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VOL. XXIV.

Nunquam aliud natura, aliud sapientia dicit.
Juvenal.



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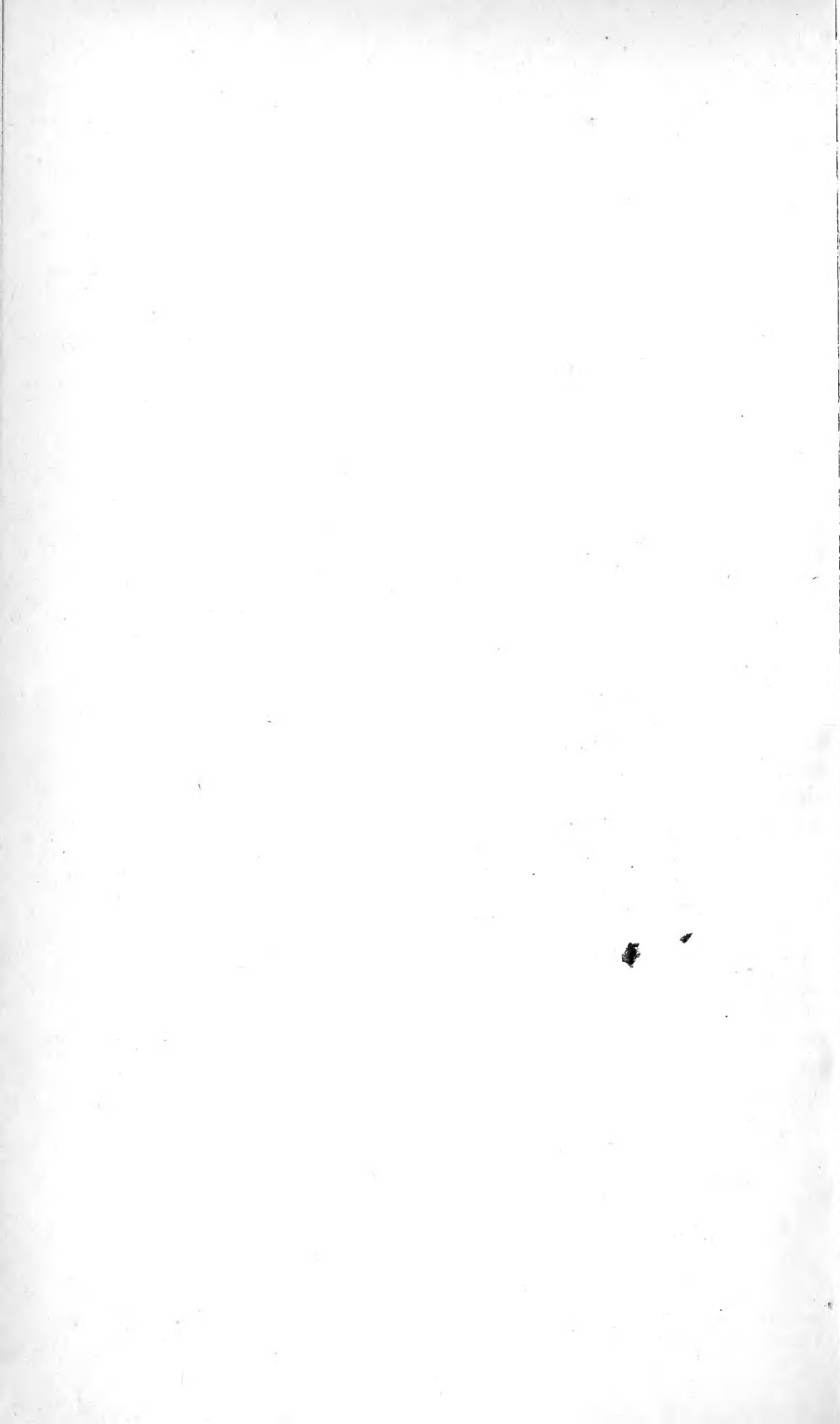
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Entomologist's Monthly Magazine

VOLUME XXIV.

CONCERNING *BRACHYSCELIS MUNITA*, SCHRADER, AN
AUSTRALIAN GALL-MAKING COCCID.

BY THOS. H. HART

(WITH PREFATORY NOTES BY R. MCLACHLAN, F.R.S.)

[In this Magazine, vol. xvii, pp. 146, 147, December, 1880 (and also in other publications), I figured and noticed an extraordinary gall on *Eucalyptus*, forwarded by Baron von Mueller, and attributed to the *Lepidoptera* on the authority of larvæ in fluid said to have been extracted from similar galls. I also noticed what was supposed to be an undeveloped Lepidopterous chrysalis in a dried form found in the galls sent. A short time ago Mr. W. R. Jeffrey sent some sketches of similar galls made by his friend Mr. Hart, of Adelaide, and which the latter attributed to a species of *Coccidæ*, and I asked him to obtain further information. This has come in the form of a letter, from which the following extracts have been made, and an excellent figure by Mr. Hart, partially reproduced here for comparison with the figure on p. 146, vol. xvii. The error as to the position of the gall-maker was induced by Baron von Mueller's erroneous association of Lepidopterous larvæ with the galls, and it is somewhat singular that in these days of keen criticism no one has, until now, referred to the paper by Schrader ("read" June 2nd, 1862), in which, in all probability, the same insect and gall are noticed and figured, any slight differences in the form and size of the galls *may* be due to differences in the species of *Eucalyptus*, or to the age of the galls. Mr. Hart's figure is reproduced mainly because it possibly indicates the galls of the male in the smaller examples. But some of Schrader's galls were enormous, for he says he found one *eleven inches* long, and his figure indicates the horns as longer and less incurved at the tips than does mine of 1880, and in this respect Mr. Hart's figure is somewhat intermediate. These gall-making Coccids (Fam. *Brachyscelidæ*, Signoret) seem peculiar to Australia, and possibly also to *Eucalyptus*, and are no doubt numerous in species. I am indebted to Mr. Jeffrey for permission to use the drawing.—R. MCLACHLAN].

"Since receiving your letter of November 24th I have done all that my unsatisfactory state of health would admit to clear up the mystery of the long-horned gall of the gum trees. In the first place I made enquiries at the Public Library here for any literature on the subject, but the only assistance the attendants could give me was to point out a paper by H. L. Schrader in the first vol. of "The Trans. of the Ento. Soc. of New South Wales," entitled, "Observations on

certain Gall-making *Coccidæ* of Australia." The paper is illustrated by three plates, and, to my surprise, on one of them I found a figure of our particular gall, with the name "*Brachyscelis munita*," Sch., attached.

"And now for private observations. Few observers seem to have seen the male Coccid ; but, as far as I can gather, it is of the normal size and winged, and would appear to be bred from the *small* galls that are almost always found in company with the large ones. As the helpless female never leaves the gall, pairing must take place through the small orifice in the gall between the horns. Whether the eggs

are expelled from the body of the female, or whether her dead skin (she is simply an egg-sac) still encloses them as a means of protection, does not seem clearly determined, but it is said the newly-hatched young emerge from the orifice and scatter in search of food. I have met with no one who has observed the galls at an early stage. I see I have omitted to say above that the female is from half to three-quarters of an inch in length, and is incapable of any movement but that of a wriggle of the tail after the manner of a chrysalid.

"As to the galls themselves, the season has about



Gss.

arrived for obtaining them, and as I cannot get about in search of them, I have enlisted the services of my friend, Mr. R. H. Pulleine, and his brothers, who have undertaken to get me some specimens, but I have just received a note from the former saying that up to the present they had been unable to meet with it. Like some of the galls at home it seems to be abundant in some years and scarce in others, but I hope we shall be able to meet with it.

“The only explanation that occurs to me of the error into which Baron von Mueller was no doubt led by some non-entomological friend is this, that a moth had deposited her eggs upon or near a cluster of old and empty galls, and the young caterpillars had appropriated the galls to their own purposes. There are quantities of Lepidopterous larvæ under the dead bark or in chinks and cracks of every gum tree, and for many of the smaller kinds the cavity of the gall with the orifice enlarged would prove a very convenient place for pupation.”

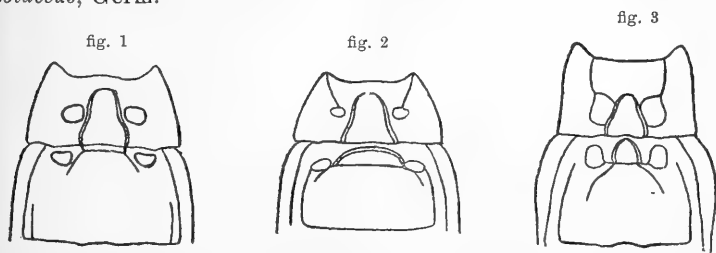
Adelaide: *March 23rd*, 1887.

ON A NEW GENUS OF *EROTYLIDÆ*.

BY GEORGE LEWIS, F.L.S.

In vol. xx of the Ent. Mo. Mag., p. 138 (1883), I described a species of the above Family as *Episcapha perforata*, but I find now, on a further study of the group and of three similar species from Japan, that the insect requires a genus to be formed for its reception. And I also see that the four Japanese species are congeneric with *Megalodacne Ulkei*, Crotch, and it is this last named species that I now propose to treat of as the type of the genus *Microsternus*.

The chief characteristics of *Microsternus* are, in the first place, the very narrow, almost inconspicuous, transverse mesosternum, and in the second the form of the prosternum. The prosternum is, as stated by Crotch (Trans. Amer. Ent. Soc., p. 353, 1873, as a specific character of *Megalodacne Ulkei*), raised and triangular. The narrow and transverse mesosternum of *Microsternus* points to an alliance with *Aulacochilus*, and so also does the form of the prosternum. The sternal plates of *Microsternus Ulkei* are represented here by fig. 1, and fig. 2, given for comparison, shows the outlines of *Aulacochilus violaceus*, Germ.



