, it is not surprising that the other sex is unrepresented in many cabinets, as from its retiring habits it is, unless specially worked for, only to be taken very sparingly. But any entomologist who collects regularly in one of the many districts where the species abounds, will be unlucky if he does not occasionally meet with the narrow-winged female.—E. R. BANKES; The Rectory, Corfe Castle, January, 1888.

AGROTIS FENNICA.—The very interesting article (Entom. xx. 314) by Mr. Dobrée, upon *Agrotis fennica*, reminds me of the specimen which brought this species into the British list, and which still remains the only example known to have been captured in this country. It was taken about forty years ago by a collector named Beresford, who was a miner, near Chesterfield, in Derbyshire. The late Thomas H. Allis, of York, obtained it from him, and it is now in the Allis Collection in the York Museum. Beresford worked hard to take others, but failed; and sugaring was not much understood or practised in those days.—J. B. HODGKINSON; Ashton-on-Ribble, Lancashire, Dec., 1887.

POLIA XANTHOMISTA IN CORNWALL.—I have obtained two specimens of *Polia xanthomista* in Cornwall; one taken in a

house near Truro, and the second in the gamekeeper's house here. They are both females, and the latter laid a good number of eggs.—H. W. VIVIAN; Boshahan, Helston, Cornwall, Jan. 11.

A LONDON FORM OF MELANISM.—As Dr. Rendall's remark (Entom. 202) as to the complete absence of any London form of melanism seems to pass unchallenged, it may be worth while to mention one good instance of melanism that came under my notice last year. Mr. S. T. Klein, during the summer of 1886, found *Miana strigilis* in considerable abundance in his garden at Willesden, and nearly all the specimens were of the melanic variety *æthiops*, the type being rare. Whether this form has only become prominent in the district of comparatively late years, like the *Amphydasis betularia* var. *doubledayaria*, about Manchester and other localities in the north, I do not know; and it would be of extreme interest to have the experience of anyone who collected years ago in the west metropolitan district on this point; but it is at least a case of London melanism which ought not to be overlooked.—T. D. A. COCKERELL; West Cliff, Custer Co., Colorado, October 20, 1887.

RETARDED EMERGENCE.—I took two *Gortyna ochracea* on the wing during the latter end of September. They were attracted by the light of my lantern, and thus enabled me to capture them. Is not this rather an unusual time for this species to be out?—CHAS. E. G. PHILLIPS; Castle House, Shooter's Hill, Kent, October 8th, 1887.

EUPITHECIA CURZONI?—Is this a species or a variety? In vol. xviii., p. 230, of the 'Entomologist' will be found a description of this insect as a "*Eupithecia* new to science." For this, and not a few other new species, we are indebted to the liberality of Mr. C. S. Gregson. He gives us an elaborate description of imago, larva, and pupa; tells us that "it has nothing common (*sic*) in appearance with that genus (*Eupithecia*), except perhaps its shape"; and finally announces that "this will be called Curzon's pug." So far, so good. At page 276, however, of the same volume we find a reply to this from Mr. H. McArthur. He, it appears, and not Mr. Curzon (as one would gather from Mr. Gregson's account), discovered the insect in 1880. "In 1883," writes Mr. McArthur, "I determined to work the extreme northern islands of the Shetland group, and succeeded while

there in not only capturing the imagines in plenty, but also in breeding this variety in quantities, and afterwards sent them to our most eminent entomologists, who all agreed with me in thinking it a very interesting variety of *E. nanata*. After many opportunities of observing it both in the larval and imago states, I must record my strong opinion that it is nothing more nor less than a variety of *E. nanata*. Mr. Gregson must have been perfectly aware of all these facts; and even allowing that it is a distinct species, which I am sure it is not, unless he received Mr. Curzon's permission to use his name, which I doubt, I think entomologists will agree with me that he has shown somewhat questionable taste in naming it after a gentleman who has collected but one season in the far north." At p. 52, vol. xviii., we find, from Mr. Gregson, the following quotation, and I must ask for careful attention, as Mr. Gregson seems to think the argument unanswerable. The italics are mine. . . . "When looking over Mr. Curzon's captures here, he again called my attention, as he had before done by letter, to the fact that hardly two of his long series of *E. curzoni* were alike, and that very often the two upper wings differed in pattern, &c. Now for *E. nanata*, I do not know a more *constant* pug. I have only seen *three* varieties of it; they are all in my cabinet, but only *one* of them is a striking variety; yet I have bred and looked carefully over many *thousands* of bred and captured specimens for *varieties*." Once more, so far so good. Now it is my custom, at the close of each year, to recall old recollections by reading over my books on Natural History. While thus occupied, a day or two ago, I came across the following under the heading "Observations on Eupitheciæ, by Mr. Gregson." After a few remarks on *linariata*, *rectangularia*, &c., comes *nanata*, the *most variable!*, the most abundant, and perhaps the handsomest pug we have both in the larva and *perfect* state!" (*vide* 'Intelligencer,' vol. iv., p. 134, 1859). Which of these statements are we to accept? In 1859, "the most 'variable' pug we have;" in 1884, "I do not know a more 'constant' pug, having only three varieties out of many thousands," &c. I have always, in common I believe with most entomologists, considered the so-called *curzoni* as a northern variety of *nanata*, but I am now entirely outside the entomological world, and have scarcely any correspondents. I should, therefore, feel obliged for the opinions of competent and

experienced judges on this matter. In lists that are occasionally sent to me I observe "*Eupithecia curzoni*" sometimes with, sometimes without, a note of interrogation. For myself I call it "*E. nanata* var. *curzoni*."—[Rev.] JOSEPH GREENE; Rostrevor, Clifton, Bristol, January 2, 1888.

BUTALIS CICADELLA. — In the beginning of July this year, while collecting on the "breck-sands," I was lucky enough to take a fine specimen of *Butalis cicadella*. Before I killed it, and for some little time after, the markings were very distinct; they are now not nearly so plain, the cause of which I attribute to the ammonia used for killing it. A peculiarity of this species is the extraordinary length of the tongue or trunk, which is quite half an inch long. I only know of one other record of its capture many years ago by Mr. T. Brown. Can any one give me information as to how many have been taken?—W. FARREN, JUN., 14, King's Parade, Cambridge, November 14, 1887.

AGRION PUELLA, &c., AT WINDERMERE. — During the first week in August I visited the Windermere district, and met with *Agrion puella* in immense abundance on the borders of the lake. *Phryganea* were to be seen in countless millions early in the morning, dancing in clouds all round the lake.—W. HARCOURT BATH, Ladywood, Birmingham.

COLLECTING IN SOMERSETSHIRE. — Whilst collecting Lepidoptera in the neighbourhood of Wellington, Somerset, in July last, I one day saw about two dozen of *Argynnis paphia* at the flowers of the lime. Are they usually at these trees when growing near their haunts? I saw no other Lepidoptera on the flowers. *A. paphia* was very plentiful in an adjoining wood and other woods near, as was also *Leucophasia sinapis*. *Thecla rubi* was plentiful in one of the woods, and some on the open heath, or rather hill. From the year 1885 and the present year it seems that the early part of July is the season for them here. I also took *Thyatira derasa*, *T. batis*, *Plusia chrysitis*, *Uropteryx sambucaria*, *Epione apiciaria*, *Angerona prunaria*, *Cleora lichenaria*, *Geometra papilionaria*, *Acidalia imitaria*, *Timandra amataria*, *Macaria alternata*, *Melanthia albicillata*, *Cidaria picata*, *C. prunata*. I have also, *Pericallia syringaria*, *Trichiura cratægi*, *Cossus ligniperda*, *Sphinx convolvuli*, *S. ligustri*, *Smerinthus ocellatus*, *S. tiliæ*, *Macroglossa stellatarum*, &c., from that neighbourhood. *Sphinx convolvuli* has

been taken in the town the last three autumns. One was seen by a lamplighter on the framework of a lamp; he was quite terrified at the sight of such a huge insect, with such large prominent eyes. He ultimately took the moth and put it in his tobacco-box; it is needless to add that it presented anything but a respectable appearance when released from its prison. My Coleoptera from Wellington, included *Cicendela campestris*, *Lebia cyanocephala*, *Rhynchites betuleti*, *Leiopus nebulosus*, *Prionus coriarius* (3), *Toxotus meridianus*, *Pachyta albomaculata*, and *Strangalia armata*.—F. MILTON; 164, Stamford Hill, London, N.

LEPIDOPTERA IN THE CHANNEL ISLANDS. — Friday, the 3rd of June, 1887, found my brother and myself *en route* for Jersey. Fortunately it proved the last day of the wet period which came in with the month of May, and the 4th of June began that fine spell which lasted, with but slight breaks, right on to the middle of August. Arriving by midday on Saturday, the 4th, at St. Heliers, we took a prospective walk into the interior of the island. Here I should state that the weather in Jersey and the Channel Islands generally had scarcely differed from that experienced in the South of England, having been wet and cold up to the time of our arrival. We noticed *Pieris brassicæ* and *P. rapæ* commonly in the gardens and lanes, and *Pararge egeria* was also common about the shadier spots. A visit to St. Brelade's Bay in the south-west produced more *P. egeria*, *P. megæra*, and *Cænonympha pamphilus* commonly; *Thecla rubi* in good condition and common; *Lycæna icarus* and *L. astrarche* in fair numbers, the latter occurring on marshy spots, and varying from English specimens on the under side in having a much lighter ground colour. From the Corbière, in the extreme south-west, we had *L. icarus* and *T. rubi* abundantly and in good condition, and these two species were also the commonest, along with *P. egeria*, in the northern and eastern parts of the island. No traces of such ordinary English species as *Euchloë cardamines*, *Gonepteryx rhamni*, *Argynnis euphrosyne*, *A. selene*, *Syrichthus malvæ*, and *Nisoniades tages*, and of these only *G. rhamni*, according to the local lists, is now found on the island. One specimen of *Vanessa atalanta* crossed our path in the north-west; and from the Quenvais, a waste tract on the west side, according to guide-books "dreary," but when we saw it, covered with wild roses and anything but dreary, we took several specimens of *Euchelia*

jacobææ, but were too early for *Melitæa cinxia*, which is said to occur abundantly. A single specimen of *Smerinthus ocellatus*, found hanging to the tip of a blade of grass, and two or three *Mamestra brassicæ*, two *Iodis lactearia*, an *Acidalia*, and two *Bombyx quercus* larvæ complete the list of species noticed in Jersey. On the morning of Tuesday, the 14th, we left for Guernsey. Here, at St. Peter's, we soon became aware of the more English character of the insects, being greeted by numbers of *Lycæna argiolus* on the borders of the town, and falling in with *Epinephele ianira* for the first time; *P. brassicæ*, *P. rapæ*, *P. napi*, common; *P. icarus*, *Polyommatus phlæas*, fairly so; but *T. rubi*, so common in Jersey, was quite over; *P. megæra* and *P. egeria* commonly; but of *C. pamphilus* none, for the very good reason, strange as it may seem, that this insect is not found at all in Guernsey, though common enough in all the other islands. A visit to Sark, on the 16th, introduced us to *Melitæa cinxia*, which was flying fresh and fine in all parts of the island, being very common close to the landing-place, and also near the famed Coupée. The island of Sark, although under four square miles in area, contains, we were informed, nearly the whole of the insect fauna of Jersey and Guernsey, and it certainly was an entomological paradise on the day we visited it. Insects were in profusion, and we had some difficulty in distinguishing between specimens of *P. megæra* and the more aristocratic *M. cinxia*. All the other species enumerated above were noticed, *L. icarus* being perhaps the commonest, and besides two more larvæ of *B. quercus* were obtained. Searching the south-east coast of Guernsey we came across *M. cinxia*, on the rough headland known as the "Gouffre," and also in "Petit Bot" Bay; but owing to windy weather the specimens were somewhat worn. From the inn-keeper at Petit Bot Bay we had a specimen of *Callimorpha hera*, one of forty he had collected in two years off an elm tree facing the inn. During two hours' stay on the island of Herm, on the afternoon of the 18th, we noticed *V. atalanta*, *C. pamphilus*, *L. argiolus*, *L. icarus*, and *E. jacobææ*. We left Guernsey for Southampton on the morning of the 21st, and arrived home before midnight, having thoroughly enjoyed both the trip and the experience of novelty in collecting the early summer species of the Lepidoptera of the Channel Islands.—
F. W. HAWES; 14, Dovecote Villas, Wood Green, N.

RIPE PLUMS A BAIT FOR INSECTS.—I could not make out why the bats flew in and out of the plum-trees, and I could not make out why there were no moths on my sugar; but putting the two negatives together I became positive that the bats were eating moths and the moths were eating plums. So I spent the next afternoon in setting up every available means of access to the plum-trees, not only the standards but those on the walls; and in the evening reaped a rich reward, finding all the moths in the country side feasting where the flies and wasps had feasted in the daytime. The most prominent were *Hadena protea*, *Anchocelis pistacina*, and *A. litura*; but there was a fair sprinkling of *Xanthia citrigo* and *X. flavago*, with odd specimens of *Agrotis segetum*, *Luperina testacea*, *Gortyna ochracea*, *Polia flavicincta*, *Noctua plecta*, *N. c-nigrum*, *N. xanthographa*, *Xanthia circellaris*, *X. gilvago*, with an early *Miselia oxyacanthæ* or two, this last being new to me here. Is this method of capture generally known? I wish I could have published my details in time to have been of use to others, but hope they will prove serviceable for next season.—G. M. A. HEWETT; Beckworth, Lindfield, Sussex.

THE COLORADO BEETLE.—When I came out to Colorado I thought that there was one insect at least that I could rely upon finding—the *Leptinotarsa (Doryphora) decemlineata*, Say, commonly called the “Colorado beetle” or “potato-bug.” But strangely enough, I have travelled over a large portion of the State, both on the eastern and western sides of the Rocky Mountain range, and not only have failed to meet with it, but find an almost complete ignorance of its existence amongst the natives; and in many cases, from descriptions given, it is evident that the supposed Colorado beetle is not *L. decemlineata* at all. The only example I have seen of *Leptinotarsa decemlineata* in America was found in July, 1887, at the side of the railway-track near Cambridge, Nebraska, where the pretty little butterfly, *Nathalis iole*, Bdv., also occurred. Possibly *Leptinotarsa* may be common in the low-lying eastern counties of Colorado, but can any one refer me to a well-authenticated record of its capture there? In my note (Entom. xx. 237), for Sangre de Cristo read Sangre de Cristo.—T. D. A. COCKERELL; West Cliff, Cluster Co., Colorado.

RELAXING INSECTS.—It frequently happens that insects which have been kept some time become so stiff that they require to be

left in the relaxing can for a few days before they are sufficiently relaxed to set; in the meantime many of them will most probably have contracted mould. Now I venture to give a practical suggestion to remove this difficulty. I damp the relaxing sand as usual and place the insects upon it, and then pour over them a few drops of benzine mixed with a little arsenic (which of course should have been previously prepared, and well shaken before use). I find that the benzine materially assists the process of relaxation, and the arsenic contained in it prevents the growth of that enemy, mould.—W. HARCOURT BATH; Birmingham, December, 1887. [A small quantity of naphthaline will be found more effective in the relaxing pot.—ED.]

FOSSIL LEPIDOPTERA.—Mr. Bell, in his interesting notes on “Post-glacial Insects” (Entom. 1), alludes to the absence of the remains of Lepidoptera in deposits of the Post-glacial period. That the Lepidoptera appeared ages before the period last mentioned is evident from the numerous specimens obtained from strata of Eocene and Miocene age; and their absence from Post-glacial deposits can only be explained, as Mr. Bell suggests, by the unfavourable nature of such formations for the preservation of soft-bodied animals. It would occupy too much space to enumerate all the known fossil Lepidoptera, and my remarks will, therefore, be confined to the Rhopalocera, of which less than a dozen have been described. From strata of Upper Eocene age, near Aix in Provence, five butterflies are known, viz., *Neorinopsis sepulta*, *Lethites reynesi*, *Coliates proserpina*, *Thaites ruminiana*, and *Pamphilites abdita*. The two first-named belong to the Nymphalidæ, the third and fourth to the Papilionidæ, and the fifth to the Hesperidæ. The remains of the plants on which the larvæ of these insects probably fed have also been found in the same beds. In addition to the species above named, M. Daudet has described the fossil larva of a species of Satyridæ from the neighbourhood of Aix. From the Lignites or Brown Coal of Rott, near Bonn, of Lower Miocene age, *Vanessa vetula* was obtained; and this is the only butterfly known from the Lower Miocene of Europe. The Lepidoptera from the marls of Radoboj in Croatia (Middle Miocene) include three butterflies, viz., *Eugonia atava*, belonging to the Nymphalidæ, and *Mylothrites pluto* and *Pontia freyeri*, belonging to the Papilionidæ. From America only one butterfly is known, viz., *Prodryas persephone*, which belongs to

the Nymphalidæ, and was found near Florissant in Colorado. This butterfly appears from its photograph, sent me by Mr. Scudder, to be in a more perfect condition than any of the specimens obtained from the European Tertiaries.—H. Goss; Surbiton Hill, Surrey, January, 1888.

LEPIDOPTERA FEEDING ON VINES.—May I trouble you with a query, the reply to which will be of interest to others besides myself? I have lately been enquiring as to what lepidopterous larvæ attack the vine, and am anxious to know as follows:— (1) Does *Batodes angustiorana* feed on the ripening fruit in summer, as reported to me from Kew, about which I think there must be some mistake? (2) What is the food-plant with us of *Tortrix vitisana*? I have no authentic account of its occurring upon the vine in England. (3) Figuiet describes, in his 'Insect World,' an insect he calls the vine Pyralis. What species is it? or is it not really a Pyralis, but a 'Tortrix?—J. R. S. CLIFFORD; 4, Laurel Cottages, Gravesend, Nov. 6, 1887.

[(1) *Batodes angustiorana*, Haw., is abundant in Britain, not so on the Continent. Mr. W. P. Weston says, "The larva, which is polyphagous, is to be found in May and June, and is very partial to various fruit trees, privet, &c." (Entom. xiii. 112). It is especially common on a privet hedge bounding my orchard here. Stainton says, larva "on most trees." (2) I do not know this name. *T. vitana*, Fabr., is a synonym of *Ctenetra pilleriana*. (3) The insect figured in Figuiet's 'Insect World' (Engl. Trans., p. 276) is *Ctenetra pilleriana*, Schiff. In Dr. Duncan's 'Transformations of Insects' (pp. 142-5) the same plate is reproduced, with the correct names given. At the meeting of the Entomological Society of France on June 8th, 1881, the late M. Maurice Girard spoke as follows:—"At the School of Horticulture of Versailles, formerly the king's kitchen garden, there is a collection of vine-stocks in pots, which are forced in the greenhouse. In the second fortnight of May numerous little larvæ and chrysalids are found on the flowers and young grapes, which have produced in the early days of June the *Cochylis ambiguella*, Hübn. (= *rosarana*, Fröhl.),—the Pyralis or Tortrix of the grape. This Microlepidopteron, after the Pyralis of the vine, *Ctenopthira pilleriana*, Denis and Schiffermuller, is the most fatal vine-moth. This species has probably been imported into the greenhouses of Versailles. I should be glad to assure myself if, as we can

foresee, this Micro will prove hurtful to the young grapes of the trellised vines, which are formed much later than those of the vines in house" (Bull. Soc. Ent. France, 1881, p. lxx.)—E. A. F.]

PROPOSED NEW ENTOMOLOGICAL SOCIETY.—I note with much pleasure a proposal to form a new Entomological Society, made in the January number of the 'Entomologist,' by Mr. Coryndon Matthews. There is great need of the help of such a Society in our country districts; and I think that if the Society was started on something of the lines proposed in Mr. Matthews' paper this would be removed. I would suggest, if possible, the holding, from time to time, an occasional meeting in conveniently situated districts. Subscribers should, I think, at all times have the fullest particulars of all matters transacted at meetings, either through, say, the 'Entomologist' or otherwise. The proposal that a Secretary should be appointed for each county is a good one, and would undoubtedly prove of great benefit in every way to the Society. I would suggest that general meetings should be held in country districts, and facilities should be given to each section to hold an occasional meeting among its own members, such meetings to be devoted to actual out-door collecting, working in some fresh district on each occasion, and that full particulars be given to the head Secretary of such meetings. I sincerely hope that the Society will be started without delay, and I feel sure that if once started it will be strongly supported, and will prove to be of the greatest benefit to entomologists residing in our country districts.—W. G. McMURTRIE; Radstock, Jan. 4, 1888.

PROPOSED NEW ENTOMOLOGICAL SOCIETY.—I have been asked to write something in support of the proposal to establish a new Society of Entomologists (Entom. 1). The London and Country is a good name, or, perhaps better, The London and Provincial may be suggested to Mr. Matthews, who wrote the article on the subject. While earnestly wishing to do all I can towards helping such a deserving project, I content myself by saying that several entomological friends here agree with me that Mr. Matthews is deserving of all help in the direction of his proposal, and of the best thanks from country entomologists. The matter is very well received here by everybody interested, and Mr. Matthews' treatment of it leaves little, if anything, to be added. I should think the question with entomologists is simply, Can such a Society be

formed? Its desirability is beyond all doubt. — J. ARKLE; 2, George Street, Chester, January 10, 1888.

ERRATUM.—For *hebridium* (page 27, *ante*) read *hebudium*.

SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON.—*Fifty-fifth Anniversary Meeting, January 18, 1888.*—Dr. D. Sharp, President, in the chair. An abstract of the Treasurer's Accounts, showing a balance in the Society's favour, was read by Mr. H. T. Stainton, F.R.S., one of the Auditors; and Mr. H. Goss read the Report of the Council. It was announced that the following gentlemen had been elected as Officers and Council for 1888:—*President*, Dr. David Sharp, M.B., F.Z.S.; *Treasurer*, Mr. Edward Saunders, F.L.S.; *Secretaries*, Mr. H. Goss, F.L.S., and the Rev. Canon Fowler, M.A., F.L.S.; *Librarian*, Mr. Ferdinand Grut, F.L.S.; and as other Members of Council, Mr. H. J. Elwes, F.L.S., Sir John Lubbock, Bart., M.P., F.R.S., Mr. Robert M'Lachlan, F.R.S., Mr. P. Brooke Mason, M.R.C.S., F.L.S., Mr. E. B. Poulton, M.A., F.L.S., Mr. Osbert Salvin, M.A., F.R.S., Mr. Henry T. Stainton, F.R.S., and the Rt. Hon. Lord Walsingham, M.A., F.R.S. The President delivered an Address, for which a vote of thanks to him was moved by Mr. M'Lachlan, seconded by Mr. F. Pascoe, and carried. A vote of thanks to the Treasurer, Secretaries, and Librarian, was moved by Mr. Kirby, seconded by Mr. Waterhouse, and carried. Mr. Saunders, Mr. Goss, Canon Fowler, and Mr. Grut made some remarks in acknowledgment. Mr. Waterhouse proposed a vote of thanks to the Council, which was seconded by Mr. White, and carried. Mr. Stainton replied. —H. Goss, *Hon. Secretary*.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—*December 22, 1887.* R. Adkin, Esq., President, in the chair. Messrs. H. Hayward, F. E. Pow, F. S. Pilkington, W. R. Hickling, H. I. Smith, C. Kedgley, F. Livesey, E. A. Fitch, G. T. Porritt, J. A. Smith, W. Turpin, S. Mosley, J. Butterfield, W. Farren, I. Eckersall, and the Rev. Canon Fowler, were elected members. The only exhibits were a lilac-coloured variety of *Lycaena icarus*, an hermaphrodite specimen of *L. corydon* by

Mr. C. B. Smith, and a fine irradiated variety of the underside of *L. icarus* by Mr. A. C. Smith. This being the annual meeting, the Secretary read the report of the council, from which it appeared that during the year fifty-one members had been elected. The Treasurer read an abstract of the accounts, showing a balance to the Society's credit. The election of officers for 1888 was then taken, with the following results:—Mr. T. R. Billups, President; Mr. John T. Carrington, Vice-President; Mr. E. Step, Hon. Treasurer; Mr. D. J. Rice, Hon. Librarian; Mr. W. West (Greenwich), Hon. Curator; Mr. H. W. Barber, Hon. Secretary; Mr. H. J. Turner, Hon. Assistant Secretary. Messrs. R. Adkin, T. W. Hall, R. South, W. H. Tugwell, J. W. Tutt, J. R. Wellman, and J. Jenner Weir, Council.

January 12, 1888. T. R. Billups, President, in the chair. Messrs. F. W. Hawes, C. E. Rumnacles, and A. E. D. Gould were elected members. Mr. J. Jenner Weir exhibited *Cicadetta hematodes*, and stated that Mr. C. Gulliver had taken a dozen during the past season in the New Forest; he (Mr. Weir) had no recollection of more than two or three having been taken in any one year before; out of the twelve taken there was only one male, and Mr. Weir contributed notes as to this. Mr. Tugwell showed specimens of *Dianthæcia cæsia* from Germany, and the dark variety from the Isle of Man; also continental examples of reputed and rare species of British Lepidoptera, among which was a specimen of *Lythria purpuraria*, which Mr. Tugwell stated was a species that had no right to be in the British list. Mr. Carrington said he knew of two undoubted English examples, both of which were taken in the neighbourhood of York, and one of them he saw alive; but although he, Mr. Prest, and many other entomologists had worked the same district for years, no other captures of the species had been made. Mr. Dobson exhibited *Agriopsis aprilina*, and a short discussion took place as to the reason of the colour in this species fading so quickly when compared with the colour of *Moma orion*, and *Geometra papilionaria*. Mr. Tutt contributed remarks on the reputed capture of *Acidalia strigaria* in Kent, and suggested that they might have been small specimens of *A. remutaria*. Mr. R. Adkin then read his Presidential Address for 1887, for which a vote of thanks was moved by Mr. Billups, seconded by Mr. T. W. Hall, and carried unanimously.—H. W. BARKER, *Hon. Sec.*

OBITUARY.

WILLIAM FARREN died at Cambridge, November 21st, 1887, aged 51 years. That he was not older will be remarked by many of our readers, for his was a name which had been before the entomological public, with an interval of some years, ever since about 1845. William Farren, like so many other field naturalists who have contributed valuable material for scientific research, appears to have developed a taste for Natural History when very young, for we hear of his having a small collection of moths when only 10 years of age, and by the time he was 14 he had decided to make his living by collecting insects and birds' eggs for sale, his station in life rendering necessary that he should decide his future livelihood. This naturally met with much opposition from his parents, who were unable to keep him; but a successful interview with a Cambridge undergraduate settled his future, when a sovereign was brought home in exchange for specimens. Thus he who might have been a mere labourer in the lower ranks of life, eventually contributed much to our present knowledge of the insect fauna of this country. In 1854 Mr. Farren went to Shoreham, Kent, to collect insects, and there found the rare and elegant *Hypocallia citrinalis* (*christiernana*), taking two specimens. In 1858 he went to the New Forest by subscription, finding many local species which were then less commonly taken than in later years. In the same season he worked in the Isle of Wight, and took *Luperina dumerilii* (Entom. xviii. 73, 74). For some years this kind of life was his, and many odd records of his captures will be found in the current Natural History literature of the time. In 1862 he married, and again visited Hampshire, but chiefly for Coleoptera on that occasion. The following year he commenced business as a photographer, confining his studies to the Micro-Lepidoptera, and in 1869 for a time ceased collecting Natural History objects. In 1874 his business premises were destroyed by fire, which unsettled him for some years; until 1879, when he commenced business as a professional rose-grower, and continued until 1883, when he again changed his occupation, and entered upon the business of a print and picture dealer, now carried on by his son. Shortly after, in 1884, finding his son had developed a taste for entomology, he recommenced his study of insects and gave

in these pages (vol. xix. 46) his views of the changes which had taken place amongst entomologists since he left off the study, under the title of 'An Entomological Rip van Winkle.' William Farren was known especially as a field naturalist. Though his published notes and records are scattered over many years, he never contributed any long treatise upon either branch of the subject. He was an acute observer, and always ready to assist those who worked with him; and his power for work may be understood when we hear of his collecting and exchanging upwards of 1700 species of Lepidoptera alone during the last three years of his life.—J. T. C.

JAMES ENGLISH, of Epping, died on January 12th, 1888, at the age of 67 years, after an illness of six months, said to have been largely brought about through excessive work on the collection of biological subjects, an occupation he had followed for upwards of fifty years. English's father had been a soldier, and settled in Epping as a gardener, his son receiving the most elementary education. After leaving school he was employed at the late Henry Doubleday's shop in Epping, and there soon contracted a taste for the pursuits of his master. It is chiefly in this connection that he will be remembered by the readers of this magazine, for the association continued so long as Mr. Doubleday was able to work at his favourite study; English being employed as his collector whenever opportunity occurred. He went for his master to the "Fen" country, and was one of the last to take the two Lepidoptera for which the district was noted, viz., *Polyommatus dispar* and *Noctua subrosea*, both now lost to these Isles. In the latter years of his life he devoted much attention to cryptogamic botany, and discovered a system of preserving fungi. He seldom contributed anything to entomological literature, but has left two small books behind upon the preservation of fungi and plants. James English was more a collector than a student.—J. T. C.

JAMES HAMER.—We regret to announce the death of this hard-working entomologist. Mr. Hamer died on the 14th of November, 1887, aged 46 years, and was interred at Southport, Lancashire. He was well known in the North of England, but rather as a practical collector than as a writer.—J. T. C.

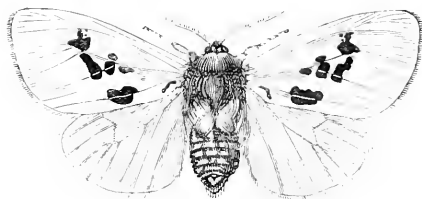
THE ENTOMOLOGIST.

VOL. XXI.]

MARCH, 1888.

[No. 298.

ARCTIA CAIA.



ABERRATION OF *ARCTIA CAIA.*

The above woodcut represents a very beautiful aberration of *Arctia caia* kindly lent for figuring by Mr. Charles A. Briggs, of Surrey House, Leatherhead. It is a female, which was bred among others of the ordinary typical form some years ago, by the late C. H. Longley, of London, but we understand there is no record of locality in which the larva was found.

The anterior wings are very pale cream-colour, with the usual brown markings slightly indicated by the merest shading of darker cream-colour, too delicate to reproduce in a woodcut, excepting those represented in the centre of the wings, which are of a rich blackish brown. Fringes are of a light brownish colour.

The posterior wings are orange-scarlet, with the usual dark blue spots replaced by very faint orange-coloured markings.

The body is orange and scarlet, without the usual dark bands.

The under side of all the wings is dark cream-colour, shaded with pinkish orange. On each anterior wing there are three small dull black spots on the under side.

COLEOPTERA TAKEN IN 1887.

BY ALFRED BEAUMONT, F.E.S.

As a beetle collector I have often been annoyed by not knowing where to find the beetles I wished to have. The book on Coleoptera by the Rev. Canon Fowler, now publishing by Reeve and Co., has supplied in a great measure my wants. The descriptions of species are admirable, the localities all I could wish. I usually get my holiday in September and spend it in Scotland; the reference so often made in Mr. Fowler's book to Askham Bog, near York, tempted me to break my journey at York on my way home. Thanks to the Rev. H. C. Hey, of that city, who most kindly directed me to the best part of the Bog for collecting, I had considerable success. Perhaps a list of water-beetles taken by me during 1887, near York, in Scotland, Kent, and a few other localities, would be acceptable to coleopterists reading the 'Entomologist.'

Cnemidotus impressus, Erith.

Haliphus obliquus, Lee, Catford; *confinis*, Lee; *fulvus*, Lee; *flavicollis*, Lee; *cinereus*, Lee, Lewisham; *fluviatilis*, Lee, Greenwich; *ruficollis*, in all ponds; *lineaticollis*, common everywhere.

Brychius elevatus, Catford.

Hyphydrus ovatus, common everywhere in the south.

Cœlambus inæqualis, York, Lewisham; *versicolor*, York; *quingulineatus*, York; *impersopunctatus*, Catford; *parallelogrammus*, Gravesend, brackish water; *novemlineatus*, Gartmorne Dam, a large reservoir that supplies the town of Alloa; *confluens*, Elmer's End; *decoratus*, Lee, York.

Deronectes assimilis, Dollar, York; *depressus*, Lewisham; *12-pustulatus*, Catford.

Hydroporus davisi, in a muddy river where all the refuse from several paper-mills is turned, at Colinton, Midlothian; *rivalis*, Dollar; *lepidus*, York; *lineatus*, Lee; *granularis*, York; *pictus*, York; *melanarius*, stagnant pools on heathery moor, Culross; *memnonius* Lewisham, York; *nigrita*, most moorland pools in Scotland; *obscurus*, Lee, York, Dollar; *discretus*, grassy streams, Pentlands; *pubescens*, common everywhere; *lituratus*, Lee, York, Culross; *planus*, common everywhere; *morio*, moors, Culross; *gyllenhalli*, West Wickham, Lee; *tristis*,

Culross, York; *scalesianus* (too late for this species), Askham Bog in early spring; *angustatus*, Dorking, Lee; *umbrosus*, moors, Culross; *vittula*, Elmers End, Dollar; *incognitus*, Gartmorne Dam, Alloa; *palustris*, everywhere common; *erythrocephalus*, everywhere common; *rufifrons*, Dollar; *dorsalis*, Lewisham, York; *longulus*, Pentlands; *obsoletus*, Pentlands; *ferrugineus*, Newhaven; *oblongus*, Askham Bay (too late for it in September).

Agabus uliginosus, Askham Bog, thanks to Rev. H. C. Hay; *affinis*, Dollar; *unquicularis*, York, Gartmorne Dam; *conspersus*, Gravesend, brackish water; *femorialis*, moors, Culross; *abbreviatus*, under stones in a dried-up pool, York; *arcticus*, deep fresh-water pool in quarry, Culross; *Rhantus grapii*, Askham Bog; *Hydatieus seminiger*, in considerable numbers, Lee, in August.

It may be interesting to record *Elmis volkmeeri* at Catford.

30, Ladywell Park, Lewisham.

AN ENTOMOLOGICAL WINTER CAMPAIGN IN SPAIN AND NORTH AFRICA.

BY G. DIECK.

(Concluded from p. 43.)

AFTER some fifteen days stay, full of the highest enjoyment, I left African ground, and on 23rd January again landed on the Spanish coast of Algeciras, where I obtained an excellent lodging in the vicinity of the Fonda Italiana. I can, with a good conscience, assert that the beetle-fauna of Algeciras is the richest I have met anywhere in Europe, for here are found not only the greater number of species which occur at Tangier, but one also meets here with a crowd of insects, &c., truly peculiar to Spain, which are wanting on the African coast. Herein lies the reason, in my opinion,—that the sea, even at this present time, brings about a certain limited union of both faunæ, for it carries over insects which have been brought down by the African rivers and deposits them in the Bay of Gibraltar. The current from the Atlantic Ocean to the Mediterranean Sea is an extraordinary strong one, and principally by storms from the south this is forced

in direct to the Bay of Gibraltar, and so naturally here is a quantity of *Genista* refuse deposited, which the sea for the most part has carried from the north-west coast of Africa. At all events the great resemblance of the sand-hill fauna of Tangier to that of the Bay of Gibraltar is very remarkable; *Isocerus ferrugineus*, *Pachychile salzmanni*, *Helops pallidus*, the small form of *Pimelia fornicata* is common to both; while *Tentyria sinuatocollis* of Algeciras, in some varieties, comes very near to the *maroccana* of Tangier. Likewise in both places are found *Apion cretaceum*, *Litargus coloratus*, *Cneorrhinus ludificator*, on the same sand-hill plant, *Genista monosperma*; and I also discovered in marine *Genista* flood refuse at Algeciras, *Pæcilus numidicus*, which had been hitherto only known from Marocco, also *Ditomus cephalotes*, not rare at Tangier, and a dead fragment of a *Scarites costulatus*, Fairm., which I have only met with on the dunes of Tangier.

My opportunity for collecting at Algeciras occurred at the most favourable time of year for the South of Spain, the beginning of spring; so that, on the one hand, I had come early enough to find all the representatives of the winter fauna; and on the other, day by day to discover newly emerged species, which contributed not a little in making my collection numerically rich in number of species. It so happened that in this year the warm spring weather set in unusually sudden and early, so that many an insect was enticed out earlier than it would have been in other seasons.

The greater number of my excursions were made to a narrow valley, overgrown with old cork trees, and which runs far up in a westerly direction from the town into the so-called Sierra of Algeciras. The road thither follows at first a little stream flowing through Algeciras, whose beautiful overgrown banks invite the use of the Streifnetz (sweeping net?). The result was, indeed, a good beginning, for there were found, upon the different shore plants principally, *Chrysomela lucida* and *C. palustris*, in all varieties, *Cionus blattariæ* and *C. angulatus*, *Donacia polita*, *Dibolia occultans*, *Phyllotreta variipennis*, *P. proceræ*, *Thyamis parvula*, *T. lateri-punctata*, *Batophila ærata*, *Apion squamigerum*, *ononis*, *humile*, *levicolle*, *flavofemoratum*, *Mecinus circulatus*, and lastly two specimens of the rare *Chrysomela tagana*, Suffr. Under stones alongside the stream there was but little, and only once did I find under a heap of stones some 80 *Pheropsophus hispanicus*.

Among other species I found *Chlenius velutinus*, *C. agrorum*, *C. vestitus*, and some specimens of *Nebria andalusica*, Rambur. After half an hour's journey the brook is crossed and a wide valley is reached, which is bounded alternately by small woods of cork trees and stony banks. Under the stones lying plentifully around were found abundantly *Percus politus* var. *vandaliticæ*, Reiche, *Siagona dejeani* and *S. jenissoni*, *Aptinus displosor*, *Brachinus angustatus*, *B. selopeta*, *Licinus silphoides* var., *Pæcilus quadricollis*, *crenatus*, *infuscatus*, *Steropus globosus*, *Apotomus rufus*, *Cossyphus hoffmannseggi*, *dejeani*, *incostatus*, and *pygmaeus*, *Calcar elongatum*; more rarely *Amblystomus mauritanicus*, *Scarites hespericus*, *Harpalus punctatostrigatus*, *H. siculus*, *Carabus bæticus*, *C. melancholicus*, *Brachinus testaceus*, *Blechnus glabratus*, *Charop-terus punctatellus*, *C. foveolatus*, *Aristus clypeatus*, *Otiorrhynchus affaber*. *Utenistes aubei* and *ghilianii*, *Tychus miles*, n. sp., *Scyd-mænus kraazi*, Sauley, n. sp., *S. intrusus*, *S. helferi*, several *Ptini*, *Rhytiphinus dilatatus*, *Pæderus cephalotes*, several *Achenii*, *Sunii*, and other Staphylinidæ. Singly appeared *Acinopus giganteus*, *Carabus dufouri*, *Bradycellus lusitanicus*, *Platyтарus mauri-tanicus*, *P. gracilis*, *Aristus capito*, *Dyschirius fulvipes*, *Tachys algericus*, *Ædichirus pæderinus*, *Procirrus*, *Mecognathus*, n. g., *Scydmaenus alcides*, Sauley, n. sp., *Bythinus peninsularis*, Sauley, n. sp., *Colon murinus*, *Acalles punctaticollis*, *A. tuberculatus*, and others, *Arthrolips humilis*, *Moronillus discolor*, *Hypera fallax*, *H. austera*, and *Sitones hispanicus*, all n. sp.

If one penetrates into the cork woods quite different species occur. Under loosened bark are to be found *Brachyderes pubes-cens* in very numerous examples, and with it, singly, *Helops coria-ceus*, *Cardiophorus bipunctatus*, *C. ulcerosus*, *Stylosomus ilicicola*, *Lebia rufipes*, and the rare *Singilis bicolor*; while from off the broom bushes may be beaten *Gonioctena litura* and *G. ægrotata*, as well as a new *Strophosomus*. In the damp places numbers of *Mastigus palpalis* are running about. Further along the valley turns to the south-west, and one reaches a very old aqueduct, dating back, probably, to the time of the Romans: this spans the valley in its entire breadth. Around this aqueduct the ground is marshy, and there occurs a genuine marsh beetle, *Carabus melan-cholicus*, plentifully; while under stones *Chlenius virens*, *Ditomus gracilis*, *Aristus spheroccephalus*, *Litoborus planicollis*, *Heliopathes ibericus*; more rarely *Melyris granulata*, *Ophonus hispanus*,

Acinopus megacephalus, *Alexia pilosa*, and several others are found. Here I captured single specimens of *Pristonychus mauritanicus*, also new to Europe, *Pseudotrechus mutilatus*, Ros., a new *Acalles*, and a very small specimen of *Platyderus gregarius*; and also among a colony of *Atta capitata*, 10 *Merophysia carinulata*, 60 *Cholorocera formiceticola*, 250 *Oochrotus unicolor*, and in another of *Æcophthora pallidula*, 2 *Scydmaenus hospes*, Sauley, n. sp.

Beyond the aqueduct opened out the before-mentioned thickly wooded mountain valley, towards which I turned my steps with great preference and very frequently. As well as the ancient cork trees, there was here a rich vegetation of several species of broom, *Erica arborea*, and similar copsewood plants; while the thick carpet of moss and leaves which covered the ground of the thicket invited the use of the sieve. On beating the bushes, especially the *Ericas* in blossom, standing as high as a man, were found in great numbers *Attalus ulicis*; somewhat rarer in collections, and less widely spread, *Cryptocephalus lineellus*, Suffr., *Strophosomus sagitta*, Seidl., n. sp., and a second new species of this genus; also some *Meligethes*, *Colaspidea nitida*, a *Philorinum*, and single *Sospita tigrina*, L. More productive still were the siftings of fallen leaves. There were found a new *Catops*, *Styphlus unguicularis* in surprising varieties, *Trichonyx brevipennis*, Sauley, n. sp., *Bythinus ibericus*, Sauley, n. sp., more rarely *Bythinus peninsularis*, n. sp., *Scydmaenus helferi* var., and single specimens of the beautiful *Pselaphus algesiranus*, Sauley, n. sp., *Faronus hispanus*, Sauley, n. sp., and *Trechus dieckei*, Putzeys, n. sp., recognised by four yellow spots. Under stones were found separately a still doubtful *Haptoderus*, *Orthomus hispanicus*, and *O. rectangulus*, Fairm. (new to Europe), *Platyderus vuillefroyi*, m. n. sp., a very beautiful variety of *P. dilatatus*, and especially *P. ruficollis* (var. *algesiranus*, m.), *Amara fervida*, Coq., *Asida luctuosa*, Ros., and *Cathormiocerus curvipes*, Woll.

With the exception of *Helops coriaccus*, *Adelocera carbonaria*, and some *Cardiophori*, there was little to be found on the old corks; but under some dead ones I found a yet living specimen of *Calosoma sycophanta*, which was not then known from Andalusia; and in a tree-stump inhabited by wasps, an exceptionally large and dull specimen of *Amorphocephalus coronatus*, which, perhaps, with more material for comparison, would have been placed as specifically different; but unfortunately I could

get nothing further from this locality, for in the attempt to break away more bark the enraged wasps attacked me, and stung my face and hands so mercilessly that I was thankful to be able to hurry away and escape from these companions.

On the way back the old aqueduct is sometimes used, but I usually turned into a valley opening to the south-east, in which, under stones easily raised, occurred in tolerable plenty *Singilis soror*, still very rare in collections, and in company with it *Lithophilus cordatus*, the beautiful *Helops macellus*, Krantz, n. sp. *Colon murinus*, and other rarities. Here also sometimes were bundles of straw laid out to dry, which I carefully shook in the umbrella, and thereby secured a large number of good and sometimes new beetles, principally Curculionidæ; among others, *Cænopsis waltonii*, *Cathormiocerus*, n. sp., *Trachyphlæus*, n. sp., numerous *Apions*, *Misolampus gibbulus*, *Helops ophonoides*, Luc., Lathridiidæ, Cryptophagi, and several others.

On leaving the valley the road leading from Tarifa to Algeciras is reached. This may now be followed, for the fields which it intersects are also very productive localities. Thus I found here under stones the two *Siagoni* in incredible numbers, *Chlænius chrysocephalus*, *Brachinus angustatus*, Dej. (*andalusicus*, Ramb.) in hundreds; also, somewhat more sparingly, *Brachinus bæticus*, *B. testaceus*, and *B. glabratus*, Dej.; singly, *Pœcilus bæticus*, *P. decipiens*, *P. cupripennis*, *P. crenulatus*, and many other species already mentioned as occurring under stones. My expeditions were next for the most part directed to the sandy coast district lying to the north of the town, which has produced some excellent localities. The way thither at first follows the road leading to San Roque, and then bends to the right to the pine woods known in Algeciras as "los Pinales," a classical entomological ground, through [the interesting captures of Will, of whose collecting an old Algesiran brave had so much to tell me. The first good localities on this road are the outside walls of a churchyard, only a few minutes from the town. From these one may take the pretty *Lithonoma andalusica*, 50 or 100, while by pulling out the plants growing on the walls several good Heteromera and Carabidæ were discovered. The luxuriantly overgrown sides of the road were also highly productive. Under the broad leaves, lying on the ground, on different kinds of plants, were hidden *Ceutorhynchus andreæ* v. *peregrinus*, *Cneo-*

rhinus, n. sp., *Cathormiocerus*, n. sp. (?), *Phytonomus pardalus*, *P. deyrollei*, Lap., and above all a very interesting new genus of the group *Otiorhynchus*. Upon the road, in the asses' dung, lived *Onitis ion*, *O. olivieri*, *Aphodius lugens*, and *A. luridus*; while under stones lying near, *Æcophthora pallidula*, *Merophysia carinulata*, and *Paussus favieri*, with *Aphenogaster senilis*, *Dinarda nigrita*, *Sunius latus*, and *Adelostoma sulcatum*, were to be met with, the last only occasionally, and in company with the ants. Not far from a small inn a footpath turns to the right, which leads over wide cattle pastures to the pine woods before mentioned. On this path one remarks some water-pools, which invite to the search for water-beetles. Here are found innumerable *Parnus hydrobates*, Kies., *Berosus hispanicus*, *B. æriceps*, *Laccophilus testaceus*, *Hydroporus xanthopus*, *H. geminus*; more rarely *Octhebius punctatus*, several *Hydrænæ*, *Hydrochus angustatus*, *Hydroporus meridionalis*, *H. bicarinatus*, *Agabus didymus*, *A. chalconotus*, *Hydrophilus pistaceus*, &c. The cattle pastures were enlivened by an interesting series of dung beetles, for instance, *Geotrupes momus*, *G. hypocrita*, *Bubas bison*, *Copris hispanicus*, *Aphodius scybalarius*, *A. lineolatus*, and *Onthophagus furcatus*; more sparingly were found *Geotrupes hoffmanseggi*, *Bubas bubalus*, *Onthophagus hirtus*, *O. marginalis*, *O. punctatus*, *O. meliteus*, *Aphodius tersus*, and *A. perezi*, Harold, n. sp., *Tachinus pictus*, and finally a pair of our native *Geotrupes typhaeus*.

After a short walk the wood is reached, and with it the sand-hills, the fauna of which naturally differs, like their surroundings. Here, even at the end of January, were flying *Cicindela maroccana* in all varieties, including the lovely golden *farellensis*, and with it more rarely *Cicindela flexuosa*, which made its appearance at the beginning of February. On the dry sand were lying two *Timarchæ*, *Pimelia maura*, and *P. fornicata* var., some *Erodii*, and single specimens of the rare *Dermestes thoracicus*, *Sitones virgatus*, and *S. niger*, All. (the last new to Europe), and *Adimonia Haagi*; while even at the end of January, but in the later hours of the afternoon, *Melolontha papposa*, in great numbers, was to be seen. The sweeping-net also produced many good things, as *Coccinella lyncea*, Ol., some specimens of the new *Xenostromylylus truncatus*, Kiesw., *Crepidodera ventralis*, *Orestia andalusica*, All., *Hydnobius andalusicus*, m., n. sp.; while in fungi were to be seen numerous *Boletobii* and

Lycoperdina bovistæ, in very dark varieties; and under the cactus stumps lying round, *Eumicrus promptus* and *E. maroccanus*, Sauley, new insects to Europe, and a single new *Elytrodon*, appeared as captures unusually deserving of mention.

On the shore the greater part of the Gibraltar sand-beetles already quoted were still to seen, and in addition to them also *Pachychile bifida*, *Tentyria sinuatocollis*, *T. emarginata*, one *Penthieus thoracicus*, *Opatrum lugens*, and to me a very doubtful *Sclerum*, which perhaps has been imported here from Africa by the sea.

The extraordinary richness of the fauna on the one hand, and the amiable behaviour of the people of Algeciras on the other, who received me with great hospitality into their families, and thus afforded me the opportunity of sharing the harmless amusement of the Spanish carnival and its joyous masquerades to the greatest extent, made Algeciras so valuable to me that I could only decide with heartfelt regret to separate myself from this hospitable place; and when, on the 20th February, the boat came which was to convey me to Cadiz, I could only say farewell with a very heavy heart.

CONTRIBUTIONS TOWARDS A LIST OF THE VARIETIES OF NOCTUÆ OCCURRING IN THE BRITISH ISLANDS.

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

(Continued from p. 52.)

Acronycta, Och., *ligustri*, F.

Var. *coronula*, Haw. — This variety has the typical pale whitish markings near the apex of the anterior wings of a pale greyish brown colour, the white colour being reduced to a lunule on the inner part of the mark. I have received this form from South Wales, and have frequently captured it with the type at Strood, Cuxton, and other places in North Kent.

Var. *olivacea*, Dobrée, litt.—Like var. *coronula*, this has no white markings, the white portions being suffused. The suffusion, however, is in this form of a dark olive-green colour. In some places this form is equally common with the type, often more so, as is the case in Yorkshire. In Entom. x. p. 124, the late Mr. Prest writes:—"The form of *A. ligustri*, we (in the

neighbourhood of York) find, is suffused with dark olive-green ; we rarely see the white-crested form. I took thirteen of this species at sugar one season, some years ago, and of these ten were olive-green with no white markings." Mr. Dobrée says that "In the East Riding of Yorkshire *A. ligustri* is not a common insect, but a variety in which the white is totally wanting and replaced by olive-green is equally common with the type." Herr A. Hoffman (Hanover) writes me :—"I have got *ligustri* from Vienna of a greenish-brown colour, with no white markings,—the place where the white markings ought to be are only a little lighter than the other part of the anterior wings." The occurrence of this variety, in such widely different localities as Yorkshire and Vienna, is very interesting.

Acronycta, Och., *rumicis*, L.

[Before dealing with the varieties of *A. rumicis*, it is necessary to enter at some length on the consideration of associating the var. *salicis* of Curtis with this species or with *A. menyanthidis*. I have gone carefully through all the literature which I can find on the subject, the following being the summary :—

Mr. Stainton, in the 'Manual,' vol. i. p. 183, treats it as a distinct species, and says that it closely resembles *rumicis*, but is smaller and darker.

Newman figures it as a variety of *rumicis*, 'British Moths,' p. 255.

Dr. Staudinger quotes it as an aberration of *menyanthidis*, with the following synonymy and description: "ab. *salicis*, Curt., Gn.? *euphorbiæ*, Wood. obscurior, alæ anteriores fere unicoloribus ; locality Anglia."

In Humphrey & Westwood, 'British Moths,' p. 197, we find :—"Varieties of *menyanthidis* occur in which the ordinary strigæ are much more distinct and brown, forming broad patches on the wing, the inner margin at the base of the third striga being marked with a more distinct lunular patch. Such a variety constitutes the *A. salicis* of Curtis."

Mr. South, in his synonymic list, calls *salicis*, Curt., a synonym of *rumicis*, and then directly after (on the same page) calls it a variety of *menyanthidis*.

At p. 7 of the 'Substitute' (1856-57) the late Mr. Nicholas Cooke wrote :—"At p. 183 of the 'Manual' I see Mr. Stainton

has copied an error from Guenée's great work, which the latter author was led into by Curtis. The larva figured along with the imago of *salicis* in the splendid work of Curtis is the larva of *menyanthidis*. I have had hundreds of them, but never reared *salicis* from them. Both myself and my friend Mr. Greening have, however, reared *salicis* from the larva of *rumicis*, and are perfectly satisfied that it is nothing more than a dark variety of the latter species." At p. 212, however, Mr. Cooke modified this statement very considerably. He says:—"The statement ('The Substitute,' p. 7) brought me a reply from Mr. J. C. Dale, which induced me to send him my specimens for examination, and it turns out that the *salicis* of our northern collections is not the *salicis* of Curtis. . . . Mr. Dale says with good reason that, if *salicis* is a variety at all, it is a variety of *menyanthidis*; that he was with Curtis at the time he found the larvæ from which they were bred; that he also found three larvæ, and reared one moth exactly like Curtis's figure of *salicis*. Curtis was more fortunate, and bred several, and one *menyanthidis* among them, which puzzled him. The larvæ were found on sallows in the Trosachs, . . . proving Guenée to be right in stating that the figure given by Curtis of the larva by the side of the imago is sufficient evidence that this *salicis* is only a variety of *menyanthidis*."

Herr A. Hoffman writes me:—" *Rumicis* does not vary with us (Germany). *Menyanthidis* varies greatly in colour, from a greyish white to dark melanic forms which occur on the moors or at the sea-coast of North Germany (probably your *salicis*, Curt.)."

After reading the above extracts I think most lepidopterists will agree with me in stating that there seems little doubt that there are two varieties named *salicis*, one, *menyanthidis* var. *salicis*, Curtis, the other, *rumicis* var. *salicis*, Sta. and Newman. In this paper I shall therefore treat them separately under their respective species.]

A. rumicis, L., *a.* var. *salicis*, Sta.—Described in Stainton's 'Manual,' vol. i. p. 183, as a distinct species. It is undoubtedly a melanic form of *rumicis*. The anterior wings very much suffused with black scales; the orbicular is distinct, but the reniform generally inconspicuous; there is a pale lunular mark at the base of the third striga, and a row of white dots parallel

to the hind margin. It is figured in Newman's 'British Moths,' p. 255, fig. 2, and occurs in the North of England and Scotland. My own specimens came from Mr. Finlay, Meldon Park, Morpeth, Mr. Henderson of Glasgow, Perth, &c. At Entom. x. p. 129, we read, "*A. rumicis* also occurs nearly black at times with us," *i. e.*, in the E. Riding of Yorkshire. It is not uncommon near Beverley (E. Yorks).

β. var. euphorbiæ, St. (non Hb.)—Under this name our early British lepidopterists figured and described a var. of *rumicis*, which they erroneously referred to Hübner's *euphorbiæ*, which is a very different species. There is a figure in Humphrey and Westwood's 'British Moths,' pl. xlii. fig. 13, and a description, vol. i. p. 197. The figure does not agree with the description very well. The figure depicts a form which has the space between the stigmata pale, and suffused more than is usual with dark brown blotches. I have seen nothing answering to the figure, but the description represents a form fairly abundant in the S.E. district.

γ. var. euphrasiæ, St. (non Dup.)—A pale var. of *rumicis* is referred by Mr. Stephens to the Continental *euphrasiæ* of Treitschke and Duponchel. It is very different to that species, but is a well-marked and uncommon variety of *rumicis*. The ground colour of a pale yellowish grey, with many black transverse lines but no dark patches; the anterior stigma obsolete. A pale lunule is developed at the end of the elbowed line, and the last striga is pale, wavy and continuous. I have some fine specimens of this unusual, pale form, which appear to agree exactly with the description of Stephens' specimen, except that they have the anterior stigma indistinct, not obsolete. My specimens were taken in Cornwall, by Mr. F. Norgate, of Brandon.

It would seem that in Britain our specimens of *rumicis* from the South-west are very pale; much suffused with brown in the South, South-east, and the Midlands: and much suffused with black in the North of England and Scotland.

Acronycta, Och., *auricoma*, F.

α. var. similis, Haw.—In this variety the wings are more ashy in colour, with a slightly waved line before the middle of the anterior wings; another short oblique line is in the centre of the wing, and a third pale one at the apex.

β. var. menyanthidis, Haw. (non Hb.)—This variety of *auri-*

coma must not be confounded with the northern species of the same name. The great character of this variety is the increased development of the ψ -like mark. I have taken this form with the type at Addlestone, in Surrey, and have no doubt it occurs everywhere where the type may be obtained.

γ . var. *pepli*, Hb., Gn.—Dr. Staudinger gives this as a probable variety of *auricoma*, with the description, “obscurior, magis unicolor.” Guenée describes it without a mark of doubt, as follows :—“The ground colour of a more bluish grey, and at the same time more sprinkled with black dots, which make the marking less distinct. The inferior wings of the male are whitish in the middle. Fringe spotted.” He gives as localities, Germany and Normandy.

Acronycta, Och., *menyanthidis*, Vw.

α . var. *salicis*, Curtis.—This melanic form of *menyanthidis* was figured by Curtis (Brit. Ent. pl. 136), with the ordinary larva of that species, the imago from which the figure was obtained having been bred with others by Curtis, from *menyanthidis* larvæ captured on sallow in the Trosachs. The late Mr. J. C. Dale, who was with Curtis at the time, and also took larvæ, bred a specimen, *vide* ‘Substitute,’ p. 212. This melanic form must be very rare in Britain. The unfortunate error of dark *rumicis* having been mistaken for Curtis’s *salicis*, has made the matter much involved. It is to be hoped that all collectors who breed melanic *menyanthidis* will record them. Mr. Prest, Entom. x. p. 129, writes :—“Those (*menyanthidis*) we take near York are nearly black, and the light form is very rare.”

β . var. *obsoleta*, mihi. — The ground colour of the anterior wings somewhat paler than in the type, the markings very faint and indistinct. Instead of the black markings of the type (*vide* Newman’s ‘British Moths,’ p. 257), they are grey and but little deeper in shade than the ground colour. The discoidal spots are indistinct, the hind marginal and central areas very pale, the latter inclining to white. My specimens of this form were given me by my friend Mr. Butterfield, and were captured in the Bradford district. He also gave me a remarkable specimen with the right side of this obsolete form and the left side much more strongly marked and typical.

γ . var. *suffusa*, mihi.—The anterior wings powdered with black

scales, giving the insect a much darker appearance than the type. The variety figured in Newman's 'British Moths,' p. 257, fig. 4, appears identical with my specimen of this form, which also came from the Bradford district.

♂. var. *scotica*, mihi.—Larger and brighter than the type, the markings very clear and distinct. All my Scotch specimens from the Glasgow and Dumbarton district are much larger, brighter, and more distinctly marked than Yorkshire specimens. The specimens from the east coast of Scotland are more like English, than Scotch specimens from the west coast, or from the Rannoch and surrounding districts. It may be well to remark here, that the fauna of the east coast, appears to be less alpine than that of the west coast of Scotland in a more southern latitude.

I may add that a great deal of variation occurs in the size, colour and completeness of the discoidal spots in the specimens of this species; very few specimens appear to be identical in these respects.

Acronycta, Och., *euphorbiæ*, Fb.

Var. *myricæ*. Gn.—The type of this species (*euphorbiæ*) does not occur in Britain. The Continental specimens are very much paler and generally somewhat smaller than our specimens. *Myricæ* was long considered a distinct species, and was described as such by Guenée, but there is no doubt that it is only one of those highly specialised melanic forms, for which the northern part of Britain and the western coast of Ireland are so remarkable. It is useless to redescribe a species which is in all our collections and has been so often described. Guenée describes a variety of *euphorbiæ*, under the name of *montivaga*, as follows:—

“The anterior wings of a deep slaty grey, with a slight tinge of bluish white, the markings almost absorbed in the ground colour; thorax grey. The inferior wings of the male a little powdered with black on the outer edge, the nervures and a distinct cellular lunule darker; those of the female of a darker grey with the fringe white. The anterior wings of the female not differing from those of the male. The variety is constant; perhaps it is due to the influence of the mountains. Locality, Chamouni.” (Guenée, 'Histoire naturelle des Insectes,' vol. v., pp. 57, 58).

There is no doubt that these varieties (*myricæ* and *montivaga*) are identical. The specimens of *montivaga* I have received from

the Alps appear almost intermediate between my pale *euphorbiæ* and Rannoch *myricæ*. It seems strange that Guenée should have described exactly the same variety; first as a var. of *euphorbiæ*, and secondly as a distinct species. Herr Hoffmann writes me that the markings of *montivaga* from the Engadine are a little less distinct than those of *myricæ* from Rannoch, otherwise the forms are identical.

It may be advisable, before leaving the genus *Acronycta*, to mention a statement of Guenée's ('Histoire des Insectes,' vol. v., p. 47), which I have had no means of verifying from actual observation. He says, "almost all the species of this genus have now and again isolated individuals distinctly suffused with rose colour." Perhaps some of our lepidopterists have such. If so I trust they will record them.

(To be continued.)

THE ELUCIDATION OF CAUSES OF VARIATION.

BY SYDNEY WEBB.

FROM time to time, in the pages of our entomological magazines, various theoretical causes have been adduced by correspondents, with the hope of explaining unknown recurring phenomena amongst lepidopterous insects, popularly known as varieties; but which, as they chiefly affect individual specimens rather than whole broods, should perhaps better have been termed (as indeed they are by a minority) aberrations.

It is I think pretty generally admitted that some, if not all, of the suggested disposing causes are prime agents, but there the matter rests. No one attempts to carry the investigation further, yet no one is satisfied with the explanations given. This unanimity of dissatisfaction arises from two sources. One is that an undoubted change does take place, not only in botanical but entomological, and in far higher orders of animal life, when kept and systematically reared in confinement, which is not observable in the wild condition. The other is that where in a state of nature these changes have been noticed (apart from single instances) they have been partial rather than general, often in a limited area of a few square miles.

How are we to get possession of facts which will assist us in unravelling the tangled skein of hypotheses presented to us? Hitherto two public methods only have been tried. I think them both inadequate.

(A.) Simple records of specimens are absolutely worthless to the majority of readers, though the fortunate captor or owner may think otherwise; and even when by an artist's aid a wider circle is reached, science is not advanced in any way.

(B.) Of equally little service are the local lists of captures by non-residents; chronicles of one season, or may be a holiday visit, though perhaps they occasionally contain a geographical record of note, which scientifically places the records on a somewhat higher pedestal. There are comparatively few localities in Britain that have not been more or less worked, albeit in a desultory manner, and the only use of these lists that I can see is the possibility of their being perpetuated in print in some local guide or handbook.

Will collectors, observers, and even editors, make a fresh departure with the coming season, from these stereotyped records?

A simple meteorological note-book of the locality each observer lives in, can easily be kept with the annual diary; so that any list we may wish to send to a magazine may combine the two. And if we do go away collecting to a distance in the summer, pray let us remember that a note on the soil and subsoil is of more value than telling that we were caught in a thunderstorm or had to obtain refreshment at a wayside inn. If we notice the "blues" to be more violet in their hue than in our own neighbourhood, we may consistently mention it without any speculations as to causes, for they may not show the same hue another year, or any other difference which strikes us concerning our fluttering friends. Then the Editor will, I am sure, be glad of our communications, and he will probably know to whom in that locality to apply for the previous winter or season's weather-table, which, coming as a postscript to our notice, will be one link in the chain of worthy records, which possibly in the future will assist in the elucidation of the unsolved problem.

An objection may perhaps be raised against the length of the notes thus treated, that is, if both be published together, but

they will be notes of usefulness, much more so indeed than continuous theoretical controversies on the subject, which I can scarcely think will be cleared up by the pen or observations of any one individual.

Single aberrations are of course more difficult to deal with, but even with these the surrounding meteorological conditions and circumstances, so far as *we know them*, should be duly set forth; then they too will supply us with food for thought.

Maidstone House, Dover, January, 1888.

ENTOMOLOGICAL NOTES, CAPTURES, &c.

PAPILIO MACHAON VARIETY.—I have a specimen of *Papilio machaon*, on the anterior wings of which the two squarish black spots on the costal margin nearest the basal patch completely coalesce and form one large blotch. Newman does not mention any variety of *P. machaon*, and I have not seen one at all resembling mine in the Doubleday Collection or in the Natural History Museum at South Kensington. I should like to know if such a variety is of common occurrence.—W. H. JACKSON; 15, Beechholme Road, Upper Clapton, E.

VANESSA ANTIOPA ABERRATION. — Having for several years successfully bred the above species, I was pleased last season, for the first time, to obtain two varieties. They differ from the normal type by the yellow margin being much broader than usual, and in one specimen completely obliterating the blue spots. In the other variety this is the case only with the fore wings. I have sent the latter, with a facsimile sketch of the former, to my uncle, Mr. J. Jäger, of Notting Hill, who intends exhibiting them at one of the meetings of the South London Entomological Society. — WILLIAM WERNER; Biedenkopf, Germany, January, 1888.

VANESSA C-ALBUM IN SURREY.—I have just seen a specimen of *Vanessa c-album*, captured in a garden close to Sutton, three years ago, by a friend.—H. M. LEE; Gladstone House, Sutton, Surrey, February 11, 1888.

BOMBYX TRIFOLII COCOON WITH TWO EXITS.—Mr. Warburg's statement (Entom. p. 15) is well worthy of attention. *B. trifolii*,
ENTOM.—MARCH, 1888.

unlike *Saturnia pavonia*, does not, of course, spin a regular exit to its cocoon. This did not strike me when Mr. Clark mentioned the fact of his possessing one. However, there is no doubt that Mr. Clark has a cocoon of *B. trifolii*, externally resembling the abnormality in the cocoon of *S. pavonia* given me by Mr. Alderson, and the cocoon in the possession of Mr. Warburg. Perhaps Mr. Clark will make a critical examination of his cocoon and give us the result, as all such abnormal structures are of the greatest interest.—J. W. TUTT; Westcombe Park, S.E., January 18, 1888.

CLOSTERA ANACHORETA. — With reference to the Rev. J. Greene's note as to *Clostera anachoreta* (Entom. 31), I may mention, that in September, 1878, I found one larva of this species at Walmer, and a friend who was with me found another at the same time. I did not know what the larva was until the 5th March following, when the insect emerged.—W. T. HAY; 26, Netherton Road, St. Margaret's, Twickenham, Feb. 3, 1888.

CLOSTERA ANACHORETA. — With reference to the Rev. J. Greene's very interesting note on this species, I would wish to point out particularly a circumstance to which he but slightly, if at all alludes, although he clearly had it in his mind while writing, namely that the balsam poplar is not only a tree that is not indigenous to our islands, but is one that, although introduced long since, has not, I believe, until comparatively recent years, been much grown here. Can any entomologist in Folkestone ascertain when those plantations were made? by what nurseryman? and, from him, whence the young plants came? Four species of poplar grew in these plantations: the white, black, the Lombardy, and the balsam, but *Clostera anachoreta* was confined to the balsam poplars.—C. A. BRIGGS; 55, Lincoln's Inn Fields, February 14, 1888.

DASYCAMPA RUBIGINEA AT CHRISTCHURCH.—I have had the pleasure again of taking a good specimen of this insect on November 28th last. It may be of some interest to note that the only three specimens I have captured in this locality during the past two years have been all in the last week in the month of November, the following being the dates: November 24th, 30th, 1885, and 28th, 1887.—J. M. ADYE; Somerford Grange, Christchurch, January, 1888.

PHIGALIA PEDARIA IN JANUARY.—Whilst walking through the village of Pinner, on the 7th inst., I captured a recently emerged male of the above species. The earliest date I can vouch for previously, for this insect, was 14th February, 1886, when my friend Mr. William Powley secured them plentifully near Hounslow at gas lamps.—PERCY RENDALL, M.D., 20, Lad-broke Square, London, W., January 18, 1888.

AMPHIDASYS BETULARIA var. DOUBLEDAYARIA.—In the summer of 1886 an entomological friend, Mr. S. Littler, of Newark, took, *in copulâ*, a pair of the above. From the female a number of fertile eggs were obtained, and as a result a nice series of this variety. Last summer I had sent me, from a village near, another couple alive and *in cop*. The larvæ were very variable—drab, green, black, and some inclined to reddish colour. At various times I have met with this variety in the neighbourhood, but only once have I taken it in the so-called normal condition.—JAS. H. TOMLINSON; Newark-on-Trent, February 3, 1888.

BUTALIS CICADELLA.—In answer to Mr. Farren's note (Entom. 62), I find in 'Entomologists' Monthly Magazine,' viii. 92, Mr. McLachan records one specimen, taken on the heath near Weybridge Station, 1st July, 1871. At page 138 of the same volume, Mr. S. Stevens tells us he took "about a dozen specimens of this moth at Southend, about twenty or twenty-five years ago, in the flowers of a kind of dandelion." The original specimen mentioned in Stainton's 'Manual' was taken by Mr. Dunning, at Brandon.—E. A. FITCH; Brick House, Maldon.