Megalodacne and *Episcapha* are closely allied genera, but both have a mesosternal structure which is conspicuous between the middle coxæ, and this character separates them in a very marked degree from

Aulacochilus and the present genus. The type of the genus *Megalodacne* is the species *fasciata*, Fab., and it measures 17 mm., and some of the species are larger. Fig. 3 represents the sterna of *Megalodacne bellula*, Lewis, from Japan. In *Microsternus* no species is known at present which measures over 7 mm., and 4 to 6 mm. is the average length of the individuals now under examination. There are lateral striæ on the prosternum of *Aulacochilus*, shorter or longer in various species, and in *algerinus*, Bedel, they converge at the apex, but in *violaceus*, Germ., the lateral striæ are interrupted as shown in the figure.

Of course the almost total disappearance of the mesosternum in *Microsternus*, and the comparative small size of it in *Aulacochilus*, are very important characters, and if systematists should hereafter consider this structure one of superior value for classification, it will be necessary to bring the genus *Erotylus* nearer to *Megalodacne*. At present *Aulacochilus* stands between *Megalodacne* and *Erotylus*, yet the last two alone have a conspicuous mesosternum.

Wimbledon: *April 15th*, 1887.

NOTES ON THE ENTOMOLOGY OF PORTUGAL.—IX. EPHEMERIDÆ.

BY THE REV. A. E. EATON, M.A., F.E.S.

This Family of insects has hitherto received no attention from Portuguese entomologists; and the species here noticed were captured for the most part on only chance opportunities. The list is, therefore, unduly short: for unless a collector can make it his business to visit suitable localities at the right seasons, and at times when the flies are on the wing (which can only be done where quarters are obtainable within convenient proximity to those places), he cannot thoroughly investigate the May-fly fauna of a country. Neither spiders' webs, nor nymph catching, can fully compensate for his absence during the hours of the flights. Some species, however, can be advantageously collected in sub-imago earlier in the day; and a netsman learns to value a lantern if he stays out until nightfall in mountainous districts.

Oligoneuria rhenana, Imh.—Nymph captured in the swift shallows above Ponte de Morcellos.

Ephemerella glaucops, Pict.—A ♀ imago, caught in the evening at Saõ Marcos da Serra, was devoured by a moribund dragon-fly in the killing-bottle. There is a specimen from central Portugal in Lisbon Museum.

Leptophlebia, sp. —?—Nymph in a hill-stream west of Villa Real, Traz-os-Montes.

Choroterpes Picteti, Etn. [the *Ch. lusitanica* of Ent. Mo. Mag., xvi, 194 (Feb.,

1881)].—Nymph locally abundant in the main stream below Cintra, in April; nymph and fly common near Aldea das Neves, Almodovar, the nymph harbouring under stones at the outflow of pools in the stream, where its identification was effected by means of the sub-imago in the afternoon; also common at fords crossed in the sierra between Saõ Marcos da Serra and Almodovar.

Thraululus bellus, Etn.—Nymph local in the main stream below Cintra, residing under stones on fine gravel and sand near the edge, where the current is gentle, at the end of April. Fly found at the same place, in a spider's web, early in the morning, a month later.

Habrophlebia nervulosa, Etn.—Cintra, at the same stream as the preceding species, and also on the hill-top outside the palace grounds; also at similar altitudes near Silves and Ponte de Morcellos, and at higher elevations on Foia, the Estrella, and near Villa Real, Traz-os-Montes.

Calliarceus humilis, Etn.—Fly common on the northern slopes of Foia, at altitudes a little over 2000 feet, at the end of May, thronging in the shelter of bushes, and near the ground; captured also by beating *Erica* overhanging a stream on the Estrella, south of Sabugueiro, at an altitude of 4100 feet, early in June.

Ephemerella ignita, Poda.—The stream below Cintra, at the end of April.

Cænis halterata, F.—Fly captured at the same place and time, near a bridge, early in the morning. *C.*, sp. —?—Nymph figured in Trans. Linn. Soc. (2) Zool., iii, pl. xlii, 3, caught at the same place.

Baëtis binoculatus, L.—Abundant lower down the same stream. *B. scambus*, Etn., ?—A species, which may be this, was abundant at Cintra with the preceding; eight specimens from Cintra, Salamonde, and Silves stand together in McLach. Mus. *B. rhodani*, Pict., ?—Three ♀ specimens from Foia may possibly belong to this species: the ♂ was not observed. *B. Bocagii*, Etn.—Captured, chiefly in sub-imago, along the streamlet between Alcantara and Bemfico, Lisbon. *B.*, sp. —?—Five specimens, captured in the early morning in descending the opposite side of the hill above Cea in the Estrella, probably represent an undescribed species; two other specimens in McLach. Mus.—one from the Estrella, south of Sabugueiro, and the other from Caldas da Monchique,—are likewise of undetermined species. *B. pumilus*, Burm.—Common at Cintra; single specimens also were caught at Cea, in the Estrella, and near Villa Real, Traz-os-Montes.

Centroptilum luteolum, Müll.—Captured on the same occasion as *Cænis*. *C. pennulatum*, Etn., ?—Two imagos at Ponte de Morcellos.

Cloëon dipterum, L.—A ♀ imago from a hedge in the vineyards under Cintra, by beating, and another in a house at Casevel Railway Station: the former specimen is lost. *C. simile*, Etn.—Slow and shallow streamlets at Almodovar, Saõ Marcos da Serra, and Silves. *C. concinnum*, Etn.—In flight, shortly before sunset on June 1st, at the stream near Porcallhota, where the roads meet from Lisbon, Cintra, and Mafra.

Siphylurus flavidus, Ed. Pict. (*Baëtis flavida*, Ed. Pict.). ?—Nymphs, very probably, of this species (figured in Trans. Linn. Soc. (2) Zool., iii, pl. L, 2, 3, and 20—26), were plentiful in a small stream by Saõ Barnabe, a hamlet near the sierra south-west of Almodovar: they match Pictet's species in size; the fly had begun to emerge early in May, although none were seen, for a few empty nymph-skins were clinging to stones in the water a little above the surface.

Epeorus sylvicola, Ed. Pict. (*Baëtis sylvicola*, Ed. Pict.; *Epeorus geminus*, of Trans. Linn. Soc. (2) Zool., iii, 238).—In flight, at 10.30 a.m. on June 7th, over a stream in the Estrella, south of Sabugueiro, at an altitude of 4200 feet.

Rhithrogena aurantiaca, Burn.—A ♀ imago at Ponte de Morcellos; other species of this genus no doubt occur in the Estrella, but none of the most likely streams were visited in the evening, being far from Cea.

Heptagenia sulphurea, Müll.—Ponte de Morcellos; the specimens have been noted as a variation in *op. cit.*, p. 270.

Ecdyurus fluminum, Pict.—A ♀ sub-imago from the stream flowing south of Monchique was captured on May 19th.

This list is based almost entirely upon specimens now in the collection of Mr. R. McLachlan.

Lyme Regis: March 11th, 1887.

OCURRENCE OF BOTH *STEGANOPTYCHA PYGMÆANA*, HB., AND *S. ABIEGANA*, DUP., IN ENGLAND, AND THE LATTER SPECIES IDENTIFIED AS THE *TORTRIX SUBSEQUANA* OF HAWORTH.

BY WILLIAM WARREN, F.E.S.

In vol. ii, p. 207, of the Manual, Mr. Stainton describes an insect, *Asthenia pygmæana*, as follows:—

“Fore-wings glossy, pale grey, with reddish-brown markings; ocellus edged with silvery, enclosing three longitudinal black lines; hind-wings with the base pearly-white. Two specimens formerly in Haworth’s collection; locality unknown.”

I am not aware that any more specimens of the insect were taken until a few years since, when Mr. Boden came across them somewhere in the London district; of these insects I possess a pair.

A fortnight or so ago, a friend showed me on his setting-board three *Tortrices* which he had lately taken, and made out from the description in the Manual to be *pygmæana*, “except that the ocellus had no black lines.” On comparing one of these insects with those captured by Mr. Boden, it was at once evident they were distinct species: Mr. Boden’s being *abiegana*, Dup.; the others, *pygmæana*, Hb.

Of *pygmæana* a very accurate description is to be found in Snellen’s *De Vlinders van Nederland*, p. 342, and in Ratzeburg’s *Forst-Insekten*, p. 226, who also figures the insect in all its stages, T. 12, fig. 9. Both species are described in Heinemann, p. 217, and by Herrich-Schäffer, iv, p. 281, who also figures *abiegana*, fig. 128.

I give here a short description of each:—

Pygmæana, Hb.—Fore-wings greyish-brown, with a few rust-coloured scales intermixed, especially towards the hind-margin. Markings dark blackish-brown; basal patch with its outer edge consisting of two distinct curves, which at their

junction in the middle form a conspicuous angle; central fascia of nearly uniform width throughout, with, on its outer edge, a sharp angle, corresponding to that of the basal patch, and more or less interrupted in the centre by grey and rust-coloured scales. Ocelloid patch with very faint lustrous margins, filled up with rusty-grey scales, without any black lines.

The costal geminations indistinct, dull lustrous. Cilia dark grey, paler at the anal angle; with a distinct sub-apical spot, which intersects the basal line, and is sometimes visible also in the apices of the cilia.

Head, thorax, face, and palpi dark fuscous; abdomen dark leaden-grey.

Hind-wings white, with the base and all the margins, especially towards the apex, broadly grey-brown.

Abiegana, Dup.—Fore-wings grey-brown, tinged with rusty-brown; markings dark brown. Basal patch with its two arms not curved, the upper slanting obliquely outwards, the lower vertical, forming only a rounded or obtusely angled projection where they meet; central fascia narrow on the costa, broadening towards the anal angle, with only a rounded projection on its outer edge, as in the basal patch, and uninterrupted in the middle. Ocelloid patch with distinctly lustrous margins, filled up with black lines, which, in the ♀, are contiguous; costal geminations distinct, bright. Cilia grey; the pale spot below the apex very indistinct, scarcely ever interrupting the basal line.

Head, thorax, face, and palpi pale fuscous; abdomen light grey.

Hind-wings whitish (thus not so white as in *pygmæana*), with the veins and margins light grey.

Pygmæana is a smoother, rather duller-looking insect, with straighter costa, and, therefore, narrower and more elongate-looking wings, with a more oblique hind-margin, not indented below the apex, as that of *abiegana* is to a slight extent. Heinemann gives $2\frac{1}{2}''$ — $2\frac{3}{4}''$ as the length of the fore-wings in each species; Herrich-Schäffer says *abiegana* $5''$ — $5\frac{1}{4}''$; *pygmæana*, $5''$. Judging from what few specimens I have seen at present, I should consider *pygmæana* slightly larger on the whole than *abiegana*.