GELECHIA ACUMINATELLA.—When collecting larvæ of *Coleophora theranella* early in September last year I noticed many of the leaves of the seeding plants of *Carduus lanceolata* blotched, and upon examination I found them tenanted with the young larvæ of the above species. They were then small, and as there appeared little chance of carrying them to maturity, I decided to wait till they were tolerably well advanced before collecting them. In the early part of October I had no difficulty in filling my bag with mined leaves, and on arrival home I found the larvæ pretty numerous, most of them being about full-grown, but a few stragglers were to be found as late as the second week in November. I hope these remarks may prove as useful to some of our young entomologists as they would have been to me when I

began systematically to collect the Tineina.—WILLIAM MACHIN ; 29, Carlton Road, Carlton Square, E., February 19, 1888.

CARABUS MONILIS IN JANUARY.—On the 27th of January I captured an active specimen of *Carabus monilis* at Harrow, during a sharp frost with snow. It did not appear at all torpid.—M. H. GRANT ; 50, Lancaster Gate, London.

ODONTEUS MOBILICORNIS IN THE ISLE OF WIGHT.—In August last, at Alum Bay, Isle of Wight, I had the good fortune to capture a male *Odontæus mobilicornis*, which is now in my collection. Not knowing the insect, I took it, together with others, to the type collection of the British Museum, Nat. Hist., Cromwell Road, where it was identified.—M. H. GRANT ; 60, Lancaster Gate, Hyde Park, February, 1888.

SCARCITY OF EMATURGA ATOMARIA IN 1887.—The most notable absentee in my experience during the past year has been *Ematurga atomaria*, of which I did not see a single specimen in any of the localities where usually it is abundant.—F. J. BUCKELL ; 32, Canonbury Square, January, 1888.

THE MICRO-LEPIDOPTERA OF SOUTH DEVON.—I was much interested in Mr. Kane's list (Entom. 34), as during the first three weeks of August last I was staying at Avonwick, half-way on the main-road between Ivy-bridge and Totnes. I was not able to give much time specially to Entomology, but came across several species which do not occur in the list of Mr. Kane. Those whose interest in Lepidoptera is gauged by the comparative variety of the species will say, "What a poor list!" But to those who take a wider view, and study distribution, such lists as mine cannot be wholly valueless. All the species named were taken at Avonwick. Rhopalocera :—*Pieris rapæ*, abundant. *Argynnis paphia*, many worn specimens. *Pararge egeria*, not uncommon in lanes and damp woods. *Epinephele tithonus*, wasted. *Vanessa urticæ*, fairly common. *V. io*, on flowers, especially by the river-side. imago at sugar. *Apamea oculatea*, common. *Neuronia popularis*, at light. *Polia chi*, at rest on walls and trunks. *Amphipyra pyramidea*, common at sugar. *Gonoptera libatrix*, common at sugar. *Mania maura*, at sugar. Geometræ :—*Epione apiciaria*, fairly common, *Lycæna icarus* and *Cænonympha pamphilus*, fairly abundant. Heterocera :—*Lithosia lurideola*, at light. *Bombyx neustria*, at light. *Acronycta alni*, one larva, on a boulder in mid-stream,

probably from a neighbouring oak. *A. rumicis*, larva on dock; *Selenia tetralunaria*, one male on a flower-bed of *Eupatorium*. *S. bilunaria*, larvæ on alder. *Cleora glabraria*, one imago beaten from an ash tree. *Amphidasys betularia*, one larva on alder. *Geometra papilionaria*, larvæ on alder. *Coremia ferrugata*, very common. *Melanthia ocellata*, very common among *Galium mollugo*. *Hyppisipetes sordidata*, larvæ on alder. *Cidaria immanata*, wasted.—GILBERT H. RAYNOR; Brentwood, Feb. 10, 1888.

A LONDON FORM OF MELANISM. — With reference to Mr. Cockerell's note on this subject (Entom. 60), the following extract from my diary may be of some interest:—"13th June, 1868,—Sugared in Bishop's Wood, Hampstead, and took (among other things) *Miana strigilis*, 4; var. *æthiops*, 7." It is therefore evident that some twenty years ago the melanic variety considerably outnumbered the type in the north-west district of London. For earlier dates I must trust to my memory, and can speak only with regard to the south-east of the metropolis, but I well remember that, while still a schoolboy, I used frequently to sugar the stems of sundry small fruit-trees in my father's garden at Lewisham. *M. strigilis* was one of the most frequent visitors, and the "black" variety was regarded as much the more common of the two forms. The periods to which I am thus able to refer are, I am aware, much too remote to allow of any definite conclusions being drawn in the direction indicated by Mr. Cockerell, but I trust that they may at least form a link in the chain of evidence that will no doubt be forthcoming upon this interesting subject.—ROBERT ADKIN; Lewisham, Feb., 1888.

BUTTERFLY, ORIGIN OF WORD.—Can you give me the derivation of the word butterfly?—N. H. REID; Oaklands, Beckenham.

[Skeats ('Etymological Dictionary') says: "Anglo-Saxon *butor-fleoge*, from *butor* = butter, and *fleoge* a fly. Dutch *boter-vlieg*, German *butterfliege*." Kilian gives Old Dutch name as *boter-schijte*, showing that its excrement was regarded as resembling butter.—J. T. C.]

SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON.—*February 1st, 1888.*—Dr. David Sharp, F.Z.S., President in the chair. The President nominated Sir John Lubbock, Bart., M.P., F.R.S., Mr.

Osbert Salvin, M.A., F.R.S., and the Rt. Hon. Lord Walsingham, M.A., F.R.S., Vice-Presidents for the Session 1888 to 1889. Mr. Henry F. Dale, F.R.M.S., F.Z.S., of Miserden, Gloucestershire, and 2, Savile Row, W., was elected a Fellow; and the Rev. W. J. H. Newman, M.A., Mr. H. W. Barker, and Mr. J. H. Leech, B.A., were admitted into the Society. Mr. F. Pascoe exhibited two specimens of a species of the Hemipterous genus *Ghilianella*, one of which he found crawling over a low bush at Pará with the young larva securely riding on its back. He said it was the only occasion he ever saw the species with the larva, which was new to Mr. Bates. Dr. Sharp exhibited some insects forwarded to him by Mr. Kidston, of Stirling, collected by Mr. Alexander Carson on Kavalla, an island in Lake Tanganyika: they were sent in spirit, and unfortunately were much damaged in transit. The Coleoptera were nearly all well-known species, exemplifying the fact that many of the commoner insects of tropical Africa have wide distribution there, some of these species being common in Natal and Senegal. The most remarkable of the insects received from Mr. Carson was a large lepidopterous caterpillar, which Dr. Sharp had given to Mr. Poulton; it was covered with very thick sharp spines, all pointed except the terminal one, which was furcate. Mr. Champion exhibited specimens of *Casnonia olivieri*, Buq., *Ædichirus unicolor*, Aubé, *Paussus favieri*, Fairm., *Colydium elongatum*, Fab., *Endophlæus spinulosus*, Latr., *Heterius arachnoides*, Fairm., *Pseudotrechus mutilatus*, Rosenh., *Singilis bicolor*, Ramb., *Phyllo-morpha laciniata*, Will., all recently collected by Mr. J. J. Walker, R.N., of H.M. ship 'Grappler,' at Gibraltar, Tetuan, and Tangier. Mr. R. South exhibited a remarkable variety of *Polyommatus phlæas*, caught by him in North Devon in 1881. Mr. R. W. Lloyd exhibited a living specimen of a species of *Ocnera* taken in London amongst merchandise imported from Ispahan. Mons. A. Wailly exhibited, and read notes on, a number of cocoons of *Antheræa assamensis*, *A. roylei*, *Actias selene*, *Attacus ricini*, &c., lately received from Assam; also a number of nests of cocoons of *Bombyx rhadama*,—the silk of which is used by the Hovas in the manufacture of their stuffs called "Lambas,"—from the island of St. Mary, Madagascar. Captain H. J. Elwes read a paper on "the Butterflies of Sikkim," the result of many years of collecting in that wonderfully rich district of the Himalayas. He said he had been enabled to complete his observations

during the enforced delay at Darjeeling of Mr. Macaulay's Mission to Thibet, of which he was a member. He stated the number of species occurring in this small district to be about 530, which is greater than the number hitherto found in any locality in the Old World. Of these the greater part only occur in the hot valleys at an elevation of 1000 to 3000 feet, and these are for the most part of a purely Malayan character, whilst those found in the middle zone are in many cases peculiar to the Himalayas; and the few species from the alpine parts of the country at 12,000 to 16,000 feet are of a European or North Asiatic type. An important feature in this paper was the numerous observations taken on the habits, variation, seasons of appearance, and range of altitude of the various species, for which Captain Elwes said he was largely indebted to Herr Otto Möller, of Darjeeling. The paper concluded with an analysis of the species and genera as compared with those found in the North-West Himalayas and in the Malay Peninsula. Mr. J. H. Leech, Dr. Sharp, Captain Elwes, and others took part in the discussion which ensued.—H. Goss, *Hon. Secretary*.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—*January 26th, 1888.* T. R. Billups, Esq., President, in the chair. Mr. Tugwell exhibited, for comparison, German and Welsh specimens of *Xylina fureifera*. Mr. J. Stringer, a varied series of *Hybernia defoliaria*. Mr. Cooper remarked that while searching for *H. leucophearia* during the previous week, he had seen numbers of *H. defoliaria* at rest on the trees, and it now seemed to be usual to meet with this species in the spring. Mr. Adkin, bred specimens of *Ptilophora plumigera*, which had recently emerged, and he thought that the cold weather experienced at the time the species usually appeared had kept them back. Mr. Carrington, referring to Mr. Cooper's and Mr. Adkin's observations, contributed notes as to the effects of temperature on the emergence of Lepidoptera. Mr. Tutt, on behalf of Mr. Alderson, varieties of *Aplecta tineta*, *Scopelosoma satellitia*, *Anaitis plagiata*, a melanic specimen of *Phigalia pedaria*, and a curious form of *Tæniocampa munda*, which he stated were all taken in the neighbourhood of Bromley. Mr. Carrington said he had frequently taken this form of *T. munda*, and recommended sugaring in the earlier part of the year for the genus *Tæniocampa*, stating that on one occasion he captured numbers

of *T. munda* with commoner species of the genus, at the same time taking a considerable number of *Asphalia flavicornis*, an insect not generally supposed to come to sugar. Mr. Billups, on behalf of Mr. W. F. De V. Kane, *Rhopalomesites tardii*, from Killarney and Powerscourt, Ireland, and invited remarks upon the same, as regards variation; the pale forms, however, were considered to be immature. Mr. Dobson read a paper on "Darwinism," which was followed by a discussion.

February 9th, 1888. The President in the chair.—Messrs. F. Warne, N. Warne, A. T. Mitchell, F. E. Strong, and P. C. C. Billups, M.D., were elected members. Mr. South exhibited, for comparison, forms of *Dianthæcia compta* and *D. nana*, and contributed notes; also a long series of what he stated were known in this country as *Cerastis vaccinii* and *C. spadicea*. He considered these to be two forms of one species, but at present was unable to bring forward any facts of sufficient weight in support of this, but thought he could establish the fact that British Lepidopterists had for years been in error in associating the name of *spadicea* with the dark *Cerastis*, which by comparison with German species of the genus must be referred to *C. ligula*, Esp.; but whether *ligula* is distinct from *vaccinii* is for future research to determine. Mr. South illustrated his remarks with long series of British and German forms of the genus; and, on behalf of Mr. J. H. Leech, exhibited Coleoptera mounted on small triangular pieces of glass, thus allowing the under surface of the specimen to be examined. Mr. Tutt, *Xylophasia rurea*, showing the different forms of variation. Mr. Hawes, a variety of *Epinephele ianira*, one of the upper wings being completely bleached, and a variety of *Argynnis paphia*, the black spots having coalesced and formed bars; both these varieties were taken in the New Forest, 1885. Mr. Jäger, an aberration of *Vanessa antiopa*, the yellow margin of the upper wings obliterating the blue spots, the specimen having been bred in Germany, with another in which the same aberration appeared also on the under wings. Mr. Adkin, life-history of *Ephestia kühniella* in a living state, and called attention to a colony of larvæ just hatched and making their way into the flour. Mr. Croker, a specimen of *Crioceris merdigera*. Mr. T. R. Billups, on behalf of the Rev. W. Johnson, of Armagh, a short series of *Bembidium clarkii*, taken at Armagh.—H. W. BARKER, Hon. Secretary.

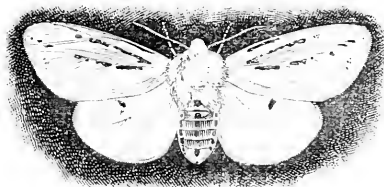
THE ENTOMOLOGIST.

VOL. XXI.]

APRIL, 1888.

[No. 299.

VARIETY OF *SPILOSOMA URTICÆ*.



SPILOSOMA URTICÆ, VAR.

THIS striking variety of *Spirosoma urticæ* is from the late Dr. Harper's last collection. Of its previous history I know nothing. There were other varieties in the series, but none so striking as this.

Although radiated varieties are not rare in its congeners *S. lubricipeda* and *S. menthastri*, I believe in *S. urticæ* they are but rarely met with. This specimen, which is in fine condition, it will be observed from the drawing, is normal in its hind wings.

On the fore wings there are three black streaks, in addition to the usual black dashes near the apex. The first streak, situate immediately below the costal margin, commences a short distance from the base, extending about one-third along the length of the wing. The second streak is situated immediately below the subcostal vein, commencing at the same distance from the base, and extending about two-thirds along the length of the wing. The third streak, extending to a similar length but commencing a little further from the base, is situate immediately below the median vein. The second and third streaks are interrupted, especially at the branches of the veins. There is a black spot at the base of the fore wings.

C. A. BRIGGS.

DISTRIBUTION OF LEPIDOPTERA

IN THE OUTER HEBRIDES, ORKNEY, AND SHETLAND.

BY RICHARD SOUTH, F.E.S.

Mr. C. W. Dale, of Glanvilles Wootton, who collected in North Uist and Harris in 1883 and 1884, and Mr. E. R. Curzon, of Forres, who was in Orkney and Shetland during the seasons of 1884, 1885, and 1886, have kindly furnished me with some interesting information respecting the distribution of Lepidoptera in those islands.

On the authority of these gentlemen, I am enabled to add thirty species to the list given (*ante*, p. 28), and also to amend the distribution table as regards some of the species previously enumerated. The following species should have a + inserted opposite their names in the proper locality column:—

ORKNEY.—*Agrotis aquilina*, *A. agathina*, *Noctua brunnea*, *Hadena oleracea*, *Scoparia angustea*, *Crambus ericellus*, *Pardia tripunctana*, *Orthotania antiquana*, *Coccyx tædella*, *Dicrorampha tanacetii*, *Catoptria fulviana*, *Blabophanes rusticella*, *Plutella cruciferarum*, *Gelechia ericetella*, *Æcophora pseudospretella*.

OUTER HEBRIDES.—*Anaitis plagiata*, *Scoparia atomalis*, *Argyrolepis hartmanniana*, *Plutella cruciferarum*, *Blabophanes rusticella*, *Æcophora pseudospretella*.

SHETLAND.—*Xanthia circellaris*, *Phlogophora meticulosa*, *Calocampa retusta*, *Cheimatobia brumata*, *Clepsis rusticana*, *Pamplusia mercuriana*.

The additional species are:—

	Ork.	O. Heb.	Shetl.		Ork.	O. Heb.	Shetl.
<i>Cœnonympha pamphilus</i>		+		<i>Incurvaria oehlmanniella</i>	+		
<i>Leucania impura</i>		+		<i>Swammerdamia cæsiella</i>			
<i>Nonagria lutosa</i>			+	<i>v. griseocapitella</i>	+		
<i>Mamestra abjecta</i>			+	<i>Depressaria costosa</i>	+		
<i>Agrotis saucia</i>			+	" <i>applanata</i>	+		
<i>Pachnobia rubricosa</i>	+			<i>Lita instabilella</i>	+		
<i>Dianthæcia capsicola</i>	+			<i>Teleia proximella</i>	+		
<i>Gonoptera libatrix</i>			+	<i>Monochroa tenebrella</i>			+
<i>Botys fuscalis</i>		+		<i>Pleurota bicostella</i>	+		
<i>Platyptilia gonodactyla</i>	+			<i>Glyphipteryx thrasonella</i>			+
<i>Mimæseoptilus</i>)				" <i>fischeriella</i>	+		
<i>pterodactylus</i>)	+			<i>Argyresthia pygmæella</i>	+		
<i>Peronea ferrugana</i>		+		<i>Gracilaria tringipennella</i>		+	+
<i>Pædisca semifuscana</i>			+	" <i>syringella</i>			+
<i>Plutella annulatella</i>	+	+		<i>Coleophora anatipennella</i>	+		
" <i>dalella</i>			+	" <i>cæspitella</i>			+

The total number of species of Lepidoptera known to occur in these groups of islands now stands at 240: of these 168 have been found in the Orkneys, 146 in the Outer Hebrides, and 96 in the Shetlands.

12, Abbey Gardens, St. John's Wood, March, 1888.

CONTRIBUTIONS TOWARDS A LIST OF THE VARIETIES
OF NOCTUÆ OCCURRING IN THE BRITISH ISLANDS.

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

(Continued from p. 87.)

Diloba, St., *cæruleocephala*, L.

Var. *armena*, Stdgr.—Dr. Staudinger, in his 'Catalog,' describes a variety under this name as "much paler; anterior wings cinereous." I have not seen this form. The locality he gives is Armenia.

Arsilonche, Ld., *albovenosa*, Göze (*venosa*, Bkh.).

The type of this species, as its name indicates, has white nervures, which show distinctly on the pale wainscot ground colour. The depth of the ground colour varies from pure silvery white to deep (inclining to reddish) ochreous. A great deal of difference exists in the development of the dark shades under the base of, and above the outer half of the median nervure, and towards the apex. Mr. Warren, of Cambridge, informs me that it is "the specimens of the second (autumnal brood) which have the dark dashes more prominently marked, and the fore wings sometimes more thickly peppered." This form (with the dark shades clearly developed) is figured by Hübner (fig. 380) under the name of *degener*.

α . var. *centripuncta*, H.-S.—The anterior wings of this variety have a black spot in the centre of each wing. The description Dr. Staudinger gives is "*alæ anteriores puncto nigro*." This form has, I believe, at the present time only been recorded from Russia, but some of my specimens from Cambridge have this spot faintly indicated. I should not be surprised to learn that this variety exists in some of our collections.

β . var. *ochracea*, mihi.—The ground colour of this variety is reddish ochreous, and the wing-rays pale ochreous instead of

white, as in the type. This variety occurs in both broods, some of the specimens being almost devoid of the dark shades, others with the dark shades very strongly marked. I have to thank Mr. W. Farren, of Cambridge, for the loan of a fine series of this variety.

γ. var. argentea, mihi.—Ground colour silvery white, with no trace of ochreous. My specimen, which is probably of the autumnal brood, is much suffused with dark scales directly above and below the median nervure, also along the costa, and less strongly along the inner margin. Taken very rarely with the type.

LEUCANIDÆ, *Gn.*

The Leucanidæ are, as a family, remarkable for their pale colour, nearly all of them being of some shade of yellowish or whitish ochreous in their palest forms. Even those which we are accustomed to consider as having the typical colour of some shade of red are found to be grey or ochreous in their paler forms, when long series from far-distant localities are obtained for comparison. In almost all the species of this group the variation in ground colour appears to go through a regular gradation from pale whitish ochreous to yellowish ochreous and reddish ochreous, generally culminating in a deep red. Not only are many of our species subject to these variations in ground colour, but nearly all the family are frequently in all these various forms more or less suffused with black scales. It is therefore in one of these two directions, or in both combined, that the variations of the Leucanidæ generally run. A less important form of variation is in the number of dots which form the transverse rows found in many species parallel to the hind margins of both the anterior and posterior wings. Frequently some specimens of a species have complete rows of these dots, while in other specimens of the same species they are entirely absent, others having a greater or less proportion of the total number suppressed. In most instances, however, two at least are developed on the anterior wings, one directly above, the other below, the median nervure.

Synia, Dup., musculosa, Hb.

It may be advisable to point out that Newman's figure, 'British Moths,' p. 273, is nothing like Hübner's type, and that his

(Newman's) description is almost convincing that the specimen he described most probably did not belong to this species. Hübner's fig. 363 is of a bright sulphur-yellow ground colour, with grey nervures, the central area of the wing much suffused with dark grey scales; the orbicular and reniform, of a very pale sulphur, stand out distinctly in the darker central area; the costa has a broad pale sulphur streak, the inner margin is also clear; a pale sulphur wedge-shaped mark extends longitudinally from the outer edge of the reniform to the hind margin, at the point where it meets the hind margin is a small grey blotch. Posterior wings pale sulphur, without any markings.

Var. *myodea*, Rbr.—Mr. Dobrée informs me that the data for considering this a variety of *musculosa* rests upon a single imperfect specimen captured in Andalusia.

Leucania, Och., *conigera*, F.

This species varies very much in ground colour from a bright ferruginous-red with a yellow-orange tint to a deep dusky red much sprinkled with black scales. The continental forms appear to closely resemble our brighter specimens, but I have seen none approaching the more melanic forms which we occasionally obtain in England, and which are very frequent on the west coast of Ireland. The diagnosis of Fabricius, taken from Borkhausen, is: "Cristata, alis deflexis flavescentibus, strigis duabus, fuscis punctoque medio albo trigono." Hübner's figure (222) is a good one of the typical insect as far as the upper wings are concerned, but the posterior wings are coloured bluish, and have a dark margin.

α. var. suffusa, mihi.—The ground colour of the anterior wings of a dusky ferruginous-red, without any trace of the brighter yellowish ground colour of the type, the whole being much suffused with darker scales; the markings exactly like those of the type, but of a deeper colour and more distinct, especially the stigmata; a very dark shade surrounds the reniform, extending to the orbicular; the costa shaded with dark scales, the wing-rays also dark. The hind wings of a very dark smoky grey colour in both sexes, bearing more or less traces of a still darker transverse line. I have this melanic form only from Morpeth and Sligo. My *conigera* from Dundee are as bright as the specimens captured in Chattenden, Strood, Deal, and other

Kentish localities. Brightly-coloured specimens are, however, captured at Sligo with the melanic form.

β. A remarkable abortion of *L. conigera* is figured in the 'Entomologist,' vol. xi., and described at p. 171 as follows:—
 "This insect has the normal coloration of the upper wings, but the left lower wing is, both in colour and structure, partly like the upper wings, and also has one white spot in the centre."

(To be continued.)

NOTES ON SOME BRITISH TORTRICES.

BY W. G. SHELDON.

Phoxopteryx derasana.—The only note of the life-history of this species I can find is 'Entomologist' xiii. p. 86: "Mr. Barrett writes, Mr. Machin bred it from larvæ found on *Rhamnus frangula*." In this district, where it is not uncommon, the larva feeds upon *Rhamnus catharticus*: this may, however, be owing to the fact that *R. frangula* is exceedingly rare in its haunts.

The larva lives in a very neat and symmetrical domicile, which it forms by folding down a leaf and joining the edges with silk. When small a portion only of the leaf is so treated, and as it approaches full growth whole ones are utilised. Within the abode thus formed it feeds upon the lower cuticle; when all this is devoured, issues forth and forms another retreat. As it grows larger it eats irregular-shaped holes through the walls of the leaf, and when these holes are formed it is careful to spin a web within the leaf, for protection against its enemies. When full-grown (which is about the latter end of September) it descends to the ground, and forms a cocoon amongst rubbish, and in this remains unchanged till the spring. The moth appears early in June. I have been unable to find even young larvæ before the beginning of September; and the long interval that thus elapses, between the emergence of the imago and the appearance of the larva, would appear to give colour to the idea, which I believe prevails in some quarters, that the species may be double-brooded, but I never took a specimen after the beginning of July. It is necessary, in order to rear this species, to winter it outdoors in the wind and rain.

Young larva: active, slender, tapering to anal extremity. Colour very light green, dorsal vessel very plainly visible, head same colour as body. Full-grown larva: length six lines, of average stoutness, tapering much to anal extremity; head and whole body shaded with indistinct hairs; head narrow, glaucous, light brown, round the mouth spotted with black; on the dorsal area where it joins second segment, are two elongated black dashes; second segment glabrous, same colour as head, but spotted with black; dorsal area bounded on each side by a black blotch. Body, colour dark putty; dorsal vessel visible when crawling; each segment (which is somewhat swollen) has several raised spots, lighter in colour than remainder of body, each one of these units a hair; anal segment glaucous and black, spiracles indistinct, prolegs tipped with black.

Conchylis dilucidana.—The larvæ of this species are to be found during the winter and spring months in the stems of the wild parsnip (*Pastinaca sativa*), and from their presence there at that period it has been concluded it was their habit to feed in that manner. See Entom. xiii. 295, where the late Mr. W. P. Weston says, “the larva feeds in the stems of wild parsnip.”

The imago, which in this district is common amongst its food-plant, appears on the wing about the middle of July; during the latter portion of this month, late in the afternoon of fine still days, the female may be seen flying gently amongst the wild parsnip, and settling upon the umbels. If closely observed, it will be found she is depositing ova on the green seeds and flowers, a single one on each. If the seeds of this plant are examined during August and September it will be seen that they are infested with a larva, which is that of *Conchylis dilucidana*.

This larva, immediately it is hatched, burrows into the interior of an unripe seed, and feeds upon the contents; when these are all devoured it eats its way through the envelope of the seed, and connecting the next one with a short tube of silk and frass serves it in the same manner. This process is repeated, when necessary, until the larva is fully developed, which is about the 25th of September; it then leaves the seeds, crawls down the stem until a favourable spot is reached, when it burrows inside; once there it commences to tunnel upwards in the pith, until it

finds a suitable position for passing the winter. This is usually in the upper portion of the stem, two feet from the ground, and at a joint where the pith is solid; here it remains quiescent through the winter and spring months (usually in little colonies of three or four) until June, at which time it gnaws a passage towards the outside of the stem, leaving a very thin skin entire, and then changes to a pupa. The pupa cases are to be found, sticking out of the stem, after the moth has emerged.

In order to successfully breed this insect, it is necessary to leave the stems containing the larvæ in the open air until they have changed; they will not pupate in the close atmosphere of a room. During the early months of last year I collected sufficient stems to breed a large number from, but owing to my taking them indoors in May only about half a dozen emerged.

Although it is the usual habit of the species to hibernate in the stems of its food-plant, there is no doubt a certain percentage do not follow out this practice, but I do not think this is a large one. Some I had in a breeding-cage, on attaining full size, commenced to wander about in search of something to pass the winter in. I introduced to their notice some rotten wood; this, although one or two availed themselves of it, was evidently not to their taste. I then placed some old parsnip stems in their cage. It was singular to see the eager manner with which they took to these, and in a remarkably short space of time every larva had disappeared in them.

Full-fed larva: length three lines, of average stoutness, tapering to each extremity; head shining jet black; narrow, second segment shining, same colour as body, but bordered behind with two black dashes; these do not quite meet in centre: anal segment darker than remainder of body; prolegs black; colour of body yellowish white; spiracles dark, rather inconspicuous; whole body thinly shaded with short hairs.

Addiscombe, January 28, 1888.

NORTHERN LEPIDOPTERA IN 1887.

By J. B. HODGKINSON.

I SELDOM breed any large moths, but on April 19th a fine male *Notodonta chaonia* came out, and a week or two later four *N. trimacula*; one male, without wings, so tumbled about

that it made a female almost as unsettled, and not worth setting. About this time some case-bearers crept up from among a lot of oak-leaves I had gathered at Windermere for *Lithocolletis*. Five of these grew up well. I gave them plenty of air and food, and they are still sticking to the side of the flower-pot. I cleared all the rubbish out of the pot, lest a female, apterous or otherwise, might come out. Knowing how soon the Psychidæ spoil themselves, I got some of my family to watch them several times each day, but the moths are still unemerged. The case is straight. The larva is a dirty white, with a row of black spots; the head a pale bone-colour, with a distinct black ring or collar behind. My troubles now began, for *Lithocolletis lantella* and *L. irradiella* came out by scores, a few *L. amyotella* and *L. kleemannella*, with plenty of *L. frölichella*, and others of the same group, keeping me at home setting. *L. quinqueguttella* came out so fast that I put a dozen or more in a box at a time to kill them. *Ornix loganella* kept turning up through May. I got tired of setting, so determined to have a ramble on the moors. So I took my conveyance about twelve miles, to see if any *Nemophora pilella* were out: this was the first week in June; the day was a bad one, no sun and a cold wind blowing. Some I dislodged from fir-trees, but mostly I found them at rest by seeing their long antennæ moving about. I got about eighteen males. I was evidently a little late, as there were no *Thecla rubi* nor *Gelechia longicornis*; whereas in 1886, it being much colder, the late Mr. John Sang and I saw the latter species about at once on the same date. However, I made a very fair bag, having filled over a hundred boxes from 11 a.m. to 6 p.m. I may note that the *Incurvaria oehmanniella* were the largest I ever saw, as large as *Lampronia luzella*. I got a fine lot of *Phoxopteryx myrtilana*, *Clepsis rusticana*, and some fine *Peronea ferrugana*.

The week after I paid Windermere a visit, to look for *Micropteryx mansuetella*, a species now nearly lost. Through drainage and cultivation, and the underwood being so thick, I had only a few yards to work on. All the streams and swampy places where the last-named species occurred were dried up. I managed in three days to take twenty, a few only being good. Although I put them in big boxes, and went as early as possible to my lodgings, in a few hours after capture most of them had dried up,

with their hind legs quite rigid out behind them. It was just the same when I tried to bring them home, a distance of fifty miles. The great heat last season made many other species spoil themselves, although I often buried my tin canister, with all the pill-boxes, among wet moss, to keep the specimens cool and alive. When coming up one of the walks a specimen of *Notodonta ziczac* was settling on an oak-trunk, and a little above it was a very large and fine *Cidaria corylata*. Among the golden rod *Ennychia octomaculalis* was flitting about freely in the shade. A fine specimen of *Spilonota rosæcolana* surprised me; no "hips" of roses had been near that I could find.

On my return home a very large *Cabera rotundaria* was flying about my breeding-room,—no doubt an escape. During the month lots of things came into my room to light, such as a fine lot of *Cidaria dotata*, and an endless lot of *Abraxas grossulariata*, *H. vauaria*, *Boarmia rhomboidaria*, and *Lophopteryx camelina*. On looking at some currant-sticks sent me, there were *Sesia tipuliformis* out, one apparently without a head, but otherwise quite perfect. Until I pinned it I could not make it out, as it was unlike anything I had seen. I suppose this will be questioned, but there was no mistake.

In the early portion of July I spent two or three days a week after *Chrysoclista bimaculella*, but to no purpose. The best species I took was *Laverna lacteella*. What an active moth this is about 5 p.m., so unlike the lazy *L. propinquella*: it needs keeping in the net. I made a sweep near where I had taken *C. bimaculella*, and swept a pair, *in cop.*, of what I thought by the large spots were *C. bimaculella*, but they were only *C. schrankella*. I may note also that specimens of the latter, even this hot summer, were larger than usual. I also took *Bucculatrix demaryella*, and four or five *Coleophora orbitella*. I thought one evening I had taken *Eupæcilia manniana*, the setting sun shining on its pale yellow wings; but the perfume of the wild mint made me think it could only be *E. notulana*. What a pest *Bactra lanceolana* was, sometimes flying easily and softly in circles. *Lampronia luzella* was commoner than usual. *Phoxopteryx diminutana*, an insect that spoils itself in the box, occurred sparingly among the shallows. *Ptycholoma lecheana* was of great size, and it is years since I took the pretty *Roxana arcuana*. Now and again *Hylophila prasinana* would tumble off a nut-bush. *Leioptilus*

tephradactylus, *L. osteodactylus*, and *Mimæseoptilus plagiodactylus* were also large.

The first week in July I thought I would go early enough to look for *Emmelesia tæniata*, as I wanted specially to get eggs for a correspondent. The intense heat seemed to drive moths, if there were any, into cool places. The result of my hunt was that I took one, *E. tæniata*, with three wings with some scales, but the other top wing was as smooth as the bark of an ash sapling. I forget to mention that in June I bred about thirty *Eupithecia constrictata* from the Isle of Man, and a new series of *E. valerianata* from Windermere.

The second week in July, when in the neighbourhood of Witherstock, *Gonopteryx rhamni*, *Argynnis adippe*, and *A. aglaia* were in plenty. I took a splendid *charlotta* variety of *aglaia* on a flower. I saw *Lycæna ægon* in plenty. It was a treat to see so many butterflies again. There were several *Selidosema ericetaria* (*plumaria*) in hot sunshine and a strong wind. I had a look on the rocks for *Sciaphila penziana*, but not a moth of any sort was to be seen; everything was burnt up, and walking on any slope dangerous. This danger and the Jubilee fires on some of our high hill-tops kept me from *Crambus furcatellus*.

In the first week in August my wife and I mainly looked after the larvæ of *Eupithecia constrictata*. The wild thyme, like other things, was burnt up; but by going as high as it grows, after a week's search we got a few score: they were not easy to breed. White butterflies were in great quantity; in fact all the cabbages, turnips, &c., were without leaves, only the "ribs" of the plants being left by the larvæ. *Lycæna icarus* was very small, but very active.

Early in September I went to the banks of the Wyre to look for larvæ of *Homœosoma senecionis* on ragwort. Not one was to be seen where I used to take them in plenty: the ragwort is gone, hence the reason. Once I took a specimen of *Catoptria expallidana* there, and as I saw some sow-thistles in a bean-field I gathered a bag of it, but there were no larvæ. Being such a good year for wild roses, my wife went in for "hips" of roses for *Spilonota rosæcolana*. I was obliged to paste the gauze down over the pot, for there were hundreds of larvæ sticking on it. How they will turn out I do not know, but they have plenty of air, soil, rotten wood, &c. During September I made several

journeys to Windermere, prospecting new places. The balsam (*Impatiens noli-me-tangere*) seemed all dead with heat, but after the heavy rains it sprang up again, and started with new life, attaining a height of two feet blooming and seeding; but not a trace of *Cidaria reticulata* larvæ until the 30th, when I found three on some plants at a little distance.

Ashton-on-Ribble, Preston, November 26, 1887.

ON THE CAPTURE OF A NEW SPECIES OF *PYTHO* IN JAPAN.

BY GEORGE LEWIS, F.L.S.

ON the 14th June, 1880, I left Nikko at day-break, and after walking about four hours I reached the higher region of Niohozan in good time for some hours' work in the forests growing at an elevation of about 7000 feet. On going up the mountain, after passing the valley vegetation, there was a large area of long grass, mixed with *Lespedeza*, and here and there oaks of a stunted growth, and beyond this I found the mountain covered with a belt of larch and birch for about a mile, and then I came suddenly into a dense forest of pines (*Abies*), where snow remained at intervals under the trees and in the crevices of the rocks where the sun rays could not directly enter. Here spring was just commencing, and insects were lying under bark and stones (which were still covered with hoar-frost) awaiting the warmth which a few days would bring to them. For the first time I now saw *Rhagium*, *Thanasimus*, and a *Coccinella*, allied to the European *ocellata*, and obtained *Pterostichus macrogenys*, Bates, and some curious *Brachylytra*, which Dr. Sharp has recently described, but insects generally, although of a distinctly boreal character, were far from numerous.

The place was above the locality of *Brososoma* and other mountain species, but one or two species of *Leistus* and *Nebria* were found, and the blue *Damaster*. Here under the pine bark still glistening in the rime of winter was the habitat of *Pytho*.

The species is the largest at present known, and the thorax is anteriorly rounded off at the sides and constricted behind, like *Pytho deplanatus*, and not transverse like that of *niger*, Kirby, or *depressus*, Linn.

PYTHO NIVALIS, n. sp.

Elongatus, depressus, niger, vix nitidus; elytris violaceis; antennis pedibusque brunneis. L. 16—17 mill.

Elongate, depressed, shining; head and thorax and under side black, elytra violet or bronze; mouth organs, antennæ, tibiæ, tarsi, thoracic sutures, and lateral margins of the elytra narrowly brown. Head uneven and very sparsely punctulate, rather parallel, widest just behind the eyes, eyes granulate and rather prominent; thorax with a slight medial canaliculation, with a large lobe-like depression on each side, widest in the middle, the lateral outline is semicircular anteriorly, and a little constricted at the base; elytra are smooth and raised in the humeral region, with ten or eleven well-marked striæ, for four-fifths of their length.

Wimbledon, December 9, 1887.

 ENTOMOLOGICAL NOTES, CAPTURES, &c.

VANESSA ANTIOPA ABERRATION.—In the year 1883 I reared about a dozen of this lovely insect, and was fortunate enough to obtain an interesting variety. The white marginal border of both primary and secondary wings was broader, and its edge less sharply defined towards the base of each wing than is usual in the type. The two white spots on the costa of the primary wings were small, the blue spots parallel with the hind margins only faintly indicated, whilst they were entirely obsolete on both secondary wings. This variety apparently corresponds exactly with one of those specimens referred to (Entom. 89-96).—WILLIAM POWLEY; HOUNSLOW, March 5, 1888.

PAPILIO MACHAON, VARIETIES OF.—Concerning varieties of *Papilio machaon*, the spots between the black margin and black submarginal band are, in one of my specimens, twice the size of those in another. There are also differences between the black spots of the costa. These were both taken at the same spot, near Eisenach, Germany.—R. C. CYRIAN; 33, Douglas Road, Canonbury, London, N., March 8, 1888.

SEX OF WINTER-FLYING BUTTERFLIES.—In answer to Mr. Clifford's remarks (Entom. xix. 178) upon the above subject,

whilst walking along the Poole Road on the 26th February I was surprised at finding the enclosed pair of *Gonepteryx rhamni*, male and female, settled upon heath, about four inches apart. Snow was lying in patches, the wind north-east and cold.—J. H. FOWLER; Grove Road, Wimborne, March 5, 1888.

CÆNONYMPHA PAMPHILUS WITH ADDITIONAL OCELLI.—Last summer, in Wales, I caught a curious variety of *Cænonympha pamphilus*. Each of the ocelli on the under surface of the wings has a supplementary spot below it, and attached to it, of about one-third of the diameter of the normal spot. These supplementary spots have white centres.—E. P. LARKEN; Gatton Tower, Reigate.

PUPATION OF COSSUS.—With reference to the notes on this subject (Entom. xx. 231—234; xxi. 56) I may state that here I always take *Cossus* pupæ from the sand-cops adjacent to an infested tree. My late friend Mr. Harmer was the first to enlighten me as to their—to me—strange method of pupation. On June 4th, 1886, whilst awaiting his arrival, I was busy cutting away at a dilapidated willow which I knew contained *Cossus*, from the peculiar pungent smell emitted. On his arrival he jocularly remarked that I might proceed with my firewood chopping, and he would try and get me some pupæ. In a very short time he found, I see by my diary, fourteen pupæ. His method was to feel along the top of the sand-cop until he came to a soft place, which he could generally tell by the boring of the larvæ previous to pupation. Then he would gently lift the pupæ, sometimes two at once. Near here, to my knowledge, he once got in about an hour about fifty pupæ in this way. It was owing to his keen powers of observation that he found out this way. There were some slender willows only about an inch and a half in diameter, which were riddled with the borings; then he cut one open and found many larvæ, but no pupæ; this led him to wonder where they pupated, and feeling about an adjacent cop he found out the secret by finding some pupæ. The fourteen he got me along with another half-score from another cop all emerged on or about the 10th of June. I should be inclined to think that Mr. Hilton's supposition is wrong (Entom. 56), that the pupæ are to be found in November. I have found scores, but never before May. I looked last week, but only found about

a dozen empty cases. Last year I went on May 30th, but owing to the exceptionally hot weather, although a week earlier than the previous year, I was too late, and only found one good pupa and a newly emerged female. I found quite thirty empty pupæ, which looked very peculiar sticking up above the top of the cop facing south. In the cops they make a tough case like *Dicranura vinula*, only not so hard. On leaving the case the brown skin of the pupa protrudes about half an inch. We have both noticed many times that the larvæ feed inside the grey sallow only (*Salix cinerea*, I think), where both it and others grow together; this alone is infested, and I should like to have the opinion of other entomologists if they have also noticed this fact.—R. C. IVY; Town Hall, Southport.

BOMBYX TRIFOLII COCOON WITH TWO EXITS.—In reply to Mr. J. W. Tutt's inquiries (Entom. 89), I have made a careful examination of the cocoon of *B. trifolii*, and it is my opinion that the larva has made two distinct exits. In my experience with cocoons such as *B. trifolii*, the end that the insect emerges from is thinner than the other part of the cocoon, and in this case I find it is the same. Mr. J. Warburg suggests that this may be an instance of two closely adjacent cocoons. I find it is not so, though I did not breed the moth, for on opening the cocoon I only found one pupa and the skin of one larva.—J. A. CLARK; The Broadway, London Fields, N.E.

MIANA STRIGILIS, MELANIC FORM OF.—In reply to Mr. Cockerell's interesting note on the black form of *M. strigilis* (Entom. 60), I have never seen the melanism in this species, except near London. The type occurs in Berkshire, Oxon, North Devon, Southport, and Hampshire, where I have collected. I have taken the melanic form at Hendon, Dulwich, Croydon, and Hackney Downs, but it does not seem to be common in Epping Forest. I never saw the black variety until collecting in the London suburban district.—J. HENDERSON; 58, Romola Road, Herne Hill, S.E.

MIANA STRIGILIS, MELANIC FORM OF.—With regard to this subject, the following note may be of some interest. In June, 1886, I captured in my garden at Clapton in one evening nine *Miana strigilis*, of which eight were the var. *æthiops*. Last year I sugared on three evenings in the same place, but did not find a

single specimen of the type, among a large number captured. I believe that the variety is looked upon by lepidopterists in this neighbourhood as of much more frequent occurrence than the normal form.—M. CAMERON; 102, Clarence Road, Clapton, E.

MELANISM NEAR LONDON.—With regard to London forms of melanism (Entom. 60), perhaps I may mention that I have dark forms of *Miana strigilis*, taken in Chiswick, in 1878 and 1879, and also the black form of *Eupithecia rectangularata*, taken here in 1877 and 1878. Other dark forms, such as the dark reddish form of *Hybernia defoliaria* and the suffused form of *Oporabia dilutata*, are common in the district.—ALFRED SICH; Burlington Lane, Chiswick, W., February 13, 1888.

GORTYNA OCHRACEA.—In reply to the remarks on the appearance of *G. ochracea*, made by Mr. Sutton and Mr. Phillips (Entom. 60), I may state that for some years past I have taken this insect in the neighbourhood of Hampstead, during the month of September, and once on the 7th October. I was not aware that it appeared earlier in the season, though on referring to Newman I see that June is the month given.—JOHN LEA; 2, Elm Villas, Hampstead, February 9, 1888.

CLOSTERA ANACHORETA.—Some particulars of the appearance of this insect in 1859 have passed under review,—possibly all on record; but I think that its history would scarcely be complete without taking note of the fact that in that year specimens were obtained by me from larvæ which fell to my net whilst beating the shallows in a field near Saltwood, in Kent. I do not clearly remember whether I sent any notice to the 'Entomologist' at the time, but if I did not do so it was because of the announcement which had been made by Dr. Knaggs.—SIDNEY COOPER; Hawkwood, Chingford, March 5, 1888.

CHESIAS SPARTIATA IN FEBRUARY.—On February 9th my friend Mr. G. Rose, of Barnsley, kindly gave me a fine freshly emerged specimen of this insect, and said it was the fifth that he had bred this year. The winter has been an exceptionally mild one here, but that would hardly explain a September and October insect emerging in January and February.—A. E. HALL; Norbury, Pitsmoor, Sheffield.

RUMIA LUTEOLATA, VARIETY.—The variety of this species recorded by Mr. Tero (Entom. 15), in which the brimstone-

yellow is replaced by pure white, is of very great interest. The primitive colour of white flowers is supposed to have been yellow, and the prevalence of these two colours in the Cruciferae shows their close relationship. The white *Pieris rapae* is occasionally yellow, and *P. oleracea* has a yellow aberration of its form *venosa* on the Pacific slope of North America. Further, white pigments may sometimes be turned yellow by the action of a caustic alkali. All these things seem to me to point to the conclusion that as the red of *Chelonia caia* is a higher form of the chrome-yellow of *C. villica*, so the white of *Pieris rapae* is a more complex form of the same sulphur-yellow that we see in its variety *noranglicae* and in *Rumia*. It is probable that the climate of Europe once resembled that of North America far more closely than now, and this may explain the unusual frequency of yellow forms of *P. rapae* in America, supposing them to be atavisms induced by a return to something like the old conditions, and it is worthy of remark that Mr. W. H. Edwards considers *venosa* to be an older form than the Atlantic slope *P. oleracea*. According to this view, the variety of *R. luteolata* in which the yellow is replaced by white, which may be conveniently called *albescens*, is a case of unusual metabolism of a pigment which in that species normally stops short at the sulphur-yellow stage. I may say, in conclusion, that I shall be infinitely obliged to anyone who will send me particulars (as full as possible) of any variations from the normal type in insects, however slight.—T. D. A. COCKERELL; West Cliff, Colorado, U.S.A., January 30.

LEIOPTILUS LIENIGIANUS AT CROYDON.—As far as I can ascertain, *Leioptilus lienigianus* has not yet been recorded as occurring in Surrey. On the 18th July last I captured a specimen, which was feasting on the flower of a thistle. I have since made a careful search for its food-plant (*Artemisia vulgaris*), but am unable to find it within two miles of the spot where the specimen occurred. As the species is endued with only a limited power of flight, it therefore seems possible that there may be some other pabulum.—W. G. SHELDON; Addiscombe, January 21, 1888.

ABUNDANCE OF RHOPALOCERA IN 1887.—I have been surprised to learn from several correspondents that they have found butterflies remarkably scarce during the past season. My experience has been exactly the reverse, for although I took no rare

butterfly I found the commoner species very numerous. In June and July I was staying near the Savernake Forest (Wilts.), where the Argynnidæ were swarming. One pine and larch enclosure, with a thick undergrowth of bramble, was alive with remarkably highly coloured *Argynnis paphia*, and in an open space covered with flowering thistles *A. adippe* and *A. aglaia* were equally abundant. Moving amongst the thistles caused hundreds of butterflies to rise. Almost every thistle-head was occupied by *adippe*. On one bloom I counted eight specimens of that insect. Besides the *aglaia* and *adippe*, a few worn *euphrosyne* and *selene* were flying. Among the Vanessidæ, *Vanessa io* was certainly the most abundant; many nettle patches were covered with larvæ. I took about ninety, and with one exception they all attained the imago state. I think *V. urticæ* must have suffered much from Ichneumonidæ, for although they abounded in the larval state I observed very few imagines. I took half a dozen fine specimens of *V. polychloros*, and had several others brought to me. The Satyridæ were well represented as usual. *Melanargia galatea* I found in great abundance at Rabley Wood, near Marlborough; but they were unusually small, and the dark markings much paler than usual. *Pararge egeria* and *P. megæra* were numerous, and *Epinephele ianira*, *E. tithonus*, *P. hyperanthus*, and *Cænonympha pamphilus*, swarmed everywhere. Of the Lycænidæ, *Thecla quercus*, which is generally very scarce in this neighbourhood, was very plentiful last July and August. I also took a long series of *T. w-album* in Savernake Forest. *Polyommatus phlœas* was exceedingly abundant on some heaths near here, and a bank of wild thyme seemed a great attraction to this little butterfly. On some chalk-hills on the borders of Hants and Berks, the beautiful *Lycæna corydon* was seen in unusually large numbers. I took several varieties of the male. *L. icarus* was also numerous, and *L. astrarche* was seen occasionally among its brighter-hued congenitors. The Pieridæ were decidedly the insects of the season. Throughout the summer the cabbage-fields and plots abounded with *Pieris rapæ* and *brassicæ*. I examined many plants, and found every leaf thickly dotted with ova. I tore off a piece of cabbage-leaf about two inches square, on which I counted eighteen ova, and while I held it, two female *Pieris rapæ* came and deposited eggs upon it. I believe *Euchloë cardamines* was plentiful in the water-meadows here in June, but as I was out of

England at the time, cannot vouch for the truth of the statement. Of the Hesperidæ, *Hesperia sylvanus* and *H. linea* were naturally the most plentiful; but my brother took a good series of *Nisomades tuges* and *Syrichthus malvæ* at Sherborne (Dorset), where he says they were fairly abundant.—MINNIE KIMBER; Cope Hall, near Newbury, Berks.

LEPIDOPTERA IN THE ISLE OF WIGHT.—Amongst other insects the following fell to my net last summer in the Isle of Wight:—Male and female *Sphinx convolvuli*, *Sesia fuciformis*, *Colias edusa*, *Limnitis sibylla* (scarce), *Thecla betulæ*, and *T. pruni*, at Freshwater. The Pieridæ were poorly represented, considering the favourable locality; indeed, there seemed to be a general scarceness of insects, especially of the Noctuæ.—M. H. GRANT; 60, Lancaster Gate, Hyde Park, February, 1888.

LEPIDOPTERA OF GLAMORGAN.—Though several entomologists of great merit are to be found in other parts of the country, this particular corner of Glamorgan is almost virgin soil to the collector. Were this county more carefully hunted I am sure we should figure oftener in lists of localities. Our geological formation is blue lias, and our soil a stiff yellow clay heavily charged with lime—a most unpropitious one for pupa-digging; but this is compensated for by the unusually large amount and variety of timber, oak, ash, and elm being well represented. Situated as we are on the coast, within a mile or two of the southernmost point of the principality, and facing the south, we enjoy an exceptionally mild, not to say “muggy,” climate. Some of our most characteristic Rhopalocera appear to be *Argynnis paphia*, *Vanessa atalanta*, *Melanargia galatea*, and *Thecla quercus*, and I have also taken *T. w-album*. In the year 1877 we had our full share of *Colias edusa*, when I could have boxed any number on the clover-fields along the coast, and when I was fortunate enough to secure two very perfect specimens of the variety *helice*, which I still possess in all its primitive freshness. I have sought for *Aporia crategi*, reported from Cardiff years ago, but in vain, though blackthorn abounds. Here, as elsewhere, there appears last year to have been an abundance of *Sphinx convolvuli*; numerous captures are reported from Swansea, and one flew in through my bedroom window to a lamp. In a previous year I took one on palings in July. Last June I took a specimen of

Hylophila bicolorana, which I do not think is generally found so far west; and in September one specimens each of *Cirrhœdia xerampelina* and *Xanthia aurago*. *Toxocampa pastinum* occurs in abundance, and *Plusia chrysitis*, *Smerinthus ocellatus*, *Sphinx ligustri*, *Cossus ligniperda*, *Hepialus hectus*, *Calligenia miata*, *Calimorpha dominula*, *Psilura monacha*, *Urapteryx sambucata*, *Eurymene dolobraria*, *Pericallia syringaria*, *Selene bilunaria*, *S. tetralunaria*, *Crocallis elinguaris*, *Ennomos alniaria*, *E. quercinaria*, *Cleora lichenaria*, *Phorodesma pustulata*, *Geometra vernaria*, *Thera simulata*, *Melanthia albicillata*, *Phibalapteryx tersata*, *Scotosia rhamnata*, *Cidaria miata*, *Nonagria arundinis*, *Agrotis lucerneæ*, seem to occur not unfrequently, while the larva of *Aeronycta alni* was taken at Fonmon Castle, three miles from here, two years ago. In conclusion, I may add my belief that we should all become far better acquainted with the entomology of our respective counties were local entomological societies formed as suggested in your columns.—WILLIAM E. R. ALLEN; Porthkerry Rectory, Cowbridge, Glamorgan.

SCARCITY OF INSECTS IN 1887.—I think I can confirm the experience of Mr. William Powley (*Entom.* 19). In the summer of 1887 I was at Bognor for some five weeks, and during my whole stay there, notwithstanding I was entomologising on every fine day, I saw but one specimen each of *Vanessa cardui* and *Colias edusa*. At the end of September I was much surprised by beating two or three specimens of *Abraxas grossulariata*.—R. C. CYRIAN; 33, Douglas Road, N.

PUPA-DIGGING.—This district is almost devoid of trees, and entomologists have tramped miles on a pupa-digging excursion and spent the day with poor success, sometimes only bringing home about half a dozen pupæ, after digging round as many as fifty or sixty trees. Some time ago I came to the conclusion that not a tenth part of the arboreal feeders pupate under the trees, or we should find more pupæ than we do. Again, seeing the very great numbers of moths whose larvæ are ground-feeders, it has often been a puzzle to me how to find the pupæ. Early in December of last year it occurred to me to try a rough piece of ground near my house, covered in summer with dock, knot-grass, ragwort, and various kinds of weeds, and having provided myself with a hook, with two prongs fastened to the end of a strong walking-stick, I proceeded to rake over the ground. The

result was simply astounding; after an hour's work I was obliged to give up, as darkness had set in. When I arrived at home I counted my captures, and found that I had got 280 pupæ of various kinds. Doubtless I could have taken as many or more larvæ, but I left them to pupate in due course. I have been several times since then and taken more pupæ, but the hibernating larvæ are as plentiful as before, not having yet pupated. I send this as an encouragement to pupa-diggers, who no doubt have been often disappointed as I have. The best places are the hummocks of couch grass (*Triticum*); dig under them about four inches from the surface, and tap the sod, when the pupæ come tumbling out eight and ten at a time.—JOHN N. YOUNG; 85, Filey Road, Rotherham.

THE COLORADO BEETLE.—In the February number of the 'Entomologist,' Mr. T. D. A. Cockerell mentions with some surprise the rarity of *Chrysomella 10-lineata* in Colorado, and rather doubts the occurrence of the species there. There is no question of the occurrence of the insect in Colorado; but it is rare where the cultivated potato does not offer an attraction and an artificial field for its increase. For some time after its discovery it was comparatively an uncommon species, feeding on *Solanum* in little colonies here and there as with other species, and kept in check by its natural enemies. When the cultivated potato reached this belt the conditions changed, and it began to spread with great rapidity along this line of cultivation, until it became the destructive pest we now know it. A similar instance of rapid spread is found in the case of *Aramigus fulleri*, Horn. When first described, in 1874, but a single specimen from Montana was known, and for two years thereafter it remained a rarity. Suddenly, however, in 1876 it began to come in from growers of roses, in great numbers, from all parts of the country, with complaints of injury caused, until "Fuller's Rose-beetle" is well known to, and dreaded by, owners of hothouses everywhere. It is just as rare in Montana, however, as it was when first described.—JOHN B. SMITH; Washington, D.C., U.S.A.

ERRATUM.—In last number, p. 93, line 16 from foot (in Mr. Adkin's note), for "remote" read "recent"; and the sentence should read:—"The periods to which I am thus able to refer are, I am aware, much too recent," &c.

SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON. — *March 7th*, 1888. Dr. D. Sharp, President, in the chair. Mr. Frederic Pennington, jun., of Broome Hall, Holmwood, Surrey; Mr. W. Crush, of Westcombe Park, Blackheath, S.E.; Mr. J. P. Cregoe, of Charleston, U.S.A., were elected Fellows; and Mr. H. Rowland Brown, B.A., was admitted into the Society. Mr. J. H. Leech exhibited, and made remarks on, a number of butterflies forming part of the collection made for him during last summer by Mr. Pratt, at Kiukiang, Central China. The specimens exhibited included *Papilio macilentus*, hitherto only recorded from Japan; varieties of *P. sarpedon*, and a supposed new species of *Papilio*; a series of *Sericinus telamon*; *Acræa vesta* (varieties); *Charaxes narceus*, and var. *mandarinus* (the latter being the common form at Kiukiang); *Palaemonympha opalina*, Butl.; new or unknown species of *Lethe*, *Apatura*, and *Neptis*; and a series of *Argynnis paphia*, with the var. *valezina* of the female. Mr. Leech stated that all the females of *A. paphia* taken at Kiukiang belong to the var. *valezina*, the typical form of the female being unknown there. Mr. Poulton expressed his interest in Mr. Leech's statement that *valezina* was the only form of the female of *Argynnis paphia* known at Kiukiang, and said he considered this fact would probably throw a new light on the question of the dimorphism of the species. Mr. Jenner Weir said he had in the course of some years obtained a series of forms intermediate between the typical female and the variety *valezina*. Mr. H. Goss, Mr. M'Lachlan, Dr. Sharp, and Mr. Leech continued the discussion. Mr. Champion exhibited, for Mr. J. J. Walker, R.N., about 950 species of Coleoptera, recently collected by the latter near Gibraltar. Mr. M'Lachlan called attention to the large number of water-beetles included in Mr. Walker's collection. Mr. Kirby suggested that the attention of the Imperial Institute should be called to the interest attaching to the exhibition of local collections of insects from British Colonies and possessions. Mr. Verrall exhibited living specimens of *Aspidomorpha sanctæ-crucis*, and another species unnamed, from the caves of Elephanta. Mr. Slater exhibited specimens of a species of weevil which had been doing much damage to miz:

sent to the Colonial Exhibition. Mr. W. White read a paper on "Experiments upon the Colour-relation between the pupæ of *Pieris rapæ* and their immediate surroundings," which comprised a detailed account and discussion of a series of observations carried on, at the author's instigation, by Mr. G. C. Griffiths, of Bristol. The various experiments were intended to act as a further test of the conclusions arrived at by Mr. E. B. Poulton in his paper on the subject recently published in the Transactions of the Royal Society; and to effect this object different and additional influences had been brought to bear on these pupæ, so that an analogy might be drawn between the two sets of results. Mr. Poulton, Lord Walsingham, Mr. Jacoby, Dr. Sharp, Mr. White, and others took part in the discussion which ensued.—H. Goss, *Hon. Secretary*.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—*February 23rd*, 1888. T. R. Billups, F.E.S., President, in the chair. Mr. Routledge exhibited a number of preserved lepidopterous larvæ. The Secretary read a paper, "Notes on the *Geodephaga* in Ireland," contributed by the Rev. W. F. Johnson, of Armagh. The author said that the number of species of *Geodephaga* at present known to occur in Ireland was only some 140, out of 300 and odd species in the British List. This apparent disproportion of numbers arose from the fact that Ireland had never been properly worked for Coleoptera. Consequently it might reasonably be supposed that a more thorough investigation would raise the number in the present list very considerably. That such an undertaking would be amply rewarded might be gathered from the fact that he had single-handed taken in the Armagh district, in the four years since he began to work at the Coleoptera, upwards of seventy-six species of *Geodephaga*, many of which had not been previously recorded as Irish. He, however, felt sure that if the south and west, the sea-coasts and the mountains were searched by earnest workers, not only would most of the gaps in the present list be filled, but probably many new species would be added to the Coleoptera of the British Isles. A list of the species captured, with observations thereon, followed. An exhibition of microscopical objects was then given: Messrs. Dadswell, Terry, Macer, Coombs, Shaw, Turner, Adkin, West, Tutt, Medland, and others exhibited.

March 8th.—The President in the chair. Messrs. H. Robson and H. A. Auld were elected members. Mr. R. Adkin exhibited a variety of *Eubolia bipunctaria*, the whole of the ground colour of the fore wings being black, the whitish grey basal patch and central fascia, on which latter the usual central spots were very prominent, being the only markings visible, and having correspondingly dark hind wings. The specimen was taken by Mr. O. Dannenberg at Box Hill, July, 1886. Mr. C. H. Watson, a variety of *Phibalapteryx tersata* from the New Forest, 1887. A note was read by the Secretary from Mr. T. D. A. Cockerell, on the origin of *Gonopteryx cleopatra*, which in his opinion arose as a seasonal variation. *Colias eurytheme* of Boisduval, generally distributed throughout the States, had on the fore wings an orange patch on a yellow ground, precisely similar to that of *G. cleopatra*; there was however a seasonal form, *keewaydin* of Edwards, which emerged from hibernated pupæ, and had the orange patch much reduced, in some specimens being almost or entirely suppressed. The seasons in America being very marked, the summer and winter types must necessarily alternate; but supposing the Northern States to become uniformly cold, the Southern uniformly warm, what would happen? Was it not obvious that the winter form of *C. eurytheme* would be perpetuated in the north, while the summer form would be prevalent in the south, thus producing species (for so they would then be called) exactly analogous to *G. cleopatra* and *rhanni*? Many things pointed to the fact that the seasons were once extremely marked in Europe; and he had no hesitation in saying that in those old days *G. rhanni* and *G. cleopatra* were but seasonal forms of one and the same species. A further note from Mr. Cockerell was also read with regard to *Agrotis suffusa*, which he said was abundant in America, and was generally known as *A. ypsilon*, it having been described under this name in 1776 by Von Rottenberg. This name, being prior to that of Hubner, unless sufficient reason could be given to the contrary, should be adopted in England. An additional synonym was *A. telifera*, Harris, 1841. Mr. John T. Carrington read a paper, "British Salmonidæ and their culture," which was followed by discussion.—H. W. BARKER, *Hon. Sec.*

THE ENTOMOLOGIST.

VOL. XXI.]

MAY, 1888.

[No. 300.

PROPOSED NEW ENTOMOLOGICAL SOCIETY.

IT will be remembered that Mr. Coryndon Matthews (Entom. 10) propounded a scheme for a new Entomological Society. That article was inserted without any editorial remarks, in the hope that independent opinions might be received upon the subject, and with the fear that such criticism might prejudice free discussion. Having now waited a considerable time without receiving any lengthened communication — although a large number of private letters have been sent to me, as Editor, advocating various modifications of Mr. Matthews's proposal — it seems desirable that we should return to the subject in these pages. It is clear from these letters that there is a general desire on the part of country entomologists, and I may say students of every branch of Biology, to associate themselves under some such organisation for mutual assistance.

Mr. Matthews's suggestions are, as a whole, admirable, and were there a larger number actively engaged in the study of Entomology the scheme as suggested by him would doubtless work well. If we take, say the list of subscribers and contributors to this Magazine, who really represent much the larger portion of those actively at work on Entomology, we find that by far the greater number are those who live in the larger towns; many of such towns having their local societies. The country entomologists appear to be in little batches of twos, threes, or fours, working together from the smaller towns. Of course there are many isolated students, for whom Mr. Matthews

more especially pleads, but their isolation is usually so great that it is difficult to bring them into closer association with others similarly situated. All these facts have been carefully considered by those who are more especially anxious to assist in bringing about the desired union; but there is considerable difficulty in carrying out this proposal as regards entomologists alone.

Foreseeing this difficulty, the Council of the South London Entomological and Natural History Society have been approached, with a view to rendering that Society the centre of some such organisation. The Council have expressed their willingness to co-operate, and there appears to be no reason why an association of country members, in connection with that Society, should not be developed on almost the identical lines proposed by Mr. Matthews, the Department to be managed by a Special Committee for the purpose, with an Organising Secretary.

The following are the advantages offered to country members studying any branch of Biology, entomological or otherwise:—

(1) That specimens, in limited numbers to be decided by the Committee, may be sent to the Organising Secretary for the purpose of identification, the naming of which will be gratuitously undertaken by various members of the Society. These will be returned, as far as possible, duly labelled, and must be sent properly packed and carriage-paid, with addressed and prepaid label for return; the whole being sent at the risk of the sender and without cost to the Society.

(2) The use of the Society's Library, by payment of carriage each way of books, subject to the Library rules.

(3) The receipt of the Society's Transactions as published.

(4) A reference list, divided into counties, of the names and addresses of all Biologists who subscribe to the Society, with the particular branch which they study, indicated after each name.

(5) Opportunities of attending the Annual Excursions with the general members of the Society, and attending the Annual Exhibitions.

Biologists living upwards of thirty miles from London will be eligible for country members.

Any further particulars may be obtained on application to the Organising Secretary, Country Members' Department, South London Entomological and Natural History Society, Bridge House, London Bridge, E.C.

It is only necessary for the success of this enterprise, which seems to be so universally desired,—for I have received favourable communications from almost every part of the United Kingdom—that those who desire to be in closer touch with their fellow-workers, should as early as possible enrol their names as country members of the South London Society, the subscription being absolutely nominal in comparison with the advantages received.

It would be desirable, when sending names for election, to state whether the candidate is willing to act as local Organising Secretary in conjunction with the London Secretary; also the particular branch of Biology studied, with reference to at least a couple of known biologists.

So far as appertains to the Entomological Section of this proposed organisation, the members may depend upon receiving all possible support and assistance from this Magazine.

JOHN T. CARRINGTON.

New Broad Street House, London, E.C., April 22, 1888.

DIPLOSIS PYRIVORA, RILEY, THE PEAR-GNAT.

By R. H. MEADE.

AMONG the numerous insects which injure our fruits and vegetables, there is a little two-winged fly belonging to the family of Cecidomyiidae, or gall-gnats, which feeds (in the larva state) upon young pears.

The eggs are laid by the female flies (which possess a very long and slender oviduct) in the interior of the blossom-buds of the pear-tree, before they expand. They are said to deposit the eggs upon the anthers of the flower, sometimes piercing through the unopened petals to reach them. The eggs soon hatch, and the little maggots bore into the core of the young pear, where they quickly increase in size, and spread and eat in various directions. The vitality of the fruit is not destroyed at once, but it continues to grow; sometimes becoming, however, distorted and lumpy in shape. By the time these young pears have become an inch or two long the larvæ will have attained their full growth, and the fruit has become partly rotten and disorganised in its

interior. If it is now cut open the core will be found partly hollow, the fruit fissured in various directions; and, surrounded by excrementitious matters and *débris*, from ten to thirty little yellowish white maggots may be seen. The pears now fall off or crack, when the larvæ leave the fruit, which they seem especially inclined to do in wet weather; the rain either making the pears crack or penetrating into the fissures, when the larvæ creep out, and, if the pears are still on the tree, spring to the ground, they possessing, like other species of *Diplosis*, the power of skipping or jumping. As soon as they reach the earth, they bury themselves, and after assuming the pupa-state remain hidden in the ground until the following spring, when the imagines emerge to renew their depredations.

The ravages committed in orchards by the pear-midge, were known in Germany and other parts of the continent of Europe many years ago, and the habits of the little pest were well described by several naturalists. Schmidberger seems to have been the first who accurately detailed its life-history, and his account, copied from papers published in the 'Isis' and other periodicals between 1827 and 1837, was well given by Vincent Kollar in his treatise upon injurious insects, published in Vienna in 1837, and translated into English by Loudon, with notes by Westwood, in 1840. Though the habits of this little insect were well known, the scientific description of it was so imperfect, that its name could not be accurately determined by entomologists. The *Cecidomyia nigra* of Meigen was put down as the pear-midge by Schmidberger, and his opinion has been generally followed, though, as Professor Mik says,* "How Schmidberger could be led to consider his *Cecidomyia*, bred from pears, as *C. nigra*, Meig., I can only explain by its possession of a long ovipositor." Nördlinger, in 'Die Kleinen Feinde,' in 1869, describes another pear-midge by the name of *Cecidomyia pyricola*, but his account is so poor that the species cannot be recognised, and his insect and Schmidberger's are probably identical. To clear up the matter and determine the genus and species of the pear-midge, it became necessary to breed examples of the fly from larvæ found in the pears themselves; and the credit of being the first to do this is due to Dr. Riley, the celebrated American State Entomologist.

* In the translation of a letter from him to Dr. Riley, published in the 'Report of the Entomologist' for the year 1885.

Special attention was directed to the subject in America a few years ago, by the fly having committed great ravages in one limited region near Meriden, Con., in a great fruit-farm belonging to Messrs. Coe Bros. In the spring of 1881 these gentlemen wrote to the State Department of Agriculture about it, but no attention seems to have been paid to the matter before June, 1884, when it was taken up. The young pears seem to have been affected there, in exactly the same manner as those blighted by the midge in Europe; and until this fly was found upon the Coe farm no insect of similar habits had been known in America, so Dr. Riley suspected that it had been brought into the country, and was not indigenous. This theory was supported by the fact that Mr. Coe had imported a large lot of pear-stocks from France seven years before, upon which American pears were grafted. Finding from Professor Mik, of Vienna, that the nature of the European pear-midge was doubtful, and the *C. nigra* of Meigen practically a lost species, being now unknown in collections; Dr. Riley carefully reared a number of specimens of the little fly of both sexes from the larvæ in pears, and minutely described and figured them; publishing his descriptions and figures in the American 'Report of the Entomologist,' published by the State at Washington in 1886. He found that the insect belonged to the genus *Diplosis*, Lw., and suggested that it should be called *D. pyrivora*, giving the names of *C. nigra*, Meig., and *C. pyricola*, Nördl., as doubtful synonyms. I have great pleasure in adopting Dr. Riley's suggestion, and have placed his name at the head of my paper.

The pear-midge has only attracted the notice of naturalists or fruit-growers in England during the last few years, probably because it has not hitherto caused much loss to the general cultivators of pears. I have not heard that it has been found in those counties where perry is made, or in other districts where pears are grown in large numbers for the London market, as in some parts of Kent. From some facts, which I shall presently mention, I am inclined to think that the pest may have been imported into this country, as well as into the United States, from the Continent.

Miss Ormerod, so well known for her researches and observations respecting insects injurious to farmers and gardeners, published an interesting article upon the pear-midge in her

'Report of Observations of Injurious Insects' for 1884, which, so far as I know,* is the first recorded notice of the insect in this country. I shall take the liberty of quoting one or two passages from her paper, as they are of peculiar interest. Miss Ormerod says:—"On June 15th I was favoured by Lord Walsingham with specimens illustrative of injury to young pears, caused by the maggots of a kind of small fly or gnat-midge." The small abortive pears were gathered on one of Lord Walsingham's farms in Norfolk. "The inside of these pears was then in process of being eaten away by the small white legless maggots within, and information was sent accompanying that every pear on the trees from which the samples of injury were taken was infested by them." There is no mention of which kind or sort these pears were, but the next extract which I shall make will give some interesting information upon this point. Miss Ormerod goes on to say:—"A little earlier in the year (on June 4th) an account of a similar attack, also not previously observed, was sent to me from Llanina, New Quay, South Wales, by Mr. C. R. Longcroft, who wrote as follows:—"I have sent you some specimens of Marie Louise pears, of which there was a splendid promise of a crop on two trees, but they are all attacked by grubs within. If you cut one open you will see the culprits. The same thing happened last year, causing the destruction of a crop, as well as in addition having destroyed a fine crop of Beaune Bachelier. I observe that the winter pears have entirely escaped. I have not heard of a similar case in this neighbourhood, and during my previous experience of many years I never met with or heard of their appearance here.'" Miss Ormerod gives a graphic account of the life-history of the fly, similar to that published by Kollar, and names it, as he had done, the *C. nigra* of Meigen.

Another observer to whom we are much indebted, and who has enabled us to clear up the life-history of the pear-midge in England and to determine its name; is the Rev. E. N. Bloomfield, of Guestling, near Hastings. He writes me word:—"I have observed for some years past that many of my Marie Louise pears were blighted, and opening them found the cause to be yellowish larvæ. As I was writing to Mr. E. A. Fitch in June, 1885, I enclosed a few pears, asking him what the larvæ were. He

* Edward Newman sent me affected pears, received from Henry Reeks of Throxton, in the spring of 1874 or 1875 (see Entom. viii. 167, 189).—E. A. F.

answered at once, 'The fallen pears are attacked by one of the gall-gnats *Cecidomyia nigra*, Mg., restricted genus uncertain.' How many years I had noticed it before this I do not know. I do not remember having observed the pest on any other pear until last year, but as my attention was then especially directed to this point I found other pears were also affected, but not to the same extent by any means. I may say, however, that the affected pears are much more conspicuous on the Marie Louise than on the other kinds. I am told that the pest occurs in the adjoining parish of Fairlight." "The Marie Louise is a Belgian pear, but has been general in this country for at least fifty years." Although these data do not prove that the pest has been imported into England from France or Belgium, yet the facts that these foreign pears have been the ones first and chiefly affected, and that the insect was apparently unknown in England before the last few years, make a *prima facie* case in support of this opinion.

Though the pears in England and America seem to have been blighted in exactly a similar manner, and, in consequence of Dr. Riley's suspicions that the insect had been imported from Europe, it was almost certain that it must be specifically the same in both countries; yet entomologists felt anxious to prove this by breeding the fly here, from the larvæ in pears, in the same way as Dr. Riley had done in America; and I am happy to say that Mr. Bloomfield has enabled us to succeed. He forwarded some of the affected Marie Louise pears to Mr. Inehbald (so well known for his researches on the Cecidomyiidae, and skill in rearing them from the larvæ) in June, 1886, but as that naturalist has recorded in the 'Entomologist' for February, 1887, he did not then succeed in rearing any imagines from the larvæ. In June, 1887, Mr. Bloomfield again sent some more pears (full of larvæ) to Mr. Inehbald, as well as to Miss Ormerod, Mr. Fitch, and myself, and both Mr. Inehbald and I have had the satisfaction of rearing both males and females of the *Diplosis*, which I have no doubt is identical with the *D. pyrivora* of Riley. Mr. Inehbald has bred the gnats in great numbers, and has been enabled to supply many of his friends with specimens. With both Mr. Inehbald and myself the females have been more numerous than the males, in proportion of about two to one. In America Dr. Riley found that the imagines began to emerge from

their pupa-cases very early in the year, long before the spring commenced: three specimens made their appearance with him on January 9th, then single individuals came, with intervals of two or three days between each, until the beginning of April, when (on the 10th) thirteen emerged in one day. With myself I found a single female (in the wide-mouthed bottle in which I had placed some of the maggots in the previous June, with some baked earth at the bottom) on February 25th (1888), a second appeared on March 2nd, a third on March 4th, and another both on the 5th and 9th. All these were females, but two males came by themselves on March 12th. With Mr. Inchbald both sexes seem to have arrived together, or nearly so, the first which appeared being, I believe, a male, which he kindly sent to me, and with which I was much pleased, as I had not then seen that sex. It was truly a beautiful little creature. His success in rearing specimens of the pear-midge this year has been wonderful, for he wrote me word on March 19th that he had bred between 200 and 300.

As with Dr. Riley in America so in England, some small parasites have appeared together with the gall-guats. I sent two of them to Mr. E. A. Fitch, who said that they were both female *Platygastridæ*, general parasites on the *Cecidomyiidæ*, very numerous in species, and difficult to name. Most probably those bred by Dr. Riley and myself are identical.

It may seem a work of supererogation to describe the *Diplosis pyrivora* again after Dr. Riley's full and accurate diagnosis, but as his account is published in a volume of American State Reports, not generally accessible either in England or on the Continent, I think it better to append a short description of the characteristic features of the insect, premising that my definition will be taken from the recent insect itself, and not copied from that of Dr. Riley.

DIPLOSI PYRIVORA, Riley.

Cecidomyia nigra?, Meig.

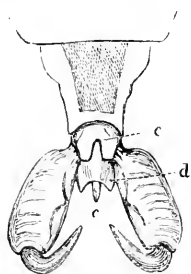
pyricola?, Nördl.

Nigro-cinerea, crinibus pallidis hirsuta. Thorax antice vittis tribus latis nigris notatus, et ordinibus pilorum subflavidorum lineatus. Antennæ in ♂ moniliformes 26- (2+24) articulatae, in ♀ 14- (2+12) articulatae, articulo 3tio elongato. Abdomen

nigrescens, tenuiter pallidò-cinctutum. Halteres albidì. Alæ cinereæ, hirtæ, marginibus longe ciliatis, venisque longitudinalibus tertiis abrupte angulatis. Pedes elongati fuscì pallide pilosuli. ♀ oviducto prælongo. Long. ♂ circiter 2, ♀ 3, mm.

♂ & ♀. Head black; face and occiput with grey reflexions, the latter furnished with a dense patch of yellow hairs of uneven lengths, the longer of which curve forward over the forehead and eyes; palpi brownish yellow; antennæ in ♂ about one-fifth longer than all the rest of the insect; yellowish brown, consisting of 2 sessile basal joints, and 24 round pedicelled and verticillated ones; the little globular beads of which they consist are divided from each other by pedicels, which are about the same length as the joints at first, but get gradually slightly longer, as the joints get rather less, towards the end. In the ♀ the antennæ are about two-thirds of the length of the insect without the oviduct; they consist of 2 basal joints similar to those of the ♂, and of 12 small oblong or cylindrical ones connected by very short pedicels. The third (the first from the base) is nearly twice as long as any of the others, and looks as if two joints had been cemented together. The joints are verticillated as in the ♂, but the hairs are shorter and pale in colour, while those in the ♂ are dark. Thorax black, with grey reflexions; when viewed from before, the hind part looks ash-grey, while the front portion appears divided into three wide black stripes or patches, of which the middle is triangular in shape, with a broad base in front, and tapering to a point behind where it joins the scutellum. The lateral stripes are subquadrate, and cover the whole of the sides in front, but become indistinct behind. These patches are separated from each other by two rows of bright long yellow hairs, which extend from the scutellum and diverge from each other as they stretch forwards, enclosing the central triangular black stripe. In some specimens these hairs seem to be seated upon grey lines. When viewed from behind, the whole thorax looks grey, and the black patches are indistinct, or sometimes appear like grey patches divided by black lines. A long tuft of yellow hairs is placed on each side of the thorax, above and in front of the root of the wings, from which a few hairs are continued in a thin line along the sides above the wings to the scutellum. A smaller tuft is also placed below the root of each wing, and the front margin of the thorax is covered with short yellowish hairs. Scutellum

grey, clothed with yellow hairs, which are longest on the sides. Abdomen dark brown, clothed with long whitish hairs, which are seated both on the middle and on the edges of the segments, but are longer and thicker in the latter situation. The hinder margins of the wings in freshly-hatched specimens (especially among the females) are also marked with a pale line. The organs at the extremity of the male abdomen are very complicated, and though the variation of these parts is of great importance in the determination of species; they are very difficult to describe without the aid of figures. I have, therefore,



Male organ of
Diplosis pyrivora.

inserted a cut, taken from Dr. Riley's work, the accuracy of which I have verified. They consist of a pair of forceps or claspers furnished with movable hooks, and of a central style provided with several peculiar-shaped processes at its base, which are thus described and named by Dr. Riley:—"The style (c) is a pointed process, reaching when at rest not quite to half the length of the swollen basal joint of the claspers, and broadening basally; a supra-penal piece (d)

is crescent-shaped, the ears of the crescent reaching about as far as the tip of the style, and its base broadening; still above this is a V-shaped palpi piece (e) broad terminally, with a well-marked V-shaped medial slit, and with a simple palpus and a stiff hair on either side." The oviduct in the ♀ consists of three joints, which when fully exerted are longer than the rest of the body of the insect. The first joint is very short and black, and the only one visible when the organ is retracted; the second joint is pale yellowish brown, and about two-thirds of the length of the abdomen; the third is about as long as the second, very thin-pointed and very pale, so as to be almost invisible to the naked eye. Halteres with yellowish stalks and clear white knobs.



Wings dusky, clothed and deeply fringed on the hind margins with black hairs. The second longitudinal or cubital vein runs nearly straight until near the end, when it curves downwards, and reaches the margin

a little behind the point of the wing. The third longitudinal or anal vein runs in quite a straight direction to the point at

which it gives off its descending branch, which turns down at almost a right angle, and runs in a straight line to the border; after emitting this branch the anal vein turns abruptly a little upwards, and then forwards and downwards, and is continued in nearly a straight course to the margin, which it reaches at a point nearly equidistant between the end of its lower branch and the end of the cubital (see fig.). Legs brown, clothed with white hairs, which are more dense on their under surfaces, and more numerous on the femora and tibiæ than on the tarsi; the tibiæ look quite pale in certain aspects, while the knees and tarsi look dark.

In conclusion, I must make a few remarks respecting the larva of this *Diplosis*. Like other Cecid. larvæ, it has 14 joints or segments (those of most insects have only 13), the supernumerary joint being placed between the head and the first thoracic segment. The sternum (*spatula sternalis*, Mik; anchor-shaped process, Ormerod), a horny body, which seems to be peculiar to the larvæ of this family, is placed on the under side of the body, near the junction of the first thoracic segment, with the supernumerary one. It is a more or less elongated process, with a widened head, which varies in shape in different species. The head is free, and projects forward; while the posterior end or root is fixed, and partly concealed beneath the semitransparent skin of the first segment. The larva of *D. pyrivora*, being of a whitish yellow colour, this process can be easily seen, for it is bright pink. As the form of this organ is of diagnostic importance, I have appended a figure, showing its shape and position. The fore part of the larva has been elongated by pressure under the microscope, and therefore looks too tapering.



Fig. showing sternal process on under side of larva of *Diplosis pyrivora*.

Bradford, March 29, 1888.

VARIETIES OF RHOPALOCERA NEAR DOVER.

BY SYDNEY WEBB.

CERTAIN localities appear to be more favourable than others to development of aberrations among the Lepidoptera, but probably there is no district, excepting that lying between the points occupied by the towns of Folkestone and Deal, where an entomologist can purposely make an excursion after varieties with every prospect of success. It may therefore perhaps interest the readers of the 'Entomologist' if I give a list of the principal specimens which have been brought under my notice during the last collecting-season (1887), condensing the descriptions as much as possible, it being borne in mind that the facies of each insect is normal in ground colour or markings excepting when otherwise stated.

Euchloë cardamines.—One male example in which the usual orange tips are replaced by clear yellow.

Argynnis aglaia.—Markings of upper wings prolonged to the centre of the disc, thus forming an irregular black band.

Vanessa urticæ.—One specimen with blue lunules of the hind margins elongated in the direction of the bases. This variety, although a slight one in itself, is very striking to the eye.

Melanargia galatea.—These insects, usually so stereotyped in appearance, varied more than usual. In 1883, its last year of variation here, the marginal line of pale spots were often wanting, but in no instance did this occur last year. On the contrary, specimens with the two posterior discal blotches of the primaries broken up into lines occurred in each of these years, as well as individuals in which the markings of the hind wings made uniform bands. One example had the hind wings uniformly black. One had the fore wings shaped like *Gonopteryx rhamni*, and this grotesque appearance also obtained in an autumnal *Lycæna bellargus*.

Epinephele ianira.—The usual (so-called) sun-bleached specimens of course occurred. One male with an alar expanse of one inch and a quarter only. *E. hyperanthus* was unusually scarce, owing probably to the stormy weather at the time they should have been seen on the wing. No variety *arcte* this year.

Cænonympha pamphilus.—None of the pale variety this year,

but many with blotches of paler colour on the disc of the wings.

Polyommatus phlæas.—One with the coppery scaling broken up by orange markings. One with copper band of hind wings obsolete. One golden-hued.

Lycæna ægon.—Three very pale specimens, the male almost mauve in colour, the females light brown. One female with tips of all the wings bleached; pretty. Many females striated with male colouring, and several gynandrous specimens. The male *ægon* represented by pure deep blue, violet-blue, pure violet and pure light blue examples; of these we consider the violet-blue our type. The Dover type has not the hind margin so broadly dusky as the New Forest specimens. *L. astrarche*.—This, the least given to vary of our British *Lycænidæ*, was represented by two good underside examples. One with the discoidal spot alone unobliterated upon the primaries and three spots only on the hind wings. The other (a very prettily coloured specimen) normal on the upper but without ocelli on the lower wings. *L. icarus*.—One male with the whole disc minutely speckled with black scales. One hermaphrodite. One large, very pale-coloured, subdiaphanous male. Several with entirely smoky fringes to all the wings. *L. bellargus*.—Several very blue examples, and some of an intense blue. Two male and two female specimens similar to the form captured by Mr. Sabine (*Entom.* xx. 40). One extraordinary male with one-third of the wings nearest the base of the natural colour, then shading off into sooty black. Several males with one or all of the wings thickly irrorated with black scales. Four males of a very abnormal colouring, pure French grey in hue (the wings almost appear to have been powdered over with slate-pencil dust), quite distinct from Mr. Sabine's variety. It is probable that want of power has something to do with this, as three of the specimens show wings torn in escaping from the chrysalis. One male with the marginal orange lunules of the lower side indistinctly visible from above also. One with hind margins of all wings shading off into dusky white. Variety *ceronus* of the female, so common in the vernal brood the preceding year at Dover, was not seen at all. *L. minimus*.—Under sides without ocelli. *L. corydon*.—The blue females of this species were also absent. Males went to opposite extremes; in some the fuscous border was very broad, forming a

V to the central spot; in other specimens it was absent, or rather replaced by white, in which the interlinear black spots usually lost in the border, showed conspicuously. Aberrations in which the ocelli were absent were very common, one collector taking upwards of two hundred, but these, as well as the hind varieties, are too well known to merit particular description. As usual, they occurred in their respective localities, those of *L. corydon* at Dover, and those of *L. bellargus* at Folkestone. Dwarfs of *L. corydon* were common near Cornhill Coastguard Station, where they occur perennially. Before leaving the "blues" I must notice an occasional aberration of almost annual occurrence with us, generally affecting *corydon* and *bellargus* in female specimens; this appears to be a defect in the mature scaling of the wings, which causes the insects affected to look shining, almost as though they had been dipped in oil. Many of both species were affected thus in 1887, and I have heard of male *bellargus* taken on the wing, that almost looked as though they had escaped from the laboratory of a variety-maker. *Nemeobius lucina*.—I can only describe a beautiful variety of this insect by transposing the guide-books: ground colour dark brown with tawny tessaræ must read, pale tawny with inner third of wing dark brown, *no* central double-arched fascia, but the usual sub-terminal irregular band is coterminous with a similar one on the entirely tawny-coloured hind wings. All the veins dark brown. A very striking golden-hued specimen.

In conclusion, a few words on the weather at Dover. The winter of 1886—87 was, as we all know, a very long and tedious one, but we did not have here the heavy snow-storms experienced in other localities. A peculiarly long dry summer broke up rather earlier than usual, with much rain the end of August, throughout September and October. There was nothing then to influence (so far as we know) the early broods of *Lycæna icarus* and *L. bellargus*, or to render *L. ægon* and *L. corydon* different from the insects of the year before; nor did we find them, *per se*, to vary more; but the same rule did not apply with the autumnal broods. The heat during larval growth we presume caused the imagines not to reach their full size, and possibly to pupate earlier and nearer the surface than usual, for far more change thus than spin up, and the variations of temperature and weather at the time of emergence had probably something, we do

not know much, to do with the paucity of perfect insects, and with their corresponding increase of variation.

I have given only an account of the Diurni, but many of the moths that fell to our nets showed also more divergence in the autumn from the usual forms than in the spring examples.

Maidstone House, Dover, March 13th, 1888.

CONTRIBUTIONS TOWARDS A LIST OF THE VARIETIES OF NOCTUÆ OCCURRING IN THE BRITISH ISLANDS.

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

(Continued from p. 102.)

Leucania, Och., *vitellina*, Hb.

Hübner's type of this species (fig. 379) is a small, very strongly-marked male, of a bright yellow ground colour, marbled with reddish, with transverse lines and stigmata red; his fig. 589 being a female, larger, dull unicolorous orange, with the transverse markings and stigmata indistinct. The specimens I have are all females as large as Hübner's fig. 589, but intermediate in depth of markings and colour between his figs. 379 and 589. Guenée, in his 'Noctuelles,' p. 73, says:—"It varies in ground colour from a pale yellow to a strong yellowish red, and the markings are more or less clearly marked, following the intensity of the ground colour. I have specimens from Algeria which do not differ from French examples." A good many specimens occur in British collections, but nearly, if not all, must be foreign, for the insect is a southern one, and but rarely occurs even in the north of France and Germany.

Leucania, Och., *turca*, L.

Until very recently I was of opinion that this species was a most constant one in colour. Thanks to the Rev. G. H. Raynor, of Brentwood, I find the species has several shades of colour. Taking the ordinary red forms as typical (the Linnean description is:—"Spirilinguis cristata, alis cinereo-rufis; strigis duabus fuscis lunulaque alba. Alæ superiores absque stigmatibus ordinariis, sed in medio lunula alba minuta."—"Systema Naturæ," p. 847, No. 140.) we find some specimens with a distinctly

orange or yellow tint; others of a dull, dead, coppery colour, much suffused with black scales, and with the dark transverse lines showing a tendency to become obsolete; in fact, the distinctness of these lines is inversely proportional to the depth of the ground colour, the pale specimens (*lutescens*) have the lines very distinct, the darker ones obscure. I am indebted to Mr. Dobrée for the following interesting information:—"Siberian specimens show the same variations of light and dark colour, but some of the former strongly incline to grey, and in others the small dark shade which surrounds the white spot in our English specimens, is developed into a large and conspicuous cloud of dark grey. To this form Dr. Staudinger gives the name of *grandis* in his last catalogues."

α. var. lutescens, mihi.—The ground colour of the anterior wings of a brighter and more yellowish tint than in the type, and but sparingly sprinkled with darker scales, the transverse lines very distinct, and the fringe of a pale shining yellowish-red colour, agreeing with the ground colour of the wings. The posterior wings much paler than in the type, with a darker shade in the centre. These pale forms occur very sparingly with the type. I have them from the New Forest, Brentwood, &c.

β. var. obscura, mihi.—The anterior wings of an obscure smoky-grey colour, with a dull coppery tinge, much suffused with dark scales. The white spot in the centre very indistinct, and the transverse lines much blurred. The Rev. G. H. Raynor has in his collection a fine series of graduated forms of this variety.

γ. var. grandis, Btl.—"The small dark shade which surrounds the white spot in English specimens is in some Siberian specimens developed into a large and conspicuous cloud of dark grey. Such varieties form the *grandis* of Staudinger's last catalogues, by whom it is treated as a distinct species" (Dobrée, *in litt.*). The Rev. G. H. Raynor has a variety in his collection, captured at Brentwood, with this grey shade very distinctly developed.

Leucania, Och., *lithargyria*, Esp.

This species varies much in ground colour, and its varieties are difficult to deal with on account of the difference existing between our specimens and Continental ones, and the fact that Haworth considered the different shades of the species sexual, the pale ones being males, the dark red ones females, whereas

both forms occur in both sexes. The typical Continental *lithargyria* is an intermediate pale greyish-red form, which is figured by Hübner (fig. 225). This form is Haworth's *grisea*. Our palest form (without red) is, in its most extreme form, var. *argyritis* of the Rambur Catalogue: our reddest forms are the *ferrago* of Fabricius (217). The transverse markings, too, vary a great deal. Some specimens have only a row of dots parallel to the hind margin, with no other marks. Haworth says, "Alæ fere unicolores." Some have a transverse basal line, and some even two or indications of them, between the reniform and base of the wings; whilst others have, in addition, a transverse line between the reniform and the row of dots, but this latter form is very rarely met with. Mr. Lawson, of Perth, sent me some with all these lines indicated, but the only specimen I have with a distinct and complete basal line and a distinct and complete line between the reniform and the row of dots was captured by Mr. Ovenden near Strood. Mr. Dobrée writes me:—"In some of the specimens taken here (Beverley, E. Yorkshire) the tendency to a darker shade on the hind margin of the upper wings is very pronounced."

α. var. argyritis, Rbr. Cat.—The anterior wings of this variety are pale grey, without the reddish colour of the type; the posterior wings paler than the type, with a row of black dots on the nervures, these dots being continuous with those on the anterior wings. This variety is described by Dr. Staudinger as "Alæ anteriores pallidiores, alæ posteriores punctorum linea exteriori." Staudinger gives as localities Sicily, France, Syria, and Dalmatia. This is undoubtedly the var. *A* of Guenée's 'Noctuelles,' vol. v., p. 75. His description is, "Of a greyish tint. Inferior wings whitish, with a row of dots more or less visible on the disc." Mr. Dobrée writes me, "It is almost light wainscot, and our English specimens are never so light coloured."

β. var. ferrago, Fab.—This is our ordinary reddish type, with the anterior wings of a deep ferruginous-red colour, with more or less traces of one (or two) basal transverse lines between the reniform and the base of the wings, and a row of dots parallel to the hind margin, a dark lunular mark sometimes being just within the base of the row of dots. The posterior wings of a dark grey, occasionally with traces of a row of dots on the disc.

This is the female of Haworth's *grisea*, of which he says, "Alis feminae rufis." A very large proportion of our specimens are red; the finest specimens perhaps of this form that I have seen are some received from Mr. Lawson, of Perth.

γ. var. *extralineae*, mihi.—The anterior wings of a ferruginous-red colour, with all the ordinary markings, and in addition a complete transverse line between the reniform and the row of dots parallel to the hind margin. This line is the complete development of the lunular mark mentioned above (vide var. *ferrago*).

Leucania, Och., *unipuncta*, Haw.

A few specimens of this cosmopolitan species have been recorded as taken in Britain at different times, spread over a great number of years. The species undergoes a certain amount of variation, of which I am unable to write much from personal experience. Haworth's description is very distinct:—"Alis rufescentibus seu griseo atomosis, lineola obliqua fusca apicis punctoque minutissimo albo basi stigmatis postici. Stigmata ordinaria fere omnino obliterated." (Haworth's 'Lepidoptera Britannica,' p. 174, No. 37.) Why this name (*unipuncta*) has been replaced, by some authors, by Guenée's *extranea* I cannot imagine, considering that Haworth's name is prior by more than half a century. The description of Guenée's *extranea* is almost identical with that of Haworth's, but in addition the former author lays more stress on his specimens being more strongly powdered with black scales. Guenée writes of *extranea*:—"The superior wings very acute at the apex, of a grey colour, more or less reddish, sometimes whitish, strongly powdered with black scales. The two ordinary stigmata stand out in the discoidal cellule in a light, more or less reddish, colour. Under the reniform is a white spot, lightly surrounded with black. No traces of transverse lines occur, but the series of black dots which represents the usual angulated line beyond the reniform is often very distinct; an oblique black streak starting from this line and carried almost to the apex, together with the shape of the wings, form the principal characteristics of this species. The inferior wings slightly transparent, grey, with the outer margin and the nervures blackish." (Guenée's 'Noctuelles,' vol. v., pp. 77, 78.) Mr. Dobrée writes me, "Specimens which I have from South Australia agree with Guenée's type, but are decidedly

greyer and more coarsely powdered with black atoms than my specimens from Canada, but as Guenée's var. B, which are less powdered, are from Australia, probably they vary there too." Taking Haworth's less powdered specimens as the type, the following varieties have been noticed:—

α. var. extranea, Gn.—Described in full above; more thickly powdered with black scales than the type. The Rev. G. H. Raynor has brought the following description to my notice:—"Fore wings light brownish-ochreous, with numerous scattered short fuscous strigulae and black scales; orbicular and reniform indistinct, roundish, more yellow-ochreous, dark-centred; a white dot, sometimes very obscure, on lower margin of reniform, preceded and followed by dark scales; a curved posterior series of black dots; a straight oblique slender fuscous streak from apex to this series; a hind-marginal series of black dots; cilia pale brownish-ochreous, apex whitish. Hind wings grey-whitish, towards hind margin broadly suffused with dark grey, especially on upper half, veins dark grey; cilia whitish, sometimes with an indistinct grey line." ('Transactions of the New Zealand Institute,' vol. xix., 1886, by E. Meyrick, B.A., F.E.S.)

β. var. asticta, mihi.—This is Guenée's var. A, of which he says, "No white spot at the base of the reniform." This name would also include Guenée's var. B, of which he says, "No white spot; superior wings less powdered, with the apical streak less marked. Inferior wings with a blackish border clearly marked, especially underneath." So that his var. A is the variety *extranea* without the white spot; var B is the paler type without the white spot.

(To be continued.)

ENTOMOLOGICAL NOTES, CAPTURES, &c.

CÆNONYMPHA PAMPHILUS WITH ADDITIONAL OCELLI — Mr. Larkin describes a specimen of *Cænonympha pamphilus* (Entom. 110) in which "each of the ocelli on the under surface of the wings has a supplementary spot below it and attached to it." I apprehend this applies to the ocelli of the upper wings only. I have a specimen in which there are two confluent ocelli, each white-centered, on the under side of the left upper wing the

right possessing but one ocellus. I have also several specimens with six ocelli on the under side of each lower wing, four of the six on each side being white-centred. — J. JENNER WEIR, Chirbury, Beckenham.

NYSSIA ZONARIA TWO YEARS IN THE PUPA.—My experience in breeding this insect shows that it frequently stays two years in the chrysalis. From larvæ I had in the summer of 1886 I obtained imagines in 1887, the first emergence being on March 29th. On examining the remaining pupæ in the autumn, I found them perfectly healthy. These are producing imagines now (1888), the first emergence being on March 22nd. The larvæ of 1886 were my last, as I had followed out the insect's history, and, besides, it was absent then in very few collections. The moth occurs at intervals only along the west coast, from Southport in Lancashire to the Conway Marshes on the borders of Carnarvonshire. Like its colleague, *N. hispidaria*, it is one of our earliest insects, occurring in March and April, and not in September as stated in Newman's well-known work. The caterpillar pupates in sandy soil, and feeds on trefoil, willow, and —I am indebted to Mr. R. Ivy, of Southport, for the following (see Entom. for June, 1886)—on knapweed (*Centaurea nigra*), certainly not on yarrow.—J. ARKLE; 2, George Street, Chester.

[Probably the larva of *N. zonaria* may not eat yarrow from choice; but in 1885 I had a small batch of ova of this species; the larvæ resulting therefrom were, in my ignorance of a more suitable pabulum, supplied with yarrow. Several attained the pupal stage, and there their history ceased.—R. S.]

SUCCESSFUL SUGARING AFTER RAIN.—I have found throughout the past season that invariably after a wet or showery day moths have been abundant at sugar; although during the long drought, night after night, I took nothing. I suppose when the flowers are too full of moisture for moths to extract the honey they turn to artificial sweets. I should be glad to hear if other collectors' experience coincides with mine.—MINNIE KIMBER; Cope Hall, near Newbury.

PIMPLA SCANICA HYPERPARASITIC.—*Pimpla scanica* as a hyperparasite is, I think, worth recording. I must candidly say that if I were not positively assured of the correctness of my observations I should be one of the last to make the assertion. The history of the affair is as follows:—In June, 1887, I was

collecting in the woods near Bickleigh, and in my rambles saw several pupæ of *Limneria vulgaris* on the leaves of *Rhamnus frangula*, evidently from *Gonopteryx rhamni*, for the larva-skin of the unfortunate caterpillar was used, as usual, as an outside covering. I boxed about a dozen, brought them home, and allowed them to remain in the same glass-bottomed box. As the *Limneria* emerged I took them out, until one only remained; and on the 20th July I bred from this last pupa, to my astonishment, *Pimpla scanica*. My curiosity was so raised over this that I cut open the cocoon, which on examination proved to contain the mortal remains of the perfect fly of *Limneria vulgaris*. The pupa-case and contents I have sent to Mr. Fitch, who may have something to say on this most interesting matter. Mr. Bridgman, who has seen both fly and pupa, believes that none of the genus *Pimpla* has ever been bred before as a hyperparasite. — G. C. BIGNELL; 7, Clarence Place, Stonehouse, Devon, Feb. 25, 1888.

[From an examination of the remains I think there is no doubt but that the *Pimpla* was bred from the very characteristic cocoon of *Limneria vulgaris*. This observation, however, is not unprecedented, as Brischke has already recorded the breeding of *Pimpla scanica* from a small *Campoplex* cocoon; he has also noted the hyperparasitism of another Pimplid, *Theronia flavicans* on *Limneria tricolor* (Entomologische Monatsblätter, i. 159). Another remarkable observation made by Brischke is the hyperparasitism of two species of *Cryptus*, viz., *C. nuberculatus*, bred from an *Eretastes* cocoon, and *C. titillator*, from *Campoplex pugillator*. (Deutsche Ent. Zeit. xxi. 286). The supposed phytophagous habits of *Pimpla* have already been referred to, and these noteworthy exceptions to the general unity of habit in a genus is certainly most interesting.—E. A. F.]

ERRATA.—In my notes in April number, p. 107, line 13 from top, for “Witherstock” read “Witherslack”; line 4 from foot, for “*rosæcolana*” read “*roseticolana*.”—J. B. HODGKINSON.

SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON. — *April 4th*, 1888. Dr. D. Sharp, F.L.S., President, in the chair. The Rev. J. H. Hodson, B.A., of Torquay; Mr. A. J. Croker, of New Cross, S.E.; Mr. G. C. Griffith, of Cotham, Bristol; and Mr.

Albert H. Jones, of Eltham, were elected Fellows. Mr. H. Goss exhibited a large number of insects lately received from Baron Ferdinand von Mueller, K.C.M.G., F.R.S., of Melbourne, which had been collected by Mr. Sayer on Mount Obree and the adjoining ranges in New Guinea, during Mr. Cuthbertson's recent expedition there under the direction of the Royal Geographical Society of Australia. The collection comprised about 240 species of Coleoptera, 150 species of Lepidoptera, 48 species of Hemiptera, and a few species of Diptera, Hymenoptera, and Orthoptera. The Lepidoptera included twenty species of butterflies belonging to the genera *Calliphæa*, *Chanapa*, *Hamadryas*, *Melanitis*, *Mycalesis*, *Hypocysta*, *Tenaris*, *Hypolimnas*, *Cyrestis*, *Neptis*, *Aeræa*, *Danis*, *Pithecopis*, *Appias*, *Ornithoptera*, and *Eurytus*. Mr. Osbert Salvin, F.R.S., exhibited, and made remarks on, about sixty specimens—no two of which were alike—of a species of butterfly belonging to the genus *Hypolimnas*, all of which had been caught by Mr. Woodford near Suva, Viti Levu, Fiji, on one patch of Zinnias. Mr. H. T. Stainton, F.R.S., exhibited, on behalf of Mr. G. C. Bignell, cases of *Thyridopteryx ephemeræformis*, Haworth, collected near Charleston, U.S.A. Mr. Stainton said he hoped Mr. Bignell would not introduce this pest into England. Mr. W. F. Kirby exhibited, and read notes on, about twenty species of South African dragonflies lately received from Mr. Roland Trimen, F.R.S., of Cape Town. Mr. A. Sich exhibited a bred specimen of a variety of *Plusia gamma*. Mr. Goss read a letter from Mr. Bignell, correcting a statement made by Mr. Poulton at the March meeting of the Society to the effect that the variety *valesina* of the female of *Argynnis paphia* did not occur in Devonshire. Mr. Bignell said that the var. *valesina* was included in Mr. Reading's 'Catalogue of Devonshire Lepidoptera,' and that he had himself taken specimens of this variety in Bickleigh Vale, Devon. Mr. Waterhouse read a paper entitled "Additional Observations on the Tea-bugs (*Helopeltis*) of Java," and exhibited a number of specimens of these insects. He said that the species infesting the Cinchona in Java was supposed to have been introduced from Ceylon in tea, but that he had discovered that the species on the Tea and on Cinchona in Java were distinct, and that both species were distinct from *Helopeltis Antonii* of Ceylon. Herr Jacoby read a paper entitled "New,

or little-known, species of Phytophagous Coleoptera from Africa and Madagascar." A letter was read from Mr. E. C. Cotes, of the Indian Museum, Calcutta, asking for the assistance of British Entomologists in working out certain groups of Coleoptera, Neuroptera, Orthoptera, Diptera, and Hymenoptera in the Indian Museum. A discussion ensued, in which Mr. M'Lachlan, Dr. Sharp, Mr. Waterhouse, Herr Jacoby, and Mr. Distant took part.—H. Goss, *Hon. Secretary*.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—*March 22nd*, 1888. T. R. Billups, F.E.S., President, in the chair. Messrs. E. Knight, C. J. Montague, J. E. Lloyd, W. Roots, and R. Pierpoint, were elected members. Mr. R. South exhibited a specimen of *Polyommatus phleas* with ocellus on under surface of left hind wing similar in character to the marginal ocelli on the under surface of anterior wings, and an example of *Papilio bianor* with a patch of the colour and ornamentation proper to the under surface of hind wings on the under surface of the right fore wing. The *Polyommatus* was captured by Mr. South in N. Devon in 1881, and the *Papilio* by Mr. Leach's collector in China in 1887. Mr. Tutt, specimens of *Leucania impudens* taken by Mr. W. Farren, of Cambs.; one closely resembling Hübner's grey type; one the var. *striata* of Staudinger; one resembling Hübner's figure of *pudorina*; the others being intermediate forms. Mr. White, preserved larvæ, also imagines, of the genus *Acronycta*, for the purpose of exhibiting the difference of character in the larvæ and the close resemblance of the moths, which he stated was so strong in the well-known instance of *A. tridens* and *A. psi*. Mr. White said he should be pleased to receive ova of any species of this genus, for the purpose of studying the affinity of the group; it would be interesting to ascertain if the larvæ varied in the different stages, and whether there was a much closer resemblance in the final stage. Mr. South remarked that in the earlier stages the larva of *A. psi* could not be separated from the larva of *A. tridens*. Mr. J. Jenner Weir exhibited British and Continental specimens of *Euchloë cardamines*, and remarked that he had observed for some years a difference between the latter, so far as he had been able to examine them, and those captured by himself in Kent, Surrey, Sussex, and Hants; those captured in these counties had the orange spot on the upper wings reaching but slightly

beyond the discoidal black spot, the inner edge curving outwards and not extending beyond the first median nervule, thus leaving the hinder angle white; this disposition of marking he found perfectly constant in those captured. In the Continental specimens the orange spot extended considerably beyond the discoidal spot and was continued to the inner edge of the wing, causing the hinder angle to be orange. The distinction pointed out was very small, but if it were constant our *E. cardamines* was an insular variety, easily separable from Continental specimens. Mr. Tutt read a paper on "The Morphology and Physiology of an Insect," which was followed by a discussion.

April 12th, 1888.—The President in the chair. Mr. Slater exhibited a large *Bombyx* from Zulu Land, which he said approached nearest to *Bombyx oubie* taken by M. Guerin in South Abyssinia, and might be a local variety of that insect; if not, it was a new species. Mr. J. Lea, varieties of *Teniocampa munda*, light specimens without the twin black spots.* Mr. Henderson, forms of *Satyrus semele*, *Cucullia verbasci*, from various localities, with a view of illustrating the local variation of the species. Mr. Adkin, bred specimens of *Pygæra anachoreta*, from Saltwood. Mr. Carrington thought that the species was no doubt introduced into this country with the balsam poplar, and gave many instances which he had met with of various species being introduced by the importation of plants. Mr. Tugwell, grey and black forms of both sexes of *Nyssia hispidaria*, which he stated were all bred from one batch of eggs; there was, however, very little variation in the larvæ. Mr. J. Jenner Weir, specimens of *Pieris brassicæ* from St. Petersburg, lat. 60°; Lewes and Blackheath, lat. 50° and 52°; Hyeres, lat. 43°; and remarked that the species did not differ from places so remote either in marking or in size. Mr. T. R. Billups, a living specimen of the genus *Aspidimorpha*, which he said was an apparently new species, and was brought from Upper Burmah amongst the roots of an orchid (*Dendrobium brymerianum*). The Secretary read a note from Mr. T. D. A. Cockerell with reference to an exhibit of a new rose gall from Custer Co., Colorado, which had been pronounced by Mr. L. O. Howard, of the U. S. Department of Agriculture, to be the product of an undescribed species, *Rhodites tuberculator*, specimens of which were contained in the collections of the Department.—H. W. BARKER, *Hon. Sec.*

* Var. *immaculata*, Staud.—R. S.

THE ENTOMOLOGIST.

VOL. XXI.]

JUNE, 1888.

[No. 301.

LABELLING INSECTS.

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

As the study of Lepidoptera becomes more extended, and the collector who has taken up the order gets more deeply interested in his subject, he gradually ceases to regard the objects he collects as so many beautiful things to be looked at, and wishes to find out more about them. The cause of variation and range of local forms has of late years created much interest, but there is one thing which has not been systematically practised, in fact has been altogether neglected, by many of the best of our younger lepidopterists. I refer to the habitual labelling of the specimens we place in our collections. There are numbers of lepidopterists who, having a real scientific knowledge of their own collections, can from memory name the collectors who captured the specimens, and the localities whence they were obtained; but the best memory will sometimes be at fault; and such knowledge is only of use to its actual possessor. Others take a step forward, by keeping a written catalogue of their collections, with data and notes entered; but this is liable to be mislaid or destroyed, when much valuable information is thus lost, and the collection, from a scientific point of view, is rendered almost valueless.

When I began collecting, some years ago, two of my first correspondents were the Rev. G. H. Raynor and Mr. W. Warren. Both these gentlemen sent out insects with tiny labels placed on the pin underneath the insect, on which were the place and date of capture, and sometimes other necessary data. One, therefore,

had at once a history with each insect. I used to think these little pieces of paper useless, and wondered what one wanted more than the insect, and systematically—I am ashamed to own—took them off before putting the insects in my cabinet. In time, however, I began to find that a series was not everything, and that a man, to be an entomologist, wanted something more than a fine collection, and that he might be a first-class entomologist, with a miserable collection—in the generally-accepted sense of the word. I soon wished that I had left these labels, and that all my correspondents would follow the example of these gentlemen. However, I began by labelling my own captures and those I received; and since then have gradually cast out of my collection all those specimens about which I knew nothing. I found, however, at the very commencement a most serious difficulty, and the difficulty is greatest with our London lepidopterists. Asking for information, I was treated to courteous explanations as to the ground being private, &c., and leading in every case to the undoubted conclusion that I wanted the knowledge for poaching purposes. This was annoying, but, as I am probably rather pachydermatous, I persevered, and eventually got the desired information; this difficulty vanishing in a short time, the facts being now most courteously given, when there is no doubt about the purpose for which they are required. But still it was a difficulty at first, and one which had to be overcome. I have frequently had pointed out to me that there is real danger in allowing exact localities to be known. Personally, I consider the danger more imaginary than real. In doubtful cases, *i. e.*, where one has an idea that a correspondent will make unfair use of the information, there are two roads open: the first is to refuse point-blank, and tell your correspondent why; the second is to tell an approximate locality, from which, if he is a real student, he may gather the exact geological formation of the district and any local peculiarities, but in this case it is of the utmost necessity not to mislead. North Kent, for instance, is vague; but there are few London lepidopterists who do not know the exact spot North Kent generally means. I must say that I should prefer to refuse point-blank, than adopt the more round-about and probably misleading method.

I should like to insist on the necessity of entomologists who give or exchange insects adding a note, whether the information

is asked for or not, informing the receiver of the locality and date of capture of each insect, thus:—*Acidalia ochrata*, Deal; July, 1887. *Epione paratellaria*, York; July, 1887. In neither case could a bad use be made of the information, as far as I can see. I own that I cannot find time to label every insect I capture. What I do is to place all the insects captured on a certain day together in my store-boxes until the end of the season, placing the locality, or localities, and date under each day's work. I can then readily add to each the locality and date when I send insects away or place them in my cabinet. I find that the use of a label under the insect necessitates the frequent removal of the specimens when one is frequently referring. Such removal, too, does not tend to improve them. Our wretchedly low style of pinning, too, makes this particular method of labelling more difficult. The high style of continental pinning and flat setting allows a label underneath to be read without touching the insect and pin. In Mr. Stainton's unapproachable collection the specimens are raised, by means of tiny pieces of pith on long pins, to the height of continental-set specimens, and attached to each pin is a label with a written history of the insect thereon. I believe there is not a specimen in the whole of Mr. Stainton's immense collection which is not labelled, and the more important data carefully noted. Mr. Stainton is so far away the best living lepidopterist that I consider his practice would alone be a sufficient excuse for bringing the matter forward.

We have, however, to consider, as most English specimens are set low on the pins, what is the best modification for labelling our insects, so that we can refer to them without injury. The method I adopt is to write the data on a tiny piece of paper, and pin it just below and generally on the right-hand side of the insect, so that it is clearly visible without moving the glass of the cabinet drawers. If more than one or a number of insects, taken in the same locality at the same time, should be in the series, a label after the last one of the batch suffices for that particular group. It does not detract much from the beauty of a collection, and there is no doubt about the increase in its utility. It used to be a labour to toil through a fairly large collection with a friend; now I find the data attached to the specimens makes the work infinitely more interesting to everyone who goes through such; and unqualified approval of all scientific lepidopterists shows that

the interest added is tenfold, while the loss in appearance is of so very little consequence.

Another advantage the actual labelling of specimens has over all other indirect methods, is that it makes the collection valuable after it leaves the hands of the collector who formed it. I suppose no one knows more about his own collection than did the late Henry Doubleday about his; yet what is to be learnt from that collection after a certain elementary point has been reached? It is useful as reference to name species, to see the range of variation in certain species, but there is nothing to tell us whether any particular insect came from the North Pole or the Sahara; nothing to help us to draw any conclusions from one of the greatest masses of heterogeneous information on Lepidoptera ever collected together. What a different value the collection would have if some system of labelling had been adopted!

Many collections with the specimens not labelled, but with a good history, as far as the collector is concerned, are sold in the sale-rooms. They increase the series of the buyers by a few more or less of a species than someone else has, but they have not the least scientific value. "Fine variety, cost £2 at So-and-so's sale," is a common speech; and that is the only scientific education the buyer has for his money. How much more valuable would such a collection be if every buyer had labels and data with the specimens he bought. He would have something then for study, something for comparison. Again, when a collection is broken up and the individual series are not labelled, but the collector has a diary, the diary must go to one buyer, or perhaps it is not even heard of; certainly it cannot go to all the buyers; hence it is of little practical value.

I recently went through Mr. South's fine collection, for the first time; and although we had never exchanged any views upon the subject, I thought it pointed a very good moral when I saw that he labels his specimens exactly in the same way that I do.

If this note leads to a discussion, or induces any lepidopterists to adopt a scientific principle in their collections, I shall be more than satisfied.

Rayleigh Villa, Westcombe Park, S.E., May 14, 1888.

DESCRIPTION OF

LARVA OF *MACROMPHALIA RIVULARIS*, BUTLER.

BY W. BARTLETT-CALVERT.

Larva.—Length one and three-quarter inch, of a slaty colour, and covered with fine hair; head of same colour, with a lemon-yellow V-shaped mark in the front, filled in with black; the 2nd segment has wart-like appendages at side of a deep rose colour, and terminate in a bunch of cream-coloured hair. From 2nd segment a double streak, of an ochre-yellow colour bordered with black, runs along the back to anal claspers, and has in the centre of each segment a reddish patch, from the fore part of which protrudes a small tuft of white and black hair, which on the 2nd, 3rd, 4th, and 12th segments are much longer and more bushy than the rest.

From the wart-like appendages on 2nd segment a narrow stripe of a reddish ochre colour runs along the side to anal segment, and on the 3rd and 4th segments, between the lateral and dorsal stripes, are often two creamy patches, but they are not constant. Spiracles black, enclosed in a creamy-coloured spot, with a black dash below, under which dash is again a creamy tuft of hair. Under surface of a dirty white, with a broad reddish ochre-coloured band running from the head to the anus between the prolegs and claspers. Prolegs red, banded with black; claspers steel-blue.

Feeds on espino (*Acacia cavenia*). Full-fed by the end of December, spinning up in a long tapering buff-coloured cocoon on the slender branches. Moths emerge from January to end of February.

Habitat, Chili. Vide 'Transactions of the Entomological Society of London,' 1882, p. 12.

Colegio Ingles, Santiago, Chili.

LEPIDOPTERA IN THE CHANNEL ISLANDS.

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

IN reference to the article on this subject (Entom. xx. 63), I must take exception to the writer's statement that "the Island of Sark, although under four square miles in area, contains, we were informed, nearly the whole of the insect fauna of Jersey and Guernsey." In company with my father, the late Francis Walker, I spent nearly seven weeks in the Islands in the summer of 1860, also visiting the neighbouring Norman town of St. Malo, during which period we explored the Islands all pretty thoroughly, in the following order:—Guernsey, Sark, Herm, Jethou, Jersey, Alderney.

In the 'Zoologist' for 1864, in "Notes on the Distribution of Insects in the Channel Islands," by my father (pp. 9273-9276), the following passage occurs:—"Jersey has a much more extensive insect fauna than is afforded by all the other Islands." My own experience goes to confirm this statement, as Jersey is at once larger, warmer, and more southerly than any of the rest. Both my father and I preserved journals of the whole of our tour; my father's journal having special reference to the comparative entomology of all the places which we visited, including notes on all orders of insects. Only Arachnidæ are specified in the volume of the 'Zoologist' above mentioned; and, in addition to the insect fauna recorded as personally observed, there is also a MS. catalogue of the Coleoptera, Diptera, Hymenoptera, and Orthoptera in the collection of Mr. Piquet, a well-known entomologist, botanist, and chemist, of St. Helier's.

I subjoin some notes on the Lepidoptera of the Islands, as observed May 26th—July 10th:—

GUERNSEY.—May 28th, at Fermain Bay and Moulin Houet Bay: *Thecla rubi* (abundant), *Polyommatus phlæas*, *Lycæna argiolus*, *Pararge aegeria*, *Bombyx quercus* (2 larvæ). May 30th, Vale Castle: *Vanessa cardui*. June 1st, towards Rocquaine Bay: *Vanessa atalanta*. June 15th, at Petit Bot Bay: *Melitea cinxia*; singular dark variety of *P. megæra* at La Moie Point, above Le Gouffre, or the "Abyss," named by me *sarniensis*.

SARK.—June 4th, neighbourhood of Dixcart Bay: *Lycæna icarus*, *Euchelia jacobææ*, *Plusia gamma*. June 8th: *Pieris brassicæ*, *P rapæ*.

HERM.—June 13th and 14th: *Vanessa atalanta*, *V. cardui*, *Pararge megæra*, *P. ægeria*.

JETHOU.—June 14th, grassy mound of an islet, chiefly a rabbit-warren: *Cœnonympha pamphilus*.

JERSEY.—June 22nd, St. Ouen's Bay: *M. cinxia*, *T. rubi*, *Argynnis latona*, and *Macroglossa stellatarum*. June 24th, St. Catherine's Bay: *Zygæna filipendulæ*. June 30th, St. Ouen's Bay: *M. cinxia* (rather worn), *A. latona*. July 4th, Rozel Bay: *Nemeophila russula*. July 5th, St. Ouen's Bay: *A. latona*, *Pieris daplidice*. July 6th, St. Clement's Bay: *Agrotis exclamationis*.

ALDERNEY.—July 7th, Braye Bay: *Pieris brassicæ*. July 9th: *Chærocampa porcellus*, *Deilephila euphorbiæ* (one solitary wing on a common). This last-named species is very common in Jersey, where its food-plant, the sea-spurge, abounds, especially in St. Ouen's Bay.

Epinephele ianira is also labelled in my collection from the Channel Isles, and most probably occurs in all of them.

Thyatira batis and *T. derasa* are likewise recorded, and may have been obtained from a Jersey doctor of St. Saviour's, who, on my way to Mr. Piquet, of St. Ouen's Bay, informed me that he had taken *Parnassius apollo* and *Papilio podalirius* in the island, and that *P. machaon* was common in the autumn. It is most likely that he mistook other species for them, and to the occurrence of these last-named insects I still append a query.

Dun Mallard, Cricklewood, N.W., February 2, 1888.

CONTRIBUTIONS TOWARDS A LIST OF THE VARIETIES OF NOCTUÆ OCCURRING IN THE BRITISH ISLANDS.

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

(Continued from p. 139.)

Leucania, Och., *loreyi*, Dup.

Of the variation in this widely-distributed species, Guenée writes:—"I find no essential difference between our European *loreyi* and those which I have received from M. Horstfield, who bred them in Java. On the other hand, I have a female specimen from Brazil slightly smaller and clearer. It varies in ground colour." ('Noctuelles,' p. 84.)

Leucania, Och., *obsoleta*, Hb.

The type of this species is Hübner's fig. 233, which gives a very incorrect idea of the form we get, and an equally incorrect one of all Continental specimens I have seen. The anterior wings are of a different shape to our *obsoleta*, and it is highly coloured. The row of dots parallel to the hind margin are, however, distinctly marked. My first impression of the figure was that the fore wing represented the var. *punctilinea* of *impura*, but the hind wings are characteristic of *obsoleta*, which cannot be mistaken for those of any other species. Hübner's figure may have been an unusual form, but I have seen no varieties.

Leucania, Och., *putrescens*, Hb.

The types of this species are Hübner's (Geyer's) figs. 730 and 731. These, although presenting the general characteristic markings of *putrescens*, are so small compared with our British form that they are hardly recognisable. I have seen no Continental specimens, but, if Hübner's figures are a fair representation of the species as it occurs on the Continent, our form is well worthy of a distinct name. This would hardly seem to be so from Guenée's remarks, 'Noctuelles,' p. 80, where he writes, "Bad as is the figure of Geyer, I believe decidedly that it really is the type of this species, which it represents, and not, as I at first thought, a variety."

(I have dwelt on Hübner's figures of these two species because they represent the first described or figured types of their respective species.)

Leucania, Och., *impudens*, Hb.

Hübner's fig. 229 (by error 329) is the type of this species, which may be described as follows:—Anterior wings of a pale greyish colour, with no trace of reddish, thickly sprinkled with black dots; a dark but faint longitudinal shade runs just above the inner margin, another between the upper branches of the median nervure, and another near the apex, a black dot at the end of discoidal cell; hind wings very dark grey, no markings whatever. Guenée, comparing the type with *pudorina*, says of

it, "Larger, of a different colour and shape, at the extremity of the discoidal cell a large black dot, which is wanting in *pudorina*." This black dot is, however, nearly always present in *pudorina*; the females are as a rule greyer than the males (Mr. Farren has sent me some almost as grey as Hübner's type-figure); and Mr. Dobrée writes me that "*impudens* from various parts of France and Germany do not differ from English specimens." In this species there is great variation; some specimens are grey (as in the type), some are bright rosy, some are almost unicolorous ochreous; whilst others have the dark shades between the nervures developed to such an extent as to form bright and strongly-marked blackish stripes.

α. var. pudorina, Hb.—Hübner's fig. 401—ochreous, sprinkled with reddish—represents our usual form of the male. It has been treated as distinct by Guenée and all our later British authors. The greater number of specimens from Cambridge, the New Forest, and other British localities are of this form, the very grey form being rare.

β. var. striata, Dobrée, *in litt.*—"The colour of the anterior wings is a very glossy wainscot-brown rather than ochreous, coarsely powdered with black, the wing-rays and the shading, which is faintly perceptible in English specimens, showing out clearly in very dark grey. In size there is no difference. This is a handsome variety from the Amur district, with the colour and markings much intensified." I have never seen this variety, and have to thank Mr. Dobrée, who has specimens in his collection, for the above information. I have, however, a specimen lent me by Mr. W. Farren, of Cambridge, with all the spaces between the nervures as thickly powdered with black scales as possible, the wing-rays being dark grey. I should think this specimen is almost exactly like the Amur specimens.

γ. var. rufescens, mihi.—Ground colour of the anterior wings entirely bright rosy red, no trace of ochreous, with very pale grey wing-rays; the wings only very slightly suffused with black scales, except just above the median nervure, where they form a decidedly blackish longitudinal streak; a small but very distinct black spot at the end of the discoidal cell. Hind wings pale grey, with red fringes. I have again to thank Mr. Farren for the loan of the type of this variety, which is much more extreme than any I had previously seen.

Leucania, Och., *comma*, L.

The type is described by Linnæus as "Spirilinguis cristata, alis cinereis deflexis; lineola nigra adjacentē tenuiori albæ. Alæ sordido colore, lineola nigra baseos. Stigmata nulla." ('Systema Naturæ,' pp. 850, 851, No. 156.) The essential points are—dirty ash-coloured, with a black lineola touching a slender one of white; no stigmata. Treitschke writes, vol. v., p. 302, "Alis anticis pallide fuscis," &c. Hübner, fig. 228 (by error 328), figures the type as *turbida*; his figure is excellent. This species varies much in the depth of ground colour and markings, our British specimens rarely occurring as pale as those from the Continent, although Continental specimens are occasionally dark. Hübner figures this dark form, fig. 617, under the same name, *turbida*, which he applies to the type. It is worthy of remark that my Deal series includes the darkest, and at the same time the palest, British specimens I have ever seen.

Var. *suffusa*, mihi.—The ground colour of the anterior wings of a decided brown colour, much darker than the type; the anterior wings, including the costal area, very much suffused with fuscous scales, the spaces between the wing-rays showing out as distinct, dark, longitudinal, wedge-shaped streaks on the outer margin. The black streak under the base of the pale median nervure intensely black. The hind wings of a deep blackish grey colour. Nearly the whole of my British series belong to this melanic form. The specimens which I have from the London and Deal districts are generally darker than specimens I have from Yorkshire, Morpeth, Brecon, and Scotch localities. As mentioned above, Hübner figures this form (fig. 617) under the name of *turbida*. Mr. Finlay, of Morpeth, gave me a specimen of this variety with a strongly-marked black lineola above the median nervure in the discoidal cell, and another short one quite at the base of the inner margin. There is also a constant form of variation, equally distributed through the paler type and var. *suffusa*, with a distinct small black dot at the end of the discoidal cell.

Leucania, Och., *brevilinea*, Fenn.*

The type of this species is described in the Ent. Mo. Mag., vol. i., p. 107, by Mr. Fenn, and copied therefrom into Newman's

* I have inserted this species in what seems to me its true position in our lists. It does not appear to me to be a *Nonagria*.

'British Moths,' p. 271. The chief character of the type (from which the name has been derived) is a short black line at the base of the anterior wings under the median nervure.

Var. *sinclinea*, Farn.—In the 'Entomologist,' vol. xi., p. 103, Mr. Farn describes a variety of *brevilinea* under this name, calling it "the form in which the line at the base of the wing disappears." It is the var. *alinea* of 'The Entomologist Synonymic List.'

(To be continued.)

ENTOMOLOGICAL NOTES, CAPTURES, &c.

VANESSA ANTIOPA AT WALTHAMSTOW.—A specimen of *Vanessa antiopa* was brought to me to name on the 24th of May, taken by a young gentleman near the Round Pond, Whips Cross, Walthamstow, Essex. The last that was taken near that spot was by my wife.—W. DOWNING; Whips Cross, Walthamstow, Essex.

ABUNDANCE OF RHOPALOCERA.—With reference to the alleged scarcity of butterflies (Entom. 113—116) during the past season, I venture to think, from what various correspondents say, that it was a scarcity of some species and in some localities only. For my part I found several species extremely abundant. For instance, in different parts of Devon *Lycæna argiolus* was very plentiful, and *Thecla rubi* unusually common. In the New Forest *T. quereus* abounded; *Apatura iris* was seen in considerable numbers, as was also *Vanessa polychloros*. I took six beautiful specimens of the latter in six successive minutes, for a friend who had never before seen the insect on the wing. But the commonest butterfly was *Argynnis paphia*; the note in my diary is, "Vast swarms of *paphia*, especially females." At no time during the past five years have I seen it so plentiful; most bramble-sprays were "alive" with them, and it was easy to take them with the fingers. The variety *valesina*, too, was common, perhaps one female in every dozen being the variety. I may add that I saw many *valesina* in union with the typical male.—(Rev.) ALBERT BONUS; Exeter, March 31, 1888.

PUPATION OF COSSUS.—In my notes on the pupation of *Cossus* (Entom. 110), I used the word "cop," forgetting that it

was a local term, and in answer to many enquiries I will now endeavour to describe the meaning of the word. A cop is a low embankment used as a fence or boundary, and is generally made of sand or earth, banked at the top and sides with grass or sods, and as a rule is about $4\frac{1}{2}$ feet high, 2 feet wide at the top, and 5 feet wide at the bottom, often being planted with a dwarf willow (*Salix fragilis*), locally termed "sand-grounders" or "shrew-withins;" entomologically they make an excellent fence. Compared, however, with the new horrible clothes-tearing porcupine wire fence, they take up such a large area of land as to amount to a considerable item on a large farm. I am sorry to say that, as they are the best collecting-grounds in this district, they are gradually being demolished, all kinds of herbage growing on them in profusion, and being a convenient height are easy to work at night for larvæ, &c. One other slight correction: it was my lamented friend James Hamer, not Harmer, whose name was mentioned as being the discoverer of the earth-pupating habit of *C. ligniperda*.—R. C. IVY; Town Hall, Southport, April 21, 1888.

NYSSIA ZONARIA NEAR SOUTHPORT.—From the 29th of March until the 21st of April I have taken the above on some old pasture-land at Crossens. They seem to get scarcer in this district every year. In one locality, Anisdale, I searched two afternoons without finding a single specimen, on land where some three years ago they occurred in abundance. The fields not having been ploughed, I assign the reason to the great numbers of plovers having invaded the district of late. These birds seem to have a *penchant* for tit-bits, such as an apterous female *zonaria*. There were traces of the birds having thoroughly overrun the ground in search of their food. I have never seen *Nyssia zonaria* on the wing, and have collected scores at all times of the night and day. From 7 a.m. until 10 a.m. seems the best time to collect them, when they are usually to be found *in copula*. Also from 10 p.m. until 12 p.m. is a good time to find the males sticking on the railings, they being then very conspicuous in the light of the lamp.—R. C. IVY.

AMPHYDASIS STRATARIA NEAR WINDERMERE.—The late Mr. Newman, in his 'Natural History of British Moths,' p. 61, says that *Amphydasis strataria* "is not common." I was, therefore, astonished during the early part of this month, at finding a

number up here in Windermere. I have no less than nineteen specimens, finding as many as seven in one afternoon within a quarter of a mile. Among them is a distinct variety; both anterior and posterior wings are a bright yellowish brown colour, the anterior wings being, perhaps, rather darker. There is a dark brown mark behind. The centre of the costal margin on each anterior wing, and the posterior wings, are dotted all over like the ordinary type, but on a yellow ground. The body, thorax, antennæ, and legs, are the same as the others. Is this variety generally known? Another thing which I lately found in my searches was a cocoon and empty chrysalis-case of *Dicranura vinula* near the foot of a Scotch fir, and there were no other trees near which the caterpillar could have crawled from. It certainly was this species, because the old caterpillar-skin had the two horns and the hard flat head, and both chrysalis and cocoon correspond to some which I have at present. Mr. Newman only gives willow and poplar as its food-plant. Can any of your readers say whether it does feed on fir?—A. M. Moss; Ellerthwaite, Windermere, April 21, 1888.

[We never heard of *Dicranura* feeding on fir; the larvæ sometimes stray long distances before pupating.—ED.]

HYBERNIA MARGINARIA NEAR SOUTHPORT.—During the present month I have taken some nice forms of *H. marginaria*, varying in colour from pale ochre to nearly black, with scarcely any distinguishing markings. So devoid of these were they, that until my friend Mr. Hodgkinson told me, I did not know they were the same species. Some of the females are quite black. I found them on an old thorn-hedge opposite my house at Crossens. From 12 p.m. until 2 a.m. is the best time to collect them, as they are then to be found *in copula*, and are easier to box than earlier in the night, when they are usually very restive.—R. C. IVY; Town Hall, Southport, April 21, 1888.

DICRANURA VINULA ON TAMARISK.—While gardening this week I found on some old tamarisk-trees in my garden five empty cocoons of *Dicranura vinula*. Later I made a fuller search, and discovered between thirty and forty, but only one containing a pupa. The only trees in the garden, besides fruit-trees, are tamarisks, sycamores, alder, and hornbeam. Presumably, therefore, these larvæ must have fed on the tamarisk on

which I found their cocoons. As this tree does not belong to the willow, sallow, or poplar families, which constitute, according to Newman and other writers, the food-plants for *D. vinula*, I think this fact worth recording. Between this and Pennsylvania Castle, two miles off, there are absolutely no trees, so these larvæ could not have wandered here to spin up. Further, I do not think there is a poplar or willow in the island, and certainly not more than half-a-dozen sallows.—CHAS. E. PARTRIDGE; The Castle, Portland, May 15, 1888.

STAUROPUS FAGI IN OXFORDSHIRE.—Yesterday, the 21st of May, I found a fine male of the above on a fir-trunk near here, on the Oxfordshire side of the Thames. It is a new insect to our district, as far as I know, and rather an early appearance.—W. E. BUTLER; 91, Chatham Street, Reading, May 22, 1888.

CYMATOPHORA OCTOGESIMA: INFORMATION WANTED.—Have any readers of the 'Entomologist' a specimen of *Cymatophora octogesima*, Hb., = *ocularis*, L., in their collections, with only one of the stigmata present, *i.e.*, with the reniform or with the orbicular, but not with both? The Linnean description of *ocularis* ('Systema Naturæ') is, I feel certain, our species; but Linnæus mentions only "one small whitish *ocellus*, with a darker centre." If such a specimen exists I should be pleased to have information regarding it. I believe from the Linnean description that it is the reniform which is referred to, and that the orbicular was absent in his type specimen.—J. W. TUTT; Westcombe Park, S.E.

UNUSUAL UNION BETWEEN MOTHS.—On the 14th April last, while working sallows at Darenth Wood, in company with my friend Mr. J. H. Carpenter, we took, amongst other ordinary visitants of sallow-bloom, a male *Tenioampa stabilis* in copulâ with a female *T. gothica*; the two insects fell into the umbrella, when I boxed them. Neither my friend nor myself have ever come across a similar occurrence; and we should be glad to hear if any other entomologists have done so.—P. F. J. LOWREY; 8, Winsdale Road, Brixton Rise, May 12, 1888.

[Many years ago, while collecting near York with the late William Prest, I saw a pair of the same species in copulâ. Although every care was taken by Mr. Prest of the ova deposited by the female, they did not hatch, and were doubtless abortive.—J. T. C.]

THE CODLIN MOTH IN TASMANIA. — The following details were communicated to me by my brother, the Rev. P. E. Raynor, of Hobart, in a letter dated December 21st, 1887—Midsummer Day in that far-distant land. Tasmania was not settled by Europeans till 1803. Therefore the Codlin Moth, as the Tasmanians call *Carpocapsa pomonana*, will soon be celebrating the centenary of its arrival in the colony, if we may presume that the earliest colonists unwittingly introduced it with their apples. My brother says:—"Last year, when we came to the colony at the end of the season, we found all the apples on the ground bored by larvæ of *C. pomonella*; so we had to buy some £3 worth of apples for the winter season, and this with forty apple-trees in the garden. By bandaging we destroyed thousands of pupæ, but the moth is still very plentiful; they are just now appearing in full force, and the larvæ are boring the apples in all directions. The old "Codlin Moth Act" was partial, and only certain districts were declared infected. We are in Glenorchy, an infected district, so we have an inspector round to see that we bandage our trees; but the opposite side of the road is in Hobart (supposed to be a non-infected district); consequently we are rather handicapped in fighting the moth, as our opposite neighbours breed it freely. However, the new Act, soon to come into operation, is universal, and I hope that will help us. I visit every tree, pick up and destroy hundreds of fallen apples under each; then bandage the tree; then with a penknife cut out the grubs, now just under the surface, on the growing apples (thus hoping to save them for preserving, though not for keeping). The imago I capture by the dozen flitting over the trees just at dusk or in the early morning; they are very hard to catch, having so zigzag a flight, and soon darting into the trees; a good many can be caught with finger and thumb, as they sit on the fruit in the daytime laying their eggs. I have also sugared two nights running, but the nights have been too bright and moonlight to do much good; I only got five and three moths respectively. They know very little about the moth and its habits here; all sorts of absurd ideas are circulated and printed; so I am studying the moth in order to gain personal experience which may be of public value. The inspector called the other day; he is an intelligent man, and has studied the moth a little; he was astounded when I told him I had caught thirty-seven moths the

previous day. He was not up to a butterfly-net, and was delighted when I showed him the one I brought with me from England and explained the *modus operandi*." With this letter were enclosed, for my identification, two Tortrices, which are the veritable *pomonana*. I think the moth must have greatly increased in numbers since the year 1879, when I paid a month's visit (from Sydney) to Tasmania. In that year I collected Lepidoptera at Deloraine and Evandale in the north, and at Hobart and Brighton in the south, without making personal acquaintance with the Codlin Moth; nor do I remember hearing much about its devastations, but now every Tasmanian newspaper that reaches me contains allusion to the pest. Tasmania is celebrated for its apples, which are much finer than those grown on the Australian Continent, whither, in consequence, they are exported very largely. It is quite possible that some of your readers may be prepared to suggest, from personal experience or other sources, useful hints for the diminution or annihilation of this foe, so ruinous to the apple-grower in Van Diemen's Land.—(Rev.) GILBERT H. RAYNOR; Fairview, Brentwood, February 10, 1888.

NEPTICULA MINUSCULELLA IN LANCASHIRE.—I am now breeding this species from pear-leaves found last October; also *N. hodgkinsonii* and *Micropteryx sparmanella*, the latter from birch.—J. B. HODGKINSON; Ashton-on-Ribble, April 17, 1888.

CAPTURES AT SALLOW IN HEREFORDSHIRE.—Sallow-bloom was unusually late this spring hereabout, some lasting well into May. The following Lepidoptera were captured:—*Anticlea badiata*, a few, from April 13th. *Anisopteryx æscularia*, one, April 13th. *Asphalia ridens*, one, April 30th. *Pachnobia leucographa*, fairly common, April 11th to 30th. *P. rubricosa*, about nine or ten, April 13th to May 6th. *Tæniocampa gothica*, abundant always. *T. incerta*, not taken at all freely, but always present. *T. opima*, April 28th to May 6th. This is the first record of the insect we have. It seems later than the others, and to prefer a warm night. Taken freely, April 30th and May 6th. *T. populeti*, April 7th to 18th, rather freely. *T. stabilis*, abundant always. *T. gracilis*, April 14th to May 6th, freely. *T. miniosa*, one specimen, May 1st. *T. munda*, April 7th to 18th, common. *T. pulverulenta*, abundant always. *Cerastis vaccinii*, in considerable quantity

throughout season. *C. spadicea*, a few, April 11th to 14th, *Scopelosoma satellitia*, a few, April 7th to May 1st. *Xylina socia*, one, May 4th. *X. ornithopus*, two, April 11th and 12th. Compared with notes sent last year by Mr. John Lea this list contains more species, but *Xylocampa areola* was absent this season, both at sallow and on trees, where it is usually common.—T. S. LEA; Tedstone-Delamere, Herefordshire, May 11, 1888.