The question then arises whether Haworth's two specimens, from which, I expect, Wilkinson's and Stainton's descriptions were taken, were really *pygmæana*, or were not rather *abiegana*. The "three longitudinal black lines of the ocellus" can certainly only belong to *abiegana*, which is also more "glossy" than *pygmæana*.

An examination of one of Haworth's original specimens, still extant in the collection of the British Museum, satisfies me that his species was really *abiegana*: this is fully confirmed by his description of *subsequana*, p. 448:—

"*Alæ anticæ griseæ, magis lucidæ, longioresque quam in prioribus, vix manifeste cinereo-argenteo strigatæ. Juxta angulum ani lincolæ seu potius striolæ 3 tenuissimæ, contiguæ atræ (marginis postici). Posticæ albidæ angustæ, apice late fuscæ, ciliis amplioribus quam in cæteris hujus generis. Cilia anticarum etiam ampla, cinerea nitidissima.*

Habitat cum præcedentibus (Strobilana).

Imago Apr. ?.

The words "marginis postici," which, as they stand, seem untranslatable, probably induced Dr. Wocke in his Catalogue to consider Haworth's insect a *Dichrorampha*!

I may remark that *pygmæna* appears, at present, to be by no means an abundant species. During the last half of April I have been able to secure only three specimens myself, and the total number taken does not exceed a dozen. Ratzeburg states that during cold and rainy weather the moth will not fly, but drops down to the ground, if disturbed. The almost total absence of fine and sunshiny days may, therefore, easily account for its scarcity. On the other hand, it may be that the majority of the brood were over before the first examples were discovered, and that those subsequently taken were only stragglers. On the continent, March and April are given as the time for *pygmæna*; April and May for *abiegana*.

Merton Cottage, Cambridge:

May 4th, 1887.

[As Haworth described his *subsequana* in 1812, and Fischer's *abiegnana* (accurately described by Zeller in the Stettin. Entomolog. Zeitung, 1849, p. 245) was first described by Duponchel in his Fourth Supplementary volume, p. 409, under the name of *abiegana* in 1842, Haworth's name has priority by 30 years, and should be retained for this species.

It is rather singular, considering how few *Tortrices* occur in the early months of the year, that two somewhat similar species, both with white, or nearly white, hind-wings, should occur in March and April.—H. T. STANTON.]

Halonota obscurana, Steph. (1834) versus *ravulana*, H.-S. (1849).—While lately looking over the figures of the *Tortrices* in Wood's "Index Entomologicus," that of *obscurana*, Steph., attracted my attention, as being wonderfully like *ravulana*, H.-S. I have since had an opportunity of seeing, in the collection of the British Museum, Stephens' own type of his *obscurana*, probably, and almost certainly the identical specimen which Wood depicted. It is a very perfect and well-marked example, of what we have been accustomed to call *ravulana*, H.-S. This name must, therefore, now sink, as Stephens' *obscurana* has the priority by fifteen years.—ID.: May 9th, 1887.

Ephestia ficulella, Barrett, = *desuetella*, Walker.—In the British Museum Catalogue (Suppl., p. 1719) Walker has described, under the name of *Nephopteryx desuetella*, an *Ephestia* from Australia which is certainly identical with *E. ficulella*, Barrett. I have found the species (as well as *E. elutella*) common enough and widely distributed in Australia. Of course Walker's description is unrecognisable,

but I propose to adopt his name, because if I do not some other wiseacre will, and we may as well get over the difficulty at once. Perhaps there will be no harm in allowing British entomologists to have an occasional taste of that perennial fount of synonymy which springs from the British Museum Catalogues.—E. MEYRICK, Ramsbury: *May 10th*, 1887.

Description of the larva of Ephestia ficella.—On May 21st last (1886) I received several larvæ of this species from Mr. W. G. Pearce, of London. Length about three-eighths of an inch; head small, a little narrower than the second segment, and is, along with the frontal and small anal plate, polished; body obese and cylindrical, but flattened a little ventrally, it tapers very slightly posteriorly, but more strongly towards the head; skin glossy and smooth, though the segmental divisions and slight transverse depressions on the segments give to it a rather puckered appearance. Ground-colour greyish-white, strongly tinged with pink; head brown; mandibles and frontal plate darker sienna-brown; the pulsating dorsal vessel shews through the skin as a dorsal stripe of a darker grey than the ground-colour; there are no perceptible sub-dorsal or spiracular stripes; tubercles brown and conspicuous. Ventral surface, legs and prolegs yellowish-white. Feeds on dried figs, raisins, currants, &c. I bred two moths only, the first on July 22nd, the other not appearing until September 6th.—GEO. T. PORRITT, Huddersfield: *May 11th*, 1887.

Thecla quercus with an orange spot on each fore-wing.—On the 1st of August, 1874, in the County of Norfolk, I sat for an hour or more in the top of an oak tree for the purpose of taking *Thecla quercus*. Of five which I then netted one female has near the centre of each fore-wing (upper surface) an orange spot about the twelfth of an inch long. This spot is of a wedge shape with angles rounded off. It lies between the centre of the wing and the costa, and its small end points towards the tip of the wing. I possess a second specimen of this species of the same sex with a similar but much less distinct spot, probably caught at the same time, but I did not notice its faint spot in time to be sure of its date and locality. These specimens remind me of *Thecla betulæ* and of *Thecla w-album*, though in *betulæ* the spot is much larger, and in *w-album* it is smaller than in my *quercus*.—FRANK NOBGATE, Downham, Brandon, Suffolk: *April 22nd*, 1887.

[The above appears to refer to the var. *bellus*, Gerhard, which has been recorded from Hungary and probably Switzerland.—EDS.]

The larva of Notodonta torva.—I have been in the habit of rearing *Notodonta torva* for the last four or five years, and I can testify to the accuracy of Mr. Barrett's description of the larva. It is a dull edition of *N. ziczac*, exactly resembling it in form, but the colour being that of a soiled white kid glove shaded with a dark leaden tinge. It is hardy, feeds well on poplar generally, and is easily reared, having, in common with most of the *Notodontæ*, sometimes one, sometimes two broods in the year. Mr. Buckler's figures of *N. ziczac* are taken from rather dingy larvæ, often the colouring being very vivid, and the orange hue of the tail portion really lovely in its tint. It is impossible, however, to speak too highly of the figures of the *Notodontidæ* in this second volume. I am familiar with every one except *Notodonta cucullina*, and there are only two larvæ which I cannot entirely realize, as if the

very caterpillar was before me—these are the very beautiful form of *N. camelina*, drawn in plate 35, fig. 3a, and the brown stick-like *N. dictæa*, plate 35, fig. 1. This latter much resembles drawings taken by me from the full grown larva of *N. argentina*. It is a great pleasure to have so fine a species as *N. torva* added to our lists, and entomologists must diligently search the aspen trees and bushes in hopes of further confirmation of the matter; the larva might be quite easily passed over as only *ziczac*.—R. C. R. JORDAN, 105, Harborne Road, Edgbaston: May 6th, 1837.

The occasional occurrence of Cossus ligniperda at "sugar."—It is probably familiar to most collectors of *Lepidoptera* that the Goat Moth is sometimes found on "sugared" trees. Such an experience happened to me five or six times when I used to collect moths. So far as my memory serves the individuals at "sugar" were invariably ♀. There can, I think, be no doubt they were attracted thereby, whatever may have been their ulterior motives. I shall be greatly obliged to any working Lepidopterist who can state with certainty that he has taken a ♂ Goat Moth on "sugar." Information on this point will tend to establish or crush a theory I have long held as to the reasons for the occurrence.

The question is of some importance from the point of view of an Economic Entomologist. Most entomologists know that the larvæ of the Goat Moth may often occur in all stages of growth in a particular tree, whereas, from no apparent reason, a neighbouring tree of the same species may be quite free from them. I incline to the opinion that a certain tree may, without being absolutely unhealthy, be in a condition favourable to the requirements of the Goat Moth. Any comparatively hard-wood tree attacked by its larvæ usually "bleeds," and this bleeding can scarcely go on without attracting attention on the part of other female Goat Moths in a condition for oviposition. Therefore, it seems to me probable that the Moth is not attracted *directly* by the "sugar," but mistakes it for the "bleeding" caused by larvæ of its own species. This theory would account for the visits of a practically tongueless Moth, as is *Cossus ligniperda*, to "sugared" trees. But if the ♂ also occurs, the suggestion is of little value.—R. McLACHLAN, Lewisham, London: February 1st, 1887.

Eupithecia innotata—an enigma solved.—At page 136, vol. xxi, of this Magazine, I gave some account of a "pug" larva from *Artemisia vulgaris*, which Mr. Buckler and I could not identify. Mr. W. Warren, of Cambridge, now writes to tell me that, after reading my description of it, he has no doubt it was the larva of *Eupithecia innotata*. At page 257 of vol. xxii, Mr. Warren records the capture of four larvæ on *Artemisia maritima*; and in vol. xxiii, page 115, is the record of his exhibiting at the September meeting of the Entomological Society two specimens of the moth bred from these larvæ; they had proved to be *Eupithecia innotata*, so, more lucky than myself, he has been able to identify his captures.

I suppose Mr. Buckler did not think of *innotata* for this reason; he had figured a continental example of the larva for Mr. Crewe, in 1862, but certainly the variety submitted to his pencil was not much like that which I found; however, Mr. Warren tells me all his four larvæ varied from one another in appearance, so that *innotata* must be a species of which it is not sufficient to see a single larva.

Probably others may have taken this species in the larva state. Mr. Buckler

remembered having received an example from Dr. Knaggs many years ago, but Mr. Warren has now enabled us to add, for certain, *Eupithecia innotata* to the British list; it may be as well, perhaps, to add that the moth can scarcely be separated from *fraxinata*, although the two larvæ are distinct enough.—J. HELLINS, The Close, Exeter; *March 1st*, 1887.