SPRING LEPIDOPTERA IN CHESHIRE.—On the 10th of March, 1888, after a warm week, accompanied by two entomological friends, I went to Delamere Forest. Our captures were *Hybernia leucophearia*, abundant, including many beautiful varieties; *Phigalia pendaria*, common, and also varied; *Larentia multistrigaria*, *Asphalia flavicornis*, and *Nyssia hispidaria*, also common and varied. I have not seen *H. leucophearia* on the same ground for years. We had the honour of adding *Cymatophora or* and *N. hispidaria* to the list of Delamere insects published by the Chester Natural Science Society. We only saw one female *N. hispidaria*; most of the males were fresh from the chrysalis. All were taken at rest on the trunks of oak and birch-trees.—J. ARKLE; 2, George Street, Chester.

INSECTS CAUGHT AT SEA.—The following extracts from a letter written by my eldest son, whilst on a voyage to New Zealand in the clipper ship 'Enterpe,' may be of interest to the readers of the 'Entomologist,' as adding some further proof of the wandering and erratic habits of insects:—"August 22nd, 1886.—Going down the English Channel under all plain sail, with a gentle breeze. The air is so mild that we are all sitting about the deck, and are very much interested in the erratic flight of a *Pieris brassicæ*, which has flown out this distance, and does not like to make up its mind for the long fly home again. I have tried to catch it, but without success. August 23rd, 1886.—I enclose two butterflies (*Pieris rapæ* and *Vanessa atalanta*) I caught aboard yesterday off the Isle of Wight. These butterflies were over eighteen miles out at sea. September 19th, 1886.—Within the tropics, thirty-five miles S.W. by S., off St. Antonio, one of the Cape de Verde islands, temperature in cabin 82° Fahr., lat. 16° 52' N., long. 26° 10' W. I went up to the mizenmast-head this morning in the hope of seeing land, but the sun's rays were too powerful for me to see any great distance. I was, how-

ever, in some measure rewarded, as I saw a little butterfly, just like one of our small brown fritillaries, fluttering around the mast-head. It alighted on the end of the royal-yard (*i.e.* the top-most spar of all), and I went out to catch it, but it flew away to sea just as I had my finger and thumb about to close upon its folded wings. This is the first butterfly I have seen since those two I caught in the English Channel, and sent to you by the pilot. September 20th, 1886.—I made a capture to-day of a beautiful dragonfly (*Libellula*), 230 miles from land, in lat. $15^{\circ} 2'$ N., long. $26^{\circ} 35'$ W. There were several hovering round the ship, and I managed to knock this one down with my Glengarry. It is in good condition." On December 6th, 1886, whilst off the coast of New Zealand, my son caught another butterfly, coloured somewhat like *V. cardui*, but with an ocellated spot of considerable size on each upper wing. With regard to the dragonflies, they may have been tempted so far from land chasing swarms of flies, which, I believe, are sometimes seen at sea. It is well known that butterflies pass from island to island and continent to continent in swarms, especially in the East, but I am at a loss to account for these butterflies being found so far from land, unless they were stragglers from swarms, or were simply tempted by the fineness of the weather and the smoothness of the sea. Probably the latter may have been the case, as they certainly could not have wandered to sea in search of food.—GEO. J. GRAPES; 32, Buckleigh Road, Streatham Common, April 13, 1888.

SUGARING AFTER RAIN.—A warm night with no wind and a soft drizzling rain is, I should say, the ideal time for sugaring (*Entom.* 140). I recollect on just such an evening in August, 1886, seeing my patches of treacle literally swarming with insects, chiefly *Noctua umbrosa* and *N. xanthographa*, with a few *Amphipyra pyramidea*. I have always found sugaring very successful too after heavy rain.—F. E. WARNER; Grammar School, Dorchester, May, 1888.

SUGARING AT CHRISTCHURCH.—During the summer of 1887 sugaring here was simply an utter failure. About June 20th I commenced working upon large numbers of trees, many more than the previous successful year; and I may say right up to September last I saw but very few insects, on some occasions none at all. However, after that time, chiefly in October and

November, I met with much better luck. Among the most important captures then were:—*Xylina ornithopus* (24), *X. socia* (14), *X. semibrunnea* (1), *Aporophila nigra* (2), *A. lutulenta* (2), *Scopelosoma satellitia*, and others. The last-named has been of unusually common occurrence during the whole of November, and I have supplied other entomologists with quantities of this species in different forms. I should just like to know whether any other entomologists have met with the same experience.—J. M. ADYE; Somerford Grange, Christchurch, January 19, 1888.

THE COLORADO BEETLE.—With reference to the note on page 65, the following information, which I have received from the U.S. Department of Agriculture, will be of interest:—"The original specimens of *Doryphora 10-lineata* were captured 'on the upper Missouri,' and although it undoubtedly occurs in the State of Colorado, it is more common in Nebraska and other neighbouring States. It originally occurred in the Rocky Mountain region on *Solanum rostratum*, and was undoubtedly abundant where that species grew. The coleopterous genus *Doryphora* was founded by Illiger in 1807, while the lepidopterous genus of the same name was founded by Heinemann in 1870. The last American check-list (Henshaw's) retains *10-lineata* in *Doryphora*." I have found *Solanum rostratum* growing about Denver and other localities in Colorado, on the eastern slope of the mountains, but have not yet met with *Doryphora*. The genus *Doryphora*, Hein., being preoccupied, might conveniently be changed to *Doryphorella*.—T. D. A. COCKERELL; West Cliff, Custer Co., Colorado, March 8, 1888.

ERRATA.—In the article last month upon country membership in the South London Natural History Society (Entom. 121), the address of the Society was in error printed E.C., whereas it should have been Bridge House Hotel, London Bridge, S.E. This has caused many letters to be returned, there being a "Bridge House," E.C., where the Society was not known. On p. 48, *B. muralis* var. *obscura*, at the end of the description occurs the phrase, "Herr Hoffmann Alps." This should be placed after the word "Sandwich," at the end of the paragraph referring to var. *par*.

SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON.—*May 2nd, 1888.*—Dr. D. Sharp, F.L.S., President in the chair. Major J. W. Yerbury, R.A., of the Army and Navy Club, Pall Mall, S.W.; and Mr. P. W. Mackinnon, of Masuri, Western Himalayas, India, were elected Fellows; and Mr. H. F. Dale, Dr. J. W. Ellis, and Mr. A. J. Croker were admitted into the Society. Dr. P. B. Mason exhibited an hermaphrodite specimen of *Saturnia carpini* from Lincoln, and another specimen of the same species with five wings, bred at Tenby. Herr Jacoby exhibited female specimens of *Chrysomela japona*, collected by Mr. J. H. Leech in Japan, and called attention to a sexual structure in the middle of the abdominal segment. Mr. Adkin exhibited a variety of *Eubolia bipunctaria*, taken at Box Hill, in July, 1886. Mr. W. F. Kirby exhibited, for Dr. Livett, a curious discoloured female specimen of *Ornithoptera minos*, Cramer. Mr. H. Goss exhibited, for Mr. W. Denison-Roebuck, a number of specimens of an exotic species of Bee obtained by the Rev. W. Fowler, of Liversedge, from split logwood. The cells or pouches were very irregular and rough and altogether unlike those in the “comb” of any known British species of Bee. Dr. J. W. Ellis read a paper entitled “Remarks on the British specimens of the (so-called) *Aphodius melanostictus*, Schmidt”; and he exhibited a number of specimens and drawings of this species and of *Aphodius inquinatus*, F. A discussion ensued, in which Dr. P. B. Mason, Dr. Sharp, Mr. Champion, and Dr. Ellis took part. Mr. E. Meyrick communicated a paper “On the Pyralidina of the Hawaiian Islands,” the materials for which paper consisted principally of the collection of Lepidoptera Heterocera formed by the Rev. T. Blackburn during six years’ residence in the Hawaiian Islands. Mr. Meyrick pointed out that the exceptional position of these islands renders an accurate knowledge of their fauna a subject of great interest. He stated that of the fifty-six known species of Hawaiian Pyralidina nine had probably been introduced through the agency of man in recent times; but he believed the remaining forty-seven to be wholly endemic: of these latter the author referred twenty-six species to the *Botydidæ*, twelve to the *Scopariadæ*, four to the *Pterophoridæ*, three to the *Crambidæ*, and

two to the *Phycitidæ*. Dr. Sharp, Mr. McLachlan, Dr. Mason, and Mr. E. B. Poulton took part in the discussion which ensued.—H. Goss, *Hon. Secretary*.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—*April 26th*, 1888. T. R. Billups, F.E.S., President, in the chair. Messrs. J. E. Pearce and J. Pearce were elected members. Mr. Adye exhibited *Asphalia rufens*, and varieties of *Teniocampa munda*. Mr. Lea, small specimens of *Hybernia leucophaearia* from Richmond Park, and commented on their size. Mr. Dobson, a specimen of *Smerinthus tiliæ*, with the lower part of the central band of the superior wings absent. Mr. Dennis, three streaked varieties of *Spilosoma lubricipeda*, and a similar var. of *S. menthastri* taken in his garden at Kingsland. Mr. T. R. Billups, a living specimen of the genus *Pelopæus*, or sand-wasps, from Honduras; also a species of Blattidæ, *Paratrupes elegans*, from South America. Mr. J. Jenner Weir read a communication from Mr. T. D. A. Cockerell, referring to his note on the origin of *Gonepteryx cleopatra* and *G. rhamni*, read at the meeting on the 8th of March last; Mr. Cockerell being of opinion that *G. cleopatra* and *G. rhamni* are climatic forms of one species. Mr. Weir said, seeing that *G. rhamni* and *G. cleopatra* existed over a large part of Europe in the same districts, and had synchronous appearance in the latter end of the summer and again after hibernation in the spring, he was unable to accept Mr. Cockerell's ingenious theory of the origin of the two species. Mr. J. W. Slater read a paper on "Sanitary and Antisanitary Services of Nature."

May 10th, 1888. The President in the chair. Mr. W. Martin was elected a member. Mr. R. Adkin exhibited full-fed larvæ of *Ephestia kuhniella*. Mr. Cooper said he had taken this moth very freely in a bakery at Leytonstone, and had found the larvæ feeding in great numbers; there was very little flour stored in the bakery, but the larvæ fed on the dust collected on the beams. He had taken odd specimens of the species for the last four years. Mr. Billups, living examples of *Hydatieus seminiger*. The remainder of the evening was devoted to the exhibition of microscopical objects, many members of the South London Microscopical Society assisting.—H. W. BARKER, *Hon. Sec.*

REVIEW.

British Oribatidæ. By ALBERT D. MICHAEL, F.L.S., F.Z.S.,
F.R.M.S., &c. Vol. II. Ray Society. 1888.

THE second and concluding volume of Mr. Michael's valuable Monograph of the British Oribatidæ has been issued by the Ray Society to the subscribers for the year 1887. The first volume contained twenty-four plates of species and seven of anatomical details; the present contains thirty-one plates of species, thus bringing up the total number of plates in the complete work to sixty-two. The author states in the preface to the volume, that "Although subsequent discoveries will doubtless add to our knowledge of the group, I think the book has been prepared carefully; it certainly has been executed to the best of my ability, and I believe that it contains as much information relative to the family as the present state of science respecting the *Acarina* permits." There can be no doubt that for many years to come this monograph will be a text-book for Acarologists; indeed, if it have a fault, it is that the subject has been treated in such a masterly manner that others will be deterred from entering upon it. It would be quite impossible to convey in words the least idea of the beauty of the plates, the *bizarre* forms of the species delineated, or the exquisite anatomical details; indeed, how the latter could have been prepared is a marvel, as the points of the dissecting instruments would be nearly as large as the *acar* operated upon, yet they are as clearly made out as would be the visceral anatomy of one of the larger vertebrates.

The bibliography of the subject is well understood and dealt with by Mr. Michael, and at pp. 619—627 a list of books and papers giving information relative to the Oribatidæ is inserted; indeed, in every way the student is thoroughly assisted; even tables are given for conversion of millimetres into inches. Whilst on the subject of assisting the student, it may be remarked that all the plates have full descriptions on the opposite pages; thus the time wasted in turning over leaves when making a reference, and the unnecessary wear and tear of the book, are avoided. The work on the whole is a model of painstaking scientific accuracy, illustrated with artistic excellence.—J. J. W.

OBITUARY.

HENRY JAMES STOVIN PRYER died unexpectedly on the 17th of last February, at his residence, 127 Bluff, Yokohama, Japan, in which country he had resided as a merchant for the previous seventeen years. Of great energy, strong constitution, and usually robust health, the attack of bronchial pneumonia which caused his death was his first really serious illness, although he had reached his 37th year. Curiously, it is said, he was attacked upon the same day of his age on which his father, who was a solicitor, living near Finsbury Square, London, contracted his fatal illness. This affected the subject of our notice so seriously that he at once made up his mind he should not get better, and prepared his affairs accordingly; at any other time he might perhaps have successfully battled with his illness. Mr. Pryer commenced the study of Entomology quite early in life, forming a collection of Lepidoptera and one of Trichoptera, chiefly from the neighbourhood of London. Among the former he took *Sterrha sacraria* close to London, and *Eupithecia togata* in Essex. *Trachonitis pryerella* was named in his honour. After his arrival in Japan he systematically studied the Natural History of that interesting country, and has from time to time sent to England valuable consignments of specimens taken all over the Islands. For a period in 1877 he held the appointment of Director to the Government Natural History Museum at Tokio, but the scheme having failed, he returned to commercial pursuits. For his many contributions to the collection of living animals in the Zoological Society's Gardens in London he was made a corresponding member of that Society. He was a member of the Entomological Society of London, and occasionally contributed papers; notably one upon remarkable cases of mimicry in insects of very different orders (*vide* Trans., 1885, pt. III.) His great work, which unfortunately remains a fragment, was a monograph of the Rhopalocera of Japan, already noticed in these pages (Entom. 23). The first part was issued and the second part of the three proposed was ready at the time of his death. It is sincerely to be hoped that means may be found for its completion. A list of the Lepidoptera of Japan from his pen, appears in the Transactions of the Royal Asiatic Society's Japanese Branch. He also published, in connection with Captain W. Black-Keston, a list of the Birds of Japan. Mr. Pryer's biological work extended to other parts of the Eastern World. He visited China in 1871; Borneo in about 1884, where his brother, also an excellent naturalist, is official resident of the British North Borneo Company; and in June, 1886, accompanied by a hired Japanese collector, he investigated the Loo-Choo Islands. Little was then known of the fauna

of this group; therefore a large proportion of the species of insects taken were new to science. The birds of this collection have been described by Mr. Seebom, and the Lepidoptera are yet undescribed. The results in the group Coleoptera were especially good. Mr. Oliver Janson, of Little Russell Street, London, acted in England as Mr. Pryer's agent in matters zoological, and we owe to Mr. Janson our thanks for much of the material from which this notice has been constructed.—J. T. C.

M. E. GLANVILLE.—Intelligence of the death of Miss Glanville, the able and kind-hearted Lady Curator of the Albany Museum, Graham's Town, South Africa, will be received with great regret by her home friends; and in her scientific labours, amongst her many surrounding friends in her own adopted land, her loss will be keenly felt. On the decease of her father, the late B. J. Glanville, who might be termed the founder of the Albany Museum at Graham's Town, Miss M. E. Glanville was, to the great gratification of those connected with Natural History in that district, elected to take his place, and there, up to her last illness, terminating in her decease on April 4th, she worked with an assiduity and intelligence which rendered the results strikingly methodical and complete. Her especial claim to the notice of the readers of the 'Entomologist,' rests on the practical as well as scientific attention she has long been rendering to Economic Entomology. For years she has devoted attention to the life-histories of the injurious crop insects of East Province, S. Africa, and, in co-operation with a few other leading observers, forwarded specimens of some of the most injurious kinds to the writer, together with such notes as could be procured of their histories. Those who are intimately acquainted with the general carelessness existing as to these points in ordinary colonial life, will appreciate the difficulties of the work. Nevertheless, Miss Glanville, by her hearty devotion, was able to collect some amount of data, which, there is good reason to hope, will prove a sound starting-point for information to gather round, and which will be of solid future benefit to the agriculturists of the eastern portion of the colony. In the words of a friend who knew her well, "good, amiable, self-sacrificing, and obliging," she worked to the last, and declined to take the rest needed, because, in her own words, her "absence would necessitate closing the museum, and cause disappointment to visitors." Marked respect was shown to the memory of the kind and accomplished lady by the attendance at the funeral of many scientific or personal friends, besides the members of her family, and her loss is one which will be much felt, both as a friend and hearty labourer.—E. A. ORMEROD.

THE ENTOMOLOGIST.

VOL. XXI.]

JULY, 1888.

[No. 302.

HIGH FLAT-SETTING OF LEPIDOPTERA.

BY ARTHUR CANT.

As I have had considerable practical experience in both the continental and British methods of setting Lepidoptera, and am known to have a decided preference for the former, I have been asked by several entomological friends to point out what I consider to be the advantages of the "high-flat-set" system.

From an individual point of view, I could enumerate many more or less important advantages resulting from having Lepidoptera set in the continental style, but I think, for present purposes, reference to three of these will suffice:—

(1) Facility of examination and study. All lepidopterological students will admit that even the upper surface of a butterfly or moth with drooping wings is not so readily examined as one whose wings are spread out flat in a plane with the body. In the majority of cases, the under surfaces of insects set in the British style are not easily examined or compared one with another; but, on the other hand, when dealing with flat-set insects, there is nothing to interfere with the most complete examination, as we have then under observation a flat surface instead of a concave one, consequently there is no distortion.

(2) Preservation of specimens. Insects set high on the pins are safe from the attacks of mites.* If an infected specimen is introduced by chance into the box or cabinet drawer there is no

* This fact has received recognition at the hands of British entomologists although they still use the sloping setting-board.

danger of the other insects being attacked unless any should be in actual contact with the "mitey" one.


(3) Uniformity. With high-flat-set insects it is possible to attain a degree of uniformity in a collection that must commend itself to all lovers of order and regularity.

The foregoing may be taken as the principal reasons why I advocate the high-flat style of setting, but, as I have said, there are many others. These, I am sure, will make themselves apparent to all who may try the method. Of course, what I think an advantage others may consider the reverse, and, foreseeing the possibility of this, I have mentioned three only, because there can be no difference of opinion about them.

With regard to uniformity of specimens in a collection, there is no system of setting with which I am acquainted that attains this end so thoroughly as that under consideration. In British-set insects we have all grades in the slope of the wings and in the length of pin showing beneath the specimens. In some cases there is hardly enough of the pin through the insects to secure them in the cork. In others the specimens are run up to beyond the middle of the pin. To my eye, both look equally bad; the one appears to be plastered on the bottom of the drawer like a "blue-bottle" on a "ketch-'em-alive," and the other suggests an unsuccessful attempt at the continental style. Of course the position of an insect on the pin and the dip of its wings are in a measure regulated by individual fancy, consequently vagaries in these matters are sometimes met with in continental-set insects; as a rule, however, there is greater uniformity in a collection of high-flat-set insects than is usually seen in a collection consisting of specimens set on sloping boards, granting that the specimens comprised in the respective collections have been operated upon by various manipulators.

That any interest at all should be taken by British entomologists in the continental method of setting is in itself satisfactory, as it shows that the insular practice is not quite all that could be desired, and that some at least are quite ready to leave the ancient groove. It is perhaps too much to expect that those who have their collections complete, or nearly so, will essay the task of re-setting; but to those who are not in this enviable position, and who wish to form a collection of Lepidoptera in which the specimens shall be at once pleasing to the eye and in the best

possible shape for study, I would say, set your insects high on the pin, and let the wings be flat.

In high flat-setting of course a different kind of board or "set" is required, to that in general use in this country. These are made of soft pine or cork, and are of the usual length. Those I have in use were made by Mr. Crockett, of Riding House Street, Great Portland Street, W.* I find it a great advantage to have the sides slightly inclined thus:  After an insect is removed from the board there is almost invariably a tendency for the wings to droop a little. The tilt in the setting allows for this, and an almost perfectly flat wing-surface is the result.

The *modus operandi* in setting Lepidoptera on flat boards may be identical with that usually practised, but it is a most useful plan to use strips of transparent tracing-cloth. These should be the length of the board, and the width in accordance with the insects set thereon, care being taken that the inner edge should not come too close to the base of the wing, but the outer edge should lap well over the apices. Bead-headed pins are the best for fastening down the strips.

It is not essential to use the foreign pins, as sizes such as Nos. 2, 3, 11 and 12, of Kirby, Beard & Co., would do very well for Macros, and the Micros could be set on ordinary pins and then staged on cork or pith, thus obviating the necessity of having turf-lined cabinet drawers. These last would be indispensable if Carlsbad and Vienna pins were used.

93, Robert Street, London, N.W.

VARIATION OF CERTAIN AGROTIDÆ.

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

THE group of Lepidoptera containing *Agrotis tritici*, *A. cursoria*, *A. aquilina*, and *A. obelisca* presents, and always has presented, such a vast range of variation and consequent difficulty of determination, even to our best lepidopterists, that it seems only natural they would from time to time, have something to say concerning such a difficult subject. It seems to me, however,

[* May also be obtained through Mr. Janson, Little Russell Street, Bloomsbury, W.C.—ED.]

that the study of the type-species of these different forms, is very necessary to enable us to get any knowledge of what is really meant by these species, or to find how far our ideas agree with or differ from the intentions of those lepidopterists who named these species.

In the following remarks I have entirely neglected the consideration of *A. nigricans*, because, in all its varietal forms there is no doubt about the species, and even in its most extreme varieties it is not likely to be mistaken for anything else. I will simply add that the dark Scotch form is the Linnean type (its name suggests it); the Southern specimens are a mixture of var. *fumosa* (dark with a yellow spot), *ruris* (the red form), *obeliscata* (with a dark rectangular spot between the stigmata), and *marshallana* (beautifully marbled with yellow); the two former generally occur in abundance, the two latter more rarely; in fact the last is an excessively rare variety.

Agrotis tritici.—The type of this species was described by Linnæus, 'Systema Naturæ,' No. 320, as:—"Noctua spirilinguis cristata cinerea alis maculis, duabus pallidioribus unaque nigricante. Stigma ovale et reniforme ut in reliquis, juxta ovale internis macula nigra ejusdem magnitudinis similis *Ph. graminis*."

This reference to *graminis* makes it quite clear that the type was striated, that is, it had a streaked costa and pale median nervure, together with a row of wedge-shaped markings parallel to the hind margins, these all being constant characters of every variety of this species. In addition, we learn that the colour was cinereous, that the two ordinary stigmata were pale, the claviform black, and that there was a black spot of equal size just within the orbicular stigma. Taking all these things into consideration, there is little difficulty to fix on a type; the colour, as before mentioned, is cinereous, and we have only to imagine a specimen of such a colour, with all the characteristic markings, to settle the matter. The first figure in Newman's 'British Moths' would fulfil all the conditions. So much for the type.

A. aquilina.—Hübner's figure 135 represents the type of this species, and it may be described as follows:—Anterior wings of a dull dark brown, with the space beyond the reniform, *i. e.*, between the reniform and outer margin, darker than the base; also darker brown between the stigmata. The costa and median nervure scarcely paler than the remainder of the wing, and then

simply a slightly paler shade of the ground colour. A dark streak runs under the base of the median nervure; the five wedge-shaped lineolæ which are so characteristic of the typical *tritici* are well developed. Hind wings grey, with a dark marginal line, dark nervures and lunule.

A. obelisca.—Hübner's figure 123 represents the type of this species. It may be described as of a deep, dull, reddish colour, with ochreous costa and dark hind margin, well-marked stigmata, but no wedge-shaped streaks near hind margin. Hind wings white, with a reddish hind margin.

The above three species are what I may term the characteristic pale costa part of the group.

A. cursoria.—The type of this species is represented by Hübner's figure 540. The anterior wings are almost entirely like the figure of *cursoria* in Newman's 'British Moths,' p. 329, but perhaps appear a trifle narrower. It may be described as of a pale reddish ochreous, with an abbreviated, followed by a complete, double, black, basal line; no claviform, but the reniform and orbicular outlined in pale; two short, dark, transverse, costal streaks above the reniform, a faint wavy line from the base of the reniform to the inner margin; a double transverse wavy line beyond the reniform; another wavy line from the apex to the anal angle includes a dark reddish brown hind margin. Hind wings ochreous, with a dark reddish gray margin, and reddish lunule. N.B. No trace of a costal streak on the anterior wings.

Such are the descriptions of the type-specimens. Now for a few general remarks. It will be seen from these descriptions that the types of *tritici*, *aquilina*, and *obelisca*, have all a costal streak developed, this costal streak giving a special character to the group. It will be seen that *cursoria* has no costal streak or longitudinal markings, but that the characteristic transverse markings are the development and completion of the abbreviated and broken transverse markings in the other group, agreeing with them in every particular; such abbreviation and breaking-up being due to the presence of the longitudinal markings which pass through them. In the species of the first group (with pale costæ), the ground colour has had a great deal to do with their determination as distinct species by lepidopterists, the brown specimens having been referred very properly to *aquilina*, the

dark red and black specimens to *obelisca*, whilst all other specimens have been referred to *tritici*. Those which have had no costal streak have been generally lumped together under the name of *cursoria*. Such has been the general method of dealing with these species. To return to the early authors, Hübner only figures one specimen of *tritici* and that is, according to Dr. Staudinger, a male *crassa*, but he figures three *aquilina*. His figure 135 which I have previously described, is a really good example of the form known as *aquilina* in Britain, but his other two figures of *aquilina* 535 and 536 are nothing like his figure 135, and themselves represent two entirely different forms. His figure 535 has a yellowish costal streak and a white median nervure, whilst the figure 536 is of a dark red colour with a white costa and white median nervure. Thus we see Hübner figures three distinct *aquilina*, and all three represent different, and not uncommon forms of *tritici*. Unless we are ready to accept all dark brown and red-streaked *tritici* as *aquilina* on the strength of Hübner's three figures, we must throw out all idea of *aquilina* as a species. Boisduval, many years after, described a number of varieties of *tritici*, including some of Hübner's so-called species; but after a few years Guenée, when writing his 'Noctuelles,' vol. v., p. 289, takes Boisduval to task for referring Hübner's *fictilis* to *tritici* instead of, as he thought, to *aquilina*. Thus we find these two great naturalists at war about the matter, and we find Guenée laying down the law that the type of *aquilina* consists of "those individuals of a pale, clear, brownish ground colour, with the markings, stigmata, and wedge-shaped marks clearly developed." We must, however, bear in mind that afterwards ('Noctuelles,' vol. v., p. 289) he includes *fictilis* and *vitta* as varieties of *aquilina*. To show too, how little faith should be pinned in Hübner's power to discriminate the species of *Agrotis*, it must be remembered that *fictilis*, as well as *vitta*, *eruta*, *ruris* and *villiersii* were figured by him as distinct species. Since Guenée, no one, except the British authors, has ever attempted to set up *aquilina* as a distinct species; and no one but British lepidopterists now attempts to prove what seems to me an utter impossibility. I have specimens of the species from most of those lepidopterists who think they get it. Nearly all the specimens are brownish (as of necessity they must be); all are taken freely where *tritici*

occurs; most lepidopterists have a generally correct idea of what *aquilina* ought to be; a few, however, do not seem even to understand these elementary necessities. The continental lepidopterists long ago understood this question, and Hübner's figure 135 takes its true position in their lists, as the type of *tritici* var. *aquilina*, his figures 535 and 536 being referred to other varietal forms.

With regard to the old British authors they have had a comparatively easy task. Every new form of *tritici* which occurred was described as a new species and named as such; the forms represented by the type-names are difficult to trace, but Wood's, and Humphrey & Westwood's publications have figures of most of these varieties.

The variation of *tritici* is so extreme, that it is almost impossible to give any idea of it. Without egotism, I may safely assert, that I have one of the finest series of this species at present in existence. Some 500 to 600 specimens, picked from perhaps twenty or thirty times that number of specimens, include some of the most magnificent forms that can be imagined. The ground colour varies from pale whitish grey to intense black, but with all this variation there is one thing that immediately strikes a student when a classification or grouping is attempted, *viz.*, that all these moths can be divided into two groups—(1) those that have no distinct pale longitudinal markings (costal streak, nervures, &c.), but have very complete transverse markings (as in typical *cursoria*); and (2) those that have distinct pale longitudinal markings, with the transverse ones broken up. I have divided my specimens upon this plan, into four distinct sections according to ground colour, *viz.*, grey, slate, brown and black, and these again are distinctly graduated according to the depth of these various ground colours. I place forms with the same ground colour in following rows—(1) with the transverse markings and not the longitudinal; (2) specimens with the same ground colour as the previous row but with longitudinal markings. Nearly three drawers of picked *Agrotis* arranged in this way makes material for careful study and carries conviction with it. I want now specially to refer to those forms of *tritici* which are without longitudinal markings. These specimens, whitish grey, slate-colour, yellowish ochreous, brown, reddish brown, intense black, with every intermediate colour, have every line, every mark the

same as Hübner's *cursoria* and everyone else's *cursoria*, but they are *tritici* taken in copulation with streaked *tritici* and occur in equal abundance with these *tritici*, some forms, streaked and unstreaked, being of equal rarity. The great mass of these forms came from one locality, Deal, but I have a very large number of *tritici* from other localities, thanks to the kindness of my numerous correspondents. Misled by the text-books, I considered all these striking unstreaked specimens as *cursoria*, and like many others, put them in my cabinet as such. Newman gives Kent as a locality for *cursoria*, but I do not believe anything of this form which we can look upon as at all distinct from *tritici* is obtainable on our Kent coast, and there is no doubt that the endless variation from grey-white to rich red-brown and black, precludes the idea of selecting one special form and saying, "This is *cursoria*," to the exclusion of all others, simply because they are of a different ground colour.

(To be concluded.)

CONTRIBUTIONS TOWARDS A LIST OF THE VARIETIES
OF NOCTUÆ OCCURRING IN THE BRITISH ISLANDS.

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

(Continued from p. 155.)

Leucania, Och., *straminea*, Tr.

The type of this species is described by Treitschke as "Alis anticis pallide stramineis, punctis tribus medio pluribus ad marginem in seriem dispositis nigris; posticis albis fusco venosis." (Treitschke, 'Die Schmet. von Europa,' vol. v., p. 297.) This typical form, with only "three dots on the anterior wings, besides the row of minute dots on the extreme hind margin, and with hind wings and fuscous nervures," is not at all a common form with us. Generally there are slight traces of a more or less complete transverse row of dots, and traces of a row of dots on the nervures of the hind wings, besides which a dark longitudinal streak is found under the median nervure of the anterior wings. In 1883 and 1884 I took a large number of this species in North Kent, and I found it one of the most variable species in its genus. In my long series, picked from a great number, I have

four very distinct forms besides the type. Summarised these are:—(1) A pale form, without any dots or markings. (2) The type, with three dots on anterior wings only. (3) A form with a transverse row of dots on anterior wings and another on nervure of posterior wings, with a faint shade under the median nervure. (4) A red form. (5) A form much suffused with black scales.

α. var. obsoleta, mihi.—This variety has the anterior wings of a delicate wainseot or straw-colour, with the median nervure pure white, below which is a faint trace of the basal part of a longitudinal dark shade. The three dots on the anterior wings are entirely absent. Posterior wings pure white, no markings or dots. The crest on the thorax very distinct. I have only one specimen of this exceedingly rare and extreme form.

β. var. intermedia, mihi.—This variety most nearly approaches the type. The wings are of the same pale straw or creamy-white colour, with a central dot, and, like the type, has two of the dots, of those which form the transverse row so characteristic of the following varieties, very conspicuous, *viz.*, the one above and that below the median nervure; but, in addition, the others which form the series are more or less developed. A longitudinal ochreous dash, darker than the ground colour, extends under the base of the median nervure; a few ochreous scales scattered over the spaces between the nervures. Posterior wings pearly-white, with a faintly-marked row of dots on the nervures parallel to the hind margin. This form, therefore, constitutes a link between the type and the following varieties.

γ. var. rufolinea, mihi.—Anterior wings bright reddish ochreous, all the wing-rays pale, so that the anterior wings appear to be made up of alternate fine lines of red and white; the central dot distinct, a complete row of black dots parallel to the hind margin; a well-developed dark reddish shade under the basal part of the central nervure. Posterior wings white, much shaded with grey (more so in males than in females), with a row of black dots on the nervures. Many specimens of this red variety have the anterior wings much suffused with black scales, as in *var. nigrostriata*, but the latter never has a red ground colour.

δ. var. nigrostriata, mihi.—The anterior wings pale wainseot-brown, so thickly suffused with black scales as to obscure the ground colour; the wing-rays very pale, sometimes white, so

that the wing has the appearance of being crossed with alternate striations of black and white lines; a very dark, almost black, shade runs under the median nervure, the central dot and row of dots present, as in the variety *rufolinea*, but more inconspicuous, owing to the suffusion. Posterior wings much irrorated with dark atoms, giving them a very dark appearance. Females of this variety are very rare. My series of this form are chiefly males.

Leucania, Och., *impura*, Hb.

The type of this species is represented by Hübner's fig. 396. The species was previously figured by Albin, plate xxx. :—*g*, upper side; *h*, under side. As, however, none of his figures are named, Hübner's name and description must stand. His fig. 396 may be described as follows:—Anterior wings of a pale wainscot-brown colour, with a dark longitudinal shade under the base of the median nervure, broad, but not reaching to the end of the discoidal cell; a black dot at the end of the discoidal cell, and four dots are developed of the transverse row parallel to the hind margin, *viz.*, two towards the apex, one just below the outer edge of the median nervure, and one just above the inner margin; nervures dusky. Posterior wings grey, nervures darker, extreme border spotted. It must be noticed that the peculiar development of the short longitudinal streak under the base of the median nervure is very unusual, and that the posterior wings are much paler than in our specimens.

α. var. *fuliginosa*, Haw.—This is our ordinary form of *impura*, which, as I have pointed out above, differs from Hübner's type. "The anterior wings are ochreous, with or without a reddish tinge, with three minute and often almost obliterated black dots, placed as in a triangle; the extreme hind margin marked with very minute black dots; the nervures white towards the outer margin. The posterior wings fuscous or smoky, with pale cilia, and an indistinct lunule" (Haworth's 'Lepidoptera Britannica,' p. 174). It will be seen that the variety has not the double spot above the median nervure (only one being developed), nor the spot above the inner margin (just beyond the anal angle), which characterise the type, and the hind wings are darker. The Scotch specimens are smaller, with clearer fore wings and darker hind wings than our southern specimens.

β. var. *punctina*, Haw.—This is the red form of *impura*: "The

anterior wings entirely red, with nervures distinctly marked, the extreme hind margins with fuscous dots; the hind wings pale grey, with a broad cinereous patch at the anal angle" (Haworth's 'Lepidoptera Britannica,' p. 174). The hind margin is in some of the red varieties unspotted, and the posterior wings are often very dark. I have a fine series of this rufescent form, obtained from the marshes in this neighbourhood a few years ago. Haworth described *punctina* from only two specimens.

γ. var. *punctilinea*, mihi. — The anterior wings reddish-ochreous, much suffused with dark scales; the row of spots parallel to the hind margin well developed, forming an almost continuous row, commencing on the costa and ending on the inner margin; a dark shade under the pale median nervure. The posterior wings very much suffused, and very dark; in some specimens almost black. I have a few specimens of this variety, showing the extreme variation in the development of these dots, captured on Greenwich Marshes in 1883; but such forms are rare.

Leucania, Och., *pallens*, L.

The type of *L. pallens* has a pale ochreous ground colour, with paler wing-rays, and one or two black spots. (There are generally three black dots—one in the centre of the wing at the end of the discoidal cell, the other two being beyond the centre, and situated one directly above the other, immediately below the median nervure, and being a portion of that row, parallel with the hind margin, which is normal in the strongly marked varieties of *straminea*, occurs in var. *punctilinea* of *impura*, but does not seem ever to be developed in this species. Specimens of all shades of colour obtaining in this species are very inconstant as to the number of these three dots developed). Hübner's fig. 234 of *pallens* is typical, but has three dots. The Linnæan description of the type is as follows:—"Spirilinguis lævis, alis deflexis pallidis immaculatis: marginibus posticis subtus nigro punctatis." "Alæ superiores supra puncto 1, sed 2, nigro, minimo. Subtus alæ atomis nigris, imprimis margine postico nigro-punctato." ('Systema Naturæ'). The ground colour varies from pale ochreous (nearly white) to bright ochreous-red. It rarely happens that the anterior wings are suffused with black scales to an appreciable extent. The hind wings are typically

pure white in the male, with the hind margin slightly shaded with grey in the females.

α . var. *arcuata*, Stphs.—The colour of the anterior wings of this variety is pale wainscot, with two black dots on the disc. Posterior wings white, shaded with ashy brown, and with an arched row of brown spots on the veins beyond the centre of the wing. Under this variety I would, therefore, include all the forms (whatever their colour) which have this arcuated row of dots. Such a development is very rare in this species, although normal in most of the varieties of *straminea*, and occasionally occurring in *impura*. I have several specimens with one or two dots developed, but the only specimen in my series that has any approach to a complete row was captured by Mr. Young, at Rotherham, Yorks.

β . var. *ectypa*, Hb.—Hübner's fig. 231, which he names *ectypa* is undoubtedly a fine red form of *pallens*. It has the anterior wings of a bright reddish ochreous with pale nervures, no central dot, two dots in outer row, one just below the third branch of the median nervure, and one just above the median nervure. Hind wings whitish grey, with a dark grey shade parallel to the hind margin. Dr. Staudinger describes it as "Alæ anteriores rufæ." I have many specimens in my long series almost like Hübner's figure. The development of the grey shade on the hind margin into a transverse band, is rarely very distinct in British examples. This is treated by Gueneé as a distinct species in his 'Noctuelles,' p. 94.

γ . var. *rufescens*, Haw.—This variety, treated as a distinct species by Haworth, is thus described by him, "Rufescens, alis anticis venosis immaculatis, posticis (costa excepta) certo situ fusciscentibus;" "alis certo situ lineolis 3-4 obsoletis, fuscis, posticis fuliginosis venis fuscis." It is a very slight modification of *ectypa* differing from that variety in having none of the three ordinary dots. Otherwise both are red, both have the wing-rays very pale, both have the hind-wings shaded on the outer margin, although in *ectypa* the shading of the hind margin takes a banded form. The anterior wings in *rufescens* have also three or four dusky streaks visible in certain positions. These streaks are very distinct in some red specimens I have. I believe that both this form and *ectypa* occur very freely everywhere in Britain with the type. I have them from

many Scotch and Irish localities. The variety *rufescens* is, without doubt, the *ectypa* of Boisduval.

δ. var. *suffusa*, St.—Another modification of var. *ectypa*, with a tendency to become melanic, having “the fore wings reddish, streaked with whitish ashy between the veins; with a single dusky dot at the apex of the discoidal cell; and two or three obsolete brownish streaks near the extremity; hind wings whitish, with a broad, sub-apical, dusky stripe; the apical margin paler.” (Humphrey & Westwood’s ‘British Moths,’ p. 218.) The variety is figured in the same volume, plate xlvii. fig. 8. The figure represents the space below the median nervure and between the other nervures thickly sprinkled with minute black atoms, and this figure is identical with a fine dark specimen I captured at Deal in July, 1887.

ε. var. *ochracea*, St.—The type of this variety “measures only 13 lines in expanse; the fore wings are ‘pale ochreous, with a slight rufescent tinge in certain lights, immaculate, obscurely streaked with pale fuscous between the nervures; the striæ at the base and on the inner margin being the darkest, as in *L. comma*; hind wings whitish ash, with the margin slightly darker.’” (Humphrey & Westwood’s ‘British Moths,’ p. 218.) This small specimen taken at Darent in August was supposed by the late Mr. Henry Doubleday to be a specimen of the second brood. I have, however, many large specimens of the summer brood from various localities answering this description, and I would propose that the name *ochracea* comprise all reddish ochreous forms, whatever the number of dots developed. Var. B of Guenée’s ‘Noctuelles,’ p. 93, would appear to belong to *ochracea*. It is described as having “a reddish shade under the median nervure, and similar streaks towards the outer margin. Inferior wings having the nervures sprinkled with black on the disc.”

(To be continued.)

A FORTNIGHT IN SWITZERLAND.

By R. J. HUTCHINSON.

This spring it was my good fortune to spend a short holiday in the beginning of May in Switzerland, and although I did not go out with any intention of collecting, the beauty and, to

English eyes, rarity of the butterflies about, induced me to purchase a net and pill-boxes, and capture some thirty species. The dates between which they were taken were May 3rd to May 18th, or just about a fortnight; and probably, had we stopped a few days longer, the list would have been largely augmented, as they were just beginning to come out in quantities when we left. Having no setting-apparatus, we simply enclosed the specimens in small paper envelopes, and with a very few exceptions, they all arrived safe in England, and were set out without much difficulty after relaxing. During the first week, from May 3rd to 11th, we were staying at Bex, in the Rhone valley, some fifteen miles above the Lake of Geneva, and a favourite haunt of butterflies. From here one can take short train journeys up and down the valley, and come across fresh species at every place. The following was the diary of captures:—

May 3rd. Very hot and sunny; in a huge orchard-meadow we took several *Vanessa antiopa*, all hybernated specimens. *Leucophasia sinapis* was very abundant, besides *Pieris rapæ* and *P. napi*, but otherwise there were no others except an occasional *Thecla rubi*.

May 5th. Another magnificent day; saw both *Papilio podalirius* and *P. machaon* at Bex; took *Argynnis dia* and *Vanessa c-album*, which was fairly common in the fine beech-woods which were just coming into leaf. *Euchloë cardamines* (males) have been about three or four days, but we did not see a female till May 7th; by the 10th they also were very common. Took *Hesperia alrcolus* for the first time. *Vanessa antiopa*, *V. io*, *V. urticæ*, *V. polychloros*, are all common everywhere; all hybernated specimens.

May 7th. Very hot; on the side of the mountain, half-way between Lavey and Morcles, some 2500 feet up, we took a solitary specimen of *Pararge hiera* in beautiful condition. At Lavey we also took two *P. podalirius* and an *Argynnis euphrosyne*.

May 9th. This was the day *par excellence* for butterflying. Four of us with nets made an excursion up the Rhone valley, between St. Maurice and Lavey, spreading out in line near the base of the high cliffs, and beating the low-lying and luxuriant meadows which were intersected at intervals by ditches and an occasional small pool. It was an ideal place for our game and we were not disappointed. The *Papilio podalirius* were glorious

and fairly plentiful, as between us we took thirteen specimens in magnificent condition, six of which fell to my net. We also took seven *Pieris daphidice*, and among them two of the rare variety *bellidice*. My bag also included a *Papilio machaon*, four *Argynnis euphrosyne*, several *latona* (all males), *Syrichthus fritillum*, *Lycæna cyllarus*, besides commoner ones, such as *Nisionades tages*, *Lycæna argiolus*, *L. alsus*, *Nemeobius lucina*, and again all the five above-mentioned Vanessidæ. I might mention here, that on May 7th, single specimens of *Colias edusa* and *C. hyale* were taken near Bex, though not by me, and *Vanessa levana* was also captured at Lucens. I did not see *C. hyale* again till May 14th, after which they became common. I never saw *edusa* at all again.

May 10th. This morning, in quick succession, I took three more *Pieris daphidice*, on the bank of a stream close to Bex, also my first *Pararge egeria*.

For the next four days I was close to the level of the snow, and consequently saw but few butterflies, except crowds of *T. rubi*, and *A. dia*, and the Vanessidæ.

May 17th. To-day we walked along the Axenstrasse, from Fluelen to Brunnen, on the Lake of Lucerne, and besides having a very lovely walk, found ourselves once more in the midst of the butterflies, taking between ten and twelve o'clock, two *Papilio machaon*, two *P. podalirius*, both these were common, and we could have captured more; an *A. euphrosyne*, four *C. hyale*, a *Carterocephalus palaemon*, the only specimen I have seen, and *Pararge egeria*, besides some commoner species. Unfortunately the Föhn wind rose half-way through the morning, and spoilt what promised to be a very productive day, as no ordinary butterfly could venture out while it was blowing; notwithstanding which *P. podalirius* were still flying, though with extreme difficulty, and offering very easy capture while laboriously beating up against it.

May 18th. In a spare hour in the morning before setting off for home, I went out to try my luck on a marshy bit of ground close to Lake Lucerne, just behind the hotel at Brunnen, and there found quantities of *Melitea aurinia* flying: I saw it nowhere else; and also took here some *Ceronympha pamphilus* and a *P. machaon*. *S. alveolus*, *N. tages*, and *Lycæna minimus* were very abundant at Brunnen.

The last winter was an unusually severe and protracted one in Switzerland, and we were told that the snow had only cleared off Bex three weeks before our arrival; possibly the butterflies were a little later in appearing than usual on this account.

15, Cavendish Square, London, W., June, 1888.

ENTOMOLOGICAL NOTES, CAPTURES, &c.

APORIA CRATEGI.—In view of the recent discussion on the disappearance of *A. crategi* in the south-eastern counties of England, it may be interesting to mention that my son, H. M. Briggs, writing from the South Eastern College, Ramsgate, says, "On June 9th I took an *Aporia crategi* in fine condition."—THOS. H. BRIGGS; Surrey House, Leatherhead, June, 1888.

COLIAS EDUSA IN JUNE.—*Colias edusa* seems to be out unusually early this year. While at Eastbourne I saw a fine specimen near Holywell, on the way to Beachy Head, on 12th June, careering along in its usual headlong fashion. I may add that I took several specimens there in 1885.—R. C. CYRIAX; 33, Douglas Road, Canonbury.

VANESSA ANTIOPA IN ESSEX.—To-day I had the pleasure of seeing a specimen of *Vanessa antiopa*, immediately after its capture by Master Callen, of 4, Matlock Villas, Hoe Street, Walthamstow. It was found at rest on the bole of a tree near 'The Eagle,' Snaresbrook, and is in very fair condition.—J. A. COOPER; 1, Sussex Villas, Harrow Road, Leytonstone, Essex, May 24.

THECLA W-ALBUM IN DERBYSHIRE.—There seems a fair prospect of an unusual abundance of *Thecla w-album*; and those collectors who are in want of it should be on the look-out for the perfect insect towards the end of July. On Wednesday, June 13th, I had the pleasure of taking, in a wood near this place, no less than sixty larvæ of this insect; and a friend who was with me got thirty more. A large proportion of them were nearly full-fed, and had turned brown previous to assuming the pupa-state; but some few were still in the green stage. We found many climbing up the trunks of the trees, principally, of course, on the wych-elms; but several on larch, one on ash, and one on a frond of fern, whither it had probably dropped from an elm

above. They seemed most to favour such trees as were somewhat exposed to the rays of the sun, and especially such as had seed hanging on them; and on one of this kind we took nearly twenty larvæ. A high wind had been blowing the day before, which might partly account for the numbers we found crawling up the trees. All, however, were ascending, not descending. May this be an indication of the fact that they pupate towards the top of the tree?—CHAS. F. THORNEWILL; Burton-on-Trent, June 15.

GYNANDROCHROMORPHIC *LYCÆNA ICARUS*.—I took on June 10th, on the downs near here, a fresh specimen of *Lycæna icarus*. The left wings are the colour of an ordinary female; the right wings have the colour of the male, with the exception of a dark narrow band reaching from the tip to the base of the anterior wing, and a similar band along the upper edge of the posterior wing, with one indistinct red spot. The right antenna is longer than the left.—ALFRED BRAZENOR; Lewes Road, Brighton, June, 1888.

[*Vide* Entom. xvi. 172.—J. T. C.]

SPRING BROOD OF *LYCÆNA ARGIOLUS*.—I have met with this elegant little butterfly this spring in the utmost profusion in nearly every locality I visited on Ashdown Forest. A few specimens were also noticed at various places close to this village, and on three occasions it was seen flying round a holly-tree in the garden. The earliest date at which I observed them was about May 10th, and they remained on the wing till about June 12th. The species was most abundant at a spot called "Chuck Hatch," where holly plantations are numerous, the hollies in some cases growing to a great height. The immediate surroundings are wild and barren, there being nothing but moorland for miles around, with a solitary wild-crab or a yew-tree dotted here and there. One of my visits to the locality was on May 28th, and the day being very dull not a specimen was to be seen on the wing; however, by beating the bushes with a stout stick, I succeeded in netting a fine series. The sexes appeared to be in equal proportion as to numbers. I noticed that whenever a gleam of sunshine occurred they began immediately to fly lazily round the tops of the hollies, but soon again settled on the sky becoming clouded. Several specimens were discovered at rest on the under side of the leaves, and also amongst the grass

under the bushes. I shall be interested to note whether the second brood is abundant in this locality. The only place in which I have ever seen the August brood of this butterfly in any numbers was last year at Brambletye Castle, near Forest Row, where the ruins are covered with ivy, over which *L. argiolus* was fitting. Hollies, however, were by no means abundant.—W. H. BLABER; Sunnyside, Groombridge, Sussex, June 19, 1888.

SYRICHTHUS MALVÆ var. TARAS (LAVATERÆ) AT ST. LEONARDS.—While collecting on the South Eastern Railway bank near St. Leonards, I took a specimen of the above variety of *S. malvæ*. I should be glad to know if any other collectors have met with it this season, and if it is often taken near the south coast. I have netted since several typical *malvæ*, with the hopes of again obtaining the variety, but have been unsuccessful.—J. W. SWEETLOVE; Cragmore, London Road, St. Leonards-on-Sea, June 5, 1888.

DEILEPHILA LIVORNICA AT BELFAST.—On June 7th I had the good fortune to capture a fine, apparently freshly-emerged, specimen of this rare insect; and on the 11th a second specimen was taken by a friend. Both were taken hovering over rhododendron flowers in Ormean Park.—C. W. WATTS; 1, Holborn Terrace, University Street, Belfast, June 20, 1888.

DEILEPHILA LIVORNICA IN SUSSEX.—While collecting in woods at Polegate, on Saturday, June 2nd, I captured a very fine specimen of *D. livornica*, flying over flowers.—A. WARD; 118, Richmond Road, Brighton, June 4, 1888.

LAPHYGMA EXIGUA AT LEWES.—When collecting on the downs in this neighbourhood on the evening of June 4th last, I had the good fortune to capture a specimen of this rare Noctua, which was skipping over the turf. I very nearly overlooked it, thinking it to be a species of *Crambus*; and, when captured, I was not sure of my prize until I showed it to a friend, who at once pronounced it to be *Laphygma exigua*.—W. E. NICHOLSON; Lewes, June 21, 1888.

[This specimen would be hybernated; examine any ivy bloom in neighbourhood in autumn.—J. T. C.]

EUPITHECIA VENOSATA.—In the autumn of 1886, I obtained from Mr. Salvage of Brighton, some pupæ of *Eupithecia venosata*, collected by him in that and earlier stages in Shetland. Some of

these emerged in June of the following year. Very unexpectedly to me—for I had no idea of the moth remaining two years in pupa—I have bred during the present month of May a goodly series of this pretty species. The first emergence on May 2nd was just a month earlier than that of last year. Some of them are extra fine—veritable giants amongst the Pugs.—JOSEPH ANDERSON, Jun. ; Chichester, May 25, 1888.

THE ABUNDANCE OF *PLUSIA GAMMA*.—I do not know whether the abundance of *Plusia gamma* is to be an event of the season. As soon as the leaves began to appear in May I noticed this species in my own little garden. On all mild evenings throughout May *gamma* was present. I saw more than a dozen in Chattenden on May 26th, several at Cuxton on May 28th, and when at Farnborough (Kent), June 2nd and 3rd, I saw several others. There are several every evening in my garden; last evening I saw five specimens in a few minutes. The specimens I have netted are pale in colour with worn fringes, leading one to surmise that the imago has hibernated. Larvæ were abundant in October (1887), and pupated and emerged (as far as those in confinement were concerned) last year. This would seem to strengthen the idea that they have hibernated. Has anyone found hibernating specimens?—J. W. TUTT; Westcombe Park, S.E., June 8, 1888.

SUGARING NEAR TENBY.—During the last week or so I have found my experience coincide with that of your correspondents, as to the advantage of sugaring after rain (Entom. 140). The weather here had for some time remained hot and dry, during which time few moths were to be got, but later on we had several days' rain, after which matters considerably improved, and I succeeded in taking a fair number at sugar; among them, *Mamestra albicolon*, *Miana strigilis*, *Grammesia trigrammica*, *Agrotis ripæ*, *A. segetum*, *A. exclamationis* (the last two were a perfect pest), *Hadena dentina*, *Aeronycta rumicis*, &c. — SPOTSWOOD GRAVES; Victoria Street, Tenby, June 21, 1888.

GREAT ABUNDANCE OF INSECTS. — During the past fortnight *Plusia gamma* has occurred here in vast numbers. At night they swarm round sycamore bloom in thousands, and in the grass-fields they appear to rise from every bunch of grass. *Vanessa cardui* and *V. atalanta* are out in greater numbers than I have ever noticed before. So far too, I have found moths come to

sugar here very freely. Such common insects as *Agrotis puta*, *A. exclamationis*, &c., cover each patch almost as soon as laid on.—(Major) CHARLES PARTRIDGE; The Castle, Portland, June 10.

[Both *Vanessa cardui* and *Plusia gamma* have been very generally abundant this season. In early June I noticed a great abundance of *V. cardui*, especially on the Essex coast, where *P. gamma* was equally common.—J. T. C.]

ABUNDANCE OF LARVÆ. — On June 9th, on entering a wood near Holmsley, New Forest, our attention was called to the bareness of the foliage on the oak-trees, and as we approached we observed that for a few hundred yards the trunks were completely surrounded with webs, within and on which there were swarms of larvæ of several different species. There were several which we could not determine but amongst others were *Thecla quercus*, *Porthesia auriflua*, *Psilura monacha*, *Phegalia pendaria*, *Hybernia defoliaria*, *H. aurantiaria*, *Cemitobia brumata*, *Oprobria dilutata*, *Asphalia ridens*, *Teniocampa stabilis*, *Catocala sponsa*, &c. The leaves were completely stripped from the boughs, except at the tops of the trees. The larvæ also occurred plentifully, resting on the bracken-fern, and by listening we could hear a distinct rustling of larvæ crawling amongst the dead leaves on the ground. There had been heavy rain a few days previously, and this, besides the want of food, may have driven the larvæ down. On re-visiting the same place a week later there was scarcely a larva to be seen. We should be interested to hear if others have had the same experience.—J. M. ADYE and A. DRUITT; Christchurch, June, 1888.

[There has been in many districts a like abundance this season of lepidopterous larvæ, feeding especially upon oaks. Some parts of Epping Forest, and in Surrey and Kent, trees look as naked as in mid-winter.—ED.]

UNUSUAL PAIRING.—In October last, whilst sugaring in the Forest of Dean, I took a male *Cerastis vaccinii* in copulâ with a female *Miselia oxyacanthæ*. Unfortunately I neglected to preserve the female. Last week I came across a male *Euchloë cardamines* in union with a female *Bapta temerata*; they were bottled together out of the net, and I did not notice anything unusual till I reached home and commenced to pin my captures (*vide* Entom. 158).—N. F. SEARANCKE; Mitcheldean, Gloucestershire, June 3, 1888.

THE DIMORPHISM OF PIGMENT.—Mr. Sydney Webb's interesting record of a variety of *Euchloë cardamines*, in which the usual orange tips are replaced by clear yellow (Entom. 132), leads me to refer to the third distinct case of dimorphism of animal pigment which has come under my notice. The first pigment is yellow or red, as seen in *Zygæna*, *Arctia*, &c.; the second, white or yellow, as in *Pieris*, *Rumia*, &c.; and the third is well illustrated by Mr. Webb's variety, having the two forms—orange and yellow—yellow being, as in the other two cases, probably the primitive one. In the North American species of *Colias* this dimorphism is very plainly seen. *C. philodice* of the Eastern States is yellow, but has its representative further west in the orange *C. eurythema*, which, nevertheless, shows a tendency to yellow in its forms *ariadne*, Edw., *keewaydin*, Edw., and *intermedia* (n. var.), and has the orange wholly replaced by yellow in the forms *eriphyle*, Edw., and *autumnalis* (n. var.). For the variety of *Euchloë* (or *Anthocharis*) *cardamines*, in which the orange is replaced by clear yellow, the name *aureoflavescens* may be used, as for any other atavisms of this nature.—T. D. A. COCKERELL; West Cliff, Colorado, May 21.

BOTANICAL DRYING PAPER.—As all entomologists should also be botanists, it is not out of place to call attention in these pages to Newman's Botanical Drying Paper, which is specially manufactured for preserving botanical specimens. The new thick kind is very useful, and has the advantage of practically lasting for always. It is far better to use this paper than more ordinary sorts, because with this and the smallest care "black plants" may be avoided, while the true colours of the flowers will be preserved.—ED.

SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON.—*June 6th*, 1888.—Dr. D. Sharp, F.L.S., President, in the chair. Mr. George Meyer Darcis, of 32, Central Hill, Upper Norwood, was elected a Fellow of the Society. Mr. Pascoe brought for exhibition a book of fine plates of Mantidæ, drawn by Prof. Westwood, which it had been hoped would have been published by the Ray Society. Mr. E. Saunders exhibited a species of Hemiptera, *Monanthia*

angustata, H.-S., new to Britain, which he had captured by sweeping, near Cisbury, Worthing. The insect is rather closely allied to the common *Monanthia cardui*, L. Mr. M'Lachlan exhibited a species of Halticidæ, which had been sent him by Mr. D. Morris, Assistant Director of the Royal Gardens, Kew, who had received them from Mr. J. H. Hart, of the Botanic Gardens, Trinidad, with a note to the effect that they had attacked young tobacco and egg-plants badly in that island. Mr. Jacoby had, with some reserve, given as his opinion that it might possibly turn out to be *Epitrix fuscata*, Duv., a species which had been described from Cuba. The Rev. H. S. Gorham exhibited a number of beetles lately captured in Brittany, including *Diachromus germanus*, L., *Onthophagus taurus*, L., *Hister sinuatus*, Ill., and other species which are exceedingly rare, or altogether wanting in Britain, and yet occur very commonly in the North of France. Mr. Enock exhibited specimens of the Hessian Fly, bred by himself, and mounted for the microscope. Mr. White exhibited living larvæ of *Endromis versicolora*, and remarked that when quite young they are nearly black, owing to being very thickly spotted with that colour; the body-colour is green, and after the second change of skin the spots disappear. Mr. White also exhibited two preserved larvæ of *Phorodesma smaragdaria*, which he had recently taken, and made some remarks concerning the so-called "case" which this insect is said to construct from the leaves of its food-plant, *Artemisia maritima*. This he did not consider to be really a case, but he had discovered that the larva possessed on its segments certain secretory glands, at the apex of each of which there is a bristly hair; this appears to retain pieces of the plant, which are probably fixed firmly afterwards by means of the secreted fluid. These pieces are very irregularly distributed, and their purpose is evidently protective. Mr. Lewis exhibited about three hundred specimens of the genera *Heterius*, Er., and *Eretmotus*, Mars. The most remarkable of these was *Heterius acutangulus*, Lewis, discovered last year by Mr. J. J. Walker near Tangier, and were recently taken by him at S. Roche, in Spain. The names of the other species exhibited are:—*Heterius bedeli*, Lewis, *H. punctulatus*, Lucas, *H. cosmossellus*, Fairmaire, *H. pluristriatus*, Fairmaire, *H. setulosus*, Reitter, *Eretmotus sociator*, Fairmaire, from Algeria. *Heterius acutan-*

gulus, Lewis, *H. arachnoides*, Fairmaire, *H.* —, n. sp.. *Eretmotus tangerianus*, Marseul, from Morocco. *Heterius hispanicus*, Rosenb., *H. marseuli*, Brisout, *Eretmotus ibericus*, Brisout, from Spain. *Heterius ferrugineus*, Oliv., from France.—W. W. FOWLER, *Hon. Sec.*

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—*May 24th*, 1888.—T. R. Billups, F.E.S., President, in the chair. Messrs. A. H. Japp, L. Stevens, and J. C. Mathews were elected members. Mr. Jäger exhibited a larva of *Nemophila plantaginis*, which he had found dying, partially covered with mould; on examination he had noticed a small larva (also exhibited) emerging from the caterpillar. Mr. West stated that the larva which Mr. Jäger had found emerging from the *plantaginis* larva was that of the hair-worm, the ova of which had probably been swallowed by the larva of *plantaginis* while feeding. Mr. Helps showed *Dianthæcia capsineola*, bred from larvæ obtained in Norfolk. Mr. R. Adkin, a fine series of *Asphalia ridens*, bred from pupæ received from the New Forest; the specimens showed a considerable amount of variation, some of the females being very white. Mr. T. R. Billups, specimens of *Bracon brevicornis*, parasitic on *Ephestia kukniella*, and said that Mr. Marshall once reared the female from the galls of *Andricus terminalis*; Mr. W. F. Kirby had bred six males and one female from *Ephestia clutella*, Herr Brischke obtained a male from *Dioryctria abietella*, while Mr. S. Webb, of Dover, had bred a male from *Myelois ceratonie*. Mr. Fenn read a paper on "British Land and Freshwater Mollusca," which was followed by a discussion upon variation, Messrs. Tugwell, Rice, Carrington, Step, Tutt, South, and others taking part.

June 14th, 1888.—John T. Carrington, F.L.S., Vice-President, in the chair. Mr. Robinson exhibited ringed forms of the larva of *Trichiura cratægi* from Monkswood, and asked whether it was a common variety of the larva. Mr. Tugwell said he had never met with this particular form, although in his experience the larva of this species varied considerably. Mr. Lowrey, a male *Teniocampa stabilis*, taken in copula with a female *T. gothica*, and remarked that ova were obtained, of which only a few hatched; the larvæ eventually died. Mr. West, of Streatham, a specimen of a moth reared from a larva found in Switzerland, and which was identified as *Acronycta leporina*; also a larva

obtained on breaking up some tea-chests from China, with pieces of the wood, showing the way the chests had been riddled by these larvæ. Mr. Slater said the larva in question was probably that of a species of Buprestidæ. Mr. R. Adkin, specimens of *Cnephasia musculana*, *Eriopsela fractifasciana*, *Phoxopteryx comptana*, *Eupæcilia ciliella*, taken at the Society's excursion to Horsley on May 26th, and remarked that in his experience the present season was even later than in 1887. The Secretary read a communication from Mr. T. D. A. Cockerell, referring to a note by Mr. Frohawk, in the 'Field' (1887, p. 828), as to his having taken a white-banded example of *Sesia culiciformis* at West Wickham. Mr. Cockerell writes that he had hitherto always classed the bands of the Sesiidæ with the hind wings, &c., of *Arctia*, *Zygæna*, &c., as exhibiting a pigment common to all which was dimorphic, the two forms being yellow and red; some species of *Sesia* have yellow and some red bands, and occasionally a normally red-banded species would have the bands yellow, but that it should vary to white was quite unexpected and unknown to him; he would, therefore, ask whether white-banded *Sesia* were known to any of the members, and was the specimen referred to by Mr. Frohawk known anything of? Messrs. Hall, Tutt, Williams, and others said that in their experience they had never met with any white-banded forms of this species; and a discussion ensued. Mr. Tutt read an article by Mr. Cockerell from the 'Canadian Entomologist' for May, "On the nature of seasonal dimorphism in Rhopalocera"; and discussion took place. Mr. J. T. Williams mentioned that in the neighbourhood of Foots Cray, Kent, the larvæ of *Bombyx neustria* were unusually abundant; also that he had noticed a number of hibernated specimens of *Vanessa cardui*. Mr. Carrington and Mr. Tutt also recorded the appearance of specimens of *V. cardui*, and referred to the large number of hibernated *Plusia gamma* noticed in different districts. On Saturday, June 23rd, a large number of members and their friends were conducted by Mr. Carrington over St. George's Hills, as described in "Localities for Beginners," No. X. (Entom. xix. 226), and by the Guildford Road to the Hut Pond, returning to the 'Hand and Spear' Hotel, Weybridge, to tea in the late evening. A most enjoyable afternoon was spent, and several rare insects captured.—H. W. BARKER, Hon. Sec.

THE ENTOMOLOGIST.

VOL. XXI.]

AUGUST, 1888.

[No. 303.

LASIOPTERA CEREALIS, LINDEMAN.

By PETER INCHBALD, F.L.S., AND R. H. MEADE, M.D.

At the close of May I succeeded in rearing the Cecid that is so destructive to the crops of rye in the broad corn-tracts of Russia. The pupæ were sent by Professor Lindeman to Miss E. A. Ormerod, and to Professor Riley, of Washington, United States. Miss Ormerod most kindly shared with me the culms sent to her. The rosy larva, when full fed, pupates either within the culm, or under the sheathing leaves of the rye-plant, spinning a slight flossy web as its temporary home. In this web it awaits its next change, which, as I said, occurs at the end of May and the early part of June. Its home is easily recognised by the partial blackening of the culm or sheathing leaves, which thus give external evidence of the tenant within.

The first gnat appeared about the 25th of May, and a beautiful fly it is, certainly the most beautiful of the Cecidomyiidae I have yet reared. The flecks and snow-white bars on the black ground-colour of the gnat, give an especial character to the otherwise sober nature of its dress. I reared about half-a-dozen examples in all, but they were mostly females. They will live, after emerging, for three or four days, if supplied with moisture. They are more sluggish in their movements than are Cecids generally, so that a fair opportunity is afforded of noticing their magpie-colouring and their habits of life.

I have very much pleasure in subjoining a diagnosis of the *Lasioptera cerealis*, from the pen of the original discoverer,

Dr. Ch. Lindeman, Professor at the Imperial Academy of Agriculture, Moscow, Russia. He writes to me as follows:—

“I received the letter you have been good enough to send me, and I hasten to furnish you with an extract of my article on the *Lasioptera cerealis*, which appeared in 1881, in the ‘Bulletin de la Société Impériale des Naturalistes de Moscou...’ The fly is $2\frac{1}{2}$ mm. in size. The body is black. The sides of the thorax, the under side of the abdomen and of the head, as also of the oviduct, are blood-red (after death and in the case of full-grown examples black). Closely-set, silver-white scales show regular and very characteristic spots and bands on various parts of the body, especially on the following:—A large white spot on the scutel, another on the sides of the thorax, above the fore coxæ. Seven small cross-bands on the abdomen, upon the hind margins of the segments; these transverse bands are smaller above than underneath, and in the middle they either diminish in size, or are altogether interrupted. The trochanters, the knees, and the under-tips of the tibiæ are also furnished with clear white scales (*beschuppt*). The poisers are white. The fore-border of the wings, their tips, and the outer half of the hind margin, are broadly bordered with black. At the base of the fore-margin a white spot is found; another white spot sits like a stigma on the fore-border of the wing, in the middle thereof. The wings are incumbent, iridescent, ciliated on the hind margin, and with forked marginal veins. The antennæ are short and thick, with round hairy joints. Proboscis short, not prominent. Palpi long, bent hookwise (*hakenformig*) behind. Metatarsus much shorter than the following limb. The male is slightly distinguished from the female by the size of the spot and the black border of the wing.

“Professor Riley, at Washington, and Dr. J. Ritzema Bos, at Wageningen, have likewise succeeded in raising the gnat from larvæ with which I supplied them.”

Dr. Meade has also kindly supplemented Dr. Lindeman’s diagnosis by a microscopic description of *L. cerealis* from living examples, and most heartily do I accept his welcome offer to give it, which will be fully appreciated by naturalists both at home and abroad.

PETER INCHBALD.

LASIOPTERA, Meigen.

This genus contains some of the most elegant, but least-known species in the family of *Cecidomyiidae*. They are characterised by having the two first longitudinal veins of the wings placed near together, and close to the costa, where they are covered with black scale-like hairs; a white spot is also often placed in the site of the stigma. No vein crosses the middle of the wing, but the posterior or anal vein is present, and forked much in the same manner as in the genera *Cecidomyia* and *Diplosis*. Their bodies are very prettily variegated with patches and stripes of white, yellow, or black scales, which are very easily abraded.

The antennæ are peculiar; as in other Cecids they are moniliform, consisting of a number of subglobose joints which are sessile in both sexes; often somewhat flattened and compressed together (especially in the females), and verticillated with short hairs. The particular point about them, however, by which the Lasiopteræ differ from almost all the other Cecids is, that they are usually (if not always) shorter, and composed of fewer joints in the male than in the female. This fact seems to have been imperfectly known, and therefore indistinctly described by almost all systematic writers. Meigen, the founder of the genus, says that the antennæ are many-jointed, and the number of joints varies in different species, but he does not mention the difference between them in the two sexes. Macquart, Zetterstedt, Walker, Schiner, Van der Wulp, Osten-Sacken, &c., none of them give a distinct account of the difference between the male and female antennæ. Winnertz is the only author who has thrown much light upon the subject, and he does not distinctly state that the antennæ are *shorter* in the male than in the female, but says that they are from 12- to 24-jointed, and then refers to the figures in his 4th plate, in which he gives a very accurate delineation of an antenna of both sexes of *L. rubi*, in which he makes that of the male one-third shorter than that of the female, and consisting of seventeen joints, while there are twenty-three joints in that of the female. In his description of the different species he also states that the females have more numerous-jointed antennæ than the males in all those of which he knew both sexes.

The Lasiopteræ have similar habits with the other Cecids. Their larvæ mostly live in the woody stems of shrubs, or in the haulms of reeds and grasses, in which they often form gall-like swellings, such as those so well figured by Reaumur,* caused by *L. rubi* on the bramble.

L. CEREALIS, Lndm.

Nigra, squamis pilisque albis variegata. Thorax nitidus, lateribus rufis. Scutellum apice testaceum. Halteres petiolis rufis, clavisque albido-squamatis. Abdomen albo cinctum. Alæ maculis duabus niveis margine superiore signatæ. Pedes atri, nigro-alboque villosi. Antennæ 17-articulatæ in ♂, 23-articulatæ in ♀. Long. 3 mm.

Head small and round; eyes contiguous above in both sexes; palpi long, 4-jointed, two basal joints short, thick, and black, third and fourth joints yellow, the third longer than the two first together, and the fourth twice as long as the third, antennæ reddish brown, becoming lighter towards the end; those of the female are about as long as the head and thorax together, composed of twenty-three short, compressed cylinders, which become gradually smaller towards the apex, which is conical; those of the male are about one-third shorter than those of the female, and more slender, formed by seventeen joints of a more globular form and less closely pressed together than in the opposite sex; they are furnished with whorls of short hairs, both in male and female.†

Thorax shining black, furnished with some scattered fine white hairs which are most easily detached; the sides and roots of the wings are red; a silvery white patch of white hairs or rather scales, is seated on the side above the fore coxæ.

Scutellum black, with the apex tinged with red, and with a patch of white hairs at the base. *Abdomen* dark brown above and red beneath; the lower margins of the segments are furnished with transverse bands of white scales, forming in the female two small lunular-shaped patches (with the convex side upwards) upon each ring, which meet or approximate only, in the

* Vol iii., Pl. 36, fig. 1.

† The antennæ of this species so closely resemble those of *L. rubi*, which are figured by Winnertz (both in shape and number of joints), that I have inserted a copy of his engraving. Plate 4, figs. 13 and 14.

centre. These white bands are straighter in the male. The oviduct was either broken off or entirely retracted in the female specimen which I examined. The male caudal organs are small and may be thus described:—The end of the abdomen is rather thick and rounded, the forceps with the enclosed parts are attached to the under side of the extremity, and turn a little upwards; on the upper surface of the end of the abdomen two little nipple-shaped hairy bodies project in front and above the caudal organs. When viewed from above, the forceps appear to have two thick flattened and twisted arms, each supporting a sharp inverted claw. Between the roots of the forceps a triangular process is seated, which terminates in two elongated style-like bodies placed close together, which reach to within a short distance of the ends of the arms of the forceps. When viewed from the under surface, the style-like bodies appear to be covered with a loose flap-like process which hides them (see fig.).



Antennæ of *L. cerealis*,
male and female (Dr.
Meade).



Caudal organs of male
L. cerealis (Dr. Meade).

Wings. The costa, together with the approximated first and second longitudinal veins, are coated with black scales; one white spot is placed at the root of the wing under the black margin, and a second at the point of termination of the second vein in the costa. The hind margin of the wing is ciliated with black hairs, and the edge of the wing itself is also a little thickened (with black scales) for a short distance from the root forwards.

Legs dull black, being more or less clothed with minute black scales, knees tawny when these are abraded. The coxæ, knees, and under sides of the ends of the tibiæ are ornamented with patches of pure white scales. The first joints of the tarsi (metatarsus) are very short, as in the genus *Cecidomyia*.

VARIATION OF CERTAIN AGROTIDÆ.

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

(Concluded from p. 176.)

Now with regard to *cursoria*. A well-developed local form of this "non pale-costa" part of the group is obtainable on many parts of the coast, which seems at first sight sufficiently distinct to call a species; but this form is in itself very inconstant. It is distinct in itself, but has a great number of local races and forms; and since our correspondents send us picked insects which they themselves are able to distinguish as belonging to *cursoria* and not to the allied *tritici*, it is difficult to say how reliable the forms are, or whether, if one obtained an immense series of *tritici* and *cursoria* from the same districts, they would exhibit the same distinctness they certainly appear to do. To return, the Lancashire specimens have generally, in the "non pale-costa" type, a well-developed dark mark in the lower half of the reniform. This seems to be there a most constant character, but I have *tritici* from Deal with this same character well developed, and some undoubted *cursoria* forms are without it. From Sligo, where my kind friend Mr. Percy Russ gets *cursoria* perhaps more abundantly than any other collector, I have a long series, but no trace of this special development except in two specimens, and then only slightly; neither does there appear to be this development among the *cursoria* from the Welsh coast. On the Scotch coast some marvellous specimens are obtainable, characteristic ochreous *cursoria* leading up to perfectly melanic forms. To me a very strange and important problem presents itself: Why is it that in all these localities none of the magnificent forms—white, slate-colour, black *cursoria*-like forms—of *tritici* are present? I am assured by collectors from these localities, that the great mass of variation of the forms without pale costæ that I get at Deal is not obtainable in their localities; and when Mr. Percy Russ looked over my collection a few weeks ago, with all his experience he said he had never met with such forms, and I think he gave up altogether the attempt to solve the problem which species many of my specimens represented. But now comes another important matter. *Cursoria* is looked upon as an insect without a pale costa, but I have seen some splendid varieties from Sligo,

the Lancashire and Cheshire coasts, the Welsh coasts and other localities, with splendidly developed pale costæ and all the characteristic longitudinal markings of *tritici*, and without or almost without any transverse markings. This creates another difficulty, and only the most practised eye can distinguish some of these and correctly refer them to their right group. I will not go so far as to say that in some instances they cannot be named, but, with the exception of some half-dozen of our oldest entomologists who have given this matter special attention, I doubt whether they would be distinguished. But although there is so much to increase the difficulty of determination, yet I do not for one moment believe that *cursoria* and *tritici* are specifically identical in the same way as are *tritici* and *aquilina*. My Kent specimens are purely and simply *cursoria*-like varieties of *tritici*, and I do not believe that *cursoria* occurs in that part of the Kent coast from which so many cabinets have been supplied. Many lepidopterists have said to me, "Oh, I never have any trouble to distinguish *cursoria*," or statements to that effect. I generally answer, "I suppose not"; but my feelings of admiration for the gentlemen may be better imagined than described. A few years ago I should have wondered whether anything was wrong with any individual who had suggested that I could not distinguish *cursoria*. I have learned better since. A series in a cabinet is a grand study; an illimitable series in a state of nature, however, is a vastly grander one. It is really marvellous to me how, in the one species *tritici*, all the characters of all the allied species are developed in special forms, and how these lead up to their respective extreme forms of development, which have at last become distinct, or, as we call them, species.

It has been pointed out to me that *cursoria* is a differently shaped insect to *tritici*. My answer is that in this group shape is nothing. I have some remarkable forms of *tritici* with the wings almost as broad as they are long, others with wings long and exceedingly slender. Normal well-developed *tritici* differ but little in shape from well-developed normal *cursoria*; but one factor in favour of considering *cursoria* distinct, is the fact that at Sligo the wings are always well developed and ample, while it is unusual to find a specimen of the various varieties of *tritici* which is not exceedingly small and undersized. It may be that the *cursoria* are more suited to their environment, but there is

no difficulty to distinguish the *cursoria* forms from *tritici* taken on the same ground; but there is great difficulty to distinguish *cursoria* from Sligo from certain forms of *tritici* captured at Deal.

We have now to consider another species—*obelisca*. Until I obtained continental specimens and studied continental authors, I must own I did not know what the species was. I had, as most lepidopterists I suppose have, specimens which had been obtained by exchange, and which my correspondents undoubtedly believed were the species they represented them to be. As those lepidopterists who believe they get the species must supply those that know they do not, there must be, I am afraid, a strange lot of *obelisca* in some cabinets. By some occult method of reasoning on the part of my correspondents, nearly all the *obelisca* I got were black (although the type is reddish brown), and with one exception (two specimens which came from Paisley) were *tritici* pure and simple, in a few cases worn until their specific rank was a little dubious, in others exceptionally dark, but undoubtedly *tritici*. With regard to *obelisca*, I feel dubious whether we get any extreme forms of the redder or paler type. The Isle of Wight specimens do not seem to have occurred at all freely of late years, and the only ones that are generally abundant are the dark ones from Scotland. It does not seem to be generally known how exceedingly pale the continental specimens of *obelisca* are, in their palest forms leading up to the var. *hastifera*, Donz., of mountainous districts, which is of a distinctly vinous-black coloration. It is because this insect is, compared with its congeners, rare in Britain, that one is unable to express the same certainty with regard to it. My own series numbers less than thirty undoubted British specimens, a number altogether inadequate to form any opinion of its extent of variation. The continental forms help one, however, to get a better idea of its affinities. Mr. Percy Russ has captured in Sligo some fine forms of *cursoria* bearing a great superficial resemblance to var. *villiersii*, Hb., but undoubtedly distinct from that variety and to be referred to *cursoria*. The specimens which we obtain from the South of Scotland are undistinguishable from specimens of var. *hastifera* which I have from various German localities, but some of these are very close to dark vars. of *tritici*, although a well-trained eye readily distinguishes between them. There is another variety, var. *ruris*, about which there is a great deal of difficulty in my

mind. Some specimens of this variety, which came through a well-known lepidopterist into my hands, from Dr. Staudinger, are altogether unlike all my previous thought of what *obelisca* ought to be, and altogether unlike the type of *ruris*, Hb., fig. 416, which is a streaked form. They are like some of my specimens of *tritici* which I called *cursoria*-like, *i.e.*, they are without the pale costa, without the pale longitudinal markings; in fact, they bring us back to the root of the matter again, *viz.*, that *tritici* and *obelisca* have *cursoria*-like forms, whilst *cursoria* has the streaked *tritici*-like forms, and that these varieties run in their extreme forms into each other so much, that it is only by training the eye specially that there is any real difference to be detected between any one of the species and the allied ones (if they can be considered as species); for the members of the whole group are so closely interwoven one with the other, that it is most difficult to tell where one ends and the other begins. However, I have tried to explain some of the difficulties of this difficult group without giving, except in the case of *aquilina*, and this, I think, is almost generally admitted now, any undue prominence to my own opinions.

Before concluding I may state what my opinions are:—

1. I firmly believe, and consider it impossible of contradiction which can be proved, that *aquilina* is a pretty generally distributed variety of *tritici* which has never become localised, and which freely interbreeds with typical *tritici*, and is therefore altogether, on any ground whatever, unentitled to rank as a species.

2. That *cursoria* is also an extreme development of a particular form of *tritici*, which has become specially modified and constant within certain limits, that the specimens breed *inter se*, although it is not known whether *cursoria* copulates with *tritici* when occupying the same ground. I am inclined to believe that it does not, and that it is what Dr. Staudinger would call a Darwinian species.

3. That *obelisca* is a still more highly specialised form, and that its constancy in Britain may be either a proof of its more complete development, or owing to its greater rarity, a proof of our ignorance in not knowing the different forms of variation through which it may extend.

I have had even good lepidopterists ask me how it is that

since I can frequently determine even dubious specimens of these forms, I can suppose they are not distinct. To such I simply answer that I can discriminate much more readily a pale and black (var. *nigrocornutus*) *segetum*; am I to consider that these *Agrotis* vars. are therefore more distinct? The varieties of *Apamea didyma* are more easily separable than the varieties of *cursoria* from those of *tritici*; the fact, therefore, of being generally able to distinguish them is of no value, although the very fact of the difficulty of separation is sufficient to make us doubt their distinctness. Very few would attempt to devote the time I have to the matter, and I must own that the more I learn about *Agrotis tritici* and its congeners, the more remains for me to learn, and I still find that the old proverb is as true as ever, that "A little wisdom is a dangerous thing."

The editor of 'The Entomologist' having kindly promised to print this in the July and August numbers of that magazine, may I ask the readers of these notes who are at work on the coast, to publish their experience this season with regard to the relation between *tritici* on the one hand, and *cursoria* and *obelisca* on the other? The Lancashire coast, Welsh coast, Aberdeen coast, Isle of Wight, all have good resident collectors, who could, by an exchange of views, make the most difficult problem we have in our study somewhat clearer than it is at present. I trust they will endeavour to do so.

Westcombe Park, S.E.

PARASITES OF THE HESSIAN FLY.

BY FRED. ENOCK, F.E.S.

LAST year I had the pleasure of breeding a large number of parasites of the Hessian fly (*Cecidomyia destructor*, Say), from puparia which I collected in various barley-fields; four of these appeared to me to agree in every respect with Professor Riley's description of *Merisus destructor*, Say, which, though recorded as both American and European, had not been identified as occurring in Great Britain. During the month of June I have bred a very large number of parasites, the greatest number being similar in form, colour, and markings to *M. destructor*, my opinion that it was this species being strengthened by that of Dr. Chas. Lindeman, of Moscow, who had written to Miss E. A. Ormerod, that "along

with these Russian species I find an example of what I am inclined to consider to be the American *M. destructor*."

I sent specimens (alive) of males and females to this able entomologist, and have just received his reply, in which he fully confirms my opinion, and writes:—"The specimens of parasites sent, bred in England from the Hessian fly, seem to me to be *Merisus destructor* of Riley; they differ from the typical specimens of my *M. intermedius* by the more compressed and broader shape of the body in the female, by their less intense green lustre, and by the brown or nearly black antennæ of the male." I have also bred several specimens of another parasite, which I am inclined to think will prove to be the American *Platygaster herrickii* of Riley.

June 28th, I found the larvæ of the Hessian fly nearly full grown, the stem of the barley being much weakened. June 2nd, I watched a female "fly" ovipositing; the number of eggs laid was 158; and as this damp and muggy weather is particularly favourable for the development of "the pest," no doubt there will be, in the course of a month or so, numerous reports from all parts of the country.

Up to the present date, I have bred the following parasites from puparia which I collected last autumn, viz.:—*Merisus destructor*, Riley; *M. (Homoporus) subapterus*, Riley; *M. intermedius*, Lindeman; *Tetrastichus* —— ? sp. (2 species); *Semiotellus nigripes*, Lindeman; *Eupelmus karschii*, Lindeman; *Euryscapus saltator*, Lindeman; *Platygaster minutus*, Lindeman; *P. (?) herrickii*, Riley.

11, Parolles Road, Upper Holloway, N., June 30, 1888.

HIGH FLAT-SETTING.

MR. CANT advocates our all taking to continental setting (Entom. 169). Before doing so let us examine a little more closely the supposed advantages to be derived from it. These are said to be:—

1st. "Facility of examination and study."—This may perhaps be granted to a certain extent, as far as the flat surface of the wings is concerned; but this is counterbalanced by the difficulty in examining any under side with a strong lens, when there is a

projection of an inch or more of pin intervening. English entomologists have shown themselves able to study their captures to very good purpose in the past, the drooping wings notwithstanding.

2nd. "Preservation of specimens."—Do mites hop? If they do, it may be a good plan to perch insects an inch or more off the bottom of the drawer; but then, to be logical, they should also be placed that distance apart every way, at which rate we should want about three cabinets to every one now in use, and all our boxes made deeper. If mites do not hop, and a space of a quarter of an inch between each insect is considered sufficient, why will not that space clear from the bottom of the drawer do also? No collector now sets his insects so that their wings shall touch the drawer, yet this setting higher up on the ordinary pins Mr. Cant stigmatises as "an unsuccessful attempt at the continental style." I have seen foreign collections quite as badly infested with mites as any English one, notwithstanding their length of pin.

3rd. "Uniformity."—This is by no means such a desideratum that more important points should be sacrificed to it, but I fail to see how it would be furthered by the introduction of a system known to be unpopular in England, and therefore only likely to be taken up by a small proportion of collectors, whose insects would be almost useless to the remainder, and *vice versa*. Besides, all fairly good British collections have quite a uniform appearance, and the insects are infinitely more graceful and natural-looking than continental ones, for most of the uniformity in a foreign collection is produced by setting the insects with the inner margins of fore wings in a straight line at right angles with the body,—this regardless of markings or shape of wings,—thus making the naturally graceful outline of a butterfly as angular and ungraceful as is possible. This alone, to anyone with an artistic eye, would prove an insuperable objection.

The upshot of the matter seems to be this,—that it is no disadvantage to set on *flat* boards (for the slight after-droop of the wings will take off from the stiffness), provided that the usual English setting in all other points be adhered to. Very nice flat boards can be had of Marsden, of Gloucester, at the ordinary prices, the groove being of sufficient depth, nearly $\frac{3}{8}$ in. in a $2\frac{1}{2}$ in. board, to allow of the insect being well off the bottom of the drawer when placed in the cabinet. The fault of the usual oval boards is that dealers will not meet the demand for a deeper groove, and you

must either cut it down yourself or have your boards specially made for you; hence the difference in height up the pin Mr. Cant complains of. I always have my groove deepened in a V shape, and have found the shape answer very well. I hope some of the leading entomologists will give us their views on this most important subject.

K. M. HINCHLIFF.

Instow, Devon, July, 1888.

For some time I have been most dissatisfied both with my own setting and that of my correspondents, and at the commencement of this season finally determined to abandon concave for flat-setting, and am therefore pleased to see this matter brought before our notice, and the latter style advocated (Entom. 169). Although personally I prefer the flat-setting, and like the insects set tolerably high on the pin, I must confess that the length of pin between the thorax and pin-head, supposed to be necessary in high-setting, takes away half the beauty of a well-set collection, as one cannot see the insects with any distinction through an army of pins, and if these be gilt this is no easy matter. It is much preferable to use shorter and stiffer pins, which do not bend nearly so easily as the long thin ones, and set the insects nearly at the top of the pin; this is quite high enough for all practical purposes, and the insects can easily be moved by the use of forceps. If the pins be black they are scarcely visible, and the result is most satisfactory.

There is one great advantage in flat-setting that Mr. Cant does not mention in his article on this subject, viz., that really good insects, which are only taken very occasionally, are rarely set in the English fashion on just the same pitched board, and thus, when a series is at last obtained, the insects, as a rule, have differently concaved surfaces, which gives a disappointingly uneven appearance. Again, if we have all our boards of one size filled up with several species and have to set the remainder on larger boards, the result is that the latter have a much flatter surface than the former, and we find our series consists of specimens with wings of different concavity, which is very discouraging. Now with flat-setting all this is avoided. If a series be partly set on one sized board and the remainder on another the result is the same, as there can only be one shape in

a flat board; whereas in the English method hardly any two boards have the same pitch, and hardly two entomologists use the same curve. As far as the smaller Geometers are concerned it is impossible to set them to look well unless flat, as they have such a tendency to droop, and when set on a curved surface and low down on the pin, their wings invariably touch the surface of the paper, and they are then subjects for mites.

Might I suggest that if flat-setting becomes of more universal use, it would be a good plan for those who avail themselves of the exchange column in this magazine to state which style they prefer, the flat or concave setting, so that a distinction might be made in that column for the convenience and satisfaction of both parties.

A. E. HALL.

Norbury, Sheffield, July, 1888.

CONTRIBUTIONS TOWARDS A LIST OF THE VARIETIES
OF NOCTUÆ OCCURRING IN THE BRITISH ISLANDS.

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

(Continued from p. 181.)

Senta, St., maritima, Tausch.

The type of this species is of a silky grey colour, with the stigmata pale but scarcely discernible, a faint row of black dots in place of the angulated transverse line. Hind wings pure white, with a faint trace of a row of black dots on the nervures.

α . var. *ulvæ*, Hb.—All Hübner's figures are more or less reddish. As this is not at all usual, it is, perhaps, advisable to keep Hübner's as a varietal name. His figure 666 is the most marked form, and may be described as:—A male with anterior wings all reddish, except the costa which is dark grey; the stigmata lined in with white. A row of tiny black dots occurs just within the fringe, then a dark shade parallel to the hind margin, then the usual transverse row of black dots between this and the reniform. Hind wings white, with a lunule and an indistinct row of dots on the nervures.

β . var. *bipunctata*, Haw.—Anterior wings with two black spots, one near the centre of the wing, the other beyond the centre. This variety is figured in Newman's 'British Moths,'

p. 268, fig. 3. Guenée writes:—"The two ordinary stigmata and a small spot which precedes them of a deep black" ('Noctuelles,' vol. v., p. 99).

γ. var. *wismariensis*, Schmidt.—Anterior wings with a broad black stripe running from the base to the hind margin. This is Guenée's var. A, which he describes as having "a broad black band traversing the middle of the wing from the base to the apex." (Guenée's 'Noctuelles,' v. p. 99).

δ. var. *nigricostata*, Stdgr.—This is described by Dr. Staudinger as having the anterior wings with the costa broadly black.

ε. var. *nigrostriata*, Stdgr.—Anterior wings with many black streaks running parallel to the veins. This is figured in Newman's 'British Moths,' p. 68, fig. 4.

All these varieties are obtainable in their British localities, the Fen district and Kent.

Chortodes extrema, Hb. (*bondii* Knaggs).

That Hübner's fig. 412 (*extrema*) is the type of this species there appears but little doubt. It is not surprising that it was referred by the continental entomologists, Treitschke, Ochsenheimer, Duponchel, &c., either to *fluxa* (a variety of *fulva*) as an aberration, or treated as a distinct but unknown species, as *bondii* was unknown to continental lepidopterists until a comparatively recent date, when the British specimens were sent over. Dr. Staudinger refers to Hübner's fig. 412 as an aberration of Guenée's *concolor*, which itself has no claim as a species. Hübner's fig. 412 may be described as:—"Wings about the same shape as *bondii*. All the wings white, shaded to ochreous on the outer margins; nervures slightly darker on outer edge. Upper part of fringe to anterior wings black, remaining fringes grey." The black in the fringe is unknown in any species of the group Leucanidæ.

Var. *bondii* Knaggs.—First described in the 'Transactions of the Entomological Society of London,' 1861, p. 133. Also figured and described by Newman in his 'British Moths,' p. 276. Our British *bondii* have no trace of the black fringe mentioned above, but this is the only point of difference between *bondii* and Hübner's *extrema*. A sexual variation occurs, the males generally having a distinct transverse row of dots, the females with this

row almost or entirely absent. *Bondii* is only taken, as far as is known, in England and Greece.

Chortodes arcuosa, Haw.

The type of this species is described in Haworth's 'Lepidoptera Britannica,' p. 260, as:—"alis sordide albo-lutescentibus strigis duabus punctorum minutissimorum fuscorum." "Corpus gracilius fere omnium hujus generis. Costa anticarum punctis ordinariis fuscis, ultimo horum majore juxta apicem. Striga prima recta ante, secunda arcuata pone medium, et inter has strigas in medio alæ punctum solitarium fuscum. Cilia pallida. Posticæ ciliaque fuscescentia." There is a great sexual difference, the female having been described by Haworth as a distinct species, under the name of *minima* ('Lepidoptera Britannica,' p. 216, No. 153), as follows:—"alis rufo-cinereis, maculis duabus ordinariis strigisque tribus pallidioribus"; "ciliis cinereis. Posticæ fuscae, ciliis albis." There seems to be but little variation in the specimens of the same sex. Of *airæ*, Fr., ii. pl. 162. figs. 1—3, Dr. Staudinger says, "nimis variegata."

Cenobia, Stphs., *rufa*, Haw.

Haworth's *rufa* ('Lepidoptera Britannica,' p. 260) is the type of this species. Haworth's description is:—"Alis oblongis ciliisque rufis unicoloribus posticis ciliisque pallidis striga medio macularum obscurarum." "Caput inter antennis album." This last phrase is very significant and is clearly shown in some specimens. Geyer, in his supplement to Hübner's Schmett., gives a good figure of the type (fig. 751) under the name of *despecta*. This delicate little species is subject to a great deal of variation in ground colour. I took a very long series last summer (1887), and found every gradation in colour, from a very deep reddish, to an exceedingly pale greyish white, the latter being in beautiful condition. There seem to be three distinct forms:—(1) a very red form = the type (*rufa*); (2) a grey form tinged with red = var. *lineola*, St.; (3) a pale grey form with no trace of red = var. *pallida*.

α. var. *lineola*, St.—The type of this variety is described as having "the fore-wings shorter than in *rufa*; colour, reddish-grey, with a longitudinal brown line at the base, occasionally branching thus < ; a row of dots parallel with the hind margins ;

fringe reddish; posterior wings with a row of dots parallel to the hind margin." (Humphrey and Westwood's 'British Moths,' vol. i. p. 245.) This intermediate form does not vary in the length of the fore-wings, more than the specimens of the type, *i.e.*, they both vary slightly. The small basal branching line is as frequent in the reddest types as in the variety.

β. var. pallescens, mihi.—I have a series of a fine pale form of this species, varying from pale whitish grey to almost white, without a trace of the rufous colouring; the spots as in the type. My specimens came from Deal. I have seen specimens of the type and *var. lineola* from Epping Forest, but do not know whether pale forms occur there.

It may be advisable to add that the female has a very different appearance to the male. It is much narrower winged, and with scarcely a trace of dots on either the anterior or posterior wings. It is but rarely captured, and owing to its habit of remaining hidden in the herbage by the side of the ditches where it occurs, is generally worn.

(To be continued.)

ENTOMOLOGICAL NOTES, CAPTURES, &c.

COLIAS EDUSA IN JUNE.—At p. 184 of the 'Entomologist' a correspondent records the appearance of a specimen of *C. edusa* on the 12th of June, remarking that this butterfly appears to be out unusually early this year. Probably, if he had caught the insect, which he merely saw "careering along in its usual head-long fashion," he would have found that it was a hibernated specimen. While collecting at Starcross, South Devon, at the end of June, I took a specimen of *C. edusa*, which proved to be a hibernated female. I can fully confirm the experience of numerous correspondents who record the unusual abundance of hibernated specimens of *Vanessa cardui* and *Plusia gamma* this year.—E. W. H. BLAGG; Cheadle, Staffordshire.

APATURA IRIS IN HANTS.—In August, 1887, whilst driving in a dog-cart from Christchurch, I saw *Apatura iris* flying along the hedge of a bare roadside. I immediately gave the reins to a friend who was in the cart with me, and pursued it with the dog-cart whip, and through a piece of luck I managed to hit the

under wing above the upper, and so disabled it enough to capture it. It was a fine male specimen, and not in the least damaged with the novel way of capturing butterflies.—G. HESELTINE; Wallhampton, Lymington, Hants.

DEILEPHILA GALII AT HOLLOWAY.—On Friday last, about 8 p.m., my brother caught a specimen of *Deilephila galii* flying round a bush of jessamine.—F. J. STONEMAN; 43, St. John's Park, Upper Holloway, N., July 25, 1888.

DEILEPHILA GALII IN BUCKINGHAMSHIRE.—I wish to record the capture of a fine specimen of *Deilephila galii*, taken at rest on a vine-leaf this afternoon in my garden.—W. THOMPSON; 183, Stantonbury, Stoney Stratford, Bucks, July 23, 1888.

DEILEPHILA GALII IN CUMBERLAND.—About 9.30 p.m., on the 21st of July, I captured with the net a fine specimen of *Deilephila galii* hovering over a bed of sweet-williams.—HUGH GOODFELLOW; Stone House, Carlisle, July 23, 1888.

DEILEPHILA LIVORNICA IN CORNWALL.—On June 13th I took a specimen of *Deilephila livornica* in our garden here, and the following night I took another within a yard or two of the same place.—A. MAYNE; Pons-a-Verran, Constantine, Penryn, Cornwall.

DEILEPHILA GALII IN ABERDEENSHIRE.—On Tuesday, July 17th, a fine specimen of the above species was captured in one of the principal streets of this town, and is now in my possession. I know of several specimens of this insect that have been found near here during the past few years.—ARTHUR HORNE; 48, Chapel Street, Aberdeen, N.B., July, 1888.

SESIA CULICIFORMIS VAR.—Respecting the communication from Mr. T. D. A. Cockerell, which was read before the South London Ent. and Nat. Hist. Soc. (Entom. p. 192) referring to the white-banded variety of *S. culiciformis* mentioned in my notes in the 'Field' (1887, p. 828), it appears to be a form unknown to the members of the Society who were present at the meeting. I captured the specimen on June 14th, 1887, whilst it was hovering round a birch-stump in West Wickham Wood, the white band showing very conspicuously when flying; Mr. A. Thomson, who was with me at the time, saw the moth while alive in my net. The usual red of the band, base of the wings and thoracic markings, are all of a clear creamy white colour, without

the slightest trace of any red scales, which are present in the yellow-banded forms that I have examined, therefore my specimen seems to be a well-defined white-banded variety.—F. W. FROHAWK; Balham, S.W., July, 1888.

ZYGÆNA LAVANDULÆ, *Esp.*, VAR.—Many of the species comprised in the genus *Zygæna* are liable to variation in the colour of their spots, but I do not remember ever having heard of this being the case with the South European species *Z. lavandulæ*, *Esp.* This winter, however, at Cannes, I obtained about six or eight larvæ of this handsome species by sweeping, all from the same locality. I fed them all together on *Dorycnium suffruticosum*, the only plant, as far as I know, on which they feed. I have never found them on *Lavendula*. In due time, at the beginning of April, they all spun up, making the usual-shaped burnet cocoon. Later on, from the 27th of April, the first specimens began to emerge, as usual; the wings metallic-greenish or violet-black, with red spots, and the collar white. On the 23rd of May, nearly a month after the first had emerged, I found in my pupa-cage a remarkable aberration, which had just made its exit from one of the *lavandulæ* cocoons. This is its description:—It is slightly smaller than the type, expanding $1\frac{1}{6}$ in. instead of $1\frac{1}{3}$ in.; it has the wings nearly the same colour, but more distinctly greenish, and the white collar is as usual; but the spots, instead of being dark crimson, are a fine ochre-yellow, and the flush of red, which is present on the under side of the wings in the normal variety, is transformed in the same way. Several normal *Z. lavandulæ* emerged later still. I think this accidental variety is fully worth chronicling, as a well-known entomologist, who has resided for many years at Cannes, where the species is pretty common, has never met with this striking aberration of *Z. lavandulæ*.—J. C. WARBURG; 8, Porchester Terrace, London, W., June 22, 1888.

DICRANURA VINULA ON TAMARISK.—Under the above heading (*Entom.* 157) I recorded the occurrence of *Dicranura vinula*. I regret that I was in error in stating that there was no poplar in the garden. Since the foliage has appeared I have discovered the stump of an old poplar, on which in all probability these larvæ were reared. My mistake was a natural one, as this old tree was in the line of tamarisks, gnarled and old, which hang over the old wall of the Castle. In appearance it was identical

and deceived me, though I was most particular in searching. I regret the mistake and hasten to rectify it.—(Major) CHARLES PARTRIDGE; The Castle, Portland.

THE ABUNDANCE OF *PLUSIA GAMMA*.—There has been an extraordinary abundance of this insect here, about three-fourths of the insects I have caught at dusk during the last month proving to be worn examples of this species. I failed to procure any good specimens, and therefore came to the conclusion that they must be hybernated examples.—A. E. HALL; Norbury, Sheffield, July 1, 1888.

ABUNDANCE OF LARVÆ.—This year has been a phenomenal one here, as far as the great quantity of Geometer larvæ is concerned. Nearly all the woods I have visited in this locality have been considerably disfigured, but none of them could compare to Ecclesall Wood, near here, the oaks and hazels of which were completely denuded of their foliage and are now putting forth a second crop of leaves. The larvæ were principally *Hybernia progemmaria* and *H. aurantiaria*, the former of which completely covered one, and was continually falling down one's neck whilst beating. *H. defoliaria* appears here to prefer elm to execute its gormandizing propensities. A few larvæ of *Phigalia pедaria* and *Oprobria dilutata* occurred. *Tenio-campa pulverulenta* larvæ were swarming in some parts, twenty and more in my tray at once. The larvæ of this species are nearly as bad cannibals as *Calymnia trapezina*.—A. E. HALL.

SUGARING NEAR CARLISLE.—In this neighbourhood sugaring has been almost useless during the summer months, but always improved in October. This year, however, since the 11th July, many common species have been plentiful at sugar, such as *Agrotis segetum*, *A. exclamationis*, *Leucania pallens*, and *Xylophasia monoglypha*. I have a large bed of valerian, which is attractive to Plusiidae and *Cucullia umbratica*.—M. ROUTLEDGE; Hayton, Carlisle, July 23, 1888.

AMPHYDASIS STRATARIA AT LIGHT.—I captured three specimens, at light, of this beautiful insect, on April 11th, 13th and 14th, and I have no doubt could have captured a great many more.—G. HESELTINE; Walhampton, Lyminster, Hants.

CIDARIA SUFFUMATA VAR. PICEATA.—*Cidaria suffumata* has not been quite so plentiful this season as formerly, owing no

doubt to the cold winds of April and May. A far greater proportion, more than has been known before, were of the var. *piceata*, with intermediate forms. I have noticed that these dark forms have become more numerous during the last four seasons.—WM. NEWMAN; 21, Russell Street, Darlington.

THE COLORADO BEETLE.—I read in the 'Entomologist' (page 163), a notice by Mr. Cockerell in regard to this species, which is still mentioned under the generic name of *Doryphora*, although in a former communication on the subject the species is rightly placed in *Leptinotarsa*. The genus *Doryphora* is distinguished from all other true Chrysomelinæ by having the mesosternum produced into a longer or shorter horn-like process, which in *Leptinotarsa* is entirely absent; the Colorado potato-beetle should, therefore, never be spoken of as a *Doryphora*. It seems yet somewhat doubtful which is the real culprit amongst several closely-allied species of *Leptinotarsa*; the figures sent out and published from America give the species with red legs (Say does not mention the colour of the legs), but there are several closely-allied species (*L. junta* and *L. 11-lineata*) in which the legs are black; all of them have been found to inhabit Mexico and other parts of Central America, and it is quite possible that it is not only *L. 10-lineata* which is said to do such mischief, but also some of his near relations. I should be very glad to receive dead specimens of authenticated potato-beetles from America, to compare them with their Mexican allies in my collection.—MARTIN JACOBY; 7, Hemstall Road, West Hampstead.

LUCANUS CERVUS IN LINCOLNSHIRE.—I had the pleasure of taking a few specimens of *Lucanus cervus*, females, in this locality quite recently, the largest measuring one inch and a quarter.* This will be information for Mr. W. H. Bath. I also obtained one specimen of *Scaphidium quadrimaculatum*.—C. K. TERO; B 32, Kent Street, Grimsby, July 20, 1888.

STRANGALIA AURELANTA, F.—I found several specimens of this handsome beetle beside a small beech-plantation south-west of Great Berkhamstead, on 21st and 22nd of July. They seem to affect the flowers of *Scabiosa arvensis*, &c.—JOHN T. CARRINGTON; New Broad Street House, London, E.C., July, 1888.

* *Lucanus cervus*, L., was taken by myself in Boston, Lincolnshire, in 1872, while on a visit to that district.—T. R. B.

SIREX GIGAS.—On July 22nd I found a large female specimen of *Sirex gigas* crawling over a larch-tree, which had been cut down during last winter from a small larch-plantation south-west of Great Berkhamstead in North Hertfordshire. I have little doubt that the insect had emerged from pupa in one of the trees of this copse, for there did not seem to be any foreign timber for more than a mile distant.—JOHN T. CARRINGTON; July, 1888.

BRITISH MUSEUM.—Readers of the 'Entomologist' will be glad to learn that the Insect Room of the British Museum at South Kensington has been enriched by the addition of the collection of Lepidoptera formed by the late Dr. Pool, of Tottenham, presented by his widow. The collection is contained in three cabinets, is well arranged according to the 'Entomologist' List of Lepidoptera, and is in good condition. It contains some rare and less common species. Although Dr. Pool had his practice to attend to, he managed in a quiet way to form a nice collection, most of his entomological work being done in the early hours of the morning; and he was very successful in rearing many species, one of his daughters assisting him in this work.

SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON.—July 4th, 1888. Dr. D. Sharp, F.L.S., President, in the chair. The Hon. Lionel Walter de Rothschild, of Tring Park, Tring, Hertfordshire, was elected a Fellow of the Society, and Mr. George Meyer-Darcis was admitted into the Society. Mr. Enock exhibited male and female specimens of a spider received from Colonel Le Grice, R.A., who had captured them at Folkestone on the 27th May last. They had been submitted to the Rev. O. Pickard-Cambridge, F.R.S., who identified them as *Pellenes tripunctatus*, a species new to Britain. Mr. Enock also exhibited specimens of *Merisus destructor* (Riley), a parasite of the Hessian Fly, bred from British specimens of that insect. Mr. Wallis-Kew exhibited a number of larvæ of *Adimonia tanacetii* (Fab.), found in Lincolnshire, feeding on Scabious. Mr. Porritt exhibited a number of variable specimens of *Arctia mendica* bred from a batch of eggs found last year on a species of *Rumex* near Hudders-

field. Mr. Porritt said that this species, in the neighbourhood of Huddersfield, was often more spotted than the typical form, but he had never before seen anything approaching in extent the variation exhibited in these bred specimens. Out of forty-four specimens (twenty-five males and nineteen females) not more than eight were like the ordinary type of the species. Mr. McLachlan exhibited a quantity of *Palingenia longicauda* from Holland—the largest of the European *Ephemeridæ* (Mayflies), and at the same time one of the most local. Mr. Jacoby exhibited the following species of Phytophagous Coleoptera from Africa and Madagascar, recently described by him in the 'Transactions' of the Society, viz.:—*Lema laticollis*, *Cladocera nigripennis*, *Oedionychis madagascariensis*, *Blepharida intermedia*, *B. nigromaculata*, *Chrysomela madagascariensis*, *Sagra opaca*, *Blepharida ornaticollis*, *B. laterimaculata*, *Mesodonta submetallica*, *Schematizella viridis*, *Spilocephalus viridipennis*, *Apophyllia smaragdipennis*, and *Aethonea variabilis*. Mons. Alfred Wailly exhibited a large number of species of Lepidoptera and Coleoptera, recently received by him from Assam, from the West Coast of Africa, and from South Africa. He also exhibited eggs and living larvæ of *Bombyx cytheræa*, and made remarks on the life-history of the species.—H. Goss, *Hon. Sec.*

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—*June 28th*, 1888. John T. Carrington, Esq., F.L.S., Vice-President in the chair. Miss M. Kimber and Mr. A. E. Hall were elected members. Mr. Hawes exhibited pupæ of *Argynnis paphia* and *A. adippe*, from South Suffolk. Mr. Slater, a specimen of *Cherocampa nerii*, from Zululand, and remarked on the difference in colour between the insect shown and European examples of the species. Mr. West, of Streatham, specimens of *Chariclea umbra*, bred from larvæ found at Folkestone. Mr. Tugwell, examples of *Spilosoma menthastri*, and var. *ochracea*, bred from ova received from Dundee, the larvæ having been fed upon stinging-nettle. Mr. Tugwell mentioned that he had recently bred several specimens of *Sesia sphegiformis*, the larvæ having been found at Tilgate Forest, and remarked that in his experience he was of opinion that the insect was three years in the larval stage, the ova being laid in July, the larvæ feeding through that year; the second year were found feeding close to the bark; and they also fed during the third year, pupating

about the second week in May, the perfect insect appearing the first or second week in June, usually about nine or ten o'clock on a sunny morning. Some observations were made by members on capturing the rarer species of Sesiidæ.

July 12th, 1888. J. T. Carrington, Esq., Vice-President, in the chair. Messrs. A. L. Clarke, W. B. Farr, and R. Atherton, were elected members. Mr. Weir exhibited a male specimen of *Lycæna icarus*, which he had taken at Lewes in June last. It was remarkable as showing a slight tendency to hermaphroditism. There were on the upper side of the underwings two well-defined and several smaller submarginal spots, the colour of all the wings in other respects was that of an ordinary male of the species. His attention had been drawn to the insect by a male of the same species, evidently by its actions, mistaking the specimen exhibited for a female. Some discussion followed, Messrs. Tutt, Tugwell, South, Weir, Carrington, and others taking part. Mr. Jäger, two specimens of *Anetia villica*, with dark hind wings, forms of *Eupithecia rectangulata*, and an example of the larvæ of *Callimorpha hera*. Mr. R. Adkin, *Eupithecia togata*, bred from Perthshire larvæ; the imagines varied much as to colour. Mr. Robinson, an example of *Miana strigilis*, from Monkswood, which was pinker than usual. Mr. South remarked that he had taken very large and red forms of this species in North Devon. Mr. Dobson, *Asphalia ridens* and *Notodonta chaonia*, bred from larvæ beaten in the New Forest. Mr. Turner, a variety of *Vanessa cardui*, an example of the female *Ermaturga atomaria*, with a pale fringe, and specimens of *Pieris napi*, and asked whether the absence of spots in this species was unusual. Mr. Weir, in reply, said it was not at all unusual in the spring emergence. Mr. West, Greenwich examples of *Rhantus notatus*, *Cercyon aquaticus*, *Heterocerus obsoletus*, taken on the Salt Marshes, Milton, near Gravesend. The Secretary exhibited on behalf of Mr. T. D. A. Cockerell, a sketch of a Thomisidæ spider, on flower of *Ligustricum montanum*, observed by him in Custer Co., Colorado, and read notes on the deceptive likeness of the spider to the flower. Mr. Weir said similar spiders were not at all uncommon in England; there were several species closely resembling the flowers on which they were in the habit of sitting for the purpose of obtaining their food.—II. W. BARKER, Hon. Sec.

THE ENTOMOLOGIST.

VOL. XXI.]

SEPTEMBER, 1888.

[No. 304.

THE EFFECT OF METEOROLOGICAL CONDITIONS UPON INSECT-LIFE.

BY WILLIAM WHITE, F.E.S.

THE problem whether or not there is any precise correlation between the light and dark forms of lepidopterous insects and their climatic condition is one that has received little attention as yet. Similarly, the influence of irregular or intermittent temperature upon the emergence of insects has scarcely been dealt with.

In consideration, therefore, that the present extraordinary summer is remarkable for having contained two of the coldest days in July that have ever been known for that month in Britain, it seems to me very desirable that observers make a special point this season of registering their experiences respecting any abnormality in the appearance of insects of various orders noticed by them.

The climatic variations throughout the spring and summer, up to the present time, have been altogether abnormal. Mr. G. J. Symons, F.R.S., the well-known meteorologist, states that he knows no parallel to the July weather of this year, and he records, in a letter to the 'Times' newspaper, July 13th, 1888, that on the 11th of July the lowest temperature registered in London was "absolutely without precedent" in the annals of British Meteorology, and very nearly so on July 12th also. The *mean* temperature registered by him on the former date was as low as $46\cdot2^{\circ}$, and on the latter $48\cdot1^{\circ}$; whilst the lowest records in July of any previous years are $47\cdot7^{\circ}$, reached on July 20th, 1836, and

48° on July 8th, 1856. "As a rule," he observes, "the hottest day in the year in London is July 16th, but it would not be at all difficult to find two days in *January* warmer than these two [11th and 12th] in July." Thus, taking the first that came to hand, he makes the following comparison:—

	Minimum.	At 9 a.m.	Maximum.
Jan. 1, 1877 .	49·3°	50·0°	54·0°
July 11, 1888 .	42·8°	45·4°	55·7°
„ 12, „ .	45·4°	49·9°	54·2°

This unseasonable coldness is doubtless a result of the remarkably frequent and heavy rainfalls which have been of almost daily occurrence throughout the month, and earlier; whilst in the mountainous regions of Great Britain, and even in some central parts of England, heavy falls of snow took place.

It should, however, be borne in mind that this moist season was preceded by a long spell of unusually dry weather in the early spring, which considerably affects the amount of rainfall for the entire half-year.

From the August number of 'Symons's Monthly Meteorological Magazine,' which contains many interesting particulars respecting the extraordinary summer weather lately experienced in Great Britain, I find that the rainfall in London during last month, when compared with the fall in July of last year,—an exceptionally dry season,—presents an extreme contrast, the total fall having been five times in excess in point of frequency, while it was seven times as great in quantity. At the same time it appears that the actual fall for the month was not unprecedented. July, 1880, indeed, was wetter by 2°, and other of the summer months in several previous years have had a considerably higher register. The *apparent* excess of moisture, therefore, is due to the fact that, although there were several torrential falls of short duration, most of the rain occurred in the form of continuous drizzle. Rain fell on no less than 26 out of the 31 days in the month, and between June 4th and July 31st on 46 days, only 11 days being without rain, against only 10 days *rainy* weather during the same period in 1887. The month was, indeed, more remarkable for the lowness of temperature than for moisture alone.

The following is a comparative table of temperature-registration for the last 30 years, as derived from the source above-mentioned:—

	July, 1858—88.	1888.	Comparison with former Years.
Mean temperature at 9 a.m.	64.5°	59.2°	In 1879, also 59.2°; no other year below 60°.
Absolute maximum	86.0°	75.9°	In 1860, also 75.9°; no other year so low.
Average maximum	74.7°	67.3°	1879, 67.7°; 1875, 69.8°; 1860, 69.9°.
Average minimum	54.0°	52.3°	1863,—lowest on record,—50.2°; and there are nine other instances lower than reached this year.
Absolute minimum	45.2°	42.8°	1863,—lowest on record,—40.3°; five other lower registrations in previous years.

“Hence,” Mr. Symons remarks, “although the *minima* have not been excessively low, the *maxima* have been low beyond all precedent for 30 years, and it is to that, coupled with continuous and heavy, though not unprecedented, rain, that all the discomfort and loss is due.”

The practical economic effect of these conditions upon insect-life is a matter of equal interest to the entomologist and the farmer, and the subject is one that is well worthy of special study.

It has been mooted by more than one writer that melanism is produced simply by atmospheric conditions, being due either directly to local humidity (see Mr. T. D. A. Cockerell's paper in *Entom.*, vol. xx., pp. 58—9), or indirectly, as a consequence of moisture, to the darkening of the wood-surfaces to which the insects cling ('On Melanism in *Lepidoptera*,' by Dr. T. A. Chapman, *E. M. M.*, vol. xxv., p. 40). Neither theory can, I think, be said to furnish a satisfactory explanation, and the evidence yet produced is of the slightest nature; but on the supposition that either be true, we should certainly this year have, as a result, a very large proportion of melanic forms throughout the country, and the rare opportunity thus afforded of practically testing the validity or otherwise of these suggestions by observation should not be lost.

It must, however, be well borne in mind that lateness of appearance of any species is not, of course, necessarily connected with this particular season. Numerous instances of retarded emergence are annually recorded in these pages, and in illustration I may cite that I have two pupæ of *Euchlæa carolinæ* which have not yet developed, though apparently living, while several

similar cases of late emergence of this insect were recorded last year (*Entom.*, vol. xx., pp. 63, 106, and 135).

The subject, considered more generally, is one well deserving careful attention, and statistics of captures including numerous species viewed in relation to date, if sufficiently extensive, would lead to interesting results.

4, Mecklenburgh Square, W.C.

NOTE ON A SPECIES OF *ACROPS* FROM JAPAN.

BY G. LEWIS, F.L.S.

IN the 'Munich Catalogue' there is only one species of this genus (recorded from Sumatra), but in my collection I have three species from Borneo, and, as I found it in S. Japan, I think the genus may not only be represented by a fair number of species, but that it may also be widely distributed in Eastern Asia. The species are very difficult to differentiate, but the characters from the four species before me seem to consist chiefly in the form of the forehead, in the relative position of the eyes to each other, and in the shape of the thorax. I have only seen eight Japanese examples, but I infer there are no conspicuous sexual characters.

ACROPS HIGONIA, n. sp.

Oblongo-ovalis obscure ænea, supra parum convexa; fronte lata, clypeo læviter emarginato; fronte rugosa et ocellato-punctata, oculos approximatis, pronoto angulos anticis modice productis, posticis rotundatis; elytris reticulato-punctatis, obscure maculatis, apicis obtusis; antennis pedibusque concoloribus. Long. $4\frac{1}{2}$ mill.

The slight emargination in the anterior edge of the clypeus has, under the microscope, an obscure projection in the middle; the eyes are elliptical, and approach each other in the middle of the neck, leaving only a narrow space between them. In one of the Borneo species the eyes almost touch, in another the distance is double that in *higonia*. The angles of the thorax anteriorly are rather produced, but blunt; and the hind angles are rounded off, and not angulate or emarginate, as other species are. The maculation of the elytra is diffused, and not very distinct; in this character it corresponds with one Borneo species, but in another

from the same island the maculation consists of fairly well-defined spots.

I obtained this species under bark of dead trees (*Rhus*), which were dry and exposed to the sun in May, 1881, at Konose and Yuyama.

There are a fair number of Trogositidæ in Japan, but the species are not yet worked out. *Leperina squamulosa*, Gebl., occurs in most of the forests, and is not rare. I also found a second species, which is more local, and I obtained only eight examples. *Peltis grossa*, L., is not rare in Yezo, and there are three or four species of *Thymalus*. The two insects named are recorded from Japan for the first time.

Wimbledon, August 7, 1888.

CONTRIBUTIONS TOWARDS A LIST OF THE VARIETIES OF NOCTUÆ OCCURRING IN THE BRITISH ISLANDS.

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

(Continued from p. 209.)

Tapinostola, Ld., *fulva*, Hb.

The type of this species is represented by Hübner's fig. 496, which has the anterior wings and fringes of a bright red with dark nervures, and a row of black dots, one on each ray, parallel to the hind margin. Hind wings dark grey with pale fringes, and no spots. Dr. Staudinger describes it as "alis anterioribus totis fulvis." This is a most variable species, the ground colour going through every gradation, from bone-white, ochreous, reddish, to deep brick-red. The type does not appear to occur in England, some of the Scotch specimens approach it, but the beautiful red Irish specimens are the true type.

α. var. *fluxa*, Tr.—Treitschke (vol. v., p. 313) gives the following description of the type of this variety:—"Alis anticis fusco rufescentibus, atomis venisque nigricantibus." Dr. Staudinger says of this form, "Paler, reddish, or greyish yellow." The greyish yellow forms are included on his own responsibility. Certainly they are not included by any other writers. In Humphrey and Westwood's 'British Moths,' vol. i., p. 219, there is a fuller description of *fluxa*,—it is "of a reddish brown colour, slightly

irrorated with dusky scales; veins dusky; hind wings brown, with the base and costa ashy." There is no doubt that the greater number of our Northern, English and Scotch forms would be included under this varietal name.

β. var. pygmina, Haw.—This was treated as the type by all our old British authors, the species being thus dealt with in Haworth, Stephens, Wood, and Humphrey and Westwood's 'British Moths.' Haworth's description is "the thorax and anterior wings reddish and unspotted, the veins scarcely marked, the hind wings fuscous, the abdomen white."—'Lepidoptera Britannica,' p. 176.

γ. var. pallida, St.—Figured by Wood in his 'Index. Ent.,' plate xv., fig. 371, and also in Humphrey and Westwood's 'British Moths,' plate xlvii., fig. 10. At p. 219 of the latter work it is described as: " $\frac{3}{4}$ of an inch in the expanse of the fore-wings, which are ochreous, whitish, and without any traces of spots or markings; the veins alone in the apical part of the wing irrorated with dusky scales, and the hind wings whitish."

δ. var. neurica, St. (non Hb.)—Hübner's *neurica*, fig. 381, is another distinct British species. Stephens' *neurica*, and Wood's ('Ind. Ent.,' plate xv., p. 372), must not be confounded with Hübner's (*Nonagria*) *neurica*, as it is only a var. of *fulva*. It is described as "about five-sixths of an inch in the expanse of the fore-wings, which are ochreous or brownish red, with a curved row of minute dusky dots beyond the middle of the wing; the apical veins slightly brownish, and the hind wings pale whitish ash. Taken but rarely at Lea Bridge and Whittlesea Mere."—(Humphrey and Westwood's 'British Moths,' p. 219.)

ε. var. concolor, Gn.*—"Superior wings oblong, with the hinder margin straighter at first, then more curved than *fulva*; of a bone-white colour in both sexes; lightly powdered with grey at the ends of the spaces between the nervures, and developed into indistinct dark streaks; a row of black spots always distinct, though faintly marked, in place of the transverse angulated line. Inferior wings of a darkish grey in both sexes, with the ends of the nervures and the fringes clearer." (Guenée's 'Noctuelles,' vol. v., pp. 103, 104). All authors have treated this as a distinct species, in my opinion altogether on insufficient

* My reasons for treating this as a variety are discussed fully in the 'Ent. Mo. Mag.,' vol. xxv., pp. 52—55.

data. Newman figures both sexes of it in his 'British Moths,' p. 274, where it is also treated as a distinct species. Staudinger treats it as synonymous with *extrema*, Hb., which seems to me impossible. This variety had not been taken in Britain for many years, until I took it at Deal in 1885, 1886, and 1887. Mr. Warren writes:—"Some twelve years ago, Albert Houghton and myself each took a *concolor* on June 26th. Both were much worn. He threw his, a female, away; I kept mine, a male, and it was sold with the rest of my *Macros*" (*in litt.*).

The following seems to me a fair summary of the forms described by previous authors:—

1. A very dark red form, with a transverse row of dots = *fulva*, Hb.
2. A red form, unspotted = var. *pygmina*, Haw.
3. An ochreous red, or brownish red form, with dots = var. *neurica*, St.
4. A reddish-ochreous form, without dots = var. *fluxa*, Tr.
5. An ochreous or whitish form, with dots = var. *concolor*, Gn.
6. An ochreous or whitish form, without dots = var. *pallida*, St.

Tapinostola, Ld., *hellmanni*, Evers.

The type of this species is described by Staudinger as "pale, greyish or reddish straw-colour." Guenée's var. *a.* is undoubtedly the type, he describes it as "less red, more powdered with grey, reniform stigma more yellowish than red; inferior wings darker."—"Noctuelles," vol. v., pp. 104, 105.

Var. *saturata*, Stdgr.—This is a dark reddish variety. Staudinger says of it, "Obscurior, alis anterioribus sæpius totis rufis." Newman, in his 'British Moths,' p. 275, has described apparently only the red form. Guenée also treats this form as his type. The two forms occur in the same localities and appear equally common.

Tapinostola, Ochl., *elymi*, Tr.

Treitschke's original description of the type is as follows:—"alis anticis solito longioribus pallide flavis atomis fuscis adspersis serie externa striolarum fuscæarum" ('Die Schmet. von Europa,' vol. v., p. 291). This species varies but little; the females are generally paler than the males, and the latter sex are in some specimens more strongly powdered with brownish or fuscous scales than in others.

Nonagria, Och., *neurica*, Hb.*

The type of this species is represented by Hübner's fig. 381. It is a male of a dull clayey brown colour, with a row of five or six small longitudinal spots along the median nervure, at the end of which is a dark spot surrounded by a whitish ring. This is in reality the lower half of the reniform, the orbicular and upper part of the reniform being entirely absent. An angulated row of eight black dots runs parallel to the hind margin. Hind wings unicolorous blackish grey. Some of our Cambridge specimens are exactly of this form. I have two which came from Mr. Warren, exceedingly characteristic, but a little redder brown in ground colour. Staudinger says of it, "species gracilior, subtus immaculata," but this seems simply a summary of Schmidt's distinction, 'Stett. Ent. Zeit.,' 1858, p. 367. Our specimens generally are of 'a greyish brown colour, tinged with reddish, with a dark, blackish, longitudinal line under the median nervure extending almost to the outer margin. In the black streak, more than half-way from the base, is a tiny black dot with a pale circumscription, which is sometimes joined to another similar but paler spot just above, but sometimes separate, the two together forming the reniform. The orbicular more or less indistinct, a faint trace of a row of tiny dots parallel to the hind margin. The nervures blackish. Hind wings dark grey, with a pale shade parallel to the hind margin; a slightly darker lunule is present.' This is *arundineta*, Schmidt. Treitschke, in his 'Die Schmet. von Europa,' vol. v., p. 319, well described this form, under the name of *neurica*, as:—"alis anticis flavo vel fusco ferrugineis vena maculaque medio albicantibus, serie punctorum nigrorum ad marginem externum."

α. var. *arundineta*, Schmidt.—Dr. Staudinger says of this variety:—"with the anterior wings pale, of a greyish straw-colour." The chief points of distinction, as given by Schmidt ('Stett. Ent. Zeit.' 1858, p. 367), are as follows:—"The difference between *neurica* and *arundineta* is less in the under-side and in the markings than in the different structure of the body and the wings. *Neurica*, Hb., is the more slender, *arundineta* the more robust form. The colour of both forms varies in the same manner, but *arundineta* has a dark spot on the under

* Vide 'Ent. Mo. Mag.,' vol. xxv., p. 56.

side of each wing, which *neurica* never has." My good friend, Herr Hoffmann (Hanover) also adds:—"Herrich Schaffer declared both forms *neurica* and *arundineta* to be different species, and so did Staudinger afterwards." A full description of this variety is given above in the comparison with the type.

β. var. *rosea*, mihi.—Like the variety *arundineta*, but with the whole of the anterior wings suffused with a rich rosy colour. The form is not common, but the Cambridge collectors get a few every year.

γ. var. *dissoluta*, Tr.—This variety was first figured by Hübner, 659—661, under the name of *neurica*, but since Treitschke first described this form under a distinct name, his name has been retained as the varietal name. Dr. Staudinger, in his 'Catalogue' (p. 106), treats it as distinct, and writes of it:—"a more robust species, wings spotted underneath." Hübner's fig. 659 is a male, the anterior wings very dark brown, with no orbicular, the outer half of the reniform lined in with pale, a pale line beyond the reniform parallel to the hind margin. Posterior wings with the outer margin blackish grey, the base paler, with a distinct black lunule. Hübner's fig. 660 is an underside, and 661 is a female, which is marked like the male, but rather larger. A fair figure of this variety is in Newman's 'British Moths,' p. 271, fig. 2. Mr. Warren writes me:—"The dark *neurica* of old time came from Yaxley, Hunts." It is not obtained in any of the British localities for *neurica* at the present time.

Nonagria, Och., *geminipuncta*, Haw., Hachette.

Haworth published the following description of the type:—"The wings reddish fuscous, with a broad red band along the inner margin, and two small white spots in the place of the posterior stigma."—"Lepidoptera Britannica," p. 176. As the name signifies, the great character of the type is the presence of the reniform as two distinct white spots. This form Hübner figures (628 and 629) as *guttans*. Dr. Staudinger seems to lose sight of the fact that this is the type, for in his 'Catalogue,' p. 106, he writes:—"ab. *guttans*, Hb., reniform stigma in two separate spots." Guenée treats *paludicola* as the type and *guttans* as a variety. Both Haworth's description and Hübner's figure ignore the presence of a black dot between the double white spot on the base. The number of white spots

varies, sometimes only one is present, sometimes neither. I have all the above forms from Yorkshire and Sussex localities.

a. var. paludicola, Hb.—Hübner figures (624) a fine variety under this name. It is of a dark reddish brown colour, with white median and basal nervures, a small black orbicular, the inner edge of the reniform lined with white, so as to form a white lunule, the remainder of the reniform blackish, the outer part of all the nervures white on and towards the hind margin. Hind wings dark grey, base paler, with a distinct lunule. I do not know of British specimens of this variety.

β. var. unipuncta, mihi.—Like the type but with only the lower half of reniform white. Hübner's fig. 637 depicts this form, but is rather dark in ground colour. This form occurs in Sussex and Yorkshire localities with the type.

γ. var. obsoleta, mihi.—Like the type but with the white twin spots characteristic of the type altogether absent. This form also occurs in the same localities with the type.

δ. var. nigricans, Stgdgr.—Staudinger described this variety as "the anterior wings wholly blackish, with the reniform indistinct." How Staudinger can refer Hübner's fig. 624 to this variety, and how he can reconcile the white nervures of Hübner's figure with his description of *var. nigricans* surprises me!

Nonagria, Och., *cannæ*, Och.

Treitschke first described this species under the name *cannæ* in 'Die Schmet. von Europa,' vol. v., p. 225, although Ochsenheimer, in the above work, vol. iv., p. 82, had named the species *cannæ* before this, with reference to previously published figures.* Treitschke's description is as follows:—"alis anticis flavo-rufescentibus, serie unica maculaque obsoleta in medio nigris." So far as I have been able to judge from continental specimens, the variation is chiefly sexual, the males being strongly reddish, the females yellowish ochreous, and this is borne out by Hübner's figs. 386, 387. His figure 386 is a male; ground colour reddish ochreous; median and costal nervures grey; a transverse curved row of seven dots; hind wings unicolorous grey. Hübner's fig. 387 is probably a female of a pale yellow ochreous colour, with median and costal nervures darker; a transverse row of seven

* Ochsenheimer wrote the first four vols. of 'Die Schmet. von Europa,' Treitschke finished the remaining vols. after Ochsenheimer's death.

black dots on nervures, hind wings grey with a paler line parallel to hind margin. Both these are figured by Hübner under the name of *arundinis*. Guenée, in his 'Noctuelles,' vol. v., p. 108, writes:—"Varies extremely in colour." In the 'Ent. Mo. Mag.,' vol. xxii., p. 170, Mr. F. D. Wheeler, M.A., who has given especial attention to this rare British species, writes:—"Our Norfolk specimens are rather brown than red, some, indeed, of them are getting on for black, and the colour helps to make them inconspicuous."

Nonagria, Och., *sparganii*, Esp.

The type of this species is described by Treitschke, vol. v., p. 323, as:—"alis anticis pallide flavis atomis fusciscentibus adpersis lunula media strigisque duabus punctatis nigris." This species is a most variable one, and on the Continent ranges from pale ochreous to deep red. Guenée, in his 'Noctuelles,' vol. v., p. 108, writes:—"The males vary from whitish grey and ochreous to reddish brown." The only British specimen I have taken is strictly typical, in so far as it is pale yellowish dusted with fuscous scales, especially under the median nervure, with a median lunule (the character of this lunule is rather uncertain, my specimen has a pale spot at the extreme end of the discoidal cell with a black lunular circumscription placed around its lower half), a transverse row of black dots parallel to the hind margin, and another within the fringes. The British specimens, however, vary much. Mr. Sydney Webb, who added this species to the British fauna, writes of it:—"I may say that it is, without doubt, of all the family, most given to vary. The ground colour not only ranges from bone-colour to reddish ochreous, but oftentimes these hues are both present (one covering the other in streaks from the base overlying and extending beyond the wing rays), whilst the dark scaling seems to vary in every individual" (*in litt.*). The specimen figured (Entom. xiii., p. 49), (the one to the left), is perhaps slightly darker than the type, but otherwise agrees well, the lunule referred to can be very distinctly seen.

α. var. *obsoleta*, mihi.—The anterior wings of the same pale ochreous colour as the type, but sparingly scattered with fuscous scales, the nervures simply a little more dusky than the ground colour, the black lunule and all the markings of the central

part of the wing obsolete. The two transverse rows of dots fainter than in the type.

β. var. bipunctata, mihi.—Ground colour pale ochreous, with no trace of a dark shade under the median nervure, and no scattered fuscous scales. A short black lineola on the median nervure, just before the centre of the wing, above which (the lineola) can be traced the faintest possible outline of the orbicular, and the characteristic small black lunular mark (which seems to be the circumscription of the lower part of the obsolete reniform) stand out conspicuously. A transverse row of minute dots, and a more sharply-defined row is placed just within the pale fringe. Hind wings white, with a slightly shaded base. This description is written from a specimen kindly lent me by Mr. Webb, and figured (not very satisfactorily) Entom. xiii., p. 49, fig. 2 (to the right hand). Mr. Webb writes me with reference to this:—The central specimen is perhaps more worthy of a varietal name than any of the *sparganii*. It occurs in both sexes, but more commonly in the female.

γ. var. rufescens, mihi.—The ground colour much suffused with reddish ochreous, the characteristic markings generally strongly developed. The red varieties are exceedingly suffused—in some instances—with fuscous scales. Hübner figures this red form (549), and I have some very strongly-coloured specimens from Germany. Mr. Sydney Webb has also sent me a red specimen captured in the south-east of England.

Nonagria, Och., arundinis, F.

The type of both sexes in this species is of a pale greyish colour, the males being but very little darker than the females.

Var. fraterna, Tr.—The anterior wings of this variety are suffused with deep reddish brown or black scales, in some specimens to such an extent that the insect is almost black in colour. The hind wings much darker than in the type, especially the females. This is Guenée's var. A, of which he says:—"Superior wings of a deep blackish or reddish brown, which absorbs almost all the markings and nervures; nervures of hind wings blackish." Under the name of *fraterna, Tr.*, Guenée describes an intermediate form between *fraterna* and the type. There is no doubt that these are the males and females of the same variety, the extreme dark forms of his var. A being nearly always females,

the dark form with paler hind wings being males. *Fraterna* occurs sparingly in all localities with the type. From 1881 to 1883 I bred a large number of *arundinis* from the neighbourhood of Higham, Kent; not more than one in thirty were *fraterna*, and these always females. In 1884 I collected a few pupæ on the marshes a few miles further down the river Thames, and out of about thirty insects bred I got about twenty dark males, two dark females, the remainder being typical. Hübner (fig. 437), under the name of *typhæ*, figures a male of this variety. His figure is of an unicolorous reddish brown, with black nervures, hind wings ochreous with dark hind margin, dusky nervures, and distinct lunule.

(To be continued.)

ENTOMOLOGICAL NOTES, CAPTURES, &c.

VANESSA ANTIOPA IN SUSSEX.—My brother captured a fine specimen of *Vanessa antiopa* flying near a pond in this neighbourhood on the 13th August this year.—W. H. MULLENS; Westfield House, Battle, Sussex.

VANESSA ANTIOPA.—This afternoon I captured a fine specimen of this butterfly, with the usual pale border, in the gardens of the Totland Bay Hotel, Isle of Wight, flying over the flowers of the privet, which was in profusion. Although I have collected insects for the last fifty-five years, this is the first time I have seen it on the wing in England. *Vanessa io*, *V. atalanta*, *V. polychloros*, *V. urticæ*, and *V. cardui* were all more or less abundant, flying over the same flowers.—SAMUEL STEVENS; August 14, 1888.

VANESSA ANTIOPA IN HANTS.—A specimen of *Vanessa antiopa* was taken on the 10th inst. in Rhanmor Enclosure, New Forest, by young Frank Gulliver. I saw it before set.—A. J. HODGES; 2, Highbury Place, Islington, London, N., August 15, 1888.

LYCENA ARGIOLUS AT LUCERNE.—This species was seen very abundantly by myself in the marshes in the neighbourhood of Lucerne during the end of July and the beginning of August. It would be interesting to know what could supply its pabulum in that situation.—W. HARCOURT BATH; Ladywood, Birmingham.

[Is our correspondent sure as to the identity of his species?
—ED.]

PUPA OF *EREBIA EPIPHRON*.—It may perhaps be of some interest to other entomologists to record the finding of a pupa of *E. epiphron*. In company with Mr. T. Richardson, of Gateshead-on-Tyne, I visited the Lake District of Cumberland during the first week of July, and went to the locality where I had previously taken great numbers of *E. epiphron*. The morning was dull, with a cold south-east wind blowing, so that very few insects were flying, although we found the butterflies we were looking for plentifully, sitting on the grass, and in very fair condition. I, however, found one that had just emerged from pupa, the wings not being dry. I called Mr. Richardson's attention to this one, and we commenced to pull up the sods of grass to try and find the pupæ. These we failed so to find; but after a little more searching I found one that had not come out. This emerged on the 6th of July. I enclose you a drawing of the pupa. We stayed in the locality for three days, but we had only about three hours of sunshine. We took, along with the *E. epiphron*, about thirty *Larentia cæsiata* and fourteen *Emmelesia minorata* (*ericetata*), and many other moths of a commoner kind. I shall be glad to go with other collectors next season if they will let me know, so that we can arrange the time and place to meet. I should like to know if any others have reared *Erebia epiphron* from pupa.—GEORGE DAWSON; 6, English Street, Carlisle.

[The egg, young larva, and pupa of *E. epiphron* are described by Mr. Buckler in his 'Larvæ of British Butterflies and Moths' (i. 33-35); the egg and larva, by Mr. Hellins in the same vol., pp. 171-2. The young larva is figured at Pl. vi., figs. 2, 2a.—E. A. F.]

SPHINX CONVULVULI IN ESSEX.—In my garden I caught with a net, on the 15th inst., a *Sphinx convulvuli*; it is the first I have seen this year. At sugar I am getting nothing but *Mania maura* and *Xylophasia monoglypha*.—THOMAS BELL; Oakwood, Epping, Aug. 22, 1888.

DEILEPHILA GALII IN KENT.—Between July 24th and August 4th I was fortunate enough to capture, near my house, nine specimens of the above-mentioned insect, three of which were very fine, and taken on one evening. Mr. Felix Oswald, who was collecting at the same place, and with whom I became acquainted, also captured eight specimens. One of the worn females laid about a dozen eggs, seven of which have hatched, and I hope to

rear them.—JAMES TRIMMER WILLIAMS; 1, Marine Villas, St. Margaret's Bay, August 8, 1888.

DEILEPHILA GALII AT DARTFORD.—On the evening of August 4th I captured at dusk a rather worn specimen (female) of *Deilephila galii*, hovering over the flowers of larkspur in our garden.—CLEMENT T. YOUENS; Tower Cottage, Dartford, Kent, August 6, 1888.