Odour observable in males of Pieris napi.—I read with interest the notes on the odour emitted by *Hepialus hectus*, and on looking through some back volumes of the Magazine, I find a note by my father (Ent. Mo. Mag., vol. xix, p. 236), in which he says that I discovered *Pieris rapæ* to be scented. I was not aware of this note, or would have corrected an error therein. About twelve years ago I was staying at Nash, near Pembroke, and one day caught a male *Pieris napi* in my fingers, and at once discovered a strong scent about it, very like sweet scented verbena. Since then I have, every year, been accustomed to catch this butterfly for the sake of the scent, but I never found a *P. rapæ* that had any, though I have tried many, nor is there any in the female *P. napi* that I am aware of. The scent is very similar to that emitted by many species of *Nomada*, *Prosopis*, *Psithyrus* (*Apathus*, N.), among bees, and in all three cases it may be for the same purpose as in *H. hectus*.—R. C. L. PERKINS, Sopworth Rectory, Chippenham: *March 1st*, 1887.

The flight and pairing of Hepialus humuli.—I was very pleased with the interesting observations upon this subject recorded in the December number of the Magazine by Dr. Chapman, because they afforded an explanation of a circumstance I had witnessed during the previous summer, and which I had been quite at a loss to comprehend: whilst passing a waste place by a road side, where several "ghosts" were indulging in their usual evening dances, a male dashed past me in a straight line—a flight so unusual that it attracted my attention. It stopped about six or eight yards from me, and about a foot from the ground, where there were a few twigs. I thought a spider's web had arrested its progress, as there was a slight flutter, a fall of about an inch, and one or two vibrations, as if swinging in a web. I could hardly imagine that a web would be strong enough to stop so strong a flight, and I went up to it to investigate. I then found that the moth was pendulous *in cop.* with a female which was sitting upon a twig. This made the matter seem still more surprising to me, as the ♂ had darted to the twig at a distance so great that it could not have seen the ♀ sitting upon it, and had gone past other ♂s which were hovering a few yards off, and apparently unconscious of the proximity of the ♀. The whole circumstance seems incapable of any explanation, except that which Dr. Chapman supplies—that the ♀ had selected the ♂, and then flown to the twig, followed by it in hot haste.

There is one other peculiarity about the flight of this species, which I have not seen recorded, viz.: that when a ♂ is hovering over a particular spot if driven away it will invariably return to the same place. The first occasion on which I noticed this was one evening when mothing round a large mound. Each time I came to one particular spot there was a ♂ *H. humuli* hovering: as it had been driven out of its place to allow of my passing, I wondered whether it was the same or a different moth each time, so having driven it away again I watched it, and saw that it was the same which returned. I repeated the experiment, with the same result, so that that moth must have returned five or six times that evening to its hovering place. I have also not

the least doubt that, although the ♂ of this species has but small antennæ, it is by scent that they return to the selected spot, because they always return against the wind, and if, as sometimes happens, they get a little on one side and pass the spot, they will fly back in a circuit which will cross the line of scent, and directly they come to it, will follow it up to the spot. I have never made search, but I have always imagined that the hovering Romeo had found Juliet escaping from the tomb, and was waiting while her bridal attire was being prepared.—A. BALDING, Wisbech: *March 16th, 1887.*

Description and Habits of the Larvæ of Hedya lariciana and Pædisca occultana.—From about the middle of May to the beginning of June the larvæ of these two insects may be found feeding upon the larch in a somewhat similar manner, yet with so much difference in the method of eating that the species may be known before the larva is seen; indeed, so soon as the eye rests upon a larch-tassel tenanted by a larva, or upon which a larva has been feeding. Both species draw together the “needles” of the larch, thus forming a little cylinder in which the larva rests and is partially concealed whilst feeding. These little cylinders of needles vary in circumference according to the size of the larva, and are easily detected so soon as the larva has grown sufficiently to require four or five needles to form the staves of its little barrel residence. The central needles of a tassel are always selected, probably because they are more tender, and are more nearly parallel than the outer ones. When drawn together, and before the larva has begun to eat it, the tube may be detected by its being rather smaller at the top, owing to the needles being less, and, therefore, not forming so large a cylinder. Thus far both species proceed alike, but in feeding each proceeds differently. *Lariciana* selects one of the needles, and beginning at the top eats it as far down as it can contract within the tube. A second and a third needle are eaten down in a similar manner, the length of tube uneaten at the base indicating the size of the larva. When the top of the tube is thus partially eaten away so as not to afford concealment, the larva selects a fresh tassel and forms a fresh tube. The eaten and vacated tubes have a ragged appearance, especially when the larva is nearly full fed and requires seven or eight needles, of which more than half are eaten, generally alternate ones. When full fed, the larva pupates head upwards in the lower entire portion of its last tube, a slight web being made to protect the pupa, and through which the moth emerges. The larva of *occultana* begins eating at the top of its tube, and eats round and round, keeping the ends of all the needles level. In this manner it reduces its tube until there is nothing left but a small cup. It then forms another home, generally taking the next tassel. In this way each larva will leave four or five little cups, each a little longer than the last, and mostly in a row on the branch, so that if one of the empty cups is seen it is easy to trace the others along the branch until the larva is discovered in the last tenanted one, unless a fatality has happened to it, or it has done feeding. Pupation probably takes place in the ground, as when reared in a glass a loose cocoon is formed under the *débris*. Both species are very easily reared. The tassels with larvæ can be broken off and put in a glass jar, with a piece of rag tied over the top, and kept in a cool place out of the sun. Each three or four days a few fresh tassels of larch must be sprinkled in the jar until the larvæ are full fed. In about three weeks the moths emerge, that is, about the end of June or beginning of July.

The larva of *lariciana* is brownish flesh-colour, with the head dark brown, as is also the plate on the second segment and the front feet. The spots are scarcely if any darker, and only visible by being rather rough, as distinguished from the slightly shining surface of the skin. Anal plate broader than long, and darkest at its upper edge.

Occultana is a much larger larva than *lariciana*, the central segments being also stouter. In colour it is dark greyish-green, lighter between the segments, with conspicuous black shining spots. Head black; plate on second segment shining black, lighter towards the head. Dorsal line only visible on the second segment as a very fine light line. Anal plate large, black, round, inclining to oval. Spiracles black, distinct, edged with light, with one spot above and two below. Two sub-dorsal spots on each side, the anterior one being the highest. Eleventh segment with a spot beside (before) the spiracle, instead of above it. Twelfth segment with a very large dorsal spot, and only one sub-dorsal spot. Front feet black. Posterior legs with two small spots at base. Larva when young light green, with the spots distinct.

For the last eight or ten years I have found the larvæ of *lariciana* fairly plentiful on one small clump of larch trees whenever I have looked for them, so that I have no doubt, when "in season," I can send some to any of my correspondents who may require them. *Occultana* must be more variable in its appearance, as I did not detect it until last year, when it was even more plentiful than *lariciana*, or at any rate more easy to find, as *lariciana* after vacating one tassel will generally wander a distance before making another tube. Beside these two larvæ there is also another which may occasionally be found on the larch, *Batodes angustiorana*, but it has not had a proper apprenticeship to feeding upon larch, and instead of the neat method of the two species described, it makes a tangle in drawing the needles together, which gets worse as they grow. Except for this it might almost be mistaken for *lariciana*.—ID.: February 5th, 1887.

Notes on the life-history of Coleophora flavaginella, Lienig.—This species, which belongs to the obscure section of the genus *Coleophora*, of which *C. laripennella*, Zett. (*annulatella*, Tengström), is the best known member, was found by the Rev. C. R. Digby and Mr. Banks on the coast of Dorsetshire, and on those of Kent and Sussex by myself in 1884. It seems to appear both as imago and larva earlier in the year than any of its near allies. The moth is on the wing throughout June and the first part of July; even in the backward season, 1886, I took a specimen on June 5th. The browner and narrower-winged species which feeds on *Atriplex portulacoides*, and has been identified as the insect known to Mühligg as *C. flavaginella*, flies towards the end of June and during July, and is, in turn, followed by *C. laripennella* and by *salinella* the whipper-in of the group.

The larva of the *C. flavaginella* of Lienig feeds during July and August on *Suaeda maritima*, at first on the leaves, and afterwards on the flowers and fruits. It may be described thus:—length rather over $\frac{1}{2}$ -in.; head light brown with darker markings; body pale yellow, darker posteriorly; corselet brown with pale median line; 3rd segment with four brown spots in the dorsal region; 2nd, 3rd and 4th with a lateral spot; a black medio-dorsal spot on the 12th segment; anal flap black, preceded by a black transverse line on the 13th segment. The ventral surface has a

small black spot between 2nd and 3rd segments, and one between each of the segments from the 4th to the 11th. These spots are not noticed in my note book, and might be invisible in the living larvæ, but are very evident in preserved specimens.

The silken case measures $\frac{3}{8}$ -in. \times $\frac{3}{32}$ -in., and is distinctly larger than those of the other species alluded to above. It is of a pale yellow or dirty white colour, with from three to five yellow or brown longitudinal stripes of variable width, a dark stripe sometimes running down a paler one. These stripes are more or less conspicuous in the cases of many *Coleophoræ*, and may be seen in those of the species mentioned above, and also in those of *C. apicella*, *C. artemisiella*, &c. I take them to be extra breadths of silk woven in to make the old gown fit its quickly growing wearer. They are, however, more distinct in the case of the *C. flavaginella* of *Lienig* than in those of its nearest allies, owing to its case being clean and not covered like theirs with sand or other foreign substances. The mouth is bent round so that the case is carried nearly flat, and the anal end is 3-lobed.—W. H. B. FLETCHER, Fairlawn House, Worthing: *May 4th*, 1887.

Coleophora Mühligiella, n. sp. (formerly known as *flavaginella* of *Mühlig*).—Nearly 30 years ago (for it was in February, 1859), I received from Herr G. G. Mühlig, of Frankfort-on-the-Maine, bred specimens of a *Coleophora* (nearly allied to *annulatella*) under the name of *flavaginella*.

It was in the very same year, 1859, but in July, that I received from Dr. Nylander specimens of *flavaginella*, labelled "*Lienig*," which had come to him from Dr. af Tengström, who I suppose had received them direct from Madame *Lienig* herself, as representatives of the *flavaginella* described by Zeller in the *Isis* of 1846, from Madame *Lienig*'s specimens. These specimens do not appear, however, to be identical with the *flavaginella* received from Herr Mühlig, and hence for some years we have been speaking of the *flavaginella* of *Lienig*, and the *flavaginella* of *Mühlig*.

It is time this trinomial confusion should cease. Mr. W. H. B. Fletcher, who has been breeding rather freely from *Sueda maritima*, an insect which I take to be the true *flavaginella* of *Lienig*, has furnished us with the life-history of that species. For the insect I had received from Herr Mühlig I would now propose the name of *Coleophora Mühligiella*.

Mühligiella is a narrower-winged, browner insect, with a straight costa barely edged with whitish beyond the middle, and with numerous scattered dark scales along the veins; its short case (very like that of *annulatella*) is of a nearly uniform grey-brown tint, frequently well covered with grains of sand.

Flavaginella is a broader-winged, greyer insect, with the costa more curved, more or less distinctly white edged from before the middle, sometimes almost from the base, and rarely with the slightest trace of any scattered dark scales along the veins; the case of this species has been well described by Mr. Fletcher above.

Herr Anton Schmid, in his Ratisbon *Lepidoptera* (*Die Lepidopteren-Fauna der Regensburger Umgegend*), ii, 117, gives, as the habitat of his *flavaginella*, which is doubtless identical with Mühlig's species (as the two Entomologists worked together at Frankfort for so very many years):—

"Imago in July and August.

"Case in September and October on the seeds of *Chenopodium album*, *bonus*

Henricus, &c.; during hibernation often concealed beneath the bark of trees, yet again moving about in spring."—H. T. STANTON, Mountsfield, Lewisham: *May 16th*, 1887.

On the life-history of Coleophora adjunctella, Hodgkinson (Ent. Mo. Mag., xviii, 189).—In June, 1886, I had the pleasure of breeding, and also of taking freely in some of the salt-marshes of Hampshire and Sussex, the above-named species. The moth may be obtained throughout the month. It flies from 6 to 7.30 p.m. among *Juncus Gerardi*, on the seeds of which the larva feeds. It appears on the wing a trifle earlier in the season than *C. cœspititiella*, from which it may be distinguished even as it flies by its smaller size and darker colour, while in the net the darkness of its head-parts is very noticeable. The larva feeds during August and September. Its case is nearly $\frac{1}{4}$ -in. in length, and is formed of the perianth and capsule of the rush, with the addition of a silken mouth, and triquetrous 3-lobed tail-piece. The silken parts are at first white, but some become of the same colour as the capsule. Its greater size and the silken tail-piece distinguish it from the case of *C. obtusella*, which terminates posteriorly with the remains of the style of the rush-flower. The following description of the larva was taken on September 12th, 1885:—

About $\frac{3}{16}$ -in. long; head light red, marked with brown round the mouth; body very pale whitish-yellow, pulsating vessel showing as a narrow dorsal line; 2nd segment with pale plate, divided by fine median line; on each side of the line about the middle of the plate a short transverse crescentic line of small dots; the plate shaded with brown along the line and on its hind margin; on the third segment on the dorsal surface are four small pale plates, with a dark brown spot in the centre of each; there are similar plates on the sides of the third and fourth segments; horny parts of legs dark brown; plates on flap and on sides of anal claspers also dark brown.—W. H. B. FLETCHER, Fairlawn House, Worthing: *March 17th*, 1887.

[This is the same species which I afterwards named *paludicola* (Ent. Mo. Mag., xxii, 9) from specimens taken by Mr. Coverdale in a salt-marsh at Shoeburyness. The narrow anterior wings and the generally quite dark antennæ (only sometimes partly pale-ringed on the under-side) seem to furnish the most striking characters. In 1876 Mr. Barrett sent me some specimens of a *Coleophora* from a salt-marsh, near Pembroke, which, though closely resembling this insect, have the anterior wings broader and rather yellower, and the antennæ more distinctly annulated, yet it would be difficult to say these specimens are a distinct species.—H. T. STANTON: *April 4th*, 1887.]

Earinus nitidulus, Nees.—Mr. E. A. Atmore took a ♀ of this rare Braconid at King's Lynn the beginning of May. The Rev. T. A. Marshall says in his Monograph of the British *Braconidæ* (Tr. Ent. Soc., 1885, 269), that the only authority for its occurrence in England is Curtis' Guide, 2nd. ed., column 116. The specimen which Mr. Atmore took is the var. *thoracicus*, Nees.—JOHN B. BRIDGMAN, 40, St. Giles Street, Norwich: *May*, 1887.

Sitones and their time of feeding.—It is commonly stated that these weevils feed entirely by day, concealing themselves beneath clods, &c., or descending into the ground during the night. This is not the case, as any one can testify who has examined a few rows of seedling peas or beans at night by the light of a bull's-eye lantern.

The weevils may then be seen closely congregated around the edges of the leaves, and busily engaged in feeding; whereas, during the daytime, as far as regards my own experience, they feed in a very fitful and irregular manner, spending most of their time in basking in the sun, or wandering aimlessly about their food-plants, and a large number pass the hours of daylight in concealment. This may be proved by the simple experiment of firmly treading a small area of ground in the infested spots, and then watching carefully for results, which will speedily manifest themselves in the appearance of a number of the buried weevils, whose alarm is aroused by the unceremonious treatment to which they have been subjected. After dark, however, I have not found this experiment to answer, and believe that *all* the weevils ascend to the surface shortly after dusk.—THEODORE WOOD, St. Peter's, Kent: *March*, 1887.

Pelophila borealis: abnormal tarsi.—Some months ago Mr. Fowler called attention to a malformation of the left posterior tarsus in two specimens of *Pelophila borealis* received by him from the Rev. W. F. Johnson, of Armagh (*cf.* Ent. Mo. Mag., xxii, 138). Among a long series just to hand from the same gentleman I find a still more singular instance of deformity, the specimen in question having not only the posterior tarsus, but all three tarsi upon the *right* side greatly malformed.

The anterior tarsus apparently consists of only three joints, the two basal ones being slightly swollen, but not nearly to the same degree as those belonging to the corresponding limb (the specimen, like Mr. Fowler's, is a male). Of the two missing joints I can find no trace whatever, but the terminal joint is of normal size, and bears fully developed claws. In the intermediate tarsus four joints are present, all of a very much abbreviated character. The claws, however, are of the ordinary dimensions. The posterior tarsus is unfortunately broken, but of the three very small joints which remain, the second is strongly transverse and the third almost cordate. These three together scarcely exceed in length the first joint alone of the corresponding foot. The terminal spines of the tibia are also much abbreviated.

In some fifty specimens now before me I can find nothing at all similar, the only deformity of any kind being a slight contraction of one of the joints in the posterior tarsus of a male specimen.—ID.: *May 7th*, 1887.

Adephaga in the Armagh district.—In addition to those already communicated by me to the Rev. W. W. Fowler as occurring here, I have taken the following:—*Leistus fulvibarbis*, scarce; *Nebria Gyllenhali*, scarce; *Elaphrus riparius*, very common; *Badister bipustulatus*, *Harpalus rufibarbis*, and *H. latus*, common; *Pterostichus versicolor*, scarce; *P. strenuus*, *P. diligens*, and *P. vernalis*, all plentiful; *Amara ovata*, *A. curta*, and *A. trivialis*; *Pristonychus terricola*, several in an out-house; *Anchomenus marginatus*, very plentiful on edges of loughs; *A. viduus*, *A. micans*, rare; *A. gracilis*, doubtful, as I have not a type; *Bembidium tibiale*, one specimen; *B. affine*, rare; *B. bruxellense* and *B. flammulatum*, tolerably plentiful; *B. fumigatum* and *B. Clarkii*, rare; *Trechus minutus* and var. *obtusus*, both plentiful; *Dromius linearis*, *D. meridionalis*, and *D. melanocephalus*, tolerably common, the specimens of the last which I have taken appear to belong to Stephens' var. *scutellaris*; *Haliphus fulvus*, not plentiful; *Noterus sparsus*, scarce; *Laccophilus obscurus*, *Cælambus versicolor*, Schall. (*reticulatus*, F.), *C. novemlineatus*, and *Dero-nectes assimilis*, all plentiful at Lowry's Lough; *Hydroporus lepidus*, *H. nigrita*, *H.*

ferrugineus, and *H. morio*, Dej. (*atriceps*, Crotch), all rather scarce; *H. lineatus*, very common; *H. lituratus*, F. (*xanthopus*, Steph.), has not occurred here, and was placed erroneously by me in the Armagh list; *Agabus paludosus*, local; *A. chalconotus*, rare; *Ilybius ater*, *Rhantus notatus* and *Dytiscus punctulatus*, all scarce; *Acilius sulcatus* and *A. fasciatus*, De G. (*canaliculatus*, Nic.), local; *Gyrinus nator*, very common, and *G. bicolor*, scarce.

Last week I took for the first time *Blethisa multipunctata* on the shore of Lowry's Lough, in company with *Pelophila borealis*. I only succeeded in getting four specimens, but hope later on to procure more. Of *Dyschirius thoracicus* I took one specimen in some wet meadows near the town. Though I searched the same locality several times, I could not procure another.

To these I may add *Platyderus ruficollis*, *Amara ovata*, *A. tibialis*, and *Calathus micropterus*, all of which I took at Portballintrae, Co. Antrim.—W. F. JOHNSON, Winder Terrace, Armagh: May 11th, 1887.

Review.

BRITISH PYRALIDES, INCLUDING THE PTEROPHORIDÆ: by JOHN HENRY LEECH, B.A., F.L.S., F.Z.S. 8vo, 121 pp., with 18 coloured plates. London: R. H. PORTER. 1886.

This work has been compiled with a good intention. The author finds that "the *Pyralidæ* and their allies have been somewhat neglected in this country;" he therefore proposes to remedy this, but has overlooked the paramount necessity on his own part for an intimate knowledge of his subject.