DEILEPHILA GALII AT FOLKESTONE.—On July 29th I took a large female *Deilephila galii* at rest near here, from which I obtained three ova that hatched on August 8th, and the larvæ are now feeding.—W. J. AUSTEN; Radnor Street, Folkestone.

DEILEPHILA GALII IN ESSEX.—At a meeting of the North Kent Entomological Society, on August 2nd, Mr. Graham exhibited a fine specimen of *Deilephila galii*, which was captured by a boy at Silvertown on July 23rd. A lad knocked it down with his cap, but fortunately it escaped injury.—H. J. WEBB; 3, Gunning Street, Plumstead.

DEILEPHILA GALII IN ESSEX.—To-night I took a specimen of *Deilephila galii*, hovering over a geranium.—P. J. TUDOR; Buckhurst Hill, Essex, August 2, 1888.

DEILEPHILA GALII IN YORKS.—On July 19th a fine specimen of *Deilephila galii* was taken by a gardener at rest on a leaf in a garden in central Scarborough.—H. W. HEAD; Norwood Street, Scarborough.

DEILEPHILA GALII IN YORKS.—On the 26th of last month I took a specimen of this insect hovering over a plant of *Delphinium formosum* in a garden in Harrogate, about 9.15 p.m. The occurrence of this Sphinx in York-hire is so rare that I venture to send you a notice of it.—BEN. BLAYDES THOMPSON; Harrogate, August 13, 1888.

DEILEPHILA GALII IN SCOTLAND.—On August 4th I captured a newly-emerged specimen of *Deilephila galii* about two miles from Dundee, hovering over a bed of ladies'-bedstraw. This is the first that I have heard of taken in this district.—PETER KIRK; 11, Wolesley Street, Clepington, Dundee.

DEILEPHILA GALII IN IRELAND.—I have a specimen of *Deilephila galii*, which was caught in my garden here on

July 16th. I cannot find whether it has been caught in Ireland before. Perhaps you could tell me.—GEORGE V. HART; Woodside, Howth, Co. Dublin, August 8, 1888.

CHÆROCAMPA CELERIO IN BERKS.—On Friday, the 3rd of August, I saw a fine specimen of *Chærocampa celerio*, taken in a garden in Reading the day before. I may also mention that the same week, while at Folkestone for my holidays, I saw a specimen of *Deilephila galii*, taken by Mr. Austin, of Folkestone.—W. E. BUTLER; 91, Chatham Street, Reading.

CHÆROCAMPA CELERIO IN BERKS.—On the 1st inst. I captured a beautiful and evidently just-hatched specimen of *Chærocampa celerio* hanging to the stone mullions of the window. Our local entomologists do not recollect its previous capture in this neighbourhood. — GEORGE PHILBRICK; Carlisle House, Reading, August 8, 1888.

SMERINTHUS TILIÆ ABUNDANT.—The larvæ of *Smerinthus tiliæ* seem very plentiful this season. I have taken twenty-three within five minutes' walk of my residence, one of them was feeding on hazel. Six years ago I found twelve fine pupæ in one small bit of garden, but until now I have only met with three or four in a season since. I do not find other larvæ so plentiful here. Last year I took two dozen larvæ of *Vanessa io*, hoping to get some butterflies from them, but they each produced ichneumons. Last month (July) I took about the same number, and only one was ichneumoned. Perhaps the cold, wet season has made all the difference.—F. MILTON; 164, Stamford Hill, N., August 23, 1888.

ASSEMBLING OF MIANA FURUNCULA. — Walking out last Saturday evening my attention was drawn to a quantity of small Noctuæ, apparently attracted by something on a grassy bank. On closer examination I found a male and female *Miana furuncula* in copulâ on the grass, and I should think quite fifty males flying round and over them. I had of course heard of the same kind of thing before, but always understood that the habit was peculiar to the Bombyces, and so thought this worth recording.—WILLIAM FARREN; Cambridge, August 13, 1888.

THE NEW FOREST ZYGÆNA MELILOTI.—This insect, which had completely died out in its old locality in the Forest, was

re-discovered last month, by Mr. E. G. Meek, in a fresh locality, at some little distance from the previous one. As is usually the case with these isolated colonies of *Zygaenæ*, there is a slight difference to be noticed in the specimens when a good series is compared with the old specimens. The difference is in two particulars: 1st, that the border of the hind wings is broader; and 2ndly, that the upper middle spot is long, instead of round, in a larger number of specimens than was the case with the specimens from the old locality, these differences not necessarily occurring in the same specimens. Typical *Z. trifolii* and intermediate forms were flying with them.—C. A. BRIGGS; 55, Lincoln's Inn Fields, August 17, 1888.

PLUSIA CHRYSON IN HANTS.—I took a fine specimen of this moth, near Winchester, on the evening of August 9th. There is much hemp-agrimony near the spot.—F. E. WARNER; Cliff Villa, Sandown, Isle of Wight, August 17, 1888.

THE ABUNDANCE OF *PLUSIA GAMMA*.—I can fully corroborate the various accounts, recently published in the 'Entomologist,' as to the unusual number of *Plusia gamma* this season. Since the end of May I have noticed them wherever I have been collecting. In the fields they rise at every step; but it is in the garden at dusk that I have seen them in such abundance. One evening, about the middle of June, I counted eighteen specimens hovering over a small patch of *Silene pendula*, while numbers were seen at pinks and other flowers. Many of those I captured were worn, and presented a very washed-out appearance. I should not like to say, positively, that they were hibernators, but their condition seemed to point strongly to that condition.—W. H. BLABER; Sunnyside, Groombridge, Sussex, July 17, 1888.

BREEDING OF *BOMBYX RUBI*.—Having successfully reared a good many perfect insects of this species from larvæ found last year, I venture to make known the plan I followed, in the hope that it may be of use to others. I got a strong wooden box, about a foot square and the same in depth, and sunk it about four inches into the ground. I then made a frame of wood and nailed some perforated zinc to it for a cover: and having got a good turf with heath growing on it, I planted it in the box, put the larvæ in, and left them to their own devices. They went down into the earth immediately, and re-appeared to spin their

cocoons in April of this year. — C. NICHOLSON; 202, Evering Road, Upper Clapton, E., June 20.

A WEEK AT WICKEN.—Monday, July 9th, I set out, accompanied by Mr. Ernest Joy, to this Fen, with the idea that, after the extremely bad weather, we should be favoured with a fine week, but unfortunately it turned out dull and cold, and sometimes very wet. During the first three or four days there, sugaring was the only means by which we could get anything at all; *Leucania impudens* and *Noctua augur* were certainly plentiful, with an occasional *Aplecta advena*, *Hadena dissimilis*, *H. dentina*, and others. Whenever there happened to be a gleam of sunshine, one or two *Papilio machaon* and *Hyria muricata* were to be seen; but it was not until my friend had left that I came in for any success, as on the Friday morning the sun came partially out, lasting for a few hours, enabling me to capture eighteen fine *P. machaon*, two *H. muricata*, and several *Acidalia immutata*. The following day was exactly similar, and I took the same species. In the evening of these two last days I went out with Mr. Houghton, of Wicken, and sugared a great many grass-knots, to which insects swarmed, completely covering the knots: *L. impudens* and *N. augur* were simply pests, and over a dozen *H. advena* were taken, among others. Mr. Houghton was perfectly amazed at such numbers, and said he had never before seen a greater abundance of moths at sugar. Scores could be seen flying up against the wind like a swarm of bees. He placed his large lamp and sheet at my disposal, which attracted the same moths; also some local species, such as *Collix sparsata*, *Miana arcuosa*, *Herminia cribralis*, &c. Of the latter I obtained a fine series. Before leaving the neighbourhood I managed to find a few *Trochilium apiformis* on trunks of poplars, and several larvæ of *Papilio machaon*, which were easily fed up.—J. M. ADYE; Somerford Grange, Christchurch, Hants, August 18, 1888.

RETARDED EMERGENCE OF SHETLAND LEPIDOPTERA.—I was much interested in Mr. Anderson's note (*ante*, pp. 186, 187) concerning *Eupithecia venosata*. I had a number of pupæ from Mr. Salvage at the same time, but mine all came out between May 20th and June 5th, 1887, not one remaining two years in pupa. On the same occasion, however, I had a number of pupæ of *Emmelesia albulata*, also from Shetland, and of these one

emerged June 11th, 1887, and on the same day I took a number in North Kent. This year (1888) I took the species at large on June 2nd, and was much surprised on June 20th to find a fine suffused Shetland specimen in one of my breeding-cages. This was followed by seven others, the last emerging July 13th, which seems to me a very late date. I have also bred *Ecophora aurimaculella* this month, from pupæ received at the same time (1886), so that it would appear that many Shetland species pass more than one winter in the pupal stage.—J. W. TUTT; July, 1888.

SIREX GIGAS IN HANTS.—Two specimens of *Sirex gigas* have turned up in the neighbourhood of Petersfield. The first was sent me for identification from Harting, where it had been caught in a yard; and the second was knocked down in Adhurst Woods on July 30th. The Harting specimen may have come from some recently-erected telegraph posts; but I cannot account for the other.—H. E. U. BULL; Shirley, Southampton, August 3, 1888.

MALFORMATION: OCNERIA DISPAR.—I have, during the present season, bred a considerable number of the above insect, and have noticed that all the females were more or less crippled; the males, however, which were of course fed up under the same conditions and on the same food as the others, were, without exception, perfect. I should think it is not at all unlikely that the female will gradually become almost as apterous as its relations, *Orgyia antiqua* and *O. gonostigma*. Perhaps some of your readers would kindly state if their experience in rearing *Ocneria dispar* coincides with my own.—W. H. JACKSON; 4, Queen Anne Villas, Grove Road, Walthamstow, Essex.

[“Mr. Enoch bred, in the year 1867, upwards of 800 males and females of this species, and nearly all had the under wings notched, as seen in the illustration” (Entom. xi. 170), pl. ii., fig. 7. We cannot, however, endorse the opinion of our correspondent. It is not unusual for certain moths to produce a brood of malformed specimens, while the following broods from such parents come quite true.—ED.]

ABUNDANCE OF HYBERNATED DIURNI.—During the latter part of May and beginning of June *Gonepteryx rhamni* appeared in unusual numbers; a friend writing from Mid Kent, May 31st, says, “To-day, while walking through the woods near here, I never saw so many brimstone butterflies before,—I may say

hundreds, besides many other kinds of butterflies." *Vanessa cardui* and *V. atalanta* I found also very numerous, especially the former. In the cold and backward spring and summer of 1879 *V. cardui* appeared in swarms over different parts of the Continent and the British Isles, and during the autumn they swarmed throughout the country, as likewise *Plusia gamma*. Now both these species this season have been unusually plentiful, which is very interesting and remarkable, as the weather of the spring and summer of 1879 was similar to that of the present year; so in all probability they will occur in like abundance during the coming autumn.—F. W. FROHAWK; Balham, July, 1888.

EXTRACTION OF MOTH FROM PUPA.—The following account of the successful, though unpremeditated, extraction of an imago from the puparium may not be uninteresting. Examining the cocoons of some of the Cork forms of *Spilosoma menlicia*, I unfortunately broke the pupa-case of one, and discovered a moth in it. Thinking, after this, that in all probability, if not killed, it would as a specimen be irretrievably ruined, I, yet with some care, peeled off the skin, and got out the imago, which was a female. She was very weak and tottering, but I placed her carefully upon a card, which I tilted against the side of the flower-pot, and, tying over the muslin covering, left the prematurely-born infant to her fate. Returning to inspect her and see how she was getting on, about two hours after, I was much surprised, and pleased, to see that the wings were fully expanded, and that the moth was, in all respects, as fine and perfect as the most fastidious lepidopterist could desire. Now it may be that the imago was upon the point of emerging when I broke open the cocoon and pupa, and so I but hastened its entry into the world; or it may be that the operation saved—for a brief period, it is true, for it was soon converted into a specimen—the moth. It is well known, of course, to all collectors of insects, that although perfectly formed within the puparium, except for the necessary development of the wings subsequent to emergence, it frequently happens that the imago has no power of issuing, and either dries or rots away. It would, doubtless, be a very hazardous proceeding thus to "help" the birth of our specimens; but the idea is suggested whether many a rare insect might not thus be saved if, and there is the rub, one only knew when to adopt it at the nick of time. Since writing the above I

have again, and quite accidentally, taken another moth from the pupa; this time it was *Lithostege grisecat*. It was a very active insect, running about the cage with much restlessness, and for a time I thought a deformity would be the result; but after leaving it for about two hours, upon my return I was rewarded by seeing a fine, perfectly developed specimen. I am not sure but that at times the disturbance of a recently-emerged imago is beneficial rather than injurious, the movements of the insect being conducive to the proper development of the wings; at least it has seemed to me, from the length of time in some cases which has elapsed before the wings commenced expanding, that had I not given the insects a little "stir up," instead of good specimens I should have had cripples.—JOSEPH ANDERSON, jun.; Chichester.

SEASONAL DIFFERENCE IN *TEPHROSIA*.—In some previous notes in the 'Entomologist' concerning the breeding of the July brood of *Tephrosia crepuscularia* or *biundularia*, obtained from ova by imagines found in April of last year, I stated that five pupæ had not emerged and were apparently living; I would now add that these have not come to anything, having, if alive, decayed in the winter. The results therefore obtained are as follows:—the July brood were bred from ova obtained in April of the early form, and the July specimens thus obtained, with the exception of being smaller in size, resemble the late pale forms. This season I have noticed during last month many of the early and late forms at the same time. On May 15th I captured a small pale example, not larger than that of the July brood. May it be possible that the early and late forms are one and the same brood, the late ones being affected by temperature before emergence? Is not the different temperature and season of the year the cause of the difference in the July specimens of this moth, as well as in those of *Selenia bilunaria*?—T. B. JEFFERYS; Clevedon, June 1, 1888.

ERRATUM.—P. 208, five lines from the bottom, for *pallida*, read *pallescens*.

SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON.—August 1st, 1888. Dr. D. Sharp, F.L.S., President, in the chair. The Rev. R. Walton-Lewis, B.A., of Cape Colony, was elected a Fellow of the Society.

Mr. F. D. Godman, F.R.S., exhibited a large number of species of Lepidoptera and Diptera recently collected for him in Mexico by Mr. Herbert Smith. Mr. White exhibited a specimen of *Osmylus maculatus*, taken by him on the Stort, near Sawbridgeworth, in July last. He also exhibited parasites bred from *Bombyx neustria*, and a living example of *Heterodes guyoni*, found at Dartford, and believed to have been introduced with Esparto grass from Tunis. Mr. Enoch exhibited a stem of barley showing the appearance of the plant under an attack of Hessian Fly. Mr. Stevens exhibited a number of galls collected at Byfleet, Surrey, in July last, by Mr. Leonard Stevens; also a specimen of *Coleophora solitariella*, with ichneumons bred from it. Mr. Edward Saunders exhibited a specimen of *Catephia alchymista*, captured by his son at St. Leonards, in June last. He also exhibited specimens of a rare Ant (*Anochetus ghiliani*), which were taken at Tangier by Mr. G. Lewis. One of these he had submitted to Dr. Emery, of Bologna, who thought that, although ocelli were present, the specimen was probably intermediate between a worker and a female, and that possibly the true female did not exist. Mr. Pascoe exhibited a number of species of Coleoptera recently collected in Germany and the Jura Mountains, and read a note correcting the synonymy of certain species of *Brachycerus* recently described by him in the 'Transactions' of the Society. He stated that the corrections had been suggested by Mons. Peringuey and Mons. Aurivillius. Prof. Westwood communicated a paper entitled "A List of the Diurnal Lepidoptera collected in Northern Celebes by Dr. Sydney Hickson, with descriptions of new Species."—H. Goss, *Hon. Sec.*

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—*July 26th, 1888.* John T. Carrington, Esq., F.L.S., Vice-President, in the chair. Mr. T. Stanton Hillman, of Lewes, was elected a member. Mr. Frohawk exhibited the white-banded variety of *Sesia culiciformis*, taken by him at West Wickham, June, 1887, shortly afterwards recorded in 'The Field,' and referred to by Mr. Cockerell in two communications read before the Society on the 14th June and 12th July, 1888. Mr. Tugwell remarked that it was the first white-banded specimen of this species he had seen. Mr. West (Streatham), *Dianthæcia capsincola*, bred from larvæ found on sweet-williams in his garden.

Mr. R. Adkin, short series of *Zonaria orbicularia*, inbred from New Forest larvæ, the specimens showing a good deal of variation; also living larvæ of *Thera firmata*, remarking on their close resemblance to the pine-needles; and of *Tephrosia punctularia*, the larvæ, when first hatched, being all of a green colour, and, after moulting, several had become of a mottled brownish colour, while others were green. Mr. E. Joy, *Leucania impulsens* from Wicken Fen. Mr. Robson, a variety of *Argynnis cyprosyne*, the silver markings on the under surface being very prettily distributed. Mr. Tugwell, two specimens of *Eupithecia extensaria* from King's Lynn, and made observations thereon; also specimens of *Melanippe fluctuata* and the var. *costovata*, which he thought had no claim to a varietal name. Mr. Carrington, a specimen of *Sirex gigas*. Mr. West stated he had on several occasions seen this species drying its wings on willow-trees.

August 9th.—The Vice-President in the chair. Mr. R. Waller, of Clapham, and Mr. Y. N. Younge, of Rotherham, were elected members. Mr. Cook exhibited a variety of *Smerinthus tiliæ*, the lower part of the central band on the central wings being absent. Mr. Wellman, bred examples of *Plusia chryson* and *Eugonia autumnaria*, and said he had bred nine females and only two males of the latter. Mr. Joy, bred specimens of *Geometra vernaria* and *Pseudoterpna pruinata*. Mr. C. A. Briggs, *Zygæna meliloti*, taken this year in the New Forest. Mr. Robson, living larvæ of *Panolis piniperda*. Mr. Carrington, specimens of *Boarmia repandata* and *Venusia cambrica*, sent for exhibition by Mr. Batty, of Sheffield, and called attention to the melanic appearance of the specimens. This exhibit gave rise to a discussion on melanism, Messrs. Weir, West (Greenwich), Step, Carrington, and others taking part. Mr. West (Streatham), a short series of *Homœosoma sinuella*, taken near Brighton. Mr. Weir, an example of the imago of *Myrmecleon europæus*, bred by him from larvæ taken at Fontainebleau in 1887. Mr. Carrington made some observations on a fortnight's collecting on the Chiltern Hills, and as to the late appearance of many species of Lepidoptera. Mr. J. Jenner Weir read an extract from a letter he had received from Mr. Cockerell, dated the 21st May, 1888, referring to Mr. Cockerell's theory that *Gonepteryx rhamni* and *G. cleopatra* originated as seasonal races, or, as Mr. Weir said he should term it, horeomorphic races.—H. W. BARKER, Hon. Sec.

REVIEWS.

Micro-Lepidoptera of Suffolk. Pamphlet by the Rev. E. N. BLOOMFIELD. Printed by Daniel & Co., St. Leonard's-on-Sea, 1888.

IT is always pleasing to meet with anything from the pen of this veteran entomologist, and although this is little more than a mere list of species occurring in the county of Suffolk, it will be useful as a basis for a fuller work at a later period. Even in its present form it should be known by those working in Suffolk; and we hope that at a later period, when the remainder of the list of the Lepidopterous fauna of the county is published, the notes will be largely amplified. Having this in view, it would greatly help Mr. Bloomfield, if those who possess the material will forward it for incorporation in the larger list, to his address, Guestling, Hastings.—J. T. C. _____

The Flora of Sussex. By the Rev. F. H. ARNOLD, M.A., LL.B. London: Hamilton, Adams & Co. Chichester: Wilms-hurst. Price 3s. 6d.

THIS Flora, the cheapest of the County Floras yet published, may be of great use to Entomologists, as containing the habitats of the food-plants of many rarer Lepidoptera. Amongst these Sussex flowers may be mentioned the strong-scented lettuce (*Lactuca virosa*); the wild liquorice (*Astragalus glycyphyllos*), said to be the food-plant of *Xylomiges conspicillaris*; the black mullein (*Verbascum nigrum*), which is almost confined to the western part of Sussex; the deadly nightshade (*Atropa belladonna*), which abounds at Harting; and the winter evergreen (*Pyrola minor*), at Colworth.

By the banks of several streams grows the great water-dock (*Rumex hydrolapathum*), a food-plant of *Polyommatus dispar*. And by the way it may be noted that a startling rumour was lately current that one had been taken in Hampshire, close to the Sussex border. Anxious enquiry proved that this was correct; but the captor had obtained the coveted prize from the cabinet of an old collector, and the specimen had formerly inhabited Whittlesea Mere. The 'Flora of Sussex' is a portable little volume, well suited for the pocket of the explorer. It enumerates the plants of the adjacent counties as well as those which occur in the county itself.—J. A.

THE ENTOMOLOGIST.

VOL. XXI.]

OCTOBER, 1888.

[No. 305.]

COLLECTING DIPTERA.

BY E. BRUNETTI.

To the true entomologist the study of the Diptera should possess attractions not shared by that of the Lepidoptera nor the Coleoptera, from the very fact of the species being less well known; it consequently offers greater opportunities for rendering real service to science.

Specimens of Diptera should always be brought home alive, if possible in pill- or chip-boxes, and killed by the fumes of burning sulphur or strong ammonia. No method that *wets* them should ever be adopted, as the pubescence once matted together, frequently, if not always, prevents the identification of the species.

For purposes of study,—so long as the legs are not allowed to cluster together close under the body, and the wings are kept from crossing so as to hide the venation and the upper side of the abdomen,—Diptera are as useful unset as set, and by not setting them a considerable amount of time is saved. Moreover, they are not so liable to accident, and do not take up so much cabinet space. I prefer the long Carlsbad pins, because the insects are easier to handle when pinned with them, and because they allow a higher magnifying power to be used when in the cabinet. Again, they are more easily exchanged with continental correspondents, who invariably use Carlsbad pins, and never set their dipterous specimens. Should, however, collectors desire to set them, let me advise them to keep the insect at least half to three-quarters of an inch from the point of the pin, which should

pierce the thorax (not the abdomen), to place the wings *horizontal*, inclining slightly forward, and to keep two pairs of legs behind the wings.

Diptera are very abundant on any warm day from early spring to late autumn. They may be taken in less numbers on cloudy, and even cold, days. Through the winter there are species of *Nemocera* to be found, so that the collector can occupy himself from one year's end to another.

A knowledge of the habitat of each family is essential to systematic and successful collecting, and the sooner the entomologist who embraces the study of Diptera learns these the better. Again, many groups have a special manner of taking flight and of behaving when on the wing, so that acquaintance with these various peculiarities is necessary, as the chance of a second stroke of the net with most species is rarely offered.

I shall now mention the various families in systematic order, giving the habitat of each.

STRATIOMYIDÆ: 44 species.—The larvæ live in decaying vegetable matter or in the earth. The flies appear on aquatic plants; their flight is slow. One genus, *Beris*, frequents woods and flowers.

XYLOPHAGIDÆ: 4 species.—All rare; sluggish flight. Larvæ feed on decayed wood.

TABANIDÆ: 20 species.—Found in woods; flight rapid, accompanied by a low hum. The females of many species attack cattle, drawing blood by means of the large and powerful proboscis.

BOMBYLIDÆ: about 9 species.—Inhabit warm dry localities; appearing in summer; flight swift and humming. Some larvæ live in earth, some are parasitic on lepidopterous insects. Rather rare.

ACROCERIDÆ: 2 species.—Globular, soft insects; venation indistinct; head nearly all eyes. Found on flowers or tree-trunks on sunny days. Rare.

SCENOPINIDÆ: 2 or 3 species.—Sluggish flies; found in houses, hot-beds, and about plants. The larvæ live in rotten fungi.

THEREVIDÆ: about 6 species.—Found in sandy spots; some are carnivorous; flight sudden and very swift. The larvæ live in the ground. Mostly uncommon. The sexes differ in the colour of their pubescence.

ASILIDÆ: 19 species.—Large, powerful carnivorous flies; found in woods and pastures; the larvæ live in the earth; flight

silent and rapid; some species frequent sandy places. Chiefly from the south coast. Not uncommon.

LEPTIDÆ: about 12 species.—Frequenting hedges, woods, thickets. The larvæ are found in the earth in sand or decayed wood; the larva of one species is aquatic. Some species inhabit marshes and ditches.

EMPIDÆ: about 180 species.—Found in ditches, fields, moors, woods, and on the banks of streams. Mostly carnivorous. Many species swarm on fine evenings over streams. Some species inhabit dry herbage, running with great swiftness over the leaves; some on hotbeds; a few on the sea-coast. Mostly common.

DOLICHOPODIDÆ: about 160 species.—Predaceous. Running on the surface of ponds with great ease. Mostly carnivorous. Some frequent dry shady places, congregating in small troops. Several genera comprise very minute brilliantly-coloured species. Some species inhabit the sea-coast, and a few appear only in hot sunshine. Mostly common, nearly all the species being brightly coloured.

SYRPHIDÆ: about 210 species.—Brilliantly-coloured flies, very common, many resembling bees and wasps; flight swift, with a shrill hum, the flies hovering in the air motionless above a flower, and darting in any direction with great swiftness, usually returning again and again to the same spot. The larvæ live in stagnant water, decomposing matter, mud, &c. The perfect insects suck the juices of flowers. Occasional swarms of Syrphidæ have been recorded, in which several species often take part.

CONOPIDÆ: 17 species.—Frequent flowers, the larvæ being parasitic on bees. Chiefly from the south coast. All the species are more or less rare, many resembling wasps, from the contracted first abdominal segment. Some are taken on sandy banks. I am working up all the European species of this family, and any correspondence on this group would be especially agreeable.

CESTRIDÆ: 6 species.—Parasitic on horses, sheep, oxen, and deer. All difficult to obtain from the rapidity of their flight, and the impossibility of breeding them. If the larva is removed from the animal on which it is living, it is certain to die. The larva takes about eight months to attain its full development.

MUSCIDÆ: about 950 species.—Nearly half the known European species of Diptera fall in this family, and it will be advisable to notice each subfamily successively.

1. *TACHININÆ*: about 120 species.—Usually found in warm dry habitats, being partial to umbelliferous flowers. Most, if not all, are parasitic, chiefly on Lepidoptera, and collectors of this order would greatly assist the students of Diptera by pinning all that may emerge from their lepidopterous pupæ, and attaching date and name of species of moth to each specimen. Walker's references to the Tachininæ and Anthomyinæ are practically useless.

2. *DEXINÆ*: about 12 species.—Their habits are very similar to those of the previous group. Common.

3. *SARCOPHAGINÆ*: 21 species.—Large powerful flies; common everywhere. The females are viviparous. The species appear very much alike, but the specific characters are very distinct.

4. *MUSCINÆ*: about 30 species.—The larvæ live in dung, or rotten vegetable matter. Most of the species are common; their flight is swift. Several of the species are found in London, and act as natural scavengers, probably more so than any other group of the Diptera.

5. *ANTHOMYINÆ*: about 230 species.—The larvæ of this sub-family live in rotten fungi, decomposing vegetable matter, &c.; many species are leaf-miners, and damage the crops to no inconsiderable extent. These flies are very common, frequenting every field, wood, and bush, and are as a rule very closely allied, the females being especially difficult to identify.

6. *ACALYPTERATA*: about 530 species.—This group appears to me theoretically inseparable from the Anthomyidæ, as the distinctive characters, so called, insensibly merge one into the other. Nearly all these flies are small, many exceedingly so, and as a rule are sombre in colour, closely allied, and consequently difficult to identify. Schiner recognises 26 groups in this sub-family. They may be obtained in very great abundance by sweeping. The larvæ live in decomposing animal and vegetable matter, dung, mud, water, galls, leaves, plant-roots, cereals; and the perfect insects may be taken in almost every conceivable situation.

PHORIDÆ: about 8 species.—The larvæ live on decomposing vegetable matter. One or two species are common in London.

PLATYPEZIDÆ: about 10 species, I think, are British.—This and the next family have been moved about a good deal from one position to another in classification by various authors.

They are found in woods, the larva inhabiting fungi, and (of one species at least) resembles a seed. Not common.

PIPUNCULIDÆ: about 10 species are British. — Inhabiting woods and fields, some species hovering in the air. Not common.

CECIDOMYIDÆ: about 100 species.—Walker has introduced a large number of species; whether they are really British or not remains to be seen. Wimmertz is the authority *par excellence* on this group. The larvæ live in plants; the flies are delicate, small, and closely allied; occurring in fields, gardens, and orchards.

PSYCHODIDÆ: 7 or 8 species.—These resemble small moths, the wings being fringed. Very small flies. Two species are found in houses. Larva aquatic. One or two species appear in midwinter.

CULICIDÆ: about 12 species.—Larva aquatic. Delicate flies (gnats), with a complicated and powerful proboscis. Some of the older authors have published the life-histories of several species. Common on summer evenings, swarming under tree-boughs. The numerous veins in, and fringe to, the wings separate this family easily from the next.

CHIRONOMIDÆ: about 270 species.—A most difficult group to work out. All the species are small and very delicate, their habits being very similar to those of the Culicidæ. Walker describes the larva of two common species. Many species are abundant at sunset, and may be taken from spring to the end of autumn.

BIBIONIDÆ: about 20 species.—These flies are chiefly vernal, often appearing for a few days only. The males hover in the air. Larvæ worm-like, living in the earth. A correspondent recently sent me a very common species, *Dilophus vulgaris*, bred from *Calceolaria*. The species are tolerably distinct.

SIMULIDÆ: about 5 species.—Larva aquatic. Some species inhabit sandy spots. Not very common.

MYCETOPHILIDÆ: about 170 species.—The larvæ feed on fungi, and frequently spin silken webs. The flies chiefly inhabit woods, some species occurring in the middle of winter. They are rather small, of delicate structure, and are tolerably common.

TIPULIDÆ: about 170 species.—The larva lives in decaying vegetables, in fungi or rotten wood, some being aquatic. The flies (daddy-longlegs) are delicate in structure, flying in swarms under trees overhanging streams, especially in the evenings; on marshy banks, and in grassy fields; one or two species doing

considerable damage to the crops whilst in the larval state. Some species occur chiefly in woods.

DIXIDÆ: 2 or 3 species of this small group are British.—Their habits and appearance are similar to those of the Tipulidæ.

RHYPHIDÆ: 3 species appear to be British.—They feed on over-ripe fruit, the larvæ living in dung.

HIPPOBOSCIDÆ: 3 or 4 species of this family are British.—They are parasitic on animals and birds; their development is immature; and all the species are more or less uncommon.

NYCTERIBIDÆ: 1 or 2 species are British.—Their habits are similar to those of the preceding family; but this family is apterous.

LONCHOPTERIDÆ: about 8 species are British.—They are small, delicate, active flies, occurring in fields and woods in spring.

A linear arrangement of families is impossible, and authors differ to some considerable extent in their opinions as to the positions of several of the families.

In the above series of notes, I have adopted Schiner's order, with one or two modifications. A few writers include the Pulicidæ (fleas) in the Diptera; but I fail to see their right to a place in this order.

Works on British Diptera are very few, and also difficult to obtain. Walker's 'Insecta Britannica,' Diptera (3 vols.), and Curtis's 'British Entomology,' Diptera, are the two best; but the former is quite useless for studying some of the groups, and both of them are incomplete, and introduce many species that are not British. Schiner's 'Fauna Austriaca,' Diptera, is undoubtedly the best work on European Diptera, but being in German many students may find it a sealed book.

I think the notes given above should be found sufficient as a basis to anyone thinking of adopting the Diptera as a special study, or even taking a partial interest in them.

To those who desire further information, I will willingly render all the assistance that lies in my power, and shall be glad to name any specimens submitted to me for that purpose.

I would finally appeal once more to *all* entomologists to take all the Diptera that come in their way, even if they do not care for the order. The specimens captured would be most welcome to those taking an interest in the Diptera. Collectors will be thus rendering real assistance to science.

MELANISM IN LONDON LEPIDOPTERA.

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

A NOTE, written by my friend Mr. T. D. A. Cockerell (Entom. 60), relating to a statement (Entom. xx. 202), to the effect that there was no London melanism, has produced a few communications about the matter, which I deem very unsatisfactory, considering the number of London lepidopterists and the sweeping assertion made. All our correspondents, so far, who have given instances of London melanism, have confined their attacks to one little species, *Miana strigilis*, which is frequently melanic in all parts of the country, and generally so in certain of the Northern and Midland counties of England.

There is no doubt that the assertion about London melanism was made on altogether insufficient data. In one group alone, the Noctuæ, a large percentage of cases of melanism or partial melanism occur, the following, among others, having come under my own notice:—

Acronycta psi var. *suffusa*.* The type does not occur in London; the dark variety only is found.

Leucania comma var. *suffusa*.* The forms occurring in the Greenwich district are altogether darker than more northern specimens.—*L. straminea* var. *nigrostriata*.* A small percentage of London specimens are thickly sprinkled with black scales between the nervures.—*L. impura* var. *fuligosina*,* Haw. This is the common form of *impura* in London, where the pale type is almost unknown.—*L. pallens* var. *suffusa*,* St. This variety occurs occasionally in the London reed-beds with the type, the spaces between the nervures being much suffused with dark scales.

Hydræcia micacea var. *brunnea*. Some London varieties, which I have bred from roots of dock, are of a rich brown colour.

Nylophasia monoglypha. Deep brown varieties occur frequently on the marshes.

Mamestra abjecta. Only the dark var. *nigricans* is taken in London, so far as I know. I have never captured the variegated

* Vide Entom., vol. xxi. Series of papers on "Varieties of Noctuæ."

form in the London district.—*M. sordida*. Many London specimens are of a dark grey colour, without any of the paler ground colour of the type.

Apamea basilinea. I have a very dark purplish brown specimen captured in London.—*A. gemina*. The dark type is as frequently taken in London as any part of the country in comparison with the paler ab. *remissa*, Tr.—*A. leucostigma*. I have only taken the dark unicolorous form in London, never the streaked and more variegated variety *fibrosa*, Hb.—*A. didyma*. The black variety, ab. *leucostigma*, Esp. (*lugens*, Haw.) is very frequent.

Miana strigilis var. *æthiops*, Haw. Exceedingly abundant in most places, as is also the dark reddish var. *latruncula*.

Rusina tenebrosa. I have London specimens as dark as those from Rannoch, which are much darker than the type.

Agrotis segetum var. *nigricornutus*, Haw. This black variety is excessively abundant, as is also the dark variety, *subatratus*, Haw. — *A. nigricans*. Darker specimens occur in my own neighbourhood than I can obtain from any other English locality (except the Lancashire coast), but not so dark as the Scotch type.

Aplecta nebulosa. Some specimens of this species are very dark.

Hadena trifolii. I have a number of London specimens which are very dark in colour.

Among the Geometers we find a large proportion showing a tendency to melanic variation. The following are some of the cases:—

Nyssia hispidaria. Sometimes exceedingly dark specimens are captured in Richmond Park.

Hemerophila abruptaria. Very dark suffused specimens are occasionally captured.

Boarmia gemmaria var. *perfumaria*, Newm. This latter variety is a melanic form almost confined to the London District.

Acidalia virgularia. Exceedingly dark specimens are occasionally captured.

Hybernia leucophearia. Black specimens frequently occur throughout the London District.—*H. defoliaria*. Very dark (almost black) specimens are very frequently found.

Oporabia dilutata. A large, almost unicolorous, dark grey form is abundant in the S E. District.

Eupithecia vulgata. Generally much darker in London than in other parts of the Kingdom.—*E. rectangulata*. A splendid black variety, *nigrosericeata*, is abundant in the London District. This is a fine melanic form, the males being of a deep smoky black, the females of a deep dark green, with black markings. It is very different from the type. I have captured a large number of this species in London, but all are of this variety; the type does not seem to occur.

Melanippe fluctuata var. *neapolitana*, Mill. A small proportion of the specimens of this species closely resemble the dark variety named above.

In other families *Botys ruralis* is much darker in the London District than a few miles out; whilst melanic forms of *Chilo phragmitellus* not infrequently occur. *Crambus perlellus* var. *warringtonellus* is abundant, whilst perfectly melanic forms of *Tortrix podana*, *Hedya ocellana*, and *Grapholitha nevana* are very frequent. A dark form of *Xanthosetia zoegana* is almost peculiar to the London District. *Diurnea fagella* is sometimes very dark, almost equalling in depth of colouring the well-known melanic Yorkshire specimens. Many other species show a greater or less tendency to vary in the same direction, but I think I have given sufficient examples to show that London melanism is not the minus quantity it has been represented.

I believe almost every instance of London melanism to be what I would call "protective melanism," and not to be classed with the melanism of the North of England and the west coasts of Scotland and Ireland. As an explanation of this latter, I believe Mr. Cockerell's theory, coupling melanism with local humidity and rainfall, to be by far the most reasonable view which has yet been presented to us.

Rayleigh Villa, Westcombe Park, S.E., August, 1888.

DEILEPHILA GALII IN 1888.

By JOHN T. CARRINGTON, F.L.S.

AMONG the more remarkable and least-understood phenomena in the life-histories of insects is the periodical appearance of certain species. Seldom a year passes without its being celebrated

among entomologists, no matter what group studied, for the unusual abundance of some special species.

The lepidopterologists have *Deilephila galii* this year as their red-letter moth. In July numerous imagines were captured in many parts of these islands, extending from the south coast of England to Scotland, and from Scarborough on the east coast to Ireland. In recent years, with the exception of in the year 1870, when it occurred in some numbers, in the larval state especially,—for instance, on the Cheshire sand-hills,—it has been counted among the rarer species inhabiting the British Islands.

All sorts of speculation are rife upon the cause of this unusual appearance of *Deilephila galii*. The migration theory is the one first set up, and may possibly be the cause of this extraordinary abundance. There are, however, other suggestions worthy of consideration; for instance, the long lying-over of the pupæ, for some fortuitous condition of atmospheric influence, suitable for the emergence of the moths. We all know how the pupæ of many Lepidoptera in captivity do remain alive, but unemerged, for years. How much more likely are they to remain in a state of nature, even for longer periods. There, the chance of safety is greater than in the artificial state of captivity. The fact of being kept too dry or too damp, or accidentally disturbed when all are thought to have emerged or to be dead, generally causes disturbance of Nature's rules with our captive pupæ. We are, perhaps, too ready to turn to the migration theory, because it is one easily understood; but it does not seem wise to put every unusual appearance down to the "blown-over theory." That migration does take place none can doubt, even on great continents. Again, no one can doubt that there are cases of unusual and periodical extraordinary abundance of certain species; with the converse of years of remarkable scarcity. Take, for instance, the flights of innumerable specimens of *Annosia plexippus* on the continent of North America. That species occurs every year in certain localities, but on some occasions in such numbers as to surprise even the uninitiated in those places. It cannot be migration in such instances.

Deilephila galii is said to occur every year on the Deal sand-hills in the larval condition, but usually in very small numbers. About thirty years since Mr. Boswell-Syme captured a large number of the larvæ there, and was then enabled to add specimens

to most of the collections of his friends. This year it has been taken in that locality by many hundreds, if not actually by thousands. Again, in smaller numbers at Shoeburyness on the Essex coast; also further north on the Suffolk coast; and at Cromer in Norfolk. All this favours the "blown-over theory," for those localities are next the Continent. These larvæ have, however, occurred this year numerously on the Wallasey sand-hills on the Cheshire coast, which is far away from continental influence. This, be it marked, is one of the old localities for *Deilephila galii*. Perhaps my friends, who favour migration as a solution of the problem, will suggest that some subtle instinct orders a very small number of continental moths, of this species, to proceed direct to Wallasey to deposit their eggs. This, it must be allowed, is only an intermittent effort of instinct, for they are not supposed to migrate annually. One can understand the heredity instinct of migratory birds, because the young return year after year for countless generations to the same locality where they were hatched. That cause cannot be claimed for unusual migration of insects, with many years' interval.

Perhaps the true moral to be drawn from the abundance during 1888 of *Deilephila galii* in this country, is connected with the fictitious value of "British specimens." If these moths were "blown-over," they are continental specimens, and the larvæ, which have been so assiduously searched for, are from "continental parents," just as much as if the ova had been sent from France and Italy by post. Again, if the moths of this species which have been taken in these islands are truly British born, they have for years to come destroyed the money value of *Deilephila galii*; for who is to tell whence all come that will be put on the market from time to time as specimens of 1888? If it should cause English entomologists to look with even the least more favour on the abolition of caste as between continental and British specimens, the abundance of this handsome moth, in 1888, will be a cause of thankfulness to future generations of students of Entomology, who will study the fauna of this country with less insular prejudice.

London, September, 1888.

CONTRIBUTIONS TOWARDS A LIST OF THE VARIETIES
OF NOCTUÆ OCCURRING IN THE BRITISH ISLANDS.

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

(Continued from p. 229.)

Calamia, Hb., *lutosa*, Hb.

The type of this species is represented by Hübner's fig. 232, which may be described as having the anterior wings pale ochreous with whitish nervures, the posterior wings grey with dusky nervures. There are no traces of spots on any of the wings. The type is rare in England, though the varieties are abundant. The variation in colour of this species is very great. It varies from pale ochreous to deep red. Some specimens are much irrorated with black scales. From the type, with no transverse rows of spots, we find every gradation to a complete row extending across both the anterior and posterior wings. The variation in size is remarkable. I have specimens of var. *pilicornis* not larger than *pallens*; I have specimens of vars. *cannæ* and *crassicornis* larger than my largest *arundinis*. Mr. Dobrée writes:—"It is a common insect in some years near Beverley, both in the type and all the varieties of size and colour, including very handsome specimens (var. *crassicornis*) with the three dark longitudinal shades very sharply defined and quite black" (*in litt.*).

α. var. *crassicornis*, Haw. — Treated by our early British lepidopterists as a distinct species. Haworth's original description is:—"Alæ anticæ subfulvo alboque venosæ, atque cinerascens ex punctulis minutissimis numerosissimis fuscis, absque lente vix conspicuis, punctisque aliis circiter sex majoribus posticis, in strigam arcuatam dispositis. Alæ posticæ fuscæ ciliis lutescentibus." ('*Insecta Britannica*,' p. 173) This name is given to those wainscot-brown specimens which are thickly irrorated with fuscous scales, with a distinct transverse row of black dots on the anterior wings and continued on the posterior. The minute fuscous atoms form three very distinct dark longitudinal shades, one extending on either side of the median nervure, another extending from the base just under the costa, a third just above, but parallel with the inner margin. Hind wings dark grey, with a transverse row of dots. The spaces

between the nervures of the anterior wings also much suffused. I have this variety from Clevedon (Somerset) and Beverley (Yorks).

β. var. pilicornis, Haw.—This name was given by our early British authors to those specimens which had the anterior wings pale ochreous, and but little irrorated with black or fuscous scales. This variety was first described by Haworth in the ‘Trans. Ent. Soc.,’ old series, p. 336, as a distinct species. These paler specimens often have the transverse rows of dots very indistinct, and more nearly approach Hübner’s spotless type. Some specimens of this are very small. I have some from East Yorkshire not larger than *pallens*. Mr. Mason (Clevedon) informs me that this is the most common form in his district.

γ. var. cannae, Steph. (non Och.).—Red varieties of this species were incorrectly referred to the *cannae* of Ochsenheimer, which is a totally distinct species, by the early British authors. The anterior wings of this variety are deep reddish ochreous, sometimes sparingly, sometimes thickly, irrorated with dusky atoms, with the transverse row of dots more or less distinctly marked. My specimens of this variety have come from Somerset, East Yorkshire, &c., and vary much in size. For the splendid series of var. *crassicornis* and var. *cannae* I have, I am largely indebted to Mr. Mason, of Clevedon, who has been exceedingly good to me, not only by giving me a large number of specimens, but also a great deal of information. “Stephens’ description of *cannae* is:—‘Expanse, $1\frac{2}{3}$ inches. Head and thorax pale reddish or yellowish ash; anterior wings the same, with a few minute dusky atoms, with some larger spots at the base, and a row still more distinct towards the hinder margin, and forming an arcuated striga; in the middle of the disc is a single spot of similar hue; posterior wings reddish or yellowish ash.’”—Humphrey & Westwood’s ‘British Moths,’ vol. i., p. 215. It is advisable to remember that this description was written at a time when the species was almost unknown in Britain, isolated examples in one or two cabinets being all that the British collectors then had.

Calamia, Hb., *phragmitidis*, Hb.

Hübner’s fig. 230 (by error 330) represents the type, and is excellently drawn. It has the anterior wings clear whitish ochreous, with the outer half of the wings to the hind margin

reddish; the hind wings grey, the upper (anal) angle paler. This is intermediate between two extreme forms, one with the whole of the anterior wings without the slightest trace of reddish, the other with the anterior wings entirely red. There is a great deal of difference also in the size of different specimens. I have some specimens exceedingly small of both the following varieties, as well as the type.

α. var. rufescens, mihi.—The anterior wings entirely suffused with rich deep red, the hind margin being slightly darker. The hind wings bright shiny grey, with paler nervures. In my opinion this is one of the finest varieties in the family, and I have a very fine series in my collection, captured on the banks of the Thames in North Kent. The form is local and rare, and I have rarely taken it in localities even where the type is abundant, although Mr. Dobrée writes that it is “equally common at Beverley as the type.” It occurs sparingly at Wicken, whence I have received it from Mr. Farren. The type is rare on the Continent, and the variety, I believe, almost unknown. This variety is figured in Humphrey & Westwood’s ‘British Moths,’ pl. xlvii., fig. 16.

β. var. pallida, mihi.—Of a pale unicolorous, whitish ochreous colour, with a slightly greenish tinge, perfectly clear and unspotted, and no trace of red. This is the commonest form of the species, being much more abundant than the type and *var. rufescens* in all localities where I have found the species. It is also the common form at Wicken.

(To be continued.)

ENTOMOLOGICAL NOTES, CAPTURES, &c.

VANESSA ANTIOPA IN KENT.—On August 22nd I received a letter from my friend Mr. J. Wood, of Chatham, written the day previous, stating:—“To our great surprise this morning we saw a Camberwell Beauty in the garden, feeding on an over-ripe gooseberry which had fallen from the bush. We watched it for some time, it looked so beautiful. It flew up, and actually settled on me and then on my sister.” Upon receiving this news, and knowing the habit the Vanessidæ have of returning day after day to sweets, I arrived at my friend’s house about midday, and was glad to hear it had been seen again feeding upon the gooseberry

that morning, and I had the fortune to secure it while settled on a gravel walk. It is a fine specimen, $3\frac{1}{2}$ in. in expanse, and very richly coloured; the margins are of a straw-yellow colour. With the exception of the margins being slightly chipped, it was, apparently, freshly emerged.—F. W. FROHAWK; Balham, S.W., August, 1883.

VANESSA ANTIOPA IN KENT.—It may not be uninteresting to record the capture, in the window of a chemist's shop in Margate, of a very fine specimen of *Vanessa antiopa*. From its freshness I should say it could not have long emerged; and the border is lighter, and size slightly larger, than that of the usual continental specimens. I have never heard of a specimen being caught in this neighbourhood, though Coleman gives Ramsgate as one of the places of its capture.—F. STANLEY; 6, Clifton Gardens, Margate, September 7, 1888.

VANESSA ANTIOPA IN KENT.—A specimen of this butterfly was captured on August 31st. by the son of the station-master of the Warren Station of the S. E. Railway, near Folkestone. I saw the insect just as it was being pinned, and it is now in my possession. Owing to its having been captured with the boy's cap, the specimen is somewhat rubbed, though otherwise perfect. It may be of some interest to mention that on the same day I took a female specimen of *Argynnis aglaia*, drying its wings; on September 5th, over a dozen specimens of *Melanargia galatea* were noticed, drying their wings; and up to the time I left the locality, although I was looking for the species, I only saw a solitary example of *Lycena bellargus*.—H. W. BARKER; 83, Brayard's Road, Peckham.

FOOD OF VANESSA POLYCHLOROS.—The larvæ of this species, according to my observation, generally feed on elm, and on branches rather high up, frequently towards the end of their life-time committing such devastation as to render the branch very conspicuous through absolutely stripping it of its leaves. I have also occasionally found the larvæ feeding on willow of various species, but I was hardly prepared for finding a nest, as I did on July 10th of this year, feeding on a low branch of a white-heart cherry tree, in a private garden situated in the town of Brentwood. Although Newman, in his 'British Butterflies,' records cherry as a food-plant, I think *Vanessa polychloros* eats it so rarely as to

make a modern instance worthy of record in your pages.—(Rev.) GILBERT H. RAYNOR; Fairview, Brentwood, August 28, 1888.

THECLA W-ALBUM IN GLOUCESTERSHIRE.—I can corroborate Mr. C. F. Thornewill's statement (Ent. 184) as to the abundance of *w-album*. On Saturday, June 16th, I took fifteen larvæ of this insect, and Mr. E. B. Poulton and the Rev. A. G. Butler took several more; on Monday, June 18th, I secured twenty-seven larvæ, nearly all full-fed; and on Saturday, June 23rd, I took one spun-up pupa, and saw several more out of reach. All these were taken on wytch-elm, and they seemed to exhibit a decided preference for the boughs bearing fruit.—M. STANGER HIGGS; The Mill House, Upton St. Leonards, Gloucestershire.

THECLA W-ALBUM IN CHESHIRE.—My son caught two bad specimens of this butterfly on August 30th, in the parish of Malpas, in Cheshire. As I have never read of its occurrence so far west as this, I place the fact on record.—C. WOLLEY DOD; Edge Hall, Malpas, September, 1888.

EPINEPHELE HYPERANTHES, VARIETY.—I captured a fine variety of *Epinephele hyperanthes* in North Kent on July 23rd. The right anterior wing is of a pale whitish grey, almost to the base; the costa is especially pale. The cilia are perfect; and the specimen had apparently but recently emerged when it was captured.—J. W. TUTT; September, 1888.

SPHINX CONVULVULI IN SUSSEX.—On September 2nd I took a fine specimen of *Sphinx convulvuli* at rest on a fence at Polegate, Sussex.—A. ABERCROMBY; 41, Fairholme Road, West Kensington, W., September 5, 1888.

SPHINX CONVULVULI IN STAFFORDSHIRE.—A fine male specimen of this moth was captured here on September 1st, 1888, on some linen that had been hung out to dry. It is now in my possession.—E. P. WRIGHT; Granville Terrace, Stone, Staffs.

SPHINX CONVULVULI AT YORK.—I captured here, on August 28th, a fine *Sphinx convulvuli*, which had been attracted by the flowers of the sweet-scented tobacco plant. I took a second specimen in the same place on August 30th, but not in such fine condition.—SAMUEL WALKER; 75, Union Terrace, York.

DEILEPHILA GALII IN CHESHIRE.—In addition to the numerous captures of the perfect insect on the South-east coast, many

specimens have been taken this summer on the Wallasey sand-hills. Hearing that the larvæ were common in that locality in the early part of September, I paid a visit to the sand-hills on the 8th. I found the caterpillars feeding on the lady's-bedstraw (*Galium verum*), where the plant grows thin and short, especially on mounds and rising grounds in the hollows between the sand-hills, and as near as possible to the sea. The larvæ should be sought for in the daytime, and are fond of feeding and exposing themselves in the hottest sunshine. The frass may be looked for among the thin short bedstraw, and followed up to the end of its track, when the caterpillar is seen. I obtained a few in this way, but, as a rule, they are easily seen. On my first visit I took eight, and on September 15th five more,—a satisfactory result, considering that the ground had been well worked,—one collector taking no less than sixty larvæ. On my return home the larvæ were distributed between a large fern-pot and a breeding-cage well filled with sea-sand, and, remembering their fondness for sun, air, and fresh food, I am glad to say that seven have pupated, just below the surface. I ought to say that I came across many dead and dying larvæ of *Deilephila galii* in all stages, probably the result of the late cold and extremely wet weather. My acquaintance with the larvæ of this species began on the sand-hills near South Shields, some twenty years ago. Since that time I have not met with any until the present season, and I am informed it is sixteen years or more since they were last found upon the Wallasey sand-hills.—J. ARKLE; 2, George St., Chester.

DEILEPHILA GALII IN KENT.—On September 13th I found two caterpillars of *Deilephila galii*, and earlier in the year I took a moth of this insect in this neighbourhood.—W. N. BUCKMASTER; West Cliff Road, Ramsgate.

DEILEPHILA GALII IN NORFOLK.—A specimen of the larva of *Deilephila galii* was taken by me on the cliff at Cromer on August 31st. It has fed up and changed into chrysalis.—J. A. TAWELL; Earls Colne, Essex, September 12, 1888.

DEILEPHILA GALII IN SUFFOLK AND ESSEX.—While collecting near Aldeburgh, on the Suffolk coast, during the last week in August, I found the larva of *D. galii* commonly feeding on *Galium verum*. From the traces about they must have been there in great numbers, many having no doubt pupated. I have since taken

about a dozen more on the sand-hills near Shoeburyness.—J. A. COOPER; 1, Sussex Villas, Harrow Road, Leytonstone, Essex.

CHÆROCAMPA NERII AT POPLAR.—A specimen of *Chærocampa nerii* was brought to me alive yesterday. It had been taken on the evening of the 20th, on a railway at Poplar, by a man named Mason.—C. A. BRIGGS; 55, Lincoln's Inn Fields, Sept. 22, 1888.

ABUNDANCE OF SMERINTHUS.—I can fully attest the abundance of *Smerinthus tilia* this year (Entom. 232), having myself taken twenty-eight larvæ, and several specimens of the perfect insect. I have also found twenty-four larvæ of *S. ocellatus*, which is more than I have taken, or heard of anybody else taking, in this neighbourhood in one season. They seem to be very backward this year, several of them have only just undergone their final moult, whereas last year they were full-grown about the middle of August.—W. J. OGDEN; 93, Clapton Common, Upper Clapton, E., September 21, 1888.

CALLIMORPHA HERA IN DEVONSHIRE.—Being at Dawlish, on September 2nd, it occurred to me that it was about the time Mr. Jäger met with so much success in the capture of *Callimorpha hera* in that locality. Having beaten several miles of hedges, I was about to give up all hope of seeing a specimen, when all at once one darted out, alighted upon an oak-tree near, and, upon being disturbed with a stone, flew off over a high hedge and was lost to view. I saw nothing more of the species until the 7th inst., when I took a worn female of the var. *lutescens*. As it came upon me suddenly, flying in the early morning sunshine, it looked so much like *Colias edusa* that I was not aware of my prize until it was in the net.—H. A. AULD; 2, Plassy Road, Catford.

ACRONYCTA ALNI IN LINCOLNSHIRE.—I beat a fine nearly full-fed larva of *Acronycta alni* off birch on Sept. 3rd, while beating for *Notodonta dictæoides*, which I have been successful in finding here.—ELIZABETH CROSS; The Vicarage, Appleby, Brigg, Lincolnshire.

ACRONYCTA ALNI IN NORTHAMPTONSHIRE.—I was fortunate in picking up a nearly full-fed larva of the above species, crawling on the road near Lilford Hall, on the 26th inst.—W. EDWARDS; Lilford Hall, Oundle, August 27, 1888.

SYNIA MUSCULOSA IN LANCASHIRE.—I have to record the capture of a specimen of *Synia musculosa* here at light on the 24th

of August. It is just like an ordinary specimen with the exception of the left anterior wing, which has a distinct small circular black spot. Is not this an unusual aberration? This is, I think, the first time this species has been recorded from this district, which is about $2\frac{1}{2}$ miles from Manchester.—A. STEWARD; Oaklands, Eccles, Lancashire, August 30, 1888.

HELIOTHIS PELTIGERA IN WALES.—While staying at Gower, South Wales, this August, I captured two fine specimens of *Heliothis peltigera*. The rest-harrow, the food-plant of the larva, grows there plentifully. I also took a specimen of *Leucania littoralis*, besides many common moths.—A. N. CHAMBERLAIN; Highbury, Moor Green, Birmingham, September 7, 1888.

PLATYPTILIA GONODACTYLA, THE SECOND BROOD.—I am pleased to record the breeding of the second brood of *P. gonodactyla*, from ova obtained by enclosing specimens of the June brood on a growing plant of *Tussilago farfara*. The larva in its early stages mines the fluffy under sides of the leaves of its food-plant, but afterwards feeds exposed, and finally spins a slight web, generally on the under surface of the leaves, in which it changes to a pupa.—J. W. TUTT; Westcombe Park, S.E.

[*P. farfarella*, Zell., is probably referable to the second brood of *P. gonodactyla*; see Entom. xviii. 172, where also it is mentioned that Mr. Gregson has recorded (Entom. vi. 427) the history of "a *gonodactylus*-like insect, from a larva found feeding in a kind of gallery made in, or under, the woolly under side of a coltsfoot-leaf."—R. S.]

RARE LEPIDOPTERA AT DEAL.—I am pleased to record the capture of *Schnœnobius mucronellus* at Deal,—two specimens on June 30th, and two very fine ones on August 10th. I also took *Doryphorella palustrella* during the first week of August, but this species is exceedingly rare, four good specimens only falling to my net, although I carefully searched for it. *Lita blandulella* occurred very sparingly, but *L. semidecandriella* was fairly abundant. A nice series of *Melissoblyptes bipunctanus (anellus)* was a welcome addition to my cabinet. I never saw *Lithosia pygmaeola* so large nor dark as they were this year. *Crambus contaminellus* was only just appearing when I left on August 19th. *Acidalia ochrata* was very rare this year, and exceedingly late, as have been all species since the commencement of June.—J. W. TUTT; Westcombe Park, S.E., September, 1888.

EXPERIMENTS ON HEREDITY IN *SELENIA TETRALUNARIA*.—For the purpose of pursuing to the best advantage some experiments I am making with *Selenia tetralunaria* (*illustraria*), I should be greatly obliged by receiving, and should be happy to pay for—or exchange—living specimens of it, captured in widely different places, especially in Scotland, Wales, Northern England, or any part of continental Europe. My object is to breed from them, and I do not require large numbers; for example, a dozen or a score of eggs from a brood, or the same number of larvæ or pupæ, would be generally sufficient, as of course would a single fertile female moth.—F. MERRIFIELD; 24, Vernon Terrace, Brighton, September 12, 1888.

[The interesting experiments which Mr. Merrifield is conducting, with a view to examining the results of heredity, should receive the best support, and we trust our readers will have opportunity of furnishing the material required.—J. T. C.]

SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON.—*September 5th*, 1888. Dr. D. Sharp, F.L.S., President, in the chair. Mr. M. Stanger Higgs, of St. Leonard's, Gloucester, was elected a Fellow of the Society. Dr. Sharp mentioned that he had received, through Prof. Newton, a collection of Coleoptera from St. Kilda, consisting of *Carabus catenulatus* (1), *Nebria brevicollis* (12), *N. gyllenhalii* (3), *Calathus cisteloides* (20), *Pristonychus terricola* (1), *Pterostichus nigrita* (71), *P. niger* (31), *Amara aulica* (4), *Ocypus olens* (1). The species being nearly all large Geodephaga, he thought probably that many other Coleoptera inhabited the island. He remarked that these specimens showed no signs of depauperation, but were scarcely distinguishable from ordinary English specimens. Mr. South exhibited a melanic *Aplecta nebulosa* from Rotherham, bred with five others of ordinary form, and an albino of the same species from Devonshire; a very curious dark variety of *Plusia gamma*; two dark vars. of *Eubolia limitata* from Durham; *Dicrorhampha consortana* from North Devon. Mr. Champion exhibited *Harpalus cupreus*, *Leptusa testacea*, and *Cathormiocerus maritimus* from Sandown, Isle of Wight. Mr. Elisha exhibited interesting Micro-Lepidoptera. Mr.

Jacoby exhibited three boxes of Coleoptera, collected partly by Mr. Fruhstroffer, containing some rare *Cetoniadæ*, *Paussidæ*, &c. Mr. E. Saunders exhibited *Amblytylus delicatus*, Perr., a new British bug, taken at Woking. Mr. Jacoby mentioned that he had taken the larva of *Vanessa cardui* on a narrow white-leaved plant in his garden. Mr. Enock mentioned that out of a batch of two males and six females of the Hessian Fly kept together, all six females had laid fertile eggs, so that each male must have impregnated more than one female.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—August 23rd, 1888. T. R. Billups, F.E.S., President, in the chair. Mr. H. A. Cruttwell, of Asuba, River Niger, West Coast of Africa, was elected a member. Mr. J. T. Williams exhibited nine specimens of *Deilephila galii*, taken by him at St. Margaret's Bay, and mentioned that Mr. Felix Oswald had taken eight specimens in the same district. Mr. Wellman, bred examples of *Heliaca tenebrata*, *Eupithecia togata*, *Emmelesia unifasciata*, *Rodophaea formosa*, *R. suavella*, *R. avenella*, *Sesia ichneumoniformis*, among which were three specimens having yellow bands; and he stated that he had bred only these three from five dozen pupæ, while last year out of three dozen he bred sixteen of this variety; and he also showed partially melanic specimens of *Venusia cambrica* from Sheffield. Mr. South, many species and varieties of Lepidoptera, among which was a variety of *Arctia villica* and an example of a *Plusia*, and called attention to the curiously-serrated line on the hind margin of the primaries, which formed a distinct metallic W; he said the specimen, so far as he knew, did not agree with any species hitherto described, but it might possibly be a variety of *Plusia gamma*. Mr. Joy, *Coremia designata*. Mr. Helps, *Acontia luctuosa*. Mr. T. D. A. Cockerell, *Trichodes ornatus*, *Chrysis pacifica*, and *Cantharis nuttalli* from Colorado; and notes were read relative to his exhibit. The Secretary read the following communications from Mr. Cockerell: a note on the genus *Euchloë*, and a short paper entitled "Can Insects distinguish between Red and Yellow?" in which he asked the members to assist him with information as to whether yellow insects showed a fondness or otherwise for pink flowers, and whether the insects seemed aware of the difference between red and yellow.

Sept. 13th.—J. T. Carrington, F.L.S., Vice-President, in the chair. Mr. J. H. Keys, of Plymouth, was elected a member. Mr. H. A. Auld exhibited a large number of *Dicycla oo*, taken at sugar on the 10th of August last near Hayes. Mr. Bouttell, a fine variety of *Melanippe sociata*, and also many other species. Mr. Turner, a melanic specimen of *Boarmia gemmaria* v. *perfumaria*, taken near Ashdown Forest. Mr. Stringer, species of Lepidoptera from Shenley, Herts, and remarked on the unusual abundance of *Ino statices* and *Zygæna filipendulæ*. Mr. Croker, imagines and preserved larvæ of *Smerinthus populi* and *Panolis piniperda*. Mr. Elisha, fine bred series of the following Tortrices: *Argyrolepis æneana*, *A. zephyrana*, *Eupœcilia atricapitana*, *E. amandana*, *Retinia turionana*, *Catoptria juliana*, *Phoxopteryx derasana*, *Ephippiphora trigeminana*, and *Carpocapsa pomonella*, the last-named bred from berries of the white beam-tree; also the following Tineæ: *Nematois fasciellus*, *Cerostoma horridella*, *C. alpella*, *Æcophora unitella*, *Coleophora therinella*, and *Gelechia semicandrella*, the last-named bred from *Cerastium tetandrum*. Mr. Wellman, bred examples of *Noctua sobrina*, *Plusia interrogationis*, both from Perthshire; *Dianthæcia irregularis*, from Cambs.; and many other species. Mr. South, a short series of *Lycæna icarus* from Durham, which he said might be regarded as a fair sample of *L. icarus* occurring at Bishop Auckland and Castle Eden, one specimen, a male, having distinct black patches in the fringes. Several of the females were remarkable for having all the under-surface markings of the primaries reproduced on the upper surface. He also showed fourteen specimens of the male of *L. icarus*, having traces of black dots or spots on the hind margins of the secondaries, picked from between sixty or seventy examples. Mr. South remarked that he was aware this form of *L. icarus* occurred in Scotland and Ireland; he had taken an example at Ventnor, but did not know that it occurred in other parts of England, and would be glad of information as to this. Mr. Tutt said it occurred at Deal. Mr. Tutt mentioned that the larvæ of *Deilephila galii* had been occurring very freely at Deal, and some remarks were made by other members with reference thereto. An interesting discussion took place on the probable influence of humidity in causing variation among Lepidoptera.—H.W. BARKER, Hon. Sec.

REVIEWS.

Insect Life : devoted to the Economy and Life-Habits of Insects, especially in their Relations to Agriculture. Edited by the Entomologist and his Assistants, with the sanction of the Commissioner of Agriculture, M.S. Department of Agriculture, Division of Entomology. Vol. I. No. 1. Washington: Government Printing Office, 1888.

THIS magazine is called, in addition to the title as above specified, 'Periodical Bulletin,' and as there is no indication of price, or that it is sold by any agents, we presume it is distributed freely among suitable readers in the United States of America. Happy people! who possess a state entomologist like Mr. C. V. Riley to conduct such a magazine, and a government sufficiently enlightened to support him in his active endeavours to circulate knowledge of Economic Entomology among the people.

Thirty-two pages large 8vo, well printed, with liberal illustrations, No. 1 of 'Insect Life' promises well for the future. There are six special articles on certain destructive insects, generally with woodcuts, "Extracts from Correspondence" of the Department, with replies, and lastly "Notes," which are of general interest. We congratulate Mr. Riley and the Department upon the issue of 'Insect Life.'—J. T. C.

Entomology for Beginners. By A. S. PACKARD, M.D., Ph.D. New York: Henry Holt & Co., 1888. 354 pp. 8vo, 373 woodcuts.

DR. PACKARD has produced a most useful and handy little work, concisely arranged, liberally illustrated and well printed. He divides his subjects into eight chapters, the first three respectively upon Structure, Growth and Metamorphosis and Classification of Insects; also others on Insect Architecture, Injurious and Beneficial, Directions for Collecting, Preserving and Rearing (it may be remarked that in the directions for setting Lepidoptera, only the high-flat system is given), Mode of Dissecting and Mounting for Microscopical Examination; and the Entomologist's Library, wherein reference is made to about 250 books, standard works, and periodicals; and lastly, 17 pp. of glossary of terms used in the study of Entomology. We can highly recommend this work to our readers, who will doubtless, on enquiry, find in England some agent for the publishers.—J. T. C.

OBITUARY.

PHILIP HENRY GOSSE, F.R.S., was born at Worcester in 1810, and died at his residence at St. Mary Church, Torquay, on the 23rd August, 1888. Mr. Gosse belonged to that class of naturalists which it is, in the present day, somewhat the fashion to look down upon, but they were the very men who created an interest in Natural History amongst the people, and widely extended the habit of observation; thus not only paving the way for grants of public money for "original research," but actually bringing into existence the specialists of the present day. Early in life Mr. Gosse removed to Poole, on the Dorset coast, where he first developed the taste for Natural History pursuits, which in after life became so valuable. His work, as is well known, was that of the recording of facts popularly stated, such records existing in his numerous books and still more numerous scattered papers; the Royal Society's catalogue of scientific papers mentions up to 1873 no less than sixty of such, while many others have since then appeared. As a traveller, Mr. Gosse had some reputation, having, in 1827, in pursuit of commercial occupations, visited, among other places, and studied the Natural History of Canada, where he resided for several years. He afterwards visited the United States, staying in Alabama for about a year. In 1844 Mr. Gosse was in Jamaica, where he lived for eighteen months, afterwards returning to England. Ill-health caused his removal at a latter period from London to the sea-side, Tenby being one of his favourite hunting-grounds. Later he removed to the house where he died, and where for long past naturalists visiting Torquay have been made welcome. In 1856 Mr. Gosse was elected a Fellow of the Royal Society. Among his best-known works are 'The Canadian Naturalist'; 'A Naturalist's Sojourn in Jamaica' and 'Birds of Jamaica'; 'Naturalist's Ramble on the Devonshire Coast'; 'The Aquarium,' of which study both in private and public institutions he was practically the founder; 'A Manual of Marine Zoology'; 'Tenby, a Seaside Holiday'; 'History of British Sea Anemones and Corals'; 'A Year at the Shore'; and others. Mr. Gosse was very fond of the study of Entomology. Papers on this subject appear from his pen in the early volumes of the 'Entomologist' and 'Zoologist.' Even so recently as in 1879 and 1880, vols. xii. and xiii. of this magazine contain important illustrated papers by him. Of late years Mr. Gosse was much engaged in religious teaching, having erected at his own expense a public place of worship, in which he was to be found both as worshipper and preacher. He, however, always found time to add to his literary Natural History works, and these have built a monument to his ardent and unceasing study of the beauties of nature.—J. T. C.

THE ENTOMOLOGIST.

VOL. XXI.]

NOVEMBER, 1888.

[No. 306.

AN ENTOMOLOGICAL EXHIBITION.

AN exhibition of Entomological subjects, probably the largest held in London since the memorable one at Westminster, took place on the 17th and 18th October, at the Bridge House, London Bridge, being that of the South London Entomological and Natural History Society. Although Entomology is the leading feature of these annual exhibitions, other branches of Zoology are prominently represented, as well as botanical subjects and microscopy.

Among the novelties exhibited were Mr. Jenner's specimens of *Acidalia immorata*, taken for a second time near Lewes in Sussex; they are remarkable not only for their fine condition, but also for the wide range of variation. Mr. R. Adkin, Spingees and Bombyces, especially *Spilosoma mendica*, including var. *rustica*, bred from Irish parents; *Triphæna comes* from pale brown to almost black; and other rare Lepidoptera from Shetland and elsewhere. Mr. Edward Atmore, of Lynn, Macro- and Micro-Lepidoptera, among which *Tortrix lafauryana* varied much; there were also *T. decratana* bred from larvæ feeding on *Myrica gale*, and Norfolk insects. Mr. Jüger, series of *Callimorpha hera* from South Devon, and other species from South Wales. Mr. Howard Vaughan, drawer of British *Colias*, including hermaphrodite, part *edusa* and part var. *helice*; drawer of Diantheciæ from many localities. Mr. C. A. Briggs, *Chærocampa nerii*, taken this year at Poplar; three drawers of Nocturni, with fine series of *Deiopia pulchella*, vars. of *Arctia caia*, &c. Mr. A. B. Farn, the

genus *Triphæna*, showing varieties from Isle of Lewis and other places. Mr. J. E. Robson, of Hartlepool, varieties of Zygaenidæ. Mr. Tugwell, six drawers selected from his collection—Sphingidæ, all British Zygaenidæ, Nocturni, with the unique British *Syntomis phegea*, and other rarities. Mr. South, Pieridæ and Argynnidæ from various parts of these isles; very extensive series of *Boarmia repandata* from North Devon, with great variation, including vars. *conservaria* and *destrigaria*; series of *Cidaria truncata* and *C. immanata* from many localities. Mr. J. H. Leech, six drawers, glazed top and bottom, so that the insects could be examined without removal: the drawers consisted—one of *Acherontia atropos*, from various parts of Europe, with many aberrations; one of *Lasiocampa pini*, showing great variation; one of *Pieris brassicæ*, from Europe, North Asia, Japan, &c., including forms *cheiranthi* and *woollastoni*; one of *Gonepteryx rhamni*, with forms *cleopatra*, *cleobule*, *farinosa* and *maderiensis*; one of *Colias hyale* from various localities; another of *C. eogene*, from Cashmere. This gentleman also sent six cases of Palæarctic Coleoptera, containing some unique examples. Mr. J. H. Cooper, six drawers of British Lepidoptera, many fine specimens. Mr. D. Chiltenden, of Ashford, fine varieties of *Xanthia aurago*. Mr. Sydney Webb, of Dover, remarkable varieties of Iycænidæ taken this year. Mr. Wellman, six drawers of very fine Lepidoptera, mostly bred. Mr. G. Elisha, six drawers of Geometridæ, containing fine and rare species and varieties. Mr. W. White, preserved larvæ and South African insects. Mr. J. Smith, of Plumstead, nine cases of Rhopalocera. Mr. A. H. Jones, of Eltham, two drawers containing all the known European Erebiæ. Mr. Oliver E. Janson, beautiful series of exotic Rhopalocera, Ornithoptera, and Papilio. Mr. Gregson, of Liverpool, coloured drawings of Lepidoptera and Hymenoptera in his collection. Mr. S. Mosley, of Huddersfield, drawers of varieties of *Abraxas grossulariata*, *Arctia caia*, &c. Mr. Tutt, long series of varieties of Agrotidæ, Gelechiidæ, &c. Mr. Percy Russ, of Sligo, long series of varieties of Lepidoptera taken in North-west of Ireland. Mr. Arthur Marshall, of Weybridge, comparative series of same species from Rannoch, Isle of Lewis, and South English localities. Mr. Samuel Stevens, many rare Lepidoptera of his own taking. Mr. J. Jenner Weir had a fine exhibit; as also Mr. Edwards, exotic Rhopalocera.

Among exhibitors in other orders were Mr. McLachlan, British Caddis-flies; Mr. Billups, many drawers of Coleoptera, Hymenoptera, and other groups. Mr. Verrall, of Newmarket, very beautifully prepared Diptera, in three drawers, the Tipulidæ being most remarkable. Mr. Brunetti also exhibited in the same order. Mr. West, of Greenwich, fine exhibit of Coleoptera, &c. Messrs. Cooke & Son, of Museum Street, London, a large show of entomological apparatus, cabinets, &c.

It is impossible with the space at our disposal to enumerate all the exhibitors and exhibits, but they included many besides those mentioned.

Lectures were given at intervals, illustrated by the oxy-hydrogen light. The attendance was very large on each evening, upwards of 2000 visitors being present.

NOTES FROM NEW ZEALAND.

By G. V. HUDSON, F.E.S.

LEPIDOPTERA have been decidedly scarce in New Zealand during the past season, owing to the numerous and protracted gales of wind that have prevailed almost throughout the summer.

Early in February I visited the Mount Arthur Tableland, which is often said to be one of the best localities for alpine collecting in New Zealand. It consists of open country, alternating with patches of stunted birch forest, and varies in altitude from about 3600 ft. to 4500 ft. The scenery is in most places very magnificent, and the place offers almost unlimited scope for both tourist and naturalist. The plants are extremely numerous, and are nearly all specifically distinct from those found on the sea-level; a peculiar and equally novel insect-fauna being naturally the result.

Our best capture was a splendid specimen of *Dodonidia helmsii*, which was taken by my friend Mr. C. W. Palmer, at six o'clock on the evening of February 16th. Unfortunately we did not see any more during the five days we remained on the Tableland, so that it would appear to be somewhat rare. My single specimen was taken exactly three years before on the Dun Mountain, Nelson, also late in the afternoon. The commonest butterfly on the Tableland was *Argyrophenga antipodum*, which

abounded amongst the tussock-grass in all the openings. It is noteworthy that this insect becomes alpine in the north of the middle island, *viz.*, in the Nelson district, whereas on the plains of Canterbury and Otago it occurs at the sea-level.

The nights, when clear, were intensely cold, the thermometer standing at 29° Fahr. one morning at 5 a.m. Notwithstanding this cold, Noctuæ flew into our hut during the evenings, attracted by the light. They consisted of *Mamestra rubescens*, *M. moderata*, and *Agrotis nullifera*. In the daytime *Larentia clarata* was the commonest moth, the conspicuous and handsome *Crambus crenæus* coming next in abundance, two specimens of the rarer *Crambus diploorrhous* being also met with. Both these insects are quite two inches across the wings, and consequently unusually large in size for the genus. One plume-moth was obtained, *viz.*, *Mimæseoptilus lithoxestus*. But the most interesting of all the alpine Lepidoptera were the members of the genus *Notoreas* and its allies, of which we took six species, *viz.*, *Notoreas brephos*, *N. philadelphia*, *N. perornata*, *Arcteuthes chrysopeda*, *Slathomyma anceps*, and *Dasyuris partheniata*, besides several others undetermined.

The greatest elevation reached was Mount Peel (5300 ft.), where we saw one specimen of *Erebia pluto*, but could discover no more, although we spent upwards of three hours on the shingle-beds near the top of the mountain. It was most disappointing to miss this species, as it was an insect we were both much in want of. This mountain also produced a fine species of alpine grasshopper (Locustidæ), which I have not yet identified, as well as large quantities of the weevil (*Cladopais mirus*) found clinging to the grass, and very sluggish with the cold.

I was informed by the miners who reside on the Tableland that the summer was an exceptionally cold one, snow having fallen there only three weeks before our arrival. This, I think, will account for the scarcity of *Erebia pluto* and other insects, which should have been much more abundant. We left the Tableland on the 19th, and on the 20th the whole of the mountains down to 3000 ft. were again covered with snow.

On March 7th I observed the largest assemblage of moths I have ever seen in New Zealand. They were flying round an electric light suspended from the yard-arm of the steamship 'Aorangi,' laying at the wharf in Wellington Harbour. I should

say, at a moderate computation, that there were over 300 specimens. I could not capture any, owing to the great height of the light, but they appeared to be chiefly *Mamestra composita* and *Porina signata*. I think that this is a good instance of the efficiency of the electric light in attracting insects, as I have found that an ordinary lamp will not attract more than a dozen or twenty specimens even under the most favourable circumstances.

Wellington, New Zealand, August 5, 1888.

CONTRIBUTIONS TOWARDS A LIST OF THE VARIETIES OF NOCTUÆ OCCURRING IN THE BRITISH ISLANDS.

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

(Continued from p. 254.)

APAMIDÆ, Gn.

THIS extensive family contains some of our most variable and some of our most constant species of Noctuæ. It seems almost impossible to make any general remarks as to the tendency of variation in the family as a whole, as the different genera vary more or less in different directions. The variation in ground colour is in some instances very remarkable, whilst the markings vary exceedingly in many species. Such species as *didyma*, *bicoloria*, *strigilis*, may well be termed polymorphic. The colours of a very large number of species vary from a pale grey or yellowish ground colour, through various shades of brown or red to black. There is probably no family in which more pronounced cases of melanism occur, or where it is more general, e. g. *micacea*, *rurea*, *monoglypha*, *testacea*, *leucostigma*, *didyma*, *strigilis*, *exulis*, *basilinea* and *abjecta* are well-known examples, and all show a great and general tendency to the production of melanic forms. Even such constant species as *scelopacina* and *sublustris* occasionally show a tendency in this direction, the former being darker in Yorkshire than in the London district, the latter sometimes occurring very much suffused at Deal.

Gortyna, O., *ochracea*, Hb.

Hübner's *ochracea* ('Beiträge zur geschichte der Schmet.,' pl. 2. m.) is referred by Guenée to this species, and considered by

Dr. Staudinger as the type; but in his 'Sammlung Europaischer Schmet.,' Hübner twice figures (186, 187) this species under the name of *flavago*, a name previously given by Fabricius to a *Xanthia*. Hübner's fig. 186 has "the ground colour of the anterior wings pale yellow, with two pale, double, basal lines, the space between filled in with blackish grey; the stigmata pale, a reddish brown shade passing between them, and extending from the costa to the inner margin; a double line, outside the reniform, is followed by a narrow blackish grey band, the outer margin being greyish. Hind wings pure white, without markings." Hübner's fig. 187 has the "anterior wings of an orange-yellow ground colour, with dark red-brown transverse markings. The hind wings grey, with a broad, dark, marginal shade, followed by a dark transverse line and a dark lunule." Hübner's fig. 186 (with white hind wings) is very unusual, and Guenée seems to have had doubt whether it represented a variety of *ochracea* or was distinct, for he writes, "Hübner figures a *flavago* with entirely white inferior wings," and then asks, "Is this a variety?" ('Noctuelles,' vol. v., p. 123). But besides this, there are two other distinct, and probably, if carefully noted, equally common forms; the first is of a pale ochreous yellow, with comparatively pale transverse markings (the type); the second is of a deep golden yellow, with bright purplish-brown or reddish-brown markings. Sepp figures this pale form (I. pl. 3), and Guenée says of it ('Noctuelles,' vol. v., p. 123):—"Sepp's figure (No. 7) is a work of art. It is represented with folded wings, but the colour is too pale." It would seem, therefore, that Guenée was unaware that there was a paler form. Mr. G. T. Porritt, in his 'List of Yorkshire Lepidoptera,' published in the 'Transactions of the Yorkshire Naturalists' Union,' Part vi., p. 72, writes:—"Mr. N. F. Dobrée writes of this species: 'In all the specimens I have seen from the E. Riding, the size is not more than two-thirds of southern specimens, and the colouring is yellow instead of orange. The difference is so marked that I am surprised that it has not hitherto been noticed in print.'" Mr. Dobrée also writes me:—"All the *flavago* which I take here in October (when I look for *lutosa*) are much smaller than the handsome orange specimens, and of a yellow colour which may almost be called a lemon-yellow. Under wings similarly much paler. These I get accidentally at flight or at sugar, the orange always by

breeding, considerably earlier. I hold it to be a distinct var., but have not sought general information, and am open to correction" (*in litt.*). With regard to this I may add that I have bred a considerable number of the orange form, var. *flavoauratum*, but do not remember breeding pale ones, although I have captured them late in September. Thus I have both forms from this neighbourhood (Greenwich), and my Hull specimens are of both forms. Taking therefore the pale form as the type, I shall call the darker form:—

Var. *flavoauratum*, mihi.—Superior wings of a bright golden yellow colour, with the two ordinary transverse bands dark purplish brown, the nervures of a bright reddish colour. Inferior wings of a pale yellowish grey colour, with a blackish lunule and a blackish band parallel to the hind margin. This is described under the name of *flavago* by Guenée, 'Noctuelles,' vol. v., p. 122; by Newman, 'British Moths,' p. 279; by Stainton, 'Manual,' vol. i., p. 197; by Humphrey & Westwood, 'British Moths,' vol. i., p. 213; and by Haworth, under the name of *ochraceago*, 'Lepidoptera Britannica,' p. 234. In fact Hübner and Sepp seem to be the only authors who figure and describe the pale type.

Hydræcia, Gn., *petasitis*, Doubleday.

Guenée, in his 'Noctuelles,' vol. v., pp. 127, 128, treats this as a variety of *H. vindelicia* of Freyer and Herrich-Schäffer, but this latter is sunk as a synonym by all modern authors. A full description of the type is given by Newman in his 'British Moths,' p. 281; and on p. 282 of the same work, Newman points out that, if *vindelicia* is a less obscure form, as mentioned by Guenée, *petasitis* is the prior name to *vindelicia*, and the former therefore would become the type and the latter be retained simply as a varietal name. Comparing *petasitis* with *vindelicia*, Guenée writes, "Much smaller, the markings of the superior wings very confused, and all the wings are more shining and more thickly scaled" ('Noctuelles,' vol. v., p. 128). Our specimens of *petasitis* present a slight sexual variation, the females being larger and darker than the males.

α. var. *vindelicia*, Frey.—Guenée's description of *vindelicia* ('Noctuelles,' vol. v., p. 127) is as follows:—"Superior wings greyish brown with a slight violet tinge, and all the exterior part of the median space, the outer margin, and a streak from the

apex of a deeper brown. Nervures sprinkled with whitish. The two stigmata large, and of the same hue as the ground colour. Inferior wings of a clearer grey, with a darker lunule, median line and subterminal shade." This is therefore only a larger, brighter form than ours. Mr. Dobrée writes:—"Guenée separated *petasitis* from England and *vindelicia* from Bavaria, because in those early days it was not understood that British insects are generally smaller, less distinctly marked, and less brilliantly coloured than Continental specimens, especially as you approach Southern Europe" (*in litt.*).

β. var. amurensis, Stdgr.—Dr. Staudinger, in his last trade list (1887), included a variety of this species, from the Amur district, under the name of *amurensis*. Of this variety I know nothing, but Mr. Dobrée has kindly given me the following information, "I have *v. amurensis*, and if the three or four I have illustrate them all, the markings are possibly a little more distinct than ours, and the violet gloss very decidedly more noticeable, but otherwise they do not differ from our specimens" (*in litt.*).

(To be continued.)

ENTOMOLOGICAL NOTES, CAPTURES, &c.

COLIAS EDUSA IN DEVONSHIRE.—On September 6th I took a specimen of *Colias edusa* at Haldon in Devonshire, and saw another on the wing. Having seen this species on the 8th, 9th, and 10th of September, flying in different parts of that district, I thought it might be the beginning of an "*edusa* year." However, a visit to the clover-fields in the neighbourhood of Dartford, Kent, on the 11th, dispelled that opinion, for there was not the sign of either *Colias edusa* or *C. hyale*. A day's work at Riddlesdown on the 12th, and at Otford on the 13th, also resulted in no *edusa*.—H. A. AULD.

COLIAS EDUSA, var. HELICE, AT CHICHESTER.—I captured a fine specimen of the variety *helice* of *Colias edusa*, in a clover-field in the neighbourhood of this city, on September 13th. It is a primrose-coloured insect. The type has occurred sparingly with us this season.—JOSEPH ANDERSON, jun.

COLIAS EDUSA IN DORSETSHIRE. — I spent a long day on Saturday at Lulworth, and found *Colias edusa* flying freely about the Cove, and also along the rocks near. I also met with it plentifully further inland. The commonest butterfly was *Satyrus semele*, which abounded on the hill-sides. *Vanessa io*, *V. atalanta*, and *V. cardui* were also plentiful.—V. R. PERKINS; Weymouth, September 24, 1888.

EPINEPHELE HYPERANTHES, VARIETY. — I have taken five specimens of a variety of *Epinephele hyperanthes* this summer, in Berkshire. The yellow and black rings are entirely absent, and only the white central dots are evident. — JOHN E. WINKWORTH; 22, Wallwood Street, Burdett Road, E., September 24, 1888.

VANESSA ANTIOPA IN KENT. — I took a fine specimen of *Vanessa antiopa* on the high-road near Sevenoaks, on the morning of Saturday last, September 22nd. The colours were brilliant; the border is not quite so white as that of one which I caught in September some forty years ago, a notice of which appeared at the time in 'The Zoologist,' but is much lighter than the buff of continental specimens. — J. T. ROGERS; River Hill, Sevenoaks, September 23, 1888.

SMERINTHUS TILIE, VARIETY. — I bred a nice dark red-brown variety of this in June. At about the same time I caught about a dozen males assembling round a captive female.—H. M. LEE; Gladstone House, Sutton, Surrey, September 25, 1888.

SPHINX CONVULVULI IN HANTS. — A female specimen of this insect, in very fair condition, which was so plentiful here last year at white tobacco plant, was brought to me on September 12th, by a gardener, who captured it in his cottage.—G. HESELTINE; Walhampton, Lymington, Hants, October 1, 1888.

DEILEPHILA GALII. — In addition to the records of *Deilephila galii* which have appeared in recent numbers of the 'Entomologist,' we have received the following:—

Kent. — Whilst walking in a meadow by the River Medway, on September 8th, I had the good fortune to find a larva. It has never to my knowledge been found in Maidstone before. It was nearly full-fed; and after feeding on lady's-bedstraw till September 17th, spun the leaves of its food-plant together just under the surface of the ground and turned into a chrysalis.—FRANCIS FOSTER; Westfield, Maidstone, September 23, 1888.

Cambridge.—The larvæ have been found plentifully in this district during September.—G. E. CRALLAN; Cambridgeshire Asylum, Fulbourn, near Cambridge, October 5, 1888.

Middlesex.—I am pleased to state that I am one of the fortunate finders this year of the larvæ of that beautiful insect *D. galii*, not only on the coast, but quite near London. Knowing a spot at Edmonton where *Galium verum* grows abundantly, I sent my son to search, and he succeeded in finding the larvæ, so I went myself and found many traces of them, and field mice also, which I think had taken most of the larvæ, as there were very few left for me. Has it occurred to other naturalists that each of the last three times this insect has been common in this country, so has the Pallas's sand-grouse? This seems a suggestive coincidence. Is it the same cause that brings such distinguished visitors to our shores? It would be interesting to know the dates when both bird and insect were first seen during the past season. Had the summer been a warm one, I should have been inclined to think the latter were the offspring of some who had paid us a visit last year; but as I know from experience they require rather a high temperature to develop, I think they must have come over this season. In the year 1859 I found a few larvæ of *D. galii*, and got them into pupa. The next season was a very cold one. After waiting and watching until the middle of August, I had to bring the pupæ indoors and give them artificial heat. I shall do so again if they do not emerge before the end of June next.—H. JOBSON; 22, Fraser Road, Walthamstow, E.

SPHINGIDÆ IN SUSSEX.—On September 17th a very fine specimen of *Acherontia atropos* was brought to me, and another on the 19th; both were in beautiful condition. I have heard of several others being taken here. Last year the larva of one was brought to me, but after changing to the pupa state it was unfortunately crushed. I have also had a fine specimen of *Sphinx convolvuli* brought to me this year.—THOMAS HOWE; 3, Royal Terrace, Devonshire Road, Bexhill-on-Sea, Sussex, September 30, 1888.

CALLIMORPHA HERA IN SOUTH DEVON.—It may be of interest to your readers to hear that I captured three specimens of *Callimorpha hera* near Dawlish, South Devon, towards the end of August last.—ALVAH J. COOK; 9, Elgin Avenue, London, W., October 8, 1888.

FOOD FOR *BOMBYX RUBI*.—The absence of proper food-plants is sometimes a difficulty with London lepidopterists. I have just been rearing *Bombyx rubi* larvæ on knotgrass (*Polygonum aviculare*), to which they take readily. Perhaps this fact will be useful to some of our London friends.—J. W. TUTT.

NOTODONTA BICOLOR.—It may be as well to put on record all the specimens that have been taken in England, and who are the possessors, as I have seen other series of this insect years ago in collections as British. As near as I can ascertain, seven were taken at Burnt Wood, Staffordshire; one by a Mr. John Smith, of Manchester; Miss Carter, of Manchester, got one, and Mr. Evans, of Derby, has it. Six were taken by Mr. Charlton; one female laid eggs, from which seven moths were bred, and they were distributed as follows:—Sidebotham 2, Doubleday 1, Mr. Burney 1, H. O. Hammond 1, C. G. Barrett 1, J. B. Hodgkinson 2, from J. Chappell; Harwood 4 also, from C. Campbell, of which two went to Mr. Burney, two to Curzon; Dr. Mason has 1 King got from Charlton; and Mr. Evans has 1 Carter got from Smith, making 14 in all.—J. B. HODGKINSON; Ashton-on-Ribble.

DICRANURA BICUSPIS, *Borkh.*—A short time ago Capt. Vihar called my attention to the discrepancies between the existing figures and descriptions of the larva of this insect. I was thus led to investigate the subject; but it proves to be involved in so much confusion, that further information from those able to supply it, would be very desirable. Setting aside the description and figure of Borkhausen and Hübner, which are considered to be entirely erroneous, we find that Ochsenheimer and Freyer describe a birch-feeding larva with two conspicuous black spots on the back of the head, and with the dorsal stripe distinctly interrupted in the third segment. On the other hand, Boisduval, Rambur, Grashin and Duponchel say nothing about the spots on the back of the head, represent the dorsal streak as continuous, and state that the larva feeds in preference on beech. It is obvious that they cannot be speaking of the same larva. According to Koch and Speyer (*teste* Kaltenbach), the larva of *Dicranura furcula* (a species confounded with *D. bicuspis* by some of the earlier authors) feeds on beech and copper beech, although it is well known that sawfly is its ordinary food; Ochsenheimer's statement that *D. furcula* feeds also on poplar

seems to be unconfirmed, and perhaps arises from some confusion with *D. bifida*. *D. furcula* is the only species of the genus which is recorded by Kaltenbach to feed on beech, and I suspect that the reputed beech-feeding *D. bicuspis* is nothing else. Our English *D. bicuspis*, which feeds on birch at Tilgate, feeds chiefly, if not exclusively, on alder in the North of England, as well as in Derbyshire and Glamorganshire. Kaltenbach mentions that Rössler found it on alder. Only one figure of a birch-feeding *D. bicuspis* is to be found in Buckler's work, and he does not mention the black spots on the back of the head. Pending further information, I can only suggest that our present knowledge seems to indicate that *D. bicuspis* feeds exclusively on birch and alder, and that the species of the genus *Dicranura* either confine themselves to different food-plants in different localities, or else that there is a larger number of closely-allied species, feeding on different plants, than we are at present inclined to suppose. — W. F. KIRBY, Assistant in Zoological Department, British Museum, South Kensington.

LAPHYGMA EXIGUA AT CHICHESTER.—In a large clover-field, my brother, Frederick Anderson, had the good fortune to take a beautifully fresh specimen of *Laphygma exigua* on Sept. 14th. He kicked it up whilst walking through the clover, and netted it at the first stroke.—JOSEPH ANDERSON, jun.

LAPHYGMA EXIGUA IN DEVON.—I have to record the capture of *Laphygma exigua*, at sugar, on August 13th, while collecting with Mr. Harold White, near Bideford, N. Devon.—HUBERT BRAY; 41, Great Russell Street, Bloomsbury, October 2, 1888.

AGROTIS PUTA IN HANTS.—I took a specimen of this insect, at light, on September 5th.—G. HESELTINE; Walhampton, Lyminster, Hants, October 1, 1888.

CIRRHEDIA XERAMPHELINA AT ACTON.—On the 12th inst. I took a specimen of this moth off a gas-lamp at East Acton.—H. G. PLACE; 11, Norland Square, Holland Park, W., Sept. 20.

CIRRHEDIA XERAMPHELINA IN DORSET.—A specimen of this insect, in poor condition, was taken flying at dusk at Bloxworth, close to Bere Wood, on September 18th, 1888. This is the second record of its appearance in this county.—A. W. P. CAMBRIDGE; Bloxworth Rectory, September 19, 1888.

HABITS OF *CALOCAMPA SOLIDAGINIS*.—Having lately met with some success in taking this insect, I beg to forward a few notes on it for the information of your readers, as the account in Newman's 'British Moths' is very meagre and unsatisfactory. I have taken a few specimens each year for some years past, in one of the numerous valleys on Cannock Chase, where it was found about seven or eight years ago by my friend Mr. E. W. K. Blagg, of Cheadle. During last month, however, when I was staying for a fortnight in the neighbourhood, I worked vigorously for the species, and obtained altogether about sixty specimens, most of which were in first-rate condition. We found them at first sitting on the trunks of some old birch-trees, in a very peculiar attitude, which reminded me strongly of the fable of the ostrich, thinking to escape its pursuers by hiding its head in the sand. The head and thorax of the insect are thrust deeply into the crevices of the bark, while the body, with the wings wrapped closely round it, something after the fashion of *Phoxophora meticulosa*, sticks out at right angles, and is thus very conspicuous, though the colour of the wings closely resembles that of the birch bark. I visited the same spot, however, on a wet day, and found that the trees were now entirely deserted, while the moths were perched on dead stems of bracken, burnt sticks of heather, &c., at the height of a foot or so from the ground; but on a third day, visiting the spot in fine weather, in the company of Mr. Freer, of Rugeley, I came to the conclusion that only a small proportion were to be found on tree-trunks, while by far the larger number preferred the dead sticks, bracken, &c., which lay in plenty all round. The insects were not to be found in such conspicuous positions as they had been on the wet day, but they were far more abundant. I took eighteen on this day, Mr. Freer forty, and two of my children, who were with me, a dozen more. The moths were not always perfectly quiet when boxed, and I found that the common chip-boxes suited them much better than the glass-topped ones, which I generally use. I did not try to take them at sugar, as the locality is somewhat awkward to work in at night; and the little experience that I had of "sugaring" this year on the Chase proved very disappointing. But I got sufficient for my requirements by the means I have mentioned; and I dare say that others, who have access to any of the localities where the insect occurs, will meet with like success. I should add that *Calocampa*

solidaginis is a little uncertain as to the time of its appearance. This year I took my first specimens on August 21st; last year they were getting past their best on August 18th; and in 1886 I got them in fine condition on August 26th.—[Rev.] C. F. THORNEWILL; The Soho, Burton-on-Trent, September 12, 1888.

[*Calocampa solidaginis* comes to sugar freely in Scotland, and would, doubtless, on Cannock Chase.—J. T. C.]

URAPTERYX SAMBUCARIA, LARVA OF. — On the morning of October 12th I found a nearly full-grown larva of *U. sambucaria* on the stem of a chestnut-tree in the park, four feet above the ground. There was no ivy in the vicinity, but plenty of elderberry at a distance of about thirty yards. I have never heard of this insect feeding on chestnut leaves.—A. KNOBLAUCH; 32, Tennyson Place, Bradford, Yorks.

BOARMIA GEMMARIA, VAR. PERFUMARIA, IN YORKSHIRE.—In the 'Entomologist,' page 248, is a statement of mine to the effect that *Boarmia gemmaria*, var. *perfumaria*, "is almost entirely confined to the London district." Towards the end of last month, but too late for correction, I learned that it was found in Yorkshire, as I received specimens from Mr. Young which had been bred from Rotherham larvæ. On the appearance of my note, Mr. Porritt was good enough to send me a long series of dark specimens, bred from larvæ found in his own garden in Huddersfield. The larvæ were fed on ivy, as also were those from which Mr. Young bred his specimens. Mr. Porritt informs me that it is the usual form taken in the Huddersfield district. He writes:—"Your statement in the current number of the 'Entomologist,' that the var. *perfumaria* of *B. rhomboidaria* is almost confined to the London district, has somewhat astonished me, for I thought you knew it was the only form we get hereabouts, and I believe throughout the south of the West Riding. I send with this some specimens bred from ivy in my own garden this year, which are probably a fair representation of the Huddersfield form." These specimens were slightly darker perhaps than the general run of our London ones, but there is no difference between them and the darkest of my specimens. On the strength of my statement that I consider it simply a case of "protective" melanism, I should not be surprised now to find that it was found in most manufacturing districts.—J. W. TURR; Westcombe Park, S.E.

EPHESTIA KUINIELLA.—This insect being quite an important pest, it is the more desirable that there should be no inaccuracy in what is published concerning it; and I therefore pray that I may be allowed at once to rectify an error which appears in the Proc. South London Entom. and Nat. Hist. Soc. for 1887, which I have received to-day. On p. 58 I am stated to have exhibited larvæ (which afterwards proved to be *E. küniella*), and to have remarked concerning them that they lived in flour which had been shipped from America to Trieste, and thence to London. What I really did say, was that the larvæ then exhibited were in flour from America, but that they were supposed to have come from some Trieste flour in the same warehouse, which was likewise badly infected. Full details concerning this particular lot of flour, and the larvæ infesting it, were published in 'The Miller,' 1887, p. 446, by Mr. S. T. Klein.—T. D. A. COCKERELL; West Cliff, Colorado, September 13.

TORTRIX PICEANA IN HANTS.—*Tortrix piceana* has been re-discovered in the New Forest, by Mr. Charles Gulliver, Ramnor Enclosure, Brockenhurst. When visiting him a month or so ago, I noticed some among his odds and ends, and pointed it out to him as remarkable. He kindly gave me three specimens.—S. J. CAPPER; Huyton Park, Huyton, October, 1888.

LEPIDOPTERA IN HANTS.—I arrived in the New Forest on August 11th last. Next day, Sunday, was damp with a fine drizzling rain, but I managed to get a good walk to Lyndhurst and back. Monday proved a very sunny, bright day, although a strong wind was blowing. I had my net, bottle, and a small collecting-box with me; and so, having procured a waggonette, set out for a long drive in the forest, going first through the villages of Bartley and Minstead, and out upon Stony Cross, until we reached Boldre, Mark Ash, and Knight woods; passing out of which we came upon the Bournemouth road, and home through Lyndhurst. *Argynnis paphia* was abundant everywhere; in fact, in some places it absolutely swarmed, the blossom of the bramble apparently being very attractive both to this and many other species, including *A. adippe*, *Limenitis sibylla*, *Thecla quercus* and *Lycena argiolus*, of which I saw one specimen in Boldre Wood. At the same spot I saw four *Argynnis valentina*, two of which proved on capture to be rather worn. A single

Vanessa cardui was noticed, and was, I think, the smallest specimen of this butterfly that I had ever come across. *Apatura iris* was seen once in Boldre Wood, and also in Knight Wood; on both occasions, however, the "emperors" were out of reach. In the plantations close to Lyndhurst Road Station, I found *Satyrus semele* in tolerable abundance, and observed that some of the specimens kept settling on the trunks of the fir trees, and when in this position were far from easily detected. This butterfly was also found on Stony Cross. Besides those already mentioned, most of the common Diurni seemed abundant in the forest, *Hesperia sylvanus* alone being seen only once. Tuesday was even a better day than Monday, as the sun was more powerful, and the strong wind had dropped; but having to return home by an early train, further collecting in this lovely spot was postponed until another season.—W. H. BLABER; Sussex Lodge, Groombridge, Sussex, October 19, 1888.

LEPIDOPTERA IN SOUTH WALES.—Having been very successful in taking *Stilbia anomala* last year near Tenby, I visited the same locality again this season, and in spite of the heavy rains about the time of their emergence, I took about two dozen in fair condition. They are not so good as last year's captures. The wet weather put a stop to all collecting, only a few *Agrotis vestigialis*, *Luperina cespitis* and *L. testacea* coming to light. The nights being very cold, sugaring proved a complete failure, but I heard from a friend in Tenby that in June and early in July *Agrotis ripæ*, *Mamestra albicolon*, and *Leucania littoralis* came freely to sugar; also two or three *Agrotis lunigera*. The larvæ of *A. ripæ* were again plentiful among the sand-hills around Tenby, feeding on *Cakile maritima* and *Eryngium maritimum*.—J. JAGER; 180, Kensington Park Road, Notting Hill, September 18, 1888.

LEPIDOPTERA IN CUMBERLAND.—The weather has been cool and showery; therefore I have not taken many insects; but amongst them, in July and August, were only the more ordinary kinds, such as *Aplecta nebulosa*, *Charæas graminis*, *Bryophila perla*, *Agrotis tritici*, *Galleria melonella*, *Ellopiopsis prosapiaria*. The wind has been chiefly from the north-east and west. Sugaring at present is useless.—M. ROUTLEDGE; Hayton, Carlisle, August 23, 1888.

LEPIDOPTERA IN CARMARTHENSHIRE.—From 1886 to 1888 I have taken in this county the following Lepidoptera:— One imago of *Amphidasys stratiaria*, from a larva found; also one imago of *Dicranura bicuspis*, from larva. Twelve larvæ of *Stauropus fagi*, from which eight imagines were obtained, the other four chrysalids having become too dry: not one specimen ichneumonated. Three larvæ of *Notodonta trepida* taken in 1888. From twelve larvæ of *Acronycta alni* taken in 1887 three imagines were obtained, nine being ichneumonated; several were taken in 1885 and 1886, and three in 1888, which were feeding on oak and alder; in all seven imagines have been obtained. Newman, in his ‘History of British Moths,’ does not mention the larva of this species when young. At this stage of existence it resembles exactly the excrement of a small bird, and any one might pass it by as such. At the third moult it becomes black, with the usual yellow or orange transverse bars. It is always found on the upper surface of the leaf, with its head turned round, touching its body in some cases, in others not quite touching. It feeds chiefly on hazel, sometimes on alder and birch, also on oak. According to Newman, it spins in the leaves of its food-plant; but every specimen, without exception, which I have had has turned to a plain chrysalis an inch below the surface of the ground. They are generally ichneumonated; hence, I suppose, their rarity in Carmarthenshire. Nine larvæ of *Acronycta leporina* were taken, from which five perfect insects were obtained; they, too, are very subject to ichneumons. Six imagines of *Dianthæcia nana* were taken in a net at common garden rocket. One imago of *Plusia bractea* was taken on the wing.—M. GRASKE; Llwyn Celyn, Llandovery, Sept. 4, 1888.

LEPIDOPTEROUS LARVÆ NEAR SHEFFIELD.—My friend Mr. J. Batty and I devoted the afternoon of September 17th to beating for larvæ of *Cymatophora fluctuosa*. I am pleased to say that we succeeded in taking a few, though the larvæ were very scarce and only occurred sparingly. A few larvæ each of *Drepana lacertinaria*, *Notodonta dromedarius*, *N. dictæoides*, *Lophopteryx camelina*, and *Cidaria corylata*, on birch; and *Venusia cambricaria* on mountain ash. We were rather late for most species, or we might have succeeded in taking a rather larger number than we did.—A. E. HALL; Norbury, Sheffield, September, 1888.

CAPTURES IN THE NEW FOREST. — The following list of insects noticed here during July, may be of some interest:—*Satyrus semele*, neighbourhood of Brockenhurst Road, in good condition. *Argynnis ephrosyne*, Beechin Lane, worn. *A. paphia*, Beechin Lane. *Limenitis sibylla*, Beechin Lane; this and the last-named species in splendid condition, freshly emerged. Also the commoner species of Rhopalocera. *Nemophila russula* (male), neighbourhood of Brockenhurst Road and in Matley Bog. *Libellula depressa*, Matley Bog, and pond at bottom of Beechin Lane, fairly common. *L. quadrimaculata*, pond at bottom of Beechin Lane, fairly common. *Sympetrum striolatum*? pond at bottom of Beechin Lane, common. *Orthetrum cærulescens*, Matley Bog, one female. *Anax imperator*, pond at bottom of Beechin Lane, two specimens seen. *Calepteryx* ———? Matley Bog, Beechin Lane, common. The *Calepteryx* found here and at Savernake Forest, Marlborough, has the whole of the wings of a dark and smoky tint in the case of the male; while that found by the Thames at Windsor has the extremity of the wing transparent: I believe them to be two distinct species, and that the last one is named *virgo*. *Pyrrhochroma minima*, Matley Bog, and pond at bottom of Beechin Lane, fairly common. *Lestes sponsa*, Beechin Lane, near pond, one female caught. Agrionidæ (blue), common by pond in Beechin Lane; two or three kinds, probably; *cyathigerum*, *pulchellum*, and *elegans* as well. Scorpion-flies in all the hedges and furze-clumps in great abundance. A few fine Ichneumonidæ; also large dipterous insects (genus *Bombylius*, I believe). Geometridæ and Tortricidæ plentiful. Insects generally late in appearance, corresponding to the backwardness of the season.—F. A. WALKER, D.D.; Dun Mallard, Cricklewood, N.W.

UNUSUAL PAIRING.—When sugaring on August 10th I took a *Xylophasia monoglypha*, in copulâ with a female *Hadena trifolii*. I killed them at once, and have the pair now in my possession still coupled.—(Major) CHAS. PARTRIDGE; The Castle, Portland, September 23, 1888.

SIREX JUVENCUS IN LONDON.—While walking through the Cattle Market, Islington, on September 6th, I found one of these sawflies resting on the stones. It was very quiet and did not attempt to fly, but when boxed it became very restless. It must have travelled some distance from its breeding-place, there being

nothing but houses in Islington. — S. ROBINSON; Clayfield Terrace, Winchmore Hill, N.

HEMILEUCA DIANA, Packard.—On September 20th, last year, I obtained a specimen of this fine moth in Mesa County, Colorado, amongst oak-scrub (*Quercus undulata*), on the north slope of the Grand Mesa. This species was originally described from Plum Creek, Colo., in 1874, and is now generally united with *H. juno*, Pack., of which it is perhaps a geographical race. It has not previously been recorded from Mesa County.—T. D. A. COCKERELL; West Cliff, Colorado, August 20, 1888.

THE SEASON OF 1888. — Mr. White's note on the effect of meteorological conditions upon insect life, published in the September number of the 'Entomologist,' raises several questions well worthy of attention, and I trust that the statistics of captures for which he asks may be forthcoming, as they will doubtless prove of interest. My own list of captures and emergences from pupæ is unfortunately scanty, yet there are a few entries in my diary which may possibly aid the greater body of material which others no doubt have at hand. On July 5th I took three fresh specimens of *Tephrosia crepuscularia* in a locality in which the species is often found during March or April. On July 9th a newly-emerged imago of *Cucullia umbratica* was captured; on the 12th and 19th of the same month specimens of *Charocampa clpenor* emerged from pupæ; on the 16th, *Chelonia villica*; and between the 24th and 30th, two *Smerinthus ocellatus*; these pupæ were all kept in a summer-house with south aspect. On July 18th I found upon a fence a specimen of *Acronycta megacephala*, with wings still unexpanded. All the above should certainly appear in June in an ordinary season. In another breeding-cage, in a room with south aspect, were four pupæ of *Deilephila euphorbiæ* (Austrian); imagines from these emerged on July 19th, August 2nd, 4th and 12th. June is the month usually assigned to this species. At Guildford, on September 12th, *Satyrus semele*, *S. megæra*, and *Vanessa polychloros*, were flying in fine condition. It seems scarcely fair to make a comparison between the hot dry summer of 1887 (when larvæ undoubtedly hatched and fed up with more than usual rapidity) with the sunless season of this year, but I may just mention that on August 2nd, 1887, but few larvæ of *Euchelia jacobæ* were to be found, most of

them having already entered the pupal state, whilst at the present time (Oct. 2nd) I have in my breeding-cages a good number of larvæ of that species, still unchanged, and by no means full-fed. The great majority of the autumn brood of larvæ of *Pieris rapæ* last year pupated in August and September, but the corresponding brood this season is so late that some of the larvæ are now to be found about a quarter of an inch in length. The season altogether has been so remarkable, that it seems well that a full record of the dates of insect occurrences should be made, if only for the sake of comparison with future years, normal and otherwise; whilst the opportunity offered for testing the various theories respecting melanism, to which Mr. White calls attention, should certainly not be neglected by those who have material at command.—GEO. C. GRIFFITHS; 1, Hale Bank, St. Matthew's Road, Cotham, Bristol, October 11, 1888.

ERRATUM.—Entom. p. 258, line 5, for railway read railing.

SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON.—*October 3rd, 1888.*—Dr. D. Sharp, F.L.S., President, in the chair. Mr. Albert H. Jones was admitted into the Society. Mr. F. P. Pascoe exhibited a number of new species of *Longicornia* from Sumatra, Madagascar, and South Africa. Dr. P. B. Mason exhibited, for Mr. Harris, a specimen of *Chærocampa Nerii*, recently captured at Burton-on-Trent. Mr. S. Stevens exhibited a specimen of *Vanessa antiopa*, which he caught in the Isle of Wight in August last. Mr. Stevens asked whether Mr. Poulton or any one else present could inform him why, in British specimens of this species, the border of the wings was almost invariably a pale straw-colour. A discussion ensued, in which Mr. F. D. Godman, Mr. M'Lachlan, Mr. Kirby, and Dr. Mason took part. Mr. E. B. Poulton exhibited a living larva of *Smerinthus ocellatus* in the last stage, fourteen larvæ of *Boarmia roboraria* and some cocoons of *Rumia cratægata*. The object of the exhibition was to show the influence of special food-plants and surroundings on the colour of the larvæ and cocoons. Mr. M. Jacoby exhibited a varied series of *Titubæa sanguinipennis*, Lac., from Central America. He stated that many of the varieties exhibited had been described as

distinct species. Mr. Billups exhibited specimens of *Bracon brevicornis*, Wesm., bred from larvæ of *Ephestia kühniella*. He remarked that this rare species had only been recorded as bred on two or three occasions—viz., by the Rev. T. A. Marshall, Mr. W. F. Kirby, Herr Brischke, and Mr. Sydney Webb. Mr. W. Warren exhibited specimens of *Antithesia ustulana* and *A. fuligana*; also bred series of the following species:—*Eupæcilia Degreyana*, *Stigmonota pallifrontana*, *Cacæcia decretana*, and *Gelechia peliella*. Lord Walsingham exhibited specimens of several species of the genus *Cryptophasa* belonging to the family *Cryptolechidæ* of the Tineina, some of the most remarkable being males and females of *Zitua balteata*, Walker, bred by Mr. Sidney Olliff from pupæ found in January last, at Newcastle, New South Wales, in burrows in branches of a species of Acacia. Lord Walsingham also exhibited a male of *Zelotypia stacyi*, received from Mr. Olliff. Mr. F. D. Godman exhibited a larva of a *Cicada*, from Mexico, having a fungoid growth on the head. Captain Elwes exhibited a large number of Butterflies, representing about 108 species, recently collected by himself and Mr. Godman in California and Yellowstone Park. The collection included many species of great interest, amongst others a species described by Mr. W. H. Edwards as *Erebia Hadenii*, but which he considered would prove to be a *Canonympha*; a very rare species of *Thecla*; and a remarkable series of species of the genus *Colias*. Mr. H. Goss exhibited, for Mr. W. J. Cross, an extraordinary melanic variety of *Agrotis segetum*, caught by the latter near Ely in July last. Mr. W. L. Distant read a paper entitled "An enumeration of the *Rhynchota*, received from Baron von Müller, and collected by Mr. Sayer in New Guinea during Mr. Cuthbertson's expedition." Mr. Poulton read a paper entitled "Notes in 1887 upon Lepidopterous larvæ, including a complete account of the life-history of *Sphinx convolvuli* and *Aglia tau*"; and Mr. White exhibited specimens of preserved larvæ of *S. convolvuli*, *A. tau*, and other species referred to in Mr. Poulton's paper. Mr. Jenner Weir, Mr. Kirby, Mr. White, Dr. Sharp, and others took part in the discussion which ensued.—H. Goss, *Hon. Secretary*.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—27th September, 1888. T. R. Billups, F.E.S., President, in the chair. Mr. G. Elisha exhibited *Eupithecia extensaria*

and other species. Mr. Auld, an example of *Callimorpha hera*, which he said he took in South Devon, flying in the sunshine; also two examples of *Vanessa io*, with additional ocelli. Mr. R. Adkin, *Thera simulata*, bred from larvæ taken in Ireland; *T. firmata*, bred from larvæ taken in the New Forest; and a living larva of *Deilephila galii*. Mr. Jäger, three specimens of *Callimorpha hera*, bred from ova obtained from a specimen taken in 1887; also a fine series of *Stilbia anomala*. Mr. Tugwell, living larvæ of *D. galii*, and called attention to the variation in the colour of the larvæ shown. He remarked that this year the larvæ of this species were exceedingly plentiful, Mr. Gibb and himself having taken 196 in a district extending from St. Margaret's Bay to within a mile or so of Ramsgate.

October 11th. — The President in the chair. Messrs. H. Bennett, of Hastings, and E. D. Y. Pode, of Ivybridge, South Devon, were elected members. Mr. T. R. Billups exhibited species of British Fossorial Hymenoptera,—*Ceratophorus morio* and its rare var. *anthracinus*, taken in his garden at Peckham, and *Nysson dimidiatus*, from Chobham. Mr. R. Adkin, larva of *Retinia resinella*, and contributed notes. Mr. J. Jäger, an example of *Vanessa io* with additional ocelli; *Argynnis paphia* with white blotches on the wings; a variety of *Satyrus semele*, with many other species, and contributed notes. Mr. Carpenter, varieties of *Vanessa atalanta* and *Amphipyra pyramidea*. Mr. Elisha, bred examples of *Cidaria reticulata*. Mr. Tugwell, *Callimorpha hera*, bred from the same batch of ova as those of Mr. Jäger; also *Crambus alpinellus* and *Anerastia farrella*, from King's Lynn.—H. W. BARKER, *Hon. Sec.*

PENARTH ENTOMOLOGICAL SOCIETY.—At a meeting held on September 18th, Mr. T. L. Howe exhibited two specimens of *Colias edusa*, caught on the 16th, about two miles from Penarth, he having seen six other specimens and also one *Vanessa c-album*. It was reported that *Plusia gamma* had been very abundant about there during the past summer, some specimens appearing at sugar being remarkably bright and well-marked. *Vanessa cardui* has also been very plentiful in the district.—G. A. BIRKENHEAD; *Hon. Sec.*

REVIEW.

A List of British Diptera. By G. H. VERRALL, F.E.S. London
Pratt & Co., 15, Mill Street, W. 1888. 33 pp., small 4to.

THIS is the first and only separate List of British Diptera ever published, and has the advantage of being compiled by one of the leading dipterists of Europe. Lists were included in Curtis' 'Guides' (1829 & 1837), Stephens' 'Catalogue' (1829), and Morris' 'List' (1865). This new list, however, brings the subject well up to present knowledge, but an early edition or supplement will be required as the study of Diptera extends.

The arrangement of families is probably the best ever yet adopted; the notable points being the inclusion of Pulicidæ in Nematocera, the manifestly natural reversion of order of the Mycetophilidæ, thus making a continuous progress from Cecidomyidæ through Lestremia on the one side, and Sciaria on the other side to Mycetophilidæ. Brauer's sub-families of Stratiomyidæ are admitted, the Leptidæ are placed between the Tabanidæ and Asilidæ, and all precede the manifestly allied Bombylidæ, Therevidæ, and Scenopinidæ. Kowarz's arrangement of Dolichopodidæ is followed, as it seems to bring allied genera in closer connection than any other system. It would possibly be better reversed, bringing *Aphrosylus* next the Empidæ, and the yellow groups next to Lonchoptera. Placing the Cestridæ between the Conopidæ and Tachinidæ is a novelty which requires testing. *Sphocolyma inanis* is unexpectedly placed under Dexidæ, instead of its usual place in Anthomyidæ; and *Calliphora cognata* with *C. sepulchralis* come under Muscidæ instead of Sarcophagidæ. All the old sub-families of Muscidæ are treated as families; probably some of these will ultimately be re-united. In the Anthomyidæ, Meade's arrangement has mainly been followed; but as four sub-families are for the first time indicated, a few species are forced away from their old allies. Many of the generic names in Ortalidæ and Trypetidæ will be strange to English eyes. Phoridæ next to Borboridæ seems natural, and has already been so placed by Schiner, but the whole group of Hypocera seems ignored. Naturally the Hippoboscidæ and the apterous Braulidæ and Mycteribidæ close the arrangement.

Scarcely any synonyms are given, and this seems a pity, but

probably more will soon be heard of this in a new edition when material serves. A few 'Catalogue' names seem to occur which, of course, will remain such until a description is given somewhere. Mr. Verrall states in his preface to the 'List' that he has not personally studied some groups; and though he does not say so, we presume all names in italics mean species insufficiently recognised as British. We see there are over 500 of these in the 'List,' which consists of about 2500 species. A vast amount of more work requires doing in the Mycetophilidæ, Chironomidæ, Empidæ, Tachinidæ, and nearly all the groups which used to be comprised under the term Muscidæ Acalyptera.

Now that another excuse is removed by the publication of this List of British Diptera, entomologists in this country will surely pay more attention to the group. It only remains for Mr. Verrall to follow with a manual of Diptera for the use of young students and a cabinet label list, when we are satisfied the dipterists would become well-nigh as numerous as the lepidopterists.—J. T. C.

OBITUARY.

JOHN SCOTT was born at Morpeth, September 21st, 1823, and died August 30th, 1888, in the 65th year of his age. From an early period Mr. Scott took interest in the study of Nature, and was a contributor to the entomological serials, chiefly as a lepidopterist, during the years following 1849, until about 1862, when he began to report upon the order Hemiptera, with which his name will be chiefly associated in time to come. The well-known work published by the Ray Society in 1865, upon British Hemiptera, of which he was joint author with Mr. Douglas, still remains a standard work, as also does the 'Catalogue of British Hemiptera,' published by the Entomological Society of London in 1876, with which list Mr. Scott was also associated. His remaining literary work is scattered through transactions of societies and periodicals, both English and foreign. Mr. Scott was an ardent worker in the field and in his study. Always bright and genial, until afflicted with a mental disease that formed part of the complication which at last caused his death, Mr. Scott had many friends, and was indeed deservedly popular among entomologists.—J. T. C.

THE ENTOMOLOGIST.

VOL. XXI.]

DECEMBER, 1888.

[No. 307.

ON THE CAPTURE OF FORMICARIOUS HISTERIDÆ.

BY G. LEWIS, F.L.S.

LAST February, as I passed through Paris *en route* to the south, I told Monsieur L. Bedel that I wanted to search particularly for *Heterii* during the three months I intended to be away from England, and his immediate reply was, "Find the larvæ of the ants and the beetles will be found amongst them"; and M. Bedel afterwards said, "They are more easily found in rainy than fine weather." With these hints fresh in my mind, I left Algiers by rail, on the 17th February, for Bou Medfa, and, after reaching the station there, an hour's drive brought me to Hamman Rirha, the Aquæ Callidæ of the Romans. The altitude of the hotel there is about 2200 feet above sea-level, and I did not at any time go much higher. The weather was so bad that I could not leave the hotel until the 21st, but then a short period of sunshine enabled me to reconnoitre with a view to subsequent work, and I fortunately found a single *Sternocalis*, which gave me the clue to a spot which afterwards proved to be a very good place for the species I most wanted.

It is better to say here that on a study of the species I brought home, I thought it well to divide *Heterius* into two genera,—*Heterius* and *Sternocalis*; and a paper on this subject appeared in the 'Annals and Mag. Nat. Hist.' in July. This arrangement left only one African species in *Heterius*, Erichson, viz., *H. plicicollis*, Fairm. The British species *ferrugineus*, Ol., which is the type of *Heterius*, is an insect which appears to be

as I stated, nearer to *Eretmotus* than *Sternocælis*; and the same remark applies also to the insects assigned to the genus *Satrapes*, Schmidt.

On the 20th of February it snowed the greater part of the day, and although I remained at Hamman Rirha until the 8th March, in all twenty-one days, there was only one day which was fairly fine and without rain. The season was, therefore, favourable for the finding of the insects I wished for; but the muddy condition of the paths and the slipperiness of the mountain-slopes, owing to the rain, made walking very difficult. The most productive slopes for *Sternocælis* I found to be those to the south of the hotel, and to get at these it was necessary to wade a small river. After crossing the stream the mountain of Zacca, altitude about 5000 feet and snow-topped, was on my right, and lying nearly due west. The surface of the slopes, which rise beyond the river, is of stiff clay; and the least disturbed portions of the slopes, and the best for insects, are those where the gigantic *Scilla maritima* grows, and where there is no scrub, but only short grass. Here and there I could see places where the land had been in recent times disturbed, perhaps by rude cultivation by the Arabs before the French occupation, and these spots I avoided. In all the places I have been to in Algeria and Morocco, whenever I found scrub the hill-sides have been, comparatively speaking, unproductive of Coleoptera; and Mr. J. J. Walker has observed the same thing. Possibly the scrub does not grow freely on the more clayey parts of the hills, and the beetle-fauna of the southern border of the Mediterranean is in a great part a *crevice-fauna*. Beetles live under stones (many are blind), where in the dry and hot season they have easy access into the crevices of the clay, and in the wet season the soil swells and encloses them for the winter under a solid stone roof.

The ant here which attracts the beetles is an *Aphænogaster*, a large black species, clothed with greyish hairs, and it is very abundant, and makes a nest under stones which are half embedded in the clay. The stones chiefly used by the ants are those of a fair size, averaging about 10 to 18 inches in the widest part. The smaller stones might perhaps serve the purposes of the *Aphænogaster* equally well, but they are frequently disturbed by the feet of the goats which are pastured on the slopes, and the ants when roughly disturbed have the

habit of removing their nests elsewhere. Of the middle-sized stones, the best for the searcher's purpose are those which when lifted expose all the galleries of the nests, as then the beetles, if there, are seen at once; but if the galleries are on a lower plane, or at the edge of the stone, the soil must be pressed aside to give a clear view of the excavations in which the larvæ are being reared. The Histeridæ are generally found feeding on the larvæ, attaching themselves to them by their mandibles and legs; but of course I also saw a good number in the galleries near where the larvæ were stored, this being the case especially with *S. hispanicus*, *arachnoides*, and even *fulvus*, which are evidently by habit more active than the shorter-legged species, as *cancer* and *punctulatus*. When a nest is laid bare the first instinct of the ant is to remove their larvæ into the lower galleries, and store them away out of the sun and air, and the Histeridæ follow them as quickly as possible, for, like all pale subterraneous species, they are not comfortable in the light.

I cannot record an instance of an ant molesting a beetle, and it seemed to me they were either unconscious of their presence or utterly indifferent to the mischief they were doing; so much so, that on two occasions I saw a *Sternocælis* cling to the abdomen of the *Aphænogaster*, and ride into a lower gallery on its back. At another time I saw *Sternocælis* sticking to a mass of larvæ, which an ant was removing to a place of supposed safety, after I had disturbed the domestic arrangements of the nest. *Aphænogaster* seems to me to be weak in its mandibles, and it is also deficient, as compared to *Formica rufa* and *fuliginosa*, in formicic acid; and this may point to one of the causes why *Heterius* and *Sternocælis* have been able to install themselves in the nests of the ants, where they do an injury, which, from the care the ants are seen to take of their larvæ, we must presume they would were they conscious of it, and able to retaliate, violently resent. If an *Heterius* could be fixed between the mandibles of an ant, I think it would be seen that the purchase the ant could bring to bear on the comparatively hard exo-skeleton of the beetle would be very slight, as the mandibles would in this position be too far widened out to admit of much pressure. I incline to the belief that the ants are physically incapable of either freeing their nests of the intruders, or of destroying them within it; and am I crediting them with too much philosophy in

saying, that with this knowledge they have ceased to trouble themselves about evils they cannot divert?

An Englishman's experience of ants may be that they frequent dryish and rather sunny places, but the insects on the southern border of the Mediterranean basin suffer at seasons from great drought, accompanied with a high temperature, so that to be in moistened places in the hot season necessitates the residence at other periods in situations which are exceedingly damp. Thus the western and northern slopes of the hills of moderate elevation in Algerian latitudes are much more frequented by insects of ground habits than those of a southern aspect; but this remark will not apply to the higher ranges of the Atlas. During February and March I have turned over stones on the slopes, and in doing so have let surface-water into the galleries made by the ants, which has flooded their nests. This happened this spring, both at Hamman Kirha and Tangier.

During the season of my visit to Algeria and Morocco, nearly every nest of *Aphænogaster* had larvæ in it, and the ant was at its busiest in rearing them, but I failed to find the larva of *Atta*, on which some species of the Histeridæ are said to feed, and cannot say therefore whether *Sternocælis* feeds on them also. As *Atta* is a very large ant, it may be a more southern type of the family, and it may lay its eggs later in the spring, so I cannot give any experiences of it as an "ant-host." By the middle of May the sun heats the stones, the soil becomes parched, and the *Aphænogaster* either becomes solitary or the colonies retire to cooler places. Information on this matter is of much interest to me, as I have been unable to learn what becomes of the Histeridæ (if in the imago), in the hot months of summer and autumn. In October I believe the beetles may again be found, but whether *Aphænogaster* has two broods of larvæ at different seasons of the year, or one or two in the spring, I should like Hymenopterists to tell us.

Of the early stages of the formicarious Histerids, or of their habits prior to becoming adults I believe nothing is known.

In the last stage they have retractile heads, and tarsi and antennæ which can be drawn into grooves, and are thus preserved in a great measure from any chance of mutilation of their appendages, even from species of their own sort; but if the ants could get at their larvæ, a very different situation would be

created. Small lepidopterous larvæ which fall into the nests of the ants have their moments numbered, for a dozen ants or more will join and attack a small caterpillar half an inch long. Heterii are not parasites in the proper sense of the term, but they are truly insectivorous in the imago state, and possibly so when larvæ, and this is probably true also of all the members of the family. *Hister pustulosus*, Géné, has been recorded as burrowing in a field after the larva of an *Agrotis*; Mr. Gorham has discovered that the imagos of *Saprinus virescens*, Payk, feed on the larvæ of a phytophagous beetle; Mr. Stevens found, at Norwood, the rare *Teretrius picipes*, Fab., hunting for *Lyctus* in the holes drilled by the latter in an oaken fence, and I have several times seen *Trypanæus* methodically chasing *Platypus*. And so probably the Histers and Sapriini which are sometimes considered stercoraceous species, are really attracted by the insects which have congregated on the highway before them. But of the larvæ of these things we want knowledge.

As a rule, there are but one or two specimens of *Sternocælis* to be found in one nest, but I have taken as many as seventeen *S. arachnoides*, Fairmaire, at Tangier together, and at Cintra in Portugal I once obtained twenty-two *S. hispanicus*, Brisout, from one colony of ants. These two species are found in sandy places,—places where the sand will run sometimes into the galleries of the nest when the stone is removed, as easily as from one division of an hour-glass to another. Yet the majority of the North-African species occur on the clay. *Sternocælis acutangulus*, Lewis, is a genuine clay-species, and on the 8th April last I turned over a stone, measuring about ten inches across each way, which was firmly embedded in the clay, and found in a crevice of it several of the beetles. There was a small nest of *Aphænogaster*, and in the crevice about an inch long, a mass of larvæ had been stored. Here I saw at first one, then another, and by using a straw extricated seven more, which, till then, were concealed beneath the larvæ.

Eretmotus is not so persistently attached to ants as *Sternocælis*. I took three specimens near Tangier, on April 5th, from under a small stone where there were no ants, and one of them was immature, so I think it likely their period of pupation is undergone away from ants, nor can anyone assume that in the quiescent state they can be dependent on them. Again, on

April 10th, I took two specimens running over a pathway in the sunshine on an excursion by themselves, so perhaps they hunt for the nests of *Aphænogaster* in the same manner as *Teretrius* chases the *Lyctus*. And near Madrid, on the 24th April, two specimens of *E. ibericus*, Brisout, were found under a stone where there were only four or five ants and no nest that could be seen within some distance.

The following is part of my last winter's itinerary, and a memorandum of my captures referred to in this note:—

Hamman Rirha.—17 February to March 3. *Sternocælis fulvus*, Lewis; *S. punctulatus*, Lucas; *S. cancer*, Lewis; *Eretmotus approximans*, Fairmaire.

Tlemcen.—15 March to March 20. *Sternocælis setulosus*, Reitter; *S. pectoralis*, Lewis.

Oran.—20 March to March 24. *Sternocælis setulosus*, Reitter.

Tangier.—27 March to April 11. *Sternocælis mauritanicus*, Lewis, *acutangulus*, Lewis; *S. arachnoides*, Fairmaire; *Eretmotus tangerianus*, Marseul.

Madrid.—24 April. *S. hispanicus*, Brisout; *E. ibericus*, Brisout.

Escorial.—25 April to May 1. *S. hispanicus*, Brisout; *S. marseuli*, Brisout; *Eretmotus ibericus*, Brisout.

St. Jean de Luz.—May 2. *Heterius ferrugineus*, Olivier.

Wimbledon, September 1, 1888.

A LEPIDOPTERIST'S MEMORANDA IN 1888.

BY J. B. HODGKINSON.

IN the month of March I brought all my breeding-pots indoors to do a little forcing, so that my time later could be used for collecting. On March 30th the first *Nepticula gei* appeared; after that I had a succession of species in that genus appearing; which came out in order as follows:—after *gei*, *ignobilella*, *hodykinsonii*, *centifoliella*, *lapponica*, *aucupariella*, *minusculella*, *gratiosella*, *pygmæella*, *oxyacanthella*, *desperatella*, *tibiella*, over 60 of this species; previously I had only two bad specimens. Then came out from the alder, *glutinosella* and *alnatella*; from birch,

continuella; *anomalella*, by the score, from rose. From alder I bred 300 *Lithocolletis frölichella*, 30 *L. kleemannella*, a few *L. stettinensis*, and several of the genus *Ornix*.

During the month of April I found some tadpole-shaped white larvæ on my table. I could not think what they would be until I saw one squeezing itself out of a tin box. Then it struck me that I had a lot of *Carex vulpinus* in it. I had looked carefully with a glass several times to see if any traces of larvæ were to be found, but could find none; however, I turned all the seeds into a pot among some moss, and during the month of June bred about 20 *Glyphipteryx ocellatella*. About the 26th of May I made a journey for *Catoptria aspidiscana*; although the wind blew hard, there was a fair amount of sun, so I got about 60 in three hours.

I made a journey to Windermere during the first week in June, and made a fairly good bag, the best being *Micropteryx mansuetella*, perhaps a dozen, but as usual they died before I got them home. On the first of June I went on the moors to collect. The weather was cold with very little sun. I went where I could get out of the cold, and collected about 100 mines of *Lithocolletis vacciniella*, only a dozen came out however, all the rest were ichneumoned. About the 12th of June I wanted some fresh *Incurvaria canariella*, but found my old locality had been fired the season before with a jubilee bonfire, which caused me to feel disloyal. I went exploring through a large nut-wood, and came upon a charmingly secluded spot, and here met with *Eriopsela fractifasciana*, a rare species in the north. The next moth was a Plume; I secured it, but did not know my prize until pinning it at home. I at once saw that it was a very fine specimen of *Mimæscoptilus hodgkinsoni*, nothing like *zophodactylus*, not any of the slaty shade that is on either *M. bipunctidactylus* or *zophodactylus*. The other two that I took were in early June, and none of the food-plant of *zophodactylus* grows near either of the localities where *M. hodgkinsoni* have occurred.

My next ramble was into Argyleshire to look for *Scopula decrepitalis*. Very few have been met with since the late Dr. Chapman used to take it some twenty-five years ago, and I could only muster three specimens in my collection. The weather was superb, everything that could be desired. I had the benefit of my friend Mr. Watson's net also, otherwise I should

have fared badly. *Melanippe tristata*, both in the Rannoch brown form, and the English form, were in profusion. Several Pugs were taken, *Eupithecia satyrata* in abundance, on the high hills, but a strong wind carried them off. Those of Argyleshire are not far off being the variety *curzonii*. The *E. lariciata* were in profusion. Large and dark *Cidaria corylata* and *C. siluceata* were not at all rare, the former very fine forms. *Emmelesia adæquata* just appearing, with also *Sericoris palustrana*, and *Gelechia expolitella*. *Scopula decrepitalis* were difficult to get out from their hiding-places. It required an experienced eye to find them. When disturbed they just hop and settle again. I could not find any time of flight, either in early morning, hot sun, or in the evening. *Botys fuscalis* was quite the reverse, it was active enough, in fact a pest, as both occur at the same place.

My next ramble was in Renfrewshire, where the black *Thera variata* occur. Moths were in profusion, *Coccyx cosmophorana* was flying briskly round the tops of rather too high firs; however, I had a good bag of them; also a fine series of black *T. variata*, some measuring one inch across the wings. *Eupithecia indigata* were large and dark. Several *Pædisca rubiginosana* and *Stigmonota coniferana*. Three or four of a black satin-like *Eupithecia*, which must be a new species, occurring among Scotch fir. *Melanippe hastata* turned up of the English type. *Lithocolletis caledoniella* was in profusion. Mr. Watson brought to me an insect on his hand, wanting to know if it was a fly or a moth. I quickly boxed it, and then told him it was *Talæporia pubicornis*, a moth I had never seen alive before, it was a splendid, perfect specimen. We looked for more, and I went again the following day, but we saw no more. I don't know what might turn up in such a place for variety and quantity. *Eupæcilia nana* was in swarms among birch; a few *Butalis torquatella* and *Nepticula argentipedella* also occurred among the birch. It is one of the finest pieces of collecting-ground I have ever worked. I returned home with some hundreds of moths to set.

On my arrival home I found my daughter had pinned some *Opadia funebrana*, *Penthina postrema*, and *Stigmonota roseticolana*. The larvæ of the latter pupated in the solid part of a lump of cork-bark. Over 100 came out, which reminded me of seeing at Mr. Sidney Webb's an old shoe-sole, with the empty cases of *Tinea imella* as thickly studded. It was all the more

remarkable with *roseticolana* to select one piece of cork out of others; it seemed as though there had been gregarious pupation. The first week in July I paid a visit to Witherslack, the weather was fine, the heat intense. The mosses swarmed with *Cenonympha typhon*, *Acidalia fumata*, *Aspilates strigillaria*, &c. It was too hot to be outside, so I turned among the shade of the birches, and took 60 fine *Coleophora wilkinsoni*; *Lithosia mesomella* began to fly, about 7 p.m. The place was literally alive with flies, gnats, &c., and I had a warm time of it. The same week I went to Windermere, where I got a grand lot of *Nepticula intimella*, and sundry other useful specimens. About 11 a.m. I saw some *Nepticulæ* flying round a low beech bush. I netted over 100 in two hours, thinking some might be *N. fulgens*, however they were all *N. tityrella*. On removing my old series of 30 from my cabinet to replace them with these new ones, I found 8 *fulgens* among the old ones. I bred the whole lot from Windermere some dozen years ago. Whilst waiting on the *Nepticulæ*, I saw flying round a young oak, at a distance from me, what I thought were *Adela viridella*, in great numbers; I did not want any, but passing by shortly after I found they were *Ennychia octomaculata*, males, in such numbers that there must have been a female about. I boxed 14, sometimes 4 in my net at once.

Odd stragglers of *P. postremana* came out through July; *Eupithecia constrictata*, fine, slaty coloured specimens from the Isle of Man, and large *E. valerianata*, from Windermere. I went to get a few *salmacis* form of *Lycæna astrarche*, they were very scarce owing to the rain and cold winds. During a brief sunshine I swept a few off some ferns. I called on my way at Arnside, and found *Phothedes captiuncula* out. Late in July I spent three days at Witherslack, two pretty fine the other one being a drencher. The Saturday was sunny with no wind. I made a good catch of *Crambus falsellus*, *C. pinellus*, *C. warringtonellus*, and a lot of others. The day after it was blowing a gale, so I went among the junipers and took 100 *Argyresthia aurentella*. On my return home I found several *Coleophora olivaceella* out. I bred about 20 out of 30 cases from some palings near Preston. I was not satisfied with the poor supply of birch *Nepticulæ*, so I tried a new place, and found what used to be an open space, with young birch and firs, now a dense thicket; on the

borders I found a large supply of *N. continuella*, and other birch feeders.

During the first week in August I was staying at Blackpool; moths were in abundance. I did not look after the Macros. There were plenty of *Choreutes myllerana*, and oddly enough on a few yards away there grew the grass from which I took *Elachista monticola*, on the moors some thirteen miles away. I had seen this patch before, but could find nothing among it. This year I took over 50 of them in fine order, nearly all males.

During the first week in September I was in Scotland for mines of *Butalis torquatella*. I still saw some mines with larvæ of *N. continuella* in them; and on a patch of *Potentilla* I saw mines of *N. terella*. I brought all the lot home to take their chance. My sole catch for the visit was a tinful of larval mines in leaves.