Under the designation "*Pyralides*" he includes the genera which form the family *Deltoides* of Latreille and other authors, and also *Aventia*, which by some is considered to form a distinct family. The nomenclature followed is that of Staudinger and Wocke's Catalogue, but the arrangement of the species appears to be original. No characters of groups or genera are given, and, as a rule, no descriptions of species. The text consists mainly of localities taken from local lists without alphabetical or geographical arrangement, and of quotations from this and other magazines, and from Dr. Hofmann's "Kleinschmetterlingsraupen" (most of which are duly acknowledged). As a rule these quotations refer to the habits or descriptions of larvæ, and Pastor Mussehl's extraordinary account of the habits of the larva of *Calamotropha paludella* is copied as if an original observation. The account itself seems so improbable that it would be very interesting to know whether our author has really verified it. He has made the acquaintance of some of our rarest species on the shores of the Mediterranean, in the Canaries and elsewhere, and his observations upon them are of interest, but the work is greatly marred by indiscriminate quotation. Thus, although Mr. Hellins succeeded in rearing a specimen of *Hypenodes costæstrigalis* on *Thymus serpyllum*, it is obvious from the habits of the species that this cannot be its usual food-plant, and when the same observer reared *Stenia punctalis* on *Lotus*, plantain, &c., it should be borne in mind that the dead leaves were preferred by the larvæ, as are those of hornbeam by the larvæ of *Agrotera nemoralis*. Moreover, the quoted statements that *Crambus alpinellus* is found in fir woods, that *Mimæseoptilus bipunctidactylus* feeds on *Galium mollugo* and *M. pterodactylus* (*fuscus*) on *Convolvulus*, and that *Homæosoma nimbella* occurs among *Aster* and thistles, do not refer to these species as known in this country. The statement

that *Ephestia semirufa* is found in grocers' warehouses refers to the semi-rufous form of *E. elutella*; the species now called *semirufa* has been taken only among old ivy; the figure (pl. ii, fig. 7) is that of the unicolorous variety of *Homæosoma sinuella* ♀. There is doubtless some ground for the assertion that the larva of *Dioryctria abietella* lives in fir cones in October, and spins a cocoon on the ground for the winter pupating in the spring, for Hofmann's statement is confirmed by M. Ragonot, yet we know that, with us, the larva feeds *in the spring*, in and below the young shoots of fir, with the *Retinæ*.

The inclusion of two purely Continental species in this work by mistake for British (*Nephoteryx rhenella*, Zk., for *hostilis*, Steph., and *Melissoblyptes anellus*, Sch., for *bipunctatus*, Curt.) is, doubtless, accounted for by its advanced state when M. Ragonot's "Revision of the British species of *Phycitidæ* and *Galleridæ*" (Ent. Mo. Mag., vol. xxii, p. 17) appeared, and this will explain other similar matters, but the statement on page 50 that the female of *Acentropus* is "semi-apterous" is perplexing. Undoubtedly semi-apterous and even apterous examples have been found, but, supposing there is only one species, they may have been ill-developed. The female has usually much larger wings than the male, well formed and developed, and the figure of *A. niveus* on plate 6 is, to all appearance, that of a female. It is also difficult to account for the statement on page 75 that the males of *Crambus pratellus* are *paler* than the females.

As the author does not supply descriptions of the species but relies on coloured figures for their identification, a careful scrutiny of the plates is necessary. Many of the figures are excellent, and, in the majority of cases, recognisable; but a very large proportion of them are drawn from female specimens, and in the cases of *Hypena crassalis* (called here *Bomolocha fontis*), *Aphomia sociella* and *Chilo cicatricellus*, in which the (very different) males are not figured, the student has, from this work, no means of identifying them. In the last named species the figure is not recognisable, even as a female, from an error in the shape of the fore-wings. In *Cataclysta lemnata* and *Scoparia alpina* the sexes are transposed, *Ebulea verbascalis* is represented with *three* transverse lines, and in several of the *Crambidæ* and *Phycitidæ* identification is rendered difficult by slight errors in their markings. The figure of *Epischnia Farrella* does not represent that species, but the variety of *Anerastia lotella* with white costal margin; and the figure called *Myelois cirrigerella* on plate 10 bears no resemblance to *cirrigerella* in structure, shape, colour, or markings, but is a very good figure of *Cledeobia brunnealis*, a native of central and southern Europe.

We are sorry to have to find fault so persistently with a beginner's first production; but works of this class are mischievous, not only from their repetition and perpetuation of errors, but also from the fact that, being attractive, they seriously interfere with the demand for those of greater accuracy and more real value.

ENTOMOLOGICAL SOCIETY OF LONDON: *May 4th*, 1887.—Dr. DAVID SHARP, F.Z.S., President, in the Chair.

The Rev. C. Ellis-Stevens, B.D., of Brooklyn, New York, U.S.A.; Mr. Frederic Merrifield, of 24, Vernon Terrace, Brighton; Mr. Henry Rowland Brown, B.A., of Oxhey Grove, Starmore; and Mr. Coryndon Matthews, of Ivybridge, Devon, were elected Fellows.

Mr. Wm. Warren exhibited specimens of *Stigmonota pallifrontana*, *S. internana*, *Asthenia pygmæana*, Hüb., and *A. abiegana*, Dup. (*subsequana*, Haw.). Mr. Stainton remarked that the two last named species both had white under-wings, and were, in other respects, very similar. It was formerly thought that Haworth's *subsequana* was identical with the species previously figured by Hübner as *pygmæana*; but now that the two allied species were critically examined it appeared that the species described by Haworth as *subsequana* was not Hübner's *pygmæana*, but another species known as the *abiegana* of Duponchel, dating only from 1842, so that Haworth's name of *subsequana* had priority by thirty years.

Mr. F. Pascoe exhibited a specimen of *Diarynes Tylori*, Wath., taken out of the stem of an orchid—*Saccolabium caeleste*—growing in an orchid-house at Croydon, and received from Moulnein, in Burmah.

Mr. McLachlan exhibited nearly 200 specimens of *Neuroptera*, in beautiful condition, collected by Mr. E. Meyrick in various parts of Australia and Tasmania, comprising about seventy species. There were between forty and fifty species of *Trichoptera*, including moth-like forms from Western Australia, allied to *Plectrotarsus*, Kol.; and other species belonging to a group represented by *Hydropsyche Edwardsii*, McLach. Among the *Planipennia* the most remarkable insect was a new species of the singular genus *Psychopsis*, Newm., from Mount Kosciusko, where it was common. Of *Pseudo-Neuroptera* there was a species of *Embiidæ* from Western Australia, and certain curious *Psocidæ* and *Pertidæ*. The *Trichoptera* appeared to be exclusively confined to *Sericostomatidæ*, *Leptoceridæ*, and *Hydropsychidæ*. Mr. Meyrick made some remarks on the localities in which he had collected the species.

Mr. M. Jacoby exhibited a new species of *Xenarthra*, collected by Mr. G. Lewis in Ceylon; also a species of *Loxoprosope* from Brazil.

Mr. C. O. Waterhouse exhibited a living example of an *Ichneumon*—*Ophion macrurum*—bred from a larva of *Callosamia promethea*, a North American species of *Saturnidæ*. He also exhibited a number of wings of *Lepidoptera* denuded of the scales and explained the method he had adopted for removing the scales. The wings were first dipped in spirit and then placed in eau de javelle (potassium hyperchlorite). Mr. Waterhouse said he had sometimes substituted peroxide of hydrogen for eau de javelle, but the action was much less rapid, although the results were satisfactory. Mr. Poulton observed that, although the pigment had disappeared, he thought the scales were not removed, but were merely rendered transparent; and he remarked that the discovery of some chemical for softening chitine had long been wanted to prepare specimens for the microscope. The discussion was continued by Mr. McLachlan and Dr. Sharp.

Mr. Slater read a note, extracted from the "Medical Press," on the subject of the poison used by certain tribes of African Bushmen in the preparation of their arrows. It was stated that a poison was prepared by them from the entrails of a caterpillar which they called "N'gwa."

The Rev. W. W. Fowler read a note received from Mr. J. Gardner, of Hartlepool, in which it was stated that *Dytiscus marginalis* possessed the power of making a loud buzzing noise like that of a humble bee. Dr. Sharp said he was familiar with the humming of *Dytiscus marginalis* previous to flight, and thought it might perhaps be connected with an inflation of the body for the purpose of diminishing the specific gravity of the insect; he had noticed also that it was occasionally accompanied by the discharge of fluid from the body. Mr. Wm. White read a paper "On the occurrence of anomalous spots on Lepidopterous larvæ." A discussion ensued, in which Mr. Poulton and others took part. Mr. Waterhouse read "Descriptions of new genera and species of *Buprestidæ*."—H. Goss, *Hon. Secretary*.

Obituary.

Rev. John Hellins, M.A.—We deeply regret to announce the death of the Rev. John Hellins, which took place in the early morning of Monday, May 9th, from an attack of erysipelas of the throat, which only commenced the previous Saturday. Mr. Hellins had nearly completed his 58th year, having been born on the 15th May, 1829; he was thus considerably younger than his friend William Buckler, whom he survived little more than three years.

John Hellins will always be best known from his long connection with William Buckler in the task of describing Lepidopterous larvæ, and since the latter's death he ably assisted the Ray Society by writing many additional descriptions, which have appeared in the two volumes of Buckler's "Larvæ of British Butterflies and Moths" already published.

Mr. Hellins entered at All Saints' College, Oxford, where he took his B.A. degree in 1851. In 1852 he was ordained Deacon, and Priest in 1854. He was for some time Second Master at the Exeter Grammar School, but, in 1859, he became Chaplain to the Devon County Prison, in succession to his father. Some six or seven years ago he was threatened with blindness from cataract, and had to retire from this position, and his health seemed thoroughly broken. Prolonged absence from work, and rest amid strange scenes in Switzerland and elsewhere, had a recuperative effect, and he returned to Exeter with improved health and one useful eye, and was again able to undertake some clerical duties, and resume his entomological occupations. He must have commenced the pursuit of Entomology early in life, but we are not able to supply the precise date. His entomological diaries are continuous from 1857 to 1887 (the last entry being made on the Saturday he was taken ill), and the diary of 1857 is evidently not the work of one then just commencing the study. He was a very successful reaver of larvæ from the egg, and a close and patient observer; a constant and ready correspondent, and a faithful friend; so that he will be much missed by a large circle.

A list of his descriptions of larvæ appeared in our Vol. xx, pp. 232, 233, when we were noticing his labours in connection with those of his friend, W. Buckler. The work on which Mr. Hellins was specially engaged at the time of his death was the description of the larvæ that will be figured in the forthcoming Vol. iii of Buckler's book, of which figures but no descriptions had been left by Mr. Buckler. In this task Mr. Hellins had enlisted the aid of numerous friends, who, after the long chilly spring, were hoping, with warmer weather, to be able to assist him with more frequent samples of larvæ. At the earnest solicitation of the Ray Society, Mr. W. H. B. Fletcher, of Fairlawn House, Worthing, Sussex, has kindly undertaken to take up the broken thread of Mr. Hellins' work, and the Ray Society will feel much obliged to those who had hoped to forward larvæ to Mr. Hellins in the ensuing season, if they will now be so good as to make Mr. Fletcher the recipient of their contributions.

Mr. Hellins leaves a widow and a son and daughter to deplore the loss of an affectionate husband and father. This is not the place to enlarge upon his private virtues. He occasionally made his entomological friends his confidants in private matters, and there are those among us who can testify to the noble and self-sacrificing character of the man in connection with his endeavours to assist discharged prisoners who had been under his care.

NOTE ON SOME BRITISH COCCIDÆ (No. 7).

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

ISCHNASPIS, *n. g.*

♀ scale very long and narrow, sides parallel, larval exuviae with a fringed margin, followed by two moults, of which the latter is very long: pygidium without spinnerets in groups, but having a design of irregular lattice-work, composed apparently of thickening of, or under, the integument; in that pattern.

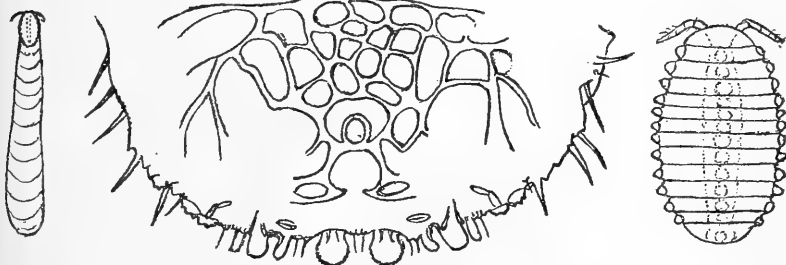
♂ scale not half the length of the ♀, of like form, but only one moult beyond the larval exuviae: imago not known.

) ISCHNASPIS FILIFORMIS, *n. sp.*

Fig. 1.

Fig. 3.

Fig. 2.



♀ scale jet-black, shining, straight, filiform (Fig. 1); larval exuviae oval, small, ochreous, with a concolorous, small, flat, angularly-lobate marginal fringe (detached, Fig. 2); the third pellicle at least twice the length of the second, widely rounded at the extremity, the successive minute increments of development perceptible throughout the scale: pygidium occupied with a lattice-work formation of irregular pattern, similar but not quite identical in all examples, yet on the posterior portion always alike; a few isolated spinnerets near the margin: posterior margin with two median, distant, large, posteriorly rounded lobes, then on each side one smaller curved outwardly, and then another larger, but not so large as the median, with a small one adjoining; some small spines between the lobes and five or six large ones beyond, the margin there having dentate plates (Fig. 3).

Length, 3—3.5, breadth, 0.40 mm.

♂ scale narrower and not half the length.

The figures are from photo-transfers of camera-drawings by Mr. G. S. Saunders.

Altogether one of the most remarkable forms of *Diaspina* that I know, both in respect of the scale and the character of the pygidium.

Abundant in the conservatories of the Royal Botanic Society on the leaves of various palms, *Strychnos*, *Myristica*, and other plants, looking like little bits of silk thread accidentally affixed.

MYTILASPIS PINNÆFORMIS.

Aspidiotus pinnæformis, Bouché, Stett. ent. Zeit., xii, 111, 5 (1851).

Mytilaspis pinnæformis, Sign., Ess. Cochin., p. 141, pl. vi, figs. 4 and 8.

♀. Scale elongate, straight or curved, mussel-shaped, flat-convex transversely, yellowish-brown, the margin distinctly white, the larval exuviae about one-fourth of the entire length, concolorous or darker, also with a white margin, the next pellicle very long. Bouché says (*l. c.*) "Similar to *A. pomorum*, but smaller, flatter, smoother, and with a broader, paler margin;" to which may be added the colour is much lighter. Length, 3 mm.

♀ adult long, flat, yellow; the sides posteriorly serrate; the last segment with five groups of spinnerets—anterior 4, anterior lateral 5, inferior lateral 4, each, between them and near the posterior margin many isolated spinnerets; the margin has two trifoliate median lobes, followed on each side with two much smaller, and six or seven spines.

♂ scale not half the length of the ♀, straight.

♂ imago small, yellowish-white, the transverse band of the metathorax dark, antennae and legs pubescent, abdomen short (Signoret).

On a leaf of the orchid *Cymbidium pendulum*, received from the Royal Gardens at Kew, was a numerous colony of the scales in all stages of existence. Bouché states that his examples were on *Cymbidium aloifolium*; Signoret says on "*les Cymbidium*;" the species probably lives on various orchids.

POLIASPIS CYCADIS.

Poliaspis cycadis, Comstock, Report for 1883, p. 126, fig. 15.

♀ scale snowy-white, larval exuviae yellowish; greatly widened posteriorly as in ♀ *Chionaspis*. Size in the adult state varies considerably; the average may be stated as, length 3, breadth 1.75 mm.

♀ adult greenish-yellow, oval; the five ordinary groups of spinnerets containing, anterior 2—4, anterior lateral 8—13, posterior lateral 18—25 each, the three superior groups each with 2—4 spinnerets; median lobes of the margin prominent, outwardly serrate, 2nd lobe deeply incised: plates slender and cylindrical, one at the side of 1st and 2nd lobes, and four or five on the lateral margin of the three or four preceding segments: two spines between the median lobes, and a few others on the margin.

♂ scale snow-white, small, narrow, parallel-sided; exuviae at one end; surface slightly convex transversely, no carinae. Length, 1 mm.

I have not seen a ♂ imago. It is described as "bright orange-red, with thoracic band of same colour; eyes black; first five segments of antennae purplish-red, the other five yellow" (Comstock).

Maskell (*Trans. N. Z. Inst.*, xii, 293, 1879) instituted the genus *Poliaspis*, an offset of *Mytilaspis*, and characterized it as "having the spinnerets in more than five groups, and in a double row, the edge of the abdomen as in *Diaspis*. Signoret forms a genus *Leucaspis* which possesses the same characters, but it has also a fringe of spiny hairs set close together round the edge of the abdomen, which fringe is absent in *Poliaspis*."

Comstock (*l. c.*) says of *Poliaspis*—"I am far from feeling sure that the genus will prove to be a natural one." The same may really

be said of many other so-called genera; the term "genus" being an abstract ideality to express certain forms or conditions of variation; but while such a group or individual, by its or their segregation, may sometimes serve the purpose of classification, science is always encumbered with the names.

In the month of February I received from the Royal Gardens at Kew some pieces of the bark of *Cycas revoluta* with some of these scales attached, all more or less covered by and involved in the fine short brown fibre which is natural to the plant, and which frequently interferes with the development in regular form of the ♀ scale.

DIASPIS ROSÆ.

Aspidiotus rosæ, Bouché, Naturgesch. d. schäd. und nütz. Garten-Insecten, p. 53, 2 (1833); *id.*, Naturgesch. der Insecten; p. 14, 2, pl. i, fig. 6 (1834); Burm., Handb., ii, 68, 2 (1835).

Diaspis rosæ, Sign., Ess. Cochin., p. 123, pl. v, fig. 3 & 3a; Maskell, Trans. N. Z. Inst., xi, p. 201, pl. vi, fig. 9 (1878); Comstock, Report for 1880, p. 312, pl. v, fig. 1, 1a, & 1b; pl. xvii, fig. 1; pl. xxi, fig. 5; Goethe, Jahrb. d. Nassau. Ver. f. Naturk., 1884, p. 116, T. 1, fig. 7, 8, 10.

♀ scale rounded-oval, nearly circular, white, the yellowish larval exuvia towards one side. Diam., 2—3 mm.

♀ adult elongate, anteriorly broad, red, posteriorly yellow, segments distinct, each with spinose plates at the sides, on the last are five groups of spinnerets nearly or quite connected, especially the laterals, anterior with 20, anterior and posterior laterals with 25—30 each, besides some isolated spinnerets; margin with two oblique median lobes, narrowly separated at base, two others on each side deeply incised, thence, up to the preceding segment, five or six spines.

♂ scale very small, narrow, tricarinate. Length, 1 mm.

♂ imago orange-red, wings white, antennæ and legs yellowish, slightly pubescent.

As the author of the original name of this species, *Aspidiotus rosæ*, Signoret (Ess. Cochin., p. 67) gives Sandberg (1784), and in this he has been followed by other writers, but both the generic and specific names were first given by Bouché (*l. c.*), Sandberg having referred to the insect only as the "Schildläuse des Rosensträuchers."* His article on its natural history, considering the time at which it was written, is full and precise, and has some graphic touches, as, for instance, where he says the insect being one of the smallest (requiring a magnifying glass in order to observe it), yet the ♀ has, in proportion, an enormous scale (ungeheuer Schild). The history ends moralizing, thus: "This is the biography of a creature whose world consists of two inches of a little branch of a rose-bush, and it accomplishes what most men do: werden, vermehren sich und—sterben."

* Naturgeschichte der Schildläuse des Rosensträuchers; von K. v. Sandberg: in Abhandlungen eines Privatgesells. Boehmen, vi, 317 (1784).

The species is not rare on the continent of Europe, and all authors state that it is found on cultivated roses. Bouché says that it lives on the stems and old shoots, which at times are quite covered with the scales, making them appear as if mouldy, and that if not removed (the best way of doing so being by means of a hard brush) the bush is killed by them. Signoret makes a similar remark. Comstock says the species is very common on roses, both in the Southern and Northern States of North America, and that he also finds the scales on raspberries and blackberries (*Rubus*). Maskell finds it on garden-roses in New Zealand. Walker includes the species in his list of British *Coccidæ*, and I have often sought for the scales, both on garden and wild roses, but in vain. On March 1st Mr. Parfitt sent from Exeter some old ♀ scales which he had just found on the stems of a wild rose (*Rosa canina*), and on bramble stems, growing in a hedge, and these were assuredly the ♀ of *Diaspis rosæ*; and on the 5th following he found some of the ♂ scales. He thus writes: "Since my first visit I find the hedge has been cut down to within a foot of the ground. However, I secured a branch of the rose and was pleased to find a few male scales. I could find no scales on the young branches, only on the old stems. This appears to be a scarce species, as I have walked past miles of hedges within the last two years, but have seen these scales in two places only, and the one just mentioned is likely to be destroyed."