Ellerslie, Ashton-on-Ribble, September 10, 1888.

ENTOMOLOGICAL WORK IN COLORADO.

BY T. D. A. COCKERELL.

THERE were seven of us, conveyed in a waggon and two buckboards—a vehicle unknown in England; and we went for work and play, either of which might come under the broad definition of pleasure, according to the fancy of the individual. Now the pleasurable work consisted of an investigation of the fauna and flora of a little-known district, scientifically speaking, namely, Eastern Custer County, and the south-western part of Pueblo County adjoining thereto. The ladies paid much attention to botany, and brought home quite a collection of plants; but the gentlemen, I regret to say, did not woo Dame Nature, their attentions being otherwise occupied; except one apparently demented individual, whose sole object in life, when he was not writing letters, seemed to be the collecting of “bugs,” whence his title, “the bug-hunter.”

The district to be investigated lies in the basin of the Arkansas River, and is watered mainly by the Hardscrabble Creek in Custer Co., and by Red Creek and the St. Charles River in Pueblo Co. In character, it is hilly and even mountainous, the

elevations ranging from 6000 to 9000 feet above the sea. The creeks mostly run in rocky cañons, which support an abundance of scrub-oak (*Quercus undulata*, Torrey), together with characteristic caeti and other low plants. Of larger trees, the principal conifers are spruces at higher elevations, and pines (*Pinus ponderosa*) throughout in suitable places, while deciduous trees are represented chiefly by cottonwoods (*Populus*, two species). As regards previous investigations, various species of insects had been recorded from Pueblo; but for the district now to be explored, no records whatever were forthcoming, except a few notes received through the kindness of Mr. H. W. Nash, of Pueblo, relating to butterflies taken by himself, viz., *Papilio daunus*, Bdv., Lower Hardscrabble, Custer Co.; *Neophasia menapia*, Feld., Hardscrabble Cañon, Custer Co.; *Pieris occidentalis*, Reak., Hardscrabble; *Argynnis cipris*, Edw. (I have taken this by Short Creek, Custer Co., about 8400 ft. alt., new to Custer Co.), Beulah, Pueblo Co.; *A. edwardsii*, Reak.; and *A. haleyone*, Edw., Hardscrabble Pass, Custer Co.; *Satyrus alope*, Fab., Beulah; *Lemonias nais*, Edw., Hardscrabble Cañon; *Thecla crysalus*, Edw., Hardscrabble Cañon; *Lycæna antiasis*, Bdv., Hardscrabble Cañon; and *Nisoniades brizo*, B. & L., Hardscrabble: 11 species in all, two from Pueblo Co., and the rest from Custer. To these I had good hopes of adding.

We started on July 31st, (1888), and passing through West Cliff and Silver Cliff, stopped at noon near a mining town called Bassickville, or more euphoniously, *Querida*. This is on the western slope of the Wet Mountains, and therefore not in the district we went to explore; but I may note that the only insects observed were *Danaïs plexippus*, L., and *Colias eurytheme*, Bdv., with the pale var. of the female, *pallida*, Ckll. After lunch we pushed on, and by evening reached the upper part of the Hardscrabble district, camping near Comargo, or rather what was Comargo, since the mining camp of that name has ceased to be. This was the first locality in the new district, so I looked around that evening, and was rewarded by a few interesting plants, including an interesting variety (*pallescens*, v. nov. rather smaller than type, raceme denser and shorter, flowers cream-colour, leaves numerous) of *Lupinus argenteus*, Pursh; but the insects were represented only by a larva of *D. plexippus*, which was about to pupate under the bark of a felled pine, and

imagines of *Colias eurytheme*, and a few moths, not yet identified, which came round the camp fire at night.

The next day we drove down the Hardscrabble Cañon, but did not stop for collecting. A species of *Senecio* was in full bloom and very abundant by the roadside, and its yellow flowers proved very attractive to *Pyrameis cardui*, *Colias eurytheme*, and *Danaüs plexippus*, while *Limenitis weidemeyerii*, Edw., and *Vanessa antiopa*, L., were also seen in the cañon.

At noon we lunched near the Templar Rock, which is said to resemble the face of a man, at the foot of the cañon, and here another butterfly was added to the list—*Nathalis iole*, Bdv. That night we reached the north fork of Red Creek (now dry, except for a small spring bubbling up, affording clear water for man and beast, though so limited in quantity that it had to be dipped up in tin cups). This is quite near the county boundary, yet still in Custer Co. Explorations were made along the cañon of the creek, and a large number of insects taken, for we remained at the same camp the whole of the next day. Many of the species were additions to the Custer Co. list, as the different character of this district from that of the western portion of the county, which had been already explored, naturally gave rise to a somewhat different fauna. Of Lepidoptera, *Nathalis iole* (♀), *Euptoieta claudia*, Cram., *Pyrameis huntera*, Fab., *Limenitis weidemeyerii*, *Colias eurytheme*, var. *keewaydin*, Edw., and *Danaüs plexippus* were observed, as well as a grand *Papilio* which eluded capture, and a larva of *Lasiocampa* (sp. ?), which was found in camp. Coleoptera, also, were numerous; and the following species fell to my lot (for their identification I am indebted to Dr. John Hamilton):—*Cicindela punctulata*, var. *micans*, Fab.; (*punctulata* appears to be a wide-spread species; Dr. Hamilton writes that he gets it at Alleghany, Pennsylvania;) *Pityophagus verticalis*, which was described from a single specimen, mine being only the second example recorded; *Diplotaxis*, apparently *D. haydeni*; *Dryops striatus*; *Batyle suturalis*; *Adimonia externa*; *Disonycha triangularis*, Say; *Nemognatha immaculata*, Say; *Epicauta maculata*, Say; *Ditylus obscurus*, which is new for Colorado; and *Dendroctonus terebrans*. But the best captures were among the Orthoptera, of which, thanks to the kindness of Mr. L. Bruner in identifying them, I am able to give a list:—*Mermiria neomexicana*, Thos.; *Circotettix undulatus*, Thos.; *Tri-*

merotropis citrina, Scudd.; *Hadrotettix trifasciatus*, Say; *Ædipoda haydenii*, Thos.; *Scyllina delicatula*, Scudd. ?; *Acridium emarginatum*, Uhler; *Dissoteira carolina*, L.; *Arphia tenebrosa*, Scudd.; *Mestobregma plattei*, Thos. (apparently new for Colorado); *Philibostroma quadrimaculata*, Thos.; *Melanoplus packardii*, Scudd.; *Melanoplus atlantis*, Riley; var. with bluish hind-tibiæ, which I propose to call var. *cæruleipes*; it would appear to be a variety characteristic of the Western States, specimens from the East invariably having the hind tibiæ reddish. (See 'Report U. S. Commissioner of Agriculture for 1885,' p. 306). *Melanoplus differentialis*, Thos., black var., this and the last species are new to my Colorado list.

We had to turn out with picks and shovels, and make a road down the Red Creek Cañon, over which we eventually drove, and found ourselves just in Pueblo County, and made a camp in a grove of cottonwood trees (*Populus balsamifera* var. *caudicans*), the place being known as Cottonwood Springs. This is in rather open country, the vegetation consisting mainly of *Quercus undulata*, *Juniperus virginianus*, and *Yucca*, while wild vine (*Vitis riparia*), and Virginia creeper (*Ampelopsis quinquefolia*) grew near the springs. The curious grama-grass (*Bouteloua oligostachya*) is also noteworthy, affording excellent food for the cattle which graze around. Insects were not abundant in this locality, but as nearly everything found was new to Pueblo County, such few as were obtained were very acceptable. Seven species of butterflies were found, namely, *Nathalis iole*, *Colias corytheme*, *Limenitis weidemeyerii*, *Danais plexippus*, *Pyrameis huntera*, *Euptoieta claudia*, and *Pamphila nevada*, Scudd., the last species having been identified by Mr. W. H. Edwards. An ichneumon was captured, which Prof. C. V. Riley identifies as *Agama glabella*, Cr.; it is smaller than the form of that species we get in Custer County. Prof. Riley also identifies an Asiliid fly from this locality as *Ospricerus minor*, which is an addition to my Colorado list. Four Orthoptera were taken, one of them, *Hesperotettix viridis*, Scudd., is a very pretty species, apple-green, with blue stockings and red garters, it was the most abundant of the four. The other three are *Stauronotus elliottii*, Thos.; *Spharagemon æquale*, Scudd.?, and a species of cricket, *Centrophilus pallidus*, Thos., which existed in considerable numbers, and kept up a lively chirping at night. The Coleoptera were also

represented by a few species, *Polyphylla 10-lineata*, Say, of which elytra only were found, *Trirhabda*, sp. indet., *Epicauta maculata*, Say, and *Graptodera foliaceae*, which occurred in some numbers on *Cucurbita perennis*, Gray.

Besides the above, there was also a most interesting little colony of insects, supported entirely by the cottonwood-trees (*Populus balsamifera* var. *candicans*), numbering six species. First, a magnificent *Smerinthus*, apparently *S. occidentalis*, Hy. Edw., larger than any of the British species, with beautifully madder-pink hind wings,—this I found at rest on a cotton-wood branch; secondly, a *Catocala*, not unlike the European *nupta*, which I saw but failed to catch, and also found the empty pupa-shells, with the usual bloom on them, under the bark of the trees. Then there was a *Cossus* boring in the living trees. I obtained a young larva, and in a dead stump were also borings, which proved to be those of a species of *Sirex* or *Urocerus*. I should never have supposed there was anything else than *Cossus* in that dead stump, were it not that some ichneumons, the like of which I had never seen before (except a single example flying, which I did not catch, but feel sure was the same, by Red Creek, in Custer Co.), with exceedingly long ovopositors, evidently laying their eggs in some larvæ within the stump. So I bottled these great yellow ichneumons, as well as a male I found flying round belonging to the same species, and cut open the stump with an axe, which led to the discovery of the *Urocerus*. Since then I have sent this and the ichneumon to Prof. C. V. Riley, who tells me that the latter is *Thalassa lunator*. Lastly, there were extensive webs of an Arctiid larva on the branches of the cotton-woods, apparently the same species as that which does much damage to *Populus angustifolia* in the Hardscrabble district of Custer Co., and was observed in Pleasant Valley, Fremont Co. The larvæ resemble in many ways those of *Hyphantria cunea*, which is reckoned so great a pest in the Eastern states, but I sent specimens to Prof. Riley in spirit, and he could not identify them.

The next camp was some twelve miles away, also in Pueblo Co., and at a higher elevation, whence we could see the open prairie stretching out to a level horizon in the east, and looking like the sea. Some dark vegetation marked the course of the Arkansas river, and on it, some thirty miles away, lay the

great town of Pueblo, smoky by day, and bright with the lights of furnaces by night. We camped under some pine trees, and close to the edge of a most interesting cañon, called Wales Cañon, which had steep, sloping sides, going down to a considerable depth, with an open space at the bottom, except where there were thickets or aspen (*Populus tremuloïdes*) trees. The sides of this cañon were remarkable for a new variety of oak—*Quercus undulata* var. *cinerio*, v. nov., small, with pale, rough leaves, nearly two inches long, with sinuate margins, and short, stiff teeth (var. *wrightii*, Engelm., is the nearest approach to this, but the leaves are much smaller), which grew together with an almost typical form of the same species, the difference between them being so marked that it was hard to believe that they were not specifically distinct. Yet it is probable that intermediate forms will be found, such is the variability of the scrub oak. In this cañon I met with a variety of insects, and several species of Mollusca, most of which (e.g. *Conulus fulvus*, *Hyalina radiatula*, *Helix pulchella* var. *costata*) were quite identical with British species. I mention these points, because although not entomological in themselves, they are helpful towards a proper understanding of the origin and nature of the insect fauna. Of the Lepidoptera taken about and in Wales Cañon, some yet remain unnamed, but the following may be mentioned: *Nathalis iole*, *Phyciodes camillus*, Edw., *Limenitis weidemeyerii*, and *Danaïd plexippus*. Of Hymenoptera, I observed *Sirex* (or *Urocerus*) *flavicornis*, Fabr. (very like the European *S. gigas*); *Rhodites*, sp., galls observed on rose-bushes; *Chrysis pacifica*, Say, (a brilliant green species); *Polybia*, sp.; *Melissodes*, sp., and a bright green bee of the genus *Agapostemon*. Diptera were represented by numerous unidentified species, and a large grey Asilid fly, which Prof. Riley informs me is *Proctacanthus milbertii*, Macq.

Among the Hemiptera, I took *Lygæus facetus*, Say (a species I also find commonly in Custer County), *Nabis inscriptus*; *Melagnotus 5-spinosus*; *Tingis*, sp., *Proconia costalis*, Fab. (on which were parasitic red mites, *Scirus*, sp.), and unidentified species of *Proconia*, *Clastoptera*, and *Bythoscopus*; while the Coleoptera found were *Eleodes extricata*, Say; *Hippodamia convergens*, Guér.; *Amara interstitialis*, Dej.; *Carabus tedatus*, Fab.; *Pterostichus herculeanus*, Mann.; *Asida sordida*, Lec.; *Epicauta ferruginea*,

Say; and two Elateridæ which came to the camp-fire, *Anelastes drurii*, Kirby; and *Asaphes memnonius*, Herbst. I should also say, that I found sundry Myriapods in the cañon of the genera, *Julus*, *Lithobius*, and *Geophilus*. From Wales Cañon we drove across some dry country, till we struck the St. Charles River, and got in a valley through which it flows, termed "Mace's Hole." On the way we passed specimens of *Solanum rostratum*, which is the natural food-plant of the Colorado potato-beetle, but never a sign of *Doryphora* (or *Leptinotarsa*, if we are to call it so). There is not very much to say about this district entomologically; we camped near the county boundary, but in Pueblo Co., and there I got a grasshopper, probably *Trimero-tropis vinculata*, Scudd., or a variety of it, and a specimen of *Carabus serratus*, Say, while one of the ladies brought to camp two fine Cetoniids, which were found on a thistle-flower; they prove to be *Euryomia inda*, L. The next morning, just in the last bit of Pueblo Co., I saw a Pierid butterfly, new to me, as we drove along; it was captured, and is now identified by Mr. W. H. Edwards, as *Neophasia menapia*, Feld., and he adds that the larva feeds on the leaves of pine trees (remarkable food for a Pierid), and in Washington Territory and Oregon does much damage by defoliating the trees. The eggs, he says, are laid in rows, touching each other, and placed obliquely on the leaf; so altogether this is a very aberrant species in its earlier stages, not like a *Pieris* at all.

Now we return to the Hardscrabble district in eastern Custer Co. on the journey homewards. By the south fork of the Hardscrabble Creek, the galls of *Rhodites tuberculator*, Riley, are met with. Later, in the Hardscrabble Cañon, we met with a few insects new to the district, *Pyrameis huntera*, *Chrysophanus zeroë*, Bdv., *Bombus rufocinctus*, Cress., and the curious spotted beetle, *Erotylus boisduvalii*, Lac. Then, at Comargo again, a fine Longicorn beetle, *Leptura canadensis*, Oliv., is found; and this ends the list, except for a few species brought home, of which the precise locality was unfortunately not noted down, viz., a *Satyrus*, which Mr. W. H. Edwards tells me is the western form of *S. nephele*, from S. W. Pueblo Co.; and *Pholisora catullus*, Fab., E. Custer Co.; while *Hybius picipes*, Kirb. ?; *Aphodius lividus*, Oliv. (new for Colorado); and *Saprinus oregonensis*, Lec., were from the Hardscrabble district in E. Custer

Co. Near Querida, in Western or Central Custer Co., *Corynetes cœruleus* and *Silpha lapponica*, L., were noted on the homeward journey. Several species remain unidentified yet, so that the above account does not even include all the insects taken on this expedition; but it will, I hope, give some idea of the entomological possibilities of an interesting and little-known district. The British entomologist will recognize many familiar genera, and a few familiar species, and I can only say, that it becomes increasingly apparent to me, that the fauna of these mountains is so nearly related to that of Europe, that an intelligent study of the one without the other, from the point of view of geographical distribution, is almost impossible. The origin, and place of origin, of the various palæartic genera and species, is yet almost entirely wrapped in obscurity; yet I feel confident that when we come to know the fauna of the palæartic zone as a whole, much will be cleared up, and the way will be opened for many new investigations and theories.

West Cliff, Custer Co., Colorado, October 12th, 1888.

CONTRIBUTIONS TOWARDS A LIST OF THE VARIETIES
OF NOCTUÆ OCCURRING IN THE BRITISH ISLANDS.

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

(Continued from p. 272.)

Hydroecia, Gn., *micacca*, Esp.

This is a most variable species, both in colour and size. The ground colour varies from a pale whitish grey and yellowish red, through bright red and purplish red, to deep brown with no trace of the typical red colour. In size, some specimens are almost twice the expanse of others. In the autumn of 1883 I bred some four hundred specimens from roots of dock. Previous to this, I had looked on this as a most constant species, and its variation surprised me much. Guenée seems surprised that Sepp figured two different varieties, one of which (figs. 6 and 7) he says is the ordinary French form, the other of "an ashy green colour" ('Noctuelles,' vol. v., p. 128). I have never seen one with a green tint. This species has a peculiar shining lustre, hence its name. The type is represented by Esper, Pl.

145, fig. 6, which I have described as follows:—"A dull red ground colour, with two single, fuscous, basal lines, dark greyish or fuscous nervures and costa; stigmata the same shade as the ground colour, surrounded by a narrow purplish ring, and this again surrounded by black; between the two basal lines there is a purple shade, and a strong whitish line beyond the reniform is internally margined with blackish, a greenish grey shade at the base of this black line; the outer part of the wing beyond this white line is also grey, with the exception of an apical streak and a bright reddish hind margin. Hind wings grey, with a marginal shade, followed by a dark transverse line and lunule, base reddish." Haworth describes this species under the name of *cypriaca*, as:—"Alis roseis vel subfuscis fusco-strigatis, medio saturatoribus." Hübner also figures (224) the species under the same name. Haworth's var. β . would appear to be the same as Esper's duller-coloured type, for he writes:—"alis magis fuscis et fere absque tincturâ roseâ: posticis cinerascentibus lunulâ mediâ strigisque pone medium fuscis" ('Lepidoptera Britannica,' p. 228, No. 197). I have received this form (type) from Sligo and Aberdeen, have frequently captured it near Strood, and have bred it from Greenwich larvæ, although I have none with the greenish* shades mentioned in my description of Esper's figure. I consider the following a summary of the principal phases of variation:—

1. A whitish-grey form, with slight pink tinge = var. *grisca*.
2. A yellowish red form = var. *lutea*.
3. A rosy form (the more common one in Kent) = var. *cypriaca*, Haw.

4. A deep red (tinged with purplish) form = var. *rubida*.

5. A dull red form suffused with fuscous = *micacca* (the type).

6. A brown form = var. *brunnea*.

I cannot help remarking here the superficial resemblance of this last variety to *petasitis*.

α . var. *lutea*, mihi. — The anterior wings of a very pale yellowish-red ground colour, very shiny, the transverse lines also paler than in the type. The hind wings, which are pale yellowish, have faint traces of the lunule and transverse line, but not of the transverse shade noticeable in the darker forms. Some specimens of this form are very small. I have only Greenwich

* I believe this is chiefly due to the artist trying to represent the peculiar shiny lustre of this species.

specimens of this variety, but Mr. Russ occasionally takes it at Sligo.

β . var. *cyprica*, Haw.—I am uncertain whether Hübner's fig. 224 ought to be referred to this variety, which I would have include all the bright red rosy forms from which it has derived its English name "*rosy rustic*"; I base this opinion on Haworth's description, "*alis roseis, fusco strigatis*," but I believe such forms as are represented by Hübner's figure should be included. These rosy forms are the more general in the South of England, but apparently rare in the North, where the darker and greyer forms are more abundant.

γ . var. *rubida*, mihi.—The anterior wings of a rich red colour, with a tendency to a purplish tinge. The posterior wings strongly marked with a dark lunule, transverse line and shade. I consider this the finest variety of the species, and have never seen specimens except those I have bred from this neighbourhood.

δ . var. *brunnea*, mihi.—An extreme development of var. *rubida* where the dark red is entirely replaced by a deep, shiny, brown colour. The hind wings are very much suffused with fuscous, the ground colour being of a dull grey; the lunule, transverse line and shade being darker than the ground colour. This extreme melanic form is rare in the South; I have only obtained one in this (Greenwich) neighbourhood, but I have received it from Mr. Percy Russ, of Sligo, and Mr. Reid, of Pitcairle. In these localities it seems not uncommon.

ϵ . var. *grisea*, mihi.—Anterior wings of a pale, shiny, greyish white, the transverse markings having the slightest possible trace of reddish colour; the stigmata very indistinct. The posterior wings greyish white, with a dusky lunule, and transverse line, while some of these grey forms have, and others have not, the ordinary transverse shade. This form is the one more generally obtained in the marshes on the banks of the Medway; I have bred it from Greenwich and have received it from Mr. Percy Russ (Sligo).

Hydræcia, Gn., *nictitans*, L.

[After a great deal of careful study, I have come to the conclusion that we probably have, under the name of *nictitans*, L., two distinct species, one of which I at first thought was the *lucens* of Freyer; but this is not so, the latter being merely a

variety of the former. My opinion has been formed, both from the study of the imagines in their various phases of variation, and the natural conditions of their occurrence. In the absence, however, of any actual proof of their distinctness, I have treated the form that I consider distinct as a local race or variety of *nictitans* under the name of *paludis* in the following notes on the species.

With regard to the superficial differences between *nictitans* and *paludis* I have made the following notes:—*Paludis* is generally larger than *nictitans*, and in its different phases of variation is rarely, if ever, of the red coloration which is common in some shade or other to all the varieties of *nictitans*. The reniform of *paludis* is always more narrow, owing to the absence of the outside line on the inner edge of the reniform, which is present in that of *nictitans*; it is also less strongly marked, and always white or orange, never red. The posterior wings of *paludis* are more ample and more rounded on the hind margin, the anterior wings less arched on the costa. The typical colour of *paludis* is ochreous or ochreous-grey, and its variations in ground colour assume a greenish tint, until its extremes may be described as greenish grey; the typical colour of *nictitans* is red, and its extremes are reddish brown or black. Both are reticulated with faint transverse lines, but *nictitans* is generally more strongly marked in this respect than *paludis*; the faint transverse line parallel to the hind margin of the anterior wings is of a different shape in *paludis* to that of *nictitans*, being more completely hollowed just below its centre.

With regard to the occurrence of these forms in a state of nature, the following facts are very striking:—On the marshes around Rochester, bordering the Medway, *paludis* in all its form of variation occurs. In the woods around Rochester, not a *paludis* is to be found; all are *nictitans*. At Sligo Mr. Percy Russ takes nothing* but *paludis*, some of which are exceedingly beautiful forms. Mr. Harrison, of Barnsley, has sent me for inspection the pick of the Yorkshire forms,—all are *nictitans*, there is no sign of *paludis*. In London *nictitans* is often common, but I have never seen *paludis*. At Shoeburyness most are *paludis*, whilst at Deal both forms occur. I have taken,

* I must modify this statement, as Mr. Russ last month (Oct., 1888) sent me a very strongly-marked specimen of *H. nictitans*, var. *erythro stigma*, with a query as to its being *nictitans* at all, the form, with a red ground colour, being entirely new to him.

at the latter locality, *nictitans* freely from the marram in copulâ. I have as frequently taken *paludis* in copulâ, but never *nictitans* with *paludis*.

In Plate I. the figs. 1—6 are *paludis*; figs. 7—12 are *nictitans*. A comparison of these two rows of figures will, I trust, make the foregoing notes clear.]

The type of this species (*nictitans*) is of a reddish grey colour, with a white reniform and pale yellowish orbicular (Plate I., fig. 7). The Linnæan description, 'Systema Naturæ,' p. 847, is as follows:—"Noctua spirilinguis cristata, alis ferrugineo-griseis, stigmatate reniformi, niveo pupilla lunari lutea." The variation of this species lies chiefly in depth of ground colour, and colour of the reniform stigma (Plate I., figs. 7-12). The ground colour varies from pale pinkish red through different shades of ferruginous red to almost black. The reniform stigma varies from white, through various shades of orange, to red. Mr. Porritt, in 'The Transactions of the Yorkshire Naturalists' Union,' Part vi., p. 73, writes of the Yorkshire specimens "often very strongly coloured." Hübner figures (221) the type under the name of *chrysographa*.

α. var. rosea, mihi.—A pale red form (Plate I., fig. 9), with transverse lines very indistinct; the orange orbicular scarcely noticeable, being but little different to the ground colour; the reniform large and well-defined, white in colour as in the type; the fringes of the hind wings very rosy, a distinct red line bordering the hind wings, the red shade extending some distance within the outer margin. The form is rare and apparently northern. I have never seen it in the south. Mr. Harrison captures it at Barnsley, and Mr. Lawson has sent me specimens from Perth. Fig. 9 is taken from a specimen captured by Mr. Lawson at Perth.

β. var. erythrostigma, Haw.—Haworth's description of this variety (which he treated as a distinct species) is as follows:—"Alis griseo rufescentibus, strigis variis tenuissimis saturatoribus, stigmatate rotundo reniformique rufis." "Alæ posticæ subfuscæ ciliis rufescentibus. Stigma subinde fere oblitteratum est" ('Lepidoptera Britannica,' p. 240). This variety is of the same colour as the type, but the reniform stigma is red instead of white (Plate I., fig. 10). It occurs everywhere with the type. I have specimens from Rannoch and other Scotch localities, which differ in no way from others captured in London, Deal, and other southern localities. It is figured in Newman's 'British

Moths,' p. 280, and some remarks of Newman on this variety are on the following page of the same work. Guenée says of it:—“Does not differ from ordinary specimens, except that the reniform is reddish instead of white” (‘Noctuelles,’ vol. v., p. 126). The specimen from which fig. 10 was taken was captured at Deal.

γ. var. *auricula*, Haw.—Also treated by Haworth as a distinct species. His description (‘Lepidoptera Britannica,’ p. 240) is as follows:—“Alis fusco-ferrugineis obsolete auratis fusco strigatis, stigmatate reniformi albo-aureo.” Haworth undoubtedly treated this as distinct, because of the golden colour of the reniform. He says, “From its reniform stigma being of the colour of pure gold, it has obtained appropriately enough, the appellation of the ‘golden ear.’” This variety is intermediate between the type with white, and var. *erythrostigma* with red, reniform stigma. The specimen from which this variety, fig. 11, was taken, was captured at Deal.

δ. var. *obscura*, mihi.—The ground colour of a very dark (inclining to blackish) brown colour, with very little trace of the ferruginous colour of the type; the reniform stigma is white as in the type. I have never seen the orange or red reniform in this variety. Hind wings darker than in the type, fringes paler. This melanic form occurs but rarely. I have only taken it occasionally at Deal. This variety is figured, Plate I., fig. 12, from a specimen captured at Deal.

ε. var. *pallida*, mihi.—The ground colour of the anterior wings of a pale yellowish or greyish red colour. All the lines and markings very distinct. Both stigmata are generally yellowish, but sometimes the reniform is whitish, sometimes orange. The posterior wings paler than in the type. Guenée’s var. B., ‘Noctuelles,’ vol. v., p. 126, would appear to be this variety. His description is, “Anterior wings a little more pointed at the apex, of a very pale, rosy, yellowish colour, which makes the lines more distinct. Locality, North America.” The specimen from which this variety was figured (fig. 8) was captured at Deal.

ζ. var. *lucens*, Fr.—*Lucens* is treated as a distinct species by Freyer and Herrich-Schæffer, but treated as a variety of *nictitans* by Guenée. In this he is followed by Newman (Newman’s ‘British Moths,’ p. 281), and Staudinger, in his ‘Catalogue,’ adopts the same view. Dr. Staudinger says of it (comparing it with *nictitans*), “major, mac. renif. alba aut rufa.” There is no

doubt that these are simply large *nictitans*. I find also that in the Doubleday collection, a number of large *nictitans*, which differ in no way (except size) from ordinary *nictitans*, are labelled as *lucens*. Careful study of Freyer's figures, pl. 468, figs 3, 4, and Herrich-Schæffer's, figs. 285—288 (by error 85—88), shows that their types are really *nictitans* and not distinct. I have made the following notes of Freyer's figures:—"Fig. 3. ♀. Anterior wings reddish ochreous, with two red stigmata; a dark shade passing from the costa, between the stigmata, to the inner margin; a double abbreviated black line at the base, followed by three very fine black lines before the orbicular; two fine black lines just beyond the reniform, with a slaty grey band at some distance from, but parallel to, the hind margin." "Fig. 4. ♀. Strong red *nictitans*, with white reniform." Of Herrich-Schæffer's figures I noted:—"Strongly-marked *nictitans*, colour of reniform variable." All these figures are strongly reticulated.

[Before describing the next variety (*paludis*) I would make the following remarks:—For reasons that I have just given under my notes on *nictitans*, I am almost satisfied that this is a species distinct from, but closely allied to, *nictitans*. Its different phases of variation are shown on Plate I., figs. 1—6. The varieties of this local race or species (whichever it may be) vary in colour from yellow-ochreous to brownish ochreous and grey, with a slight greenish tinge. The orbicular is yellow in all varieties, the reniform is always white- or orange-yellow, never distinctly red as in *nictitans* var. *erythrostigma*. The form is not figured by any British or Continental author; as far as I can find, the nearest approach to it is Esper's, fig. v., pl. 125; although in Humphrey & Westwood's 'British Moths,' vol. ii., pl. xxxvii., fig. 4, there is a poor figure of what might possibly be its var. *grisea*. *Paludis* and its vars. seem particularly marsh or coast-forms. The palest I have ever seen were captured by Mr. Russ, at Sligo, in Ireland; but some captured by Mr. Ovenden and myself at Strood, some by Mr. Coverdale at Shoeburyness, and some by myself at Deal, are but little darker than the Irish specimens. In Plate I., figs. 1 & 2 are the ochreous form (*paludis*); figs. 4, 5, 6, are the dark form (*grisea*); fig. 3 is intermediate (*intermedia*). It must be noted that each of these figures has a form with both white and yellow reniform stigmata, although a yellow form of *intermedia* is not figured. I have therefore divided each of the

three varieties up into *-albo* and *-flavo* according to the colour of the reniform.]

n. var. *paludis*, mihi.—(1) *paludis-albo*.—The anterior wing of a pale ochreous-yellow ground colour, with a white reniform and yellow orbicular; an abbreviated double basal line, followed by two single fuscous transverse lines; a dark fuscous shade, extending from the inner edge of the reniform to the inner margin; two fuscous transverse elbowed lines just beyond the reniform, extending across the wing; a costal shade slightly darker than the ground colour near the apex, the reniform being situated in a similarly-coloured shade; the hind margin from the apex to the anal angle also darker; the reniform is exceedingly narrow, compared with that of *nictitans*, owing to the absence of the outside ring present in the reniform of the latter species. The hind wings dark grey, the males with the base much paler, darker nervures and indistinct lunule. This variety is figured on Plate I., fig. 1. I have specimens from Sligo, Strood, and Deal.

(2). *paludis-flavo*.—Figured on Plate I., fig. 2, like *paludis-albo*, but with a yellow reniform instead of white. I have specimens from Sligo, Strood, Shoeburyness, and Deal.

θ. var. *intermedia*, mihi.—(1) *intermedia-albo*.—This variety has the ground colour darker ochreous than in var. *paludis*, a more distinct dark shade around the reniform, and the ground colour with a slight greenish tint. This variety is figured on Plate I., fig. 3. I have specimens of this var. and *intermedia-flavo*, from Shoeburyness, Sligo, Strood, and Deal.

(2). *intermedia-flavo*.—Like the above *intermedia-albo*, but with a yellow reniform instead of white.

κ. var. *grisea*, mihi.—(1). *grisea-albo*.—The ground colour greyish, darker than *paludis* and *intermedia*, with a slight greenish tinge, a pale yellow orbicular and a white reniform, a darker shade enveloping the lower part of the reniform. The pale transverse lines as in *paludis* and *intermedia*. The posterior wings darker than in either of these last two varieties. This form is figured on Plate I., fig. 4, and I have specimens from Deal and Strood. This and the following are more common in Kent than either var. *paludis* or var. *intermedia*.

(2). *grisea-flavo*.—Like *grisea-albo*, but with yellow reniform stigmata instead of white. This form is figured on Plate I., figs. 6 & 7, the latter of these two figures having the transverse lines



H Knight ad nat

West, Newman & Co chrom.

Hydriceia metitans and its varieties.

especially strongly marked. My specimens came from Strood and Deal.

(To be continued.)

EXPLANATION OF PLATE I.

Fig. 1.	<i>paludis (paludis-albo)</i>	.	.	Captured at Deal, Aug., 1887.
„ 2.	<i>paludis (paludis-flavo)</i>			Captured at Shoeburyness, „ 1883.
„ 3.	<i>intermedia (intermedia-albo)</i>		„ Deal	„ 1887.
„ 4.	<i>grisea (grisea-albo)</i>	.	.	„ Deal „ „
„ 5.	<i>grisea (grisea-flavo)</i>	.	.	„ Strood „ 1884.
„ 6.	<i>grisea (grisea-flavo)</i>	.	.	„ Deal „ 1887.
„ 7.	<i>nictitans</i> , L.	.	.	„ Deal „ „
„ 8.	„ v. <i>pallida</i>	.	.	„ Deal „ „
„ 9.	„ v. <i>rosea</i>	.	.	„ Perth „ „
„ 10.	„ v. <i>erythrostigma</i> , Haw.		„ Deal	„ „ „
„ 11.	„ v. <i>auricula</i> , Haw.	.	„ Deal	„ „ „
„ 12.	„ v. <i>obscura</i>	.	.	„ Deal „ „

NOTES FROM THE NORTH-WEST COUNTIES.

By J. ARKLE.

UP to the beginning of March frost and snow made collecting impossible. I occasionally saw *Chimatomia brumata* and *Hybernia defoliaria* on the gas-lamps; but it was not till the 10th of March that I made the acquaintance of *Nyssia hispidaria*, in Delamere Forest. This moth was a very common insect in that locality until the end of the month—with, of course, *H. rupicapraria*, *H. leucophearia*, *H. marginaria*, *Anisopteryx æscularia*, *Larentia multistrigaria*, *Phigalia pedaria* and, occasionally, *Cymatophora or* and *Amphidasys strataria*. A good rain, the first with us for months, occurred on April 12th, and was succeeded by a few days of warmth. On April 17th I came across the common *Tæniocampa* representatives with *T. gracilis* and *T. incerta*—all in profusion on the willow-blooms at night.

The succeeding cold left me nothing to record until May 2nd, when a few *Tephrosia biundularia (laricaria)* emerged—bred from Delamere Forest larvæ which I had beaten off birch last autumn. On the 5th larvæ of *Liparis similis (auriflua)*—which

had hibernated in little webs accommodating one as a rule, but sometimes two—emerged, and began eating the early buds of the hawthorn. My first visit of the season to the Wallasey sandhills occurred on May 12th. This locality, as your readers are doubtless aware, is famous as the habitat of *Nyssia zonaria*. For several years past it has not been a common insect there, and, on the occasion of the visit referred to, I considered myself fortunate in taking a fine male and female—bringing the recorded captures of the season, for the time, up to no more than eight. The male was at rest on a catkin of the dwarf willows which clothe many a hollow and crest of the sandhills; the female was busy laying her eggs on a dead ragwort stem. These eggs, I am sorry to say, proved infertile. Fresh and numerous specimens of *Mesotype virgata*—a moth with very butterfly-like habits—skipped among the short herbage; but my chief object was the capture of *Teniocampa opima*. Finding the dwarf willows so well in bloom, I decided to hire a lantern, and indulge in a lonely examination of the catkins after night-fall. Whilst on my way to the village, however, I had the good fortune to meet with a local entomologist. This gentleman most kindly put me on the right track for *Teniocampa opima*. The insect, he said, was most probably over,—at any rate the willows, from their very abundance, were not worth working. Eggs, however, were doubtless to be had near a certain part of the coast-line, and thither I was kindly conducted. No one would expect them on the dead stems of ragwort, and far away from the willows; but there they were, in batches of a dull brown colour, which showed they had been deposited some time, as they are white when freshly laid. The parent moth can then be discovered at the root of the plant. A batch or two satisfied me, especially as the larvæ are considered to be difficult to rear. However, I lost only a small percentage of the caterpillars after hatching, and I have every reason to hope that the remainder pupated well. The dead ones succumbed to a flabby, dropsical-looking state, which attacked them on entering their last stage. A few captures of the lovely *Nomophila ostrinalis* and a good beetle—*Cicindela hybrida*—closed a most interesting day.

Whitsuntide found me in the charming Vale of Llangollen. On the opposite hillside, whilst standing under the ruins of Abbey Crucis, I could look into the birch-wood where *Sesia*

scoliformis used to be taken, but something like thirty years ago. The only insect I saw worth a special record was *Euchloë cardamines*, which literally swarmed over the meadows in the Vale.

The first half of June was notorious in the Chester district for a profusion of *Vanessa cardui*—certainly a remarkably late month for a hibernated butterfly to appear! The insect was taken several times, even in our street gardens; and I set a few for the purpose of a comparison to which I will refer by-and-by. Lepidopterous larvæ of most species have been abundant with us this summer. In Delamere Forest the oaks were almost defoliated, chiefly by the caterpillars of *Tortrix viridana*. I would also specially include, from their abundance, those of *Calymnia trapezina*. Two or three got accidentally into my larva-boxes, and they devoured, to my chagrin, nearly every other occupant. Larvæ of *Hylophila prasinana* were also very common. From last year's larvæ, beaten in Delamere Forest, I might incidentally say that I had, up to this date, the emergence of *Tephrosia biundularia*, *Hadena glauca*, *Acronycta leporina*, *Cymatophora duplaris*, and many commoner species.

A visit to Delamere Forest on June 23rd showed that, in addition to *Pieris brassicæ*, *P. napi*, *Cænonympha pamphilus*, *Polyommatus phleas* and *Lycæna icarus*, *Thecla rubi* was also a common insect, in fact, unusually so. Others, equally common, were *Bupalus piniaria*, *Ematurga atomaria*, *Lomaspilis marginata*, *Cabera pus-aria*, *Macaria liturata*, *Hypsipetes ruberata*, *Cidaria corylata*, *Thera variata*, but by no means so abundant as last year. Old acquaintances like *Aplecta nebulosa*, *Hepialus hectus*, and *H. velleda*, seemed conspicuous by their absence; while, on the other hand, *Panagria petraria*, *Eubolia plumbaria*, and *Cymatophora duplaris* appeared like fresh discoveries. In comparison with last season, however, this fine hunting-ground seemed deserted by the insect tribes. *Ellopiia prosapiaria* I only met with twice; *Eucosmia undulata* and *Geometra papilionaria* not at all: whilst the scanty occurrence of *Anarta myrtilli*, *Nemophila russula* and *Boarmia repandata* was delayed, doubtless by the cold of June and the addition of rain in July, until the middle of the last-named month. The tardy appearance of *Lycæna ægon* and *Drepana falcataria* did not take place till then, but was atoned for by the unusual abundance of both insects.

Amongst the beetles I must specially mention *Elater balteatus*, beaten commonly enough out of birch. I should not pass over my Delamere visit on the 23rd, without referring to what has evidently been considered a matter of some importance. I came across a type female *Amphidasys betularia* and black male, on an oak trunk, and *in copulâ*. The female I kept alive for eggs, and these hatched.

On July 16th I was at Southport, famous entomologically for its fine sandhills. I record the visit, as it was the first time I ever saw larvæ of *Leucoma salicis* in the wild state. They were plentiful in the streets,—on the poplars screening the houses and gardens from the road. I took two or three fine specimens of *Acronyeta megacephala* from the poplar trunks that were within reach.

The weather for the summer seemed now thoroughly disorganized, and no expedition could be indulged in without the attendant nuisances of waterproof or umbrella. With the consolation, however, that matters could not well be worse, I started for the North Lancashire mosses on July 19th, and met there Mr. A. W. Kershaw, of Lancaster, and Mr. H. Murray, of Carnforth,—old entomological friends. Our first hunt took place on Heysham Moss, near Morecambe, on the 20th, *Carsia paludata (imbutata)* being the insect perhaps most desired. I was sorry to see that the Moss had become less in extent since my last visit two years ago. It was too early for *C. paludata*, but the short interval of sunshine we were favoured with brought out hundreds of *Hyria muricata (auro-raria)*, of which I secured a good series. *Cænonympha typhon* seemed as plentiful as ever. *Anarta myrtilli* was a common insect and comparatively easy to capture, owing to the low temperature; but a drenching rain put a stop to further operations. On July 23rd we reached the Witherslack Mosses. Making the best of a threatening morning, our captures were *Argynnis selene*, *Syrichthus malvæ (alveolus)*, *Lycæna astrarche* var. *salmacis*, *Pseudoterpna pruinata (cytisaria)*, *Hyria muricata* (rare), *Drepana lacertinaria* and *Melanthia ocellata*, beaten from birch, *Nemophila russula*, *Peronea rufana*, with larvæ of *Notodonta ziczac* and *Gonoptera libatrix* taken from the shallows. *Vanessa io* larvæ were in great abundance on the nettles. The mosses resembled sponges filled with water, and were impassable in many places

as we learned to our cost. Vipers were also common impediments, and lizards swarmed in drier places. After midday the rain came down and drove us into our hotel,—the ‘Derby Arms,’—wet through, where we met the well-known Lancashire entomologist, Mr. Hodgkinson, with whom we chatted on things entomological till far into the afternoon. The day ended with Mr. Murray showing us, at Carnforth, a magnificent *Cidaria reticulata*, which had just developed in one of his breeding-cages. The 27th saw us once more at Heysham Moss. *C. paludata* was just beginning to make its appearance, and we took two fine specimens. *H. muricata* had nearly disappeared, only two being seen, and the weather had evidently thinned the numbers of *C. typhon*. Beating a retreat before a downfall of rain, we turned our attention to larva-hunting in the rides or approaches to the Moss. Growing out of the wide ditches, on either side, were numberless bulrushes, in the stems of which the larvæ of *Nonagria arundinis* (*typhæ*), nearly full fed, were in any quantity. On the thistles we secured a large number of the larvæ of *Vanessa cardui*, whilst the nettles were equally tenanted by the caterpillars of *V. atalanta* and *V. urticæ*. The butterflies I bred from the *V. cardui* larvæ presented a very different appearance to the hybernated specimens already referred to. They are decidedly darker, having much more black upon their wings. One pupa, out of the dozen or so I retained, has not yet developed into the perfect insect. It is quite healthy, and looks as if it will pass the winter in the pupal state. The stone walls of the district are notorious for the profusion of *Bryophila perla*. Hearing that the Lancaster insect is claimed in certain quarters as a variety, I secured a long series for comparison. The distinctive value of the specimens, however, is evidently *nil*. A black *Apanea didyma*, taken at rest in the streets, closes my Lancashire record.

On July 20th I went to Hoylake, a small town on the Cheshire coast-line, and only a few miles from Wallasey. Here *L. salicis* was too evidently a garden pest. The leaves of willows and poplars bordering the streets were matted together by the cocoons, which were often common to three or more pupæ; and numbers of the moths were lazily resting on the leaves and branches, depositing their eggs. Larvæ of *Smerinthus ocellatus*, *S. populi* and *A. megacephala* were common.

On August 4th I took another trip into North Wales. My object was to extend what knowledge I possess respecting the haunts of *Agrotis ashworthii*, an insect which is still to be had, I am told, but by a very limited number of entomologists, among whom, I am sorry to say, I cannot at present rank myself. Mr. Alfred O. Walker gives both Llangollen and 'The Loggerheads' as localities; and both districts are certainly well-known to me. 'The Loggerheads,' which is simply a quiet and comfortable country inn, is reached by walking along a dry water-way cut in the face of limestone precipices, four or five miles from the hamlet of Rhydymwyn, on the Chester and Denbigh Railway. The scenery is among the finest in North Wales, and all along the entomologist finds a splendid, if dangerous, hunting-ground. On this occasion my captures, owing to the miserable weather, were few:—*Lycæna astrarche*, late, and just appearing; *P. pruinata*, *Anaitis plagiata*, *Cidaria truncata* var. *perfuscata*, *Mimæscoptilus pterodactylus*. *Satyrus semele*, an abundant butterfly here, was evidently still in the chrysalis; and the fresh bloom on the dog-roses gave additional hints on the lateness of the season. I might well, therefore, have spared myself the search, on the face of an ugly-looking cliff, for *A. ashworthii*,—at any rate I gave it up, for an intended larva-hunt some night next spring, as rain began to fall. I may add that I came across many cocoons of *Plusia gamma*—a moth which has swarmed with us—a curious coincidence to the season's abundance of *V. cardui*. Cold weather, rain, and very little sunshine, marked the greater part of August. The common but brilliant tiger-beetle, *Cicindela campestris*, was abundant in the first week, on the heaths at Delamere. The effect of the unseasonable weather was shown by my taking two fine *Geometra papilionaria* from a Chester gas-lamp, on August 6th. From another gas-lamp I took *Cosmia pyralina* on the 10th. On the 25th I was fortunate in obtaining larvæ of *Notodonta dictæoides* from sallows growing in the Chester Cemetery. The 8th and 13th of September are red-letter days marked as visits to Wallasey, and with the captures of *Deilephila galii* larvæ. *Anomala frischii* was a fairly common beetle on both occasions.

Sharp and unusual frost set in on the 25th of September. Previous to that date I ought to note a capture of *Cirrhædia*

xerampelina on the 12th and another on the 15th, both at gas-lamps. On the 17th a young friend brought me a full-fed caterpillar of *Acronycta alni*, which he had taken from a hawthorn hedge in the suburbs of the city. I gave it two or three inches of dead, dry thistle-stem, and it soon disappeared as it excavated its pupal-chamber amongst the pith.

2, George Street, Chester.

NOTE ON *TORTRIX PICEANA*, LINN.

BY RICHARD SOUTH, F.E.S.

MR. CAPPER'S interesting note (Entom. 279) on the occurrence of *T. piceana* in the New Forest induces me to communicate my experience with this insect in Surrey.

During the last four years I have at odd times most successfully worked the Surrey pine-woods and plantations, securing therein many good species of Micro-Lepidoptera peculiar to the Coniferæ. Among others were *Sericoris bifasciana*, *Pædisca ratzeburghiana*, and *P. rubiginosana*, but the prize was undoubtedly *T. piceana*, of which species I first netted a wasted male example early in August, 1884. The following year (1885), whilst collecting larvæ of *S. bifasciana*, I noticed some needles of the Scotch fir spun together; and suspecting this was the work of a lepidopterous larva, I proceeded to overhaul the construction, with a view of making the acquaintance of the architect and owner. In this, however, I only partially succeeded, for as I gently knocked at the front door of the leafy tenement the occupant bustled out at the back, and I had but a momentary glimpse of a green, plump Tortrix larva. For the remainder of that afternoon my interest was transferred from *S. bifasciana*, and I put all my energy into the discovery of what might be aptly termed "needle-cases," for the enterprise was hardly more satisfactory than that of looking for the proverbial "needle in a bottle of hay." Although I worked with a will, searching and beating for fully three hours, I only obtained eight larvæ, from which I subsequently bred one imago of *T. piceana*. What became of the other seven larvæ I never knew, but probably they made their escape through a small hole in the muslin which covered the top of the flower-pot in which I had placed them, and which

I had failed to detect until too late. In 1886 I got but one larva, which produced a female specimen in July, and the following year I failed to get any. Unfortunately I did not visit the ground at the right time for the imago in either of those years, but this year I obtained one imago in June. My first example of *T. piceana* was captured on the wing as it flew about the lower branches of a tall pine-tree, and at the same time there were a number of small moths flying high up and around one spot of this particular tree. As well as I could judge these were similar in size and shape, and appeared to fly in the same manner as the specimen I captured, and I thought they were most likely *T. piceana* also; but no other specimens came within my reach, so that I was unable to verify my supposition.

I remember once to have seen males of *T. podana* crowding around and about the herbage in a hedgerow, under an oak tree. On investigating the cause of this assemblage I found that the attraction was a lady *podana*; so that if any entomologist should find larvæ of *T. piceana*, and breed a female of that species, it might be well to test her power of attracting the opposite sex. Probably it will be found that the larvæ of this Tortrix feeds, as a rule, higher up the tree than is convenient for work by the ordinary methods of searching and beating, and it occurs to me that "sheeting" and "jarring" might be employed with advantage. "Verbum sat sapienti."

When Mr. Wilkinson wrote his 'British Tortrices' (pub. 1859) the claim of *T. piceana* to a place in our list rested on somewhat slender data; and the author of the work referred to did not describe the species, as he seems to have considered that at the time there was some doubt as to the authenticity of the occurrence of the species in Britain. After describing the ten species placed by him in Stephens' genus *Lozotania*, Wilkinson appends a note which it may be interesting to reprint here:—"Note.—Besides the foregoing ten species, there is another (*T. piceana*), of which a single specimen, a female, is said to have occurred in this country at the New Forest many years ago; it was originally in the possession of Mr. Stone, from whom it passed into the collection of Mr. Bently, and ultimately to that of Mr. Edwin Shepherd, where it now is at present unique; but as its claims to rank as an indigenous species must be received with doubt, it is merely mentioned here provisionally, lest hereafter it be

admitted to our list. Upon the Continent it is a well-known species, and inhabits the pine-forests of Germany, Sweden, &c., and in size and appearance much resembles *L. fulvax*" (*podana*).

In Ent. Mo. Mag. viii., p. 272, Mr. C. G. Barrett says that he beat a female specimen of *T. piceana* from an oak-tree in a wood on the borders of Hants. This capture was effected on July 11th, 1868, but it was long after that date that he ascertained the insect was not "an extraordinary variety of *T. pyrastrana*" (*podana*) as he supposed it, but *T. piceana*. Any one with suspicious-looking specimens in their series of *T. podana*, should therefore subject the same to a critical examination.

12, Abbey Gardens, St. John's Wood, N.W.

ENTOMOLOGICAL NOTES, CAPTURES, &c.

ANOSIA PLEXIPPUS IN SUSSEX.—On the 14th of September, 1887, I captured a large brown butterfly. All the wings were of a rich chestnut-brown, with broad blackish brown borders, studded with a double row of white spots; in expanse they were about six inches. It was flying along the beach at Worthing, and a friend who was with me at the time managed to hit it down with his cap, when I caught it. It was uninjured, and seemed to be freshly emerged. I saw another the next day but was unable to capture it. I was ignorant of its name till a few days ago, when I saw one like it in a museum, and was so enabled to identify them.—F. H. STEWART; Oaklands, Eccles, Lancashire, Oct. 4.

DEILEPHILA GALII IN LANCASHIRE.—On July 22nd last, towards noon, I caught a fine specimen of *D. galii* here. It was flying up and down the skylight of a "Fives" Court, trying to find an outlet, appearing much distressed by the hot sun.—R. AUGUSTINE CLARKE; Rossall School, Fleetwood, Lancashire, Nov. 10, 1888.

DEILEPHILA GALII IN BERKS.—On September 10th, I found some caterpillars of *Deilephila galii* feeding on *Clarkia* in a garden here. They were then not quite half-grown, and became full-fed on 25th September, when they spun a slight cocoon on the surface of the earth in the breeding-cage, changing to chrysalis. I never heard of its being found so far inland before.—W. BARNES; 2, Brightwell Villas, Southern Hill, Reading, Nov. 5.

SESIA MYOPEFORMIS IN THE ISLE OF THANET.—My brother, S. C. Cockerell, has recently sent me an example of this species, which he found at Minster in the Isle of Thanet. Although in many places a common insect, I am not aware of any previous record for Thanet. Conchologically, Thanet is found to present peculiarities, not only in the presence, but more notably often in the absence, of certain species. Mr. T. Wood's notes, from time to time, show us that it has some interesting Coleoptera, and several rare Lepidoptera are occasionally found there; while Mr. Billups has collected some good Hymenoptera and Hemiptera. Would it, therefore, be too much to ask some ardent entomologist to spend a few days' holiday there when he can, and collect material to be published as a beginning of a complete list of the insect-fauna of this corner of England? At present the records are few, and so scattered, that it would take a couple of months in the British Museum library to make sure of finding them all.—T. D. A. COCKERELL; August 20, 1888.

LITHOSIA COMPLANA, FOOD OF LARVÆ.—Whilst collecting on sand-hills on the Carmarthenshire coast, on July 31st, I captured a specimen of *Lithosia complana*. Was not this an uncommon situation? There were no bushes or trees of any kind within half-a-mile at least. On what lichens does the larva feed? Newman, in 'British Moths,' questions the larvæ having been seen in this country. Have they since been discovered? I should state that the specimen taken was perfectly fresh and in fine condition.—T. B. JEFFERYS; Cirencester, August 18, 1888.

OCNERIA DISPAR, MALFORMED.—I see that one of your correspondents (Entom. 235), in breeding *Ocneria dispar*, has had all his female specimens emerge in a crippled condition. I have bred about twenty, and have only had one which was fit to set, all the others being deformed; some of them almost wingless. From these I have obtained a lot of ova, to see if this malformation is continued. A friend, also having a lot of this pupa, has only bred two perfect females; while our male examples were, without exception, all perfect.—W. T. RAINE; 333, Ladypool Road, Sparkbrook, Birmingham.

ACIDALIA IMMORATA AT LEWES.—I am pleased to report that this insect has again been taken in the same locality as last year, thus confirming it as an undoubted British species, and not a casual visitor. It is readily disturbed from the herbage by day,

and apparently does not fly at dusk. Its habits are therefore not very much those of an *Acidalia*. Indeed in appearance and habits it seems closely allied to *Strenia*, in which genus Berce ('Fanne Entomologique Française') places it.—J. H. A. JENNER; 4, East Street, Lewes, October 24, 1888.

SIREX GIGAS NEAR ENFIELD.—Late in July, 1887, a friend of mine netted a splendid specimen of *Sirex gigas*, which was flying about in a garden here. The insect is now in my possession. It may have come from a timber-yard close by.—H. D. SYKES; The Cedars, Brigadier Hill, Enfield, Middlesex, Oct. 22.

VARIOUS CAPTURES.—My captures during the past season, besides a fair quantity of Lepidoptera, include in Coleoptera, *Typhaeus vulgaris*, Coldharbour Common, Surrey; *Attelabus curculionides*, Epping Forest, near Loughton; *Liophleus nubilis*, *Mycetophagus 4-pustulatus*, *Crecophilus maxillosus*, *Leistrophus nebulosus*, *L. murinus*, *Outhophagus vacca*, near Stamford Hill, the three last very plentifully. *Hyllobius abietis*, taken at sugar, Brockenhurst, New Forest; *Liopus nebulosus*, beaten from willow, Chattenden Woods; *Dorcus parallelipedus*, *Prionus coriarius*, *Necrophorus respillo*, *N. interruptus*, *N. ruspator*, *N. humator*, sent to me from Wellington, Somerset; the two last, with other commoner species, were found under a dead hedgehog. Among Orthoptera: *Micropteryx cinereus*, *Odontura punctatissima*, in Chattenden Woods, near Strood; *Ectobius lapponica*, taken at sugar, Brockenhurst, Hants. Among Homoptera: *Ledra aurita*, near Cobham, Surrey, Chattenden Woods, and Epping Forest, near Loughton; *Centrotus cornutus*, same locality as the last. Among Hemiptera: *Naucoris cimicoides*, several, Stamford Hill; *Ranatra linearis*, Epping Forest, Snaresbrook. Among Trichoptera: *Raphidia londinensis*, beaten from a hedge in a lane between Potter's Bar and the Railway station. Among Hymenoptera: *Trichiosoma lucorum*, near Cobham, Surrey; *Abia nigricornis*, Holmwood Common, Surrey; *Lampronata setosa*, several females around a *Cossus*-infected tree, Stamford Hill; *Sirex gigas*, sent to me from Wellington. Among Diptera: *Tipula gigantea*, Stamford Hill; *Bombylius major*, Holmwood Common; *Volucella bombylans*, Chattenden Woods; *Tachina ferox*, *Atylotus fulvus*, *Chrysops relictus*, from Wellington; *Eristalis intricatus*, Stamford Hill.—F. MILTON; 164, Stamford Hill, N., October 22, 1888.

LEPIDOPTERA IN SURREY.—My captures from May to July include—May 14th: *Cucullia chamomillæ*, found at rest on a fence in Dorking. 21st: *Stigmonota perlepidana*, common near Gomshall. 31st: *Phorodesma pustulata*, Rammore. June 3rd: *Nemeobius lucina* (commonly), *Gnophria rubricollis*, at Rammore. 7th: *Emmelesia decolorata*, on Box Hill. 10th: *Thecla rubi*, at Rammore. 17th: A large number of larvæ of *Thecla quercus*, nearly everyone of which produced an imago; several larvæ of *Cymatophora ridens*, as well as larvæ of *Cerostoma costella*, *Psilura monacha*, Rammore. 24th: *Acidalia ornata*, abundantly; a pair of *Carabus violaceum*, near Dorking. July 8th: *Lycæna minima*, quite common on the down near the rifle-range at Reigate, where *Setina irrorella* is rather common. 10th: *Thyatira batis*, very common at Rammore; but not a single *T. derasa* seen.—F. G. WHITTLE; 2, Cambridge Terrace, Lupus Street, S.W., October 21, 1888.

NOTES FROM THE CHANNEL ISLANDS.—I spent part of my holiday this year amongst the Channel Islands, arriving at Guernsey about the 19th of August. Although I did not go fully prepared for collecting, still I managed to pick up a few insects. The weather on the whole was very fine and hot, although one or two days were showery. I noticed most of the common butterflies in Guernsey, including a few *Argynnis paphia*. *Satyrus semele* was abundant on the cliffs round Fort George, and *Bombyx quercus* was seen in great plenty at the same spot, dashing about wildly in the sunshine. I noticed one example of *Colias edusa* flying amongst the shipping in the docks. At Sark, where I spent a single day, butterflies appeared to be anything but numerous; nor was I surprised considering what a bleak and barren island it is. *Vanessa atalanta*, *S. semele*, *Gonepteryx rhamni*, and *Pieris brassicæ*, were all I saw; but the larvæ of *Euchelia jacobææ* were swarming on almost every piece of ragwort that I passed. While at Jersey the weather was splendid, and many kinds of butterflies were to be noticed in great numbers. As I was driving along, I saw a very large *C. edusa* in a grass field, and soon afterwards caught sight of *Callimorpha hera* flying in the sunshine. The beautiful moth settled on a hawthorn bush, and having jumped out of the carriage I secured it safely. Taking into consideration the great variety of country in this island, it

should be an excellent locality for Lepidoptera.—W. H. BLABER; Sunnyside, Groombridge, Sussex, October 9, 1888.

HIGH FLAT-SETTING.—A great deal has been said lately on the advantage of continental setting for insects, but nobody seems to have pointed out any disadvantages. It was proposed that those who had not completed their collections, should re-set them. Now, I have not re-set my collection from the English style to that of the continental, but I have re-set it from the continental to the English. Although by no means a large collection, it entailed, I believe, about three weeks' labour; and of the insects re-set, I have had to renew a large number. If, when this was done again, there was any definite result to be gained, one would not mind the trouble; but having re-set our collections to say one half-inch for Noctuæ, we find on exchanging with some correspondent, that he has re-set his Noctuæ to one inch; remarkably pretty a series of insects look, say with four of them, on heights varying from one inch and a quarter to half an inch, as I have seen them on the continent! Would it not be possible to have a regulation board given out by the Entomological Society, if they would spare a short time to the consideration of a want that is evidently felt, judging by the recent letters to the 'Entomologist?' I for one, as an outsider, would be extremely grateful. Till, however, there is some chance of uniformity, I prefer to keep my modest little collection in the English style, where the vagaries of setting are not so noticeable. As to mites, they attack insects set in continental style, where no counter-poison is kept, just as they do in England, with the exception, that as they cannot climb up the pin, they go on the top of the case and drop down. I have found a drawer full of them, even where mercury was kept.—K. DINGWALL; Knollys Croft, Streatham.

BRITISH DIPTERA.—I see in your review of 'A List of British Diptera' (Entom. 287), it is said, "placing the Cæstridæ between the Conopidæ and Tachinidæ is a novelty which requires testing." In arranging my Diptera five years ago I placed the family in that exact position, without any communication with Mr. Verrall on the subject; so, if wrong, it is singular we both arrived at the same conclusion. I have not yet seen the list, so am curious to know where the Platypezidæ are placed. In my opinion they are closely allied to the Anthomyidæ. Living specimens in the net much resemble each other.—C. W. DALE.

SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON.—*November 7th, 1888.* Dr. D. Sharp, F.L.S., President, in the chair. Mr. H. Stuart Fremlin, M.R.C.S., of Mereworth, Maidstone, and Mr. Geo. Vernon Hudson, of Wellington, New Zealand, were elected Fellows; and Mr. William E. Nicholson was admitted into the Society. Mons. A. Wailly exhibited a large and interesting collection of Butterflies recently received from the Gold Coast and other parts of West Africa. The collection included about forty-seven species belonging to the genera *Papilio*, *Diadema*, *Salamis*, *Romaleosoma*, *Charaxes*, *Harma*, *Eurypheme*, *Junonia*, *Aterica*, *Hypanis*, *Eurytela*, *Mycalesis*, *Cyrcstis*, *Nepheromia*, *Mylothris*, *Belenois*, &c. Mons. Wailly stated that several of the species were undescribed, and were not represented in the British Museum Collections. Mr. Jenner Weir exhibited four bred specimens of Ant-lions, two of which were from Saxon Switzerland, and the other two from Fontainebleau. He stated that he believed the specimens belonged to two distinct species. Mr. M'Lachlan said that the specimens all belonged to one species, viz. *Myrmeleon formicarius*, Auct. = *europæus*, M'Lach. Mr. W. C. Boyd exhibited an example of *Pterophorus zetterstedtii*, taken at Sydenham. He remarked that this species had hitherto only been recorded from Lynmouth and Folkestone. Mr. Enoch exhibited specimens of *Cecidomyia destructor* (Hessian Fly), illustrating the life-history of the species, and made remarks on them. Mr. Wallis Kew exhibited a specimen of *Dytiscus marginalis* having a small bivalve shell attached to one of its legs. The bivalve had apparently attacked the *Dytiscus* and refused to relax its grasp. A discussion ensued in which Dr. Sharp, Mr. Stainton, and Mr. Kew took part. Mr. W. E. Nicholson exhibited several specimens of *Acidalia immorata*, Linn., caught by him near Lewes. Mr. Jenner Weir remarked that the species had only recently been added to the British list, and that it was remarkable how so comparatively large a species could have been hitherto overlooked. It was also remarked that a specimen of this species from the collection of the late Mr. Desvignes had been exhibited by Mr. Stevens at the meeting of the Society in Nov., 1887. Dr. Sharp exhibited a large number of species of Rhynchophora, collected by Mr. George Lewis in Japan. Mr. F. P. Pascoe read a paper entitled "Descriptions of new Longicorn Coleoptera." Dr. Sharp read a paper entitled "The Rhynchophorous Coleoptera of Japan."—H. Goss, *Hon. Secretary*.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—*October 25th, 1888.* John T. Carrington, F.L.S., Vice-President, in the chair. Mr. E. A. Atmore, of King's Lynn,

was elected a member. Mr. C. A. Briggs exhibited banded and other forms of *Gnophos obscuraria*. Mr. Wellman, on behalf of Mr. A. E. Hall, forms of *Lycæna icarus*. Mr. Goldthwait, an interesting form of *Triphæna orbona*, Hufn. (*subsequa*, Hb.), forms of *Argynnis paphia*, and the variety *ralesina*. Mr. Oldham, a fine variety of *Argynnis euphrosyne*, also species of Neuroptera, Hymenoptera, &c. Mr. Adye, varieties of *Epinephele ianira*, *E. hyperanthes*, *Ematurgia atomaria*, &c. Mr. Hawes, living larvæ of *Polyommatus phleas*. Mr. Tutt, on behalf of Mr. P. Russ, of Sligo, a number of species of Agrotidæ, fine series of *Epunda lutulenta*, and contributed notes. Mr. West, of Greenwich, *Thyatira sericea*, from West Wickham. Mr. Jenner Weir, specimens of *Myrmeleon europæus*, L. (ant-lions), with cocoons, and made some remarks thereon.

November 8th. 1888. The Vice-President in the chair. Messrs. H. W. J. Vaughan, W. Warren, W. D. Causdale, C. Fenn, F. Oswald, E. Brunetti, H. A. Sauzé, A. Short, H. E. Hopkins, D. Chiltenden, and Sydney Webb, were elected members. Mr. Wellman exhibited three bred series of *Acidalia aversata*, L. Mr. R. Adkin, *Crymodes exulis*, and *Pachnobia hyperborea*, from Shetland. Mr. Tutt, on behalf of Dr. Chapman, of Hereford, showed long series of *Acronycta tridens* and *A. psi*. Mr. Tutt stated that Dr. Chapman had told him that throughout the whole of the larval stages the two species were quite distinct. Mr. Step read a note from Mr. T. D. A. Cockerell, on the protective resemblance of a species of *Aphis* occurring near West Cliff, Custer County, Colorado, about 8000 ft. alt., to a parasitic fungus (*Puccinia bigelovia*, Ellis & Everhart), very abundant on the *Bigelovia*, in the same locality.—H. W. BARKER, *Hon. Sec.*

REVIEW.

The Butterflies of the Eastern United States and Canada, with special reference to New England. By SAMUEL H. SCUDDER. Cambridge, Massachusetts, U.S.A.

MR. SCUDDER has for twenty years been engaged in collecting, preparing, and arranging material for the production of this important work, the first number of which appeared on November 1st, of this year. It will be issued in twelve monthly parts, and when completed will contain about 2000 figures on ninety-six plates, of which forty or more will be coloured. The whole of the Butterflies of New England will first be described and figured, and in an Appendix all those will be added which have not yet been taken within the limits of New England, but have been

captured within the limits indicated in the title of the work. Each species is described in the most ample manner: first, the name and full synonym is dealt with; then, to assist the student in making references, catch-words are printed in heavier type, and full descriptions are given of the Imago, Egg, Caterpillar, in all its stages, when known; Chrysalis, Geographical Distribution, Haunts, Food-plant of Caterpillar, Habits of Caterpillar, Pupa-tion, Life-history, Habits, Flight, &c., Parasites, other headings when necessary; and lastly, under the head of "Desiderata," further information is sought for, if needed to complete the life-history of the species.

The plates are excellent, and embrace the whole development of the insect, from the egg to the imago; in all cases the explanation is given on the opposite page, a further great help to the student. There are also plates of the structure and scales; and to show the geographical distribution, there are small maps of the Nearctic continent, coloured to show the range of each species, which may thus be understood at a glance.

Another feature is the interpolation throughout the work of essays on general subjects connected with Butterflies, such as the Clothing of Caterpillars, the Eggs of Butterflies, the Modes of Suspension of Chrysalids, and other interesting themes.

The Satyrinæ, which are dealt with in this first part, are poorly represented in New England, even if *Cercyonis alope* and *C. nephele* are treated as distinct only eight species have been taken within its limits, as against eleven species, more or less common in England; on the other hand, we have but one of the Papilioninæ, and New England has six. Mr. Scudder remarks on the former sub-family, that not only in New England, but that in the whole of Eastern North America they are very poorly represented, and form but a mere fragment of the Butterfly fauna; in Western North America they are a little more abundant, but even there bear no such relation to the general fauna as they do in Europe, where they compose nearly one-third of the whole fauna, and are relatively more than four times as numerous as in New England. This is a very remarkable fact, seeing that this sub-family is more widely spread over the globe than any other.

Probably no work has been attempted or produced which deals with the Rhopalocera of a region in such a complete manner. No doubt the whole will be equal in merit to the excellent first part; and the high reputation in which Mr. Scudder is held, as an Entomologist of the first rank, will cause the appearance of each successive part to be looked forward to with eagerness.—J. J. W.

SUBSCRIPTIONS FOR 1888 ARE NOW DUE.

Vol. XXI.]

JANUARY, 1888.

No. 296.

THE
ENTOMOLOGIST

AS

178224

Illustrated Journal

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Vol. XXI.]

APRIL, 1883

No. 299.

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DESCRIPTIVE AND GENERAL

131.86

GENERAL ENTOMOLOGY.

EDITED BY JOHN E. SAUNDERS, D.D., F.R.S.

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Published by the Entomological Society of London,
21, BEDFORD SQUARE, W. (near the British Museum).

LONDON

PRINTED BY RICHARDS & CO., 21, BEDFORD SQUARE, W.

Price Sixpence.

Vol. XXI.

DECEMBER, 1888.

No. 307.

THE

ENTOMOLOGIST

AS

Illustrated Journal

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GENERAL ENTOMOLOGY.

EDITED BY JOHN L. GAY, F.R.S., F.L.S., F.E.S.

DECEMBER, 1888.

Published by the Entomological Society of London, 25, Abchurch Lane, London, E.C. 4.

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