PULVINARIA MESEMBRYANTHEMI.

————— *mesembrianthemi*, Vallot, Bull. de Férussac ii, p. 469 (1830).

Calypticus mesembrianthemi, Costa, Ann. d. Acad. Asp. Nat. Naples, 273 (1844).

Pulvinaria biplicata, Targ.-Tozz., Catal., p. 34 (1868).

Pulvinaria mesembrianthemi, Sign., Ess. Coch., 215.

The synonymy comes from Signoret, *l. c.* The genus adopted by Vallot is not given, and I cannot refer to the original. *P. biplicata*, Targ.-Tozz., cited by Signoret as a synonym, was not described; it was only denominated "n. sp. (*Mesembrianthemi acinaciformis incola*)."

♀ scale, adult. Ovate, yellowish-brown, slightly convex, with three or four strong corrugations across the middle, often, however, in the most advanced condition, the dry scale is also contorted or bent backwards. Underneath, and projected posteriorly, is a large, long, white ovisac, smooth above, but otherwise composed of loose, tangled, cottony filaments, among which are the yellow eggs and larvæ. Antennæ of eight joints, the 3rd longest. Length of scale 4—5, breadth 3—3.5 mm.

In the young stages and up to the time of the formation of the ovisac, the entire insect is delicate pale green and the scale is smooth; the colour becomes gradually brown, and the transverse folds then also first appear, developing as the scale becomes dry.

On a small piece of a *Mesembryanthemum* imported from Spain, received from Dr. W. H. Lowe, Wimbledon, in April, was a numerous colony of this species in all stages of existence.

LECANIUM TESSELLATUM.

Lecanium tessellatum, Sign., Ess. Cochin., p. 231, pl. 11, fig. 4.

♀. Scale flat-convex, short broad-oval, much widened posteriorly, a little narrowed anteriorly, one side usually straighter than the other, or somewhat curved inwardly, and sometimes with one or two slight incisions; pale greenish-yellow, covered with dark-lined irregular reticulation or tessellation, each mesh containing numerous dark dots more or less in rows, the middle of the disc occupied by a long, wide, irregular sided space. This is the immature form and is the *L. tessellatum* of Signoret. In a still younger state the scale, although of full size, is flat, without marking, colourless and transparent. The mature form, more convex than in the immature, foveate-punctate; along the middle of the back a broad, flattened, black ridge, from which, on either side, the black colour extends downwards all round, more or less suffusing two or three rows of meshes, and often forming a well-defined blotch, but leaving a space of two rows of clear reticulation between it and the margin; within the bounds of the blotch four or five transverse furrows, the broad intervening spaces flat, each having at its lower end a pale spot; anal point above the cleft yellow. Under-side, body anteriorly white, posteriorly black; legs and antennæ pale, the latter of seven joints, the 3rd twice as long as the 4th, 6th and 7th still longer.

Length, 3·5, breadth, 3 mm.

Young larvæ under the mature scales. No ♂ scales seen.

At p. 77, vol. xxiii, I have mentioned this species, then known to me only by Signoret's description and figure, in comparison with *L. alienum*, and I can now confirm the differences there stated.

Received from Mr. Sowerby, Royal Botanic Society's Gardens, on *Sapindus saponaria*, and from Mr. J. O'Brien, Harrow, on the same plant, in all stages of existence on a leaf.

LECANIUM ANGUSTATUM.

Lecanium angustatum, Sign., Ess. Cochin., p. 228, pl. 11, fig. 2.

♀. Scale clear yellow, elongate, narrow, flat (sometimes with a tendency to a median blunt carina), smooth, shining, sides nearly straight and not recurved, both ends rounded. Under-side all pale; antennæ of seven joints, 3rd and 4th longest; tibiæ canaliculate, the tarsi, when viewed obliquely, appear flattened and broader than the tibiæ. Eggs and larvæ within the body.

Length, 4·5—5, breadth, 2 mm.

Except as to the slight indication of a median keel this agrees exactly with Signoret's description of *L. angustatum*, which was found on *Papyrus*. My specimens came from leaves of *Anthurium Scherzerianum*, a native of Costa Rica, received from the Royal Botanic Society's Gardens, Regent's Park, in January and February last.

THE MALE OF LECANIUM HESPERIDUM.

In the "Comptes rendus des Séances de l'Académie des Sciences" (Paris), No. 7, Feb. 14, 1887, p. 449, is an article entitled "Les mâles

du *Lecanium hesperidum* et la parthénogénèse," by M. R. Moniez. The author premises that sexual dimorphism is ordinarily present in the *Coccidæ*, the males, contrary to the females, being winged and undergoing complete metamorphoses, yet that in many species they are hitherto unknown, although the females are continually reproductive. Among the species having this character *Lecanium hesperidum* is always cited, and Leydig and Leuckart are specially mentioned among those who have in vain sought for the males. Then he continues :—

"But this species is by no means parthenogenetic; at least, I have found males in abundance in nearly all the numerous females from different localities that I have examined. I have always found each one isolated in an ovarian *cul-de-sac*, those containing males appearing to be mixed with those containing larvæ of the females."

The author then states that he observed several stages of development. In the first there are no external organs, the body appearing to be entirely occupied by the "follicules testiculaires," as yet not differentiated, the integument very thin. The second stage is distinguished by having five or six folds of the enveloping membrane, which doubtless correspond to the segments; the evolution of the spermatozoids is effected, the testicles are clearly distinguished, compressed by the development of the rudiments of the organs. At the third stage, which represents the perfect insect, all the salient organs which characterize the adult are present. But the young male has no trace of eyes, and its skin remains very tender, strongly contrasting with the chitinous integument and the well-developed eyes of the young females, which are found at the same time in the body of the mother.

The summary of these observations is thus given :—

"The male of *Lecanium hesperidum*, among all those hitherto known, is therefore characterized by its minute size, the form of the penis, the absence of eyes and wings, the character of the integument, and the development of the spermatozoids before the appearance of members, at a stage which doubtless corresponds to that of pupa."

Then follows a statement of the progressive development of the organs, leading to the conclusion that—

"The organization of the male does not permit a doubt that there is pairing, but I have not been able to decide if it takes place within or without the body of the mother. I could not find a male outside of the mother, not even under her body, but its imperfect condition rather induces me to suppose that the females are fecundated within the maternal organization.

"If, however, we consider that the spermatozoids are mature in *Lecanium hesperidum* at the time when the males are yet without relative organization, we

cannot but think that there is here a transitory state, or even a still lower degree of development, which may be definite in some species of the same family or any other group. We may even conceive that the males may be rudimentary in such a manner that they may be reduced, in the body of the mother, to sexual elements, and thus there may be produced there a kind of false hermaphroditism; they might even be represented in the lowest degree by undifferentiated elements, but which, nevertheless, come into connection with the ovules; it may thus happen that the so-called *pseudova* may be identical, in their evolution, with ordinary eggs, and, as in the known hypothesis in connection with agamic *Aphides*, that the development of the ovules was determined by the hermaphroditism of the females. Be this as it may, as the males escape observation in every case, one cannot fail to infer that parthenogenesis or pedogenesis, which is a form of it, exists. In fine, we conceive that these reduced males may be able, in certain seasons and under certain influences, in consequence of a more retarded evolution of the genital products, to acquire a perfect development and exhibit normal characteristics.

“It appears possible to apply these considerations, until there is proof to the contrary, to the various parthenogenetic animals, with the exception, perhaps, of certain *Hymenoptera* among which the phenomena are more complicated. Parthenogenesis constitutes a peculiar fact which hitherto has not received sufficient explanation, and it may be, that like many other facts apparently aberrant, it will one day come under the general law of sexual reproduction.”

The discovery of the male of *Lecanium hesperidum*, although the mode of action or influence of this sex has yet to be elucidated, is of itself of very great interest, and in the inferences and suggestions arising from it, with respect to the recondite subject of parthenogenesis in general, has a significance and importance not exceeded by any revelation of modern science.

LECANIUM DEPRESSUM.

Lecanium depressum, Sign., Ess. Cochin., p. 269, pl. 12, fig. 11, 11a, and 11b.

♀. Scale convex more or less according to age. Form broad-oval or ovate, sometimes one side nearly straight, or incurved so much that the outline is subreniform or subpyriform. Colour pale greenish-yellow; a black or dark median line, not carinate; the disc with black dotted lines disposed so as to form marquetry, in the mature form these coalesce and make patches, but leaving the ground colour clear in places, usually two anterior and two posterior; lower down straight dotted lines radiate to the margin all round; on the anterior half on each side two distinct dark-dotted carinæ with pale ends extend to the margin, the posterior ones nearly at a right angle, the anterior oblique, all of them corresponding to the legs beneath. Under a high power the surface is seen to be covered with a reticulation of irregular, shallow cells, and the black dots are resolved into spots with a pale centre or ocellus, each spot, situate in a mesh, appears as an inlaid plate of tessellation. Anal point yellow. Under-side all pale, except the abdomen, which is black. Antennæ of eight joints, the 3rd longest. Length, 4, breadth, 3.5 mm.

This description differs from that of Signoret in that he gives the colour of the scale as brown, which does not occur, in my experience.

until the insect is nearly or quite dead, and then the markings have disappeared. He also states that scales he received from Florence (which I take to have been the typical form) were oval, a little elongated anteriorly, and having two depressions in the region of the lateral carinæ (as appears in his figure 11): this form I do not find. At first I was inclined to describe my examples as a new species, under the name of *L. simulans*, but as the other characters given are present, and in view also of the variation admitted by Signoret, I have concluded that there are scarcely sufficient grounds to establish a distinct species. Yet it may be that if one had all the forms before him contemporaneously, two or three good species might be determined.

Signoret attributes the name *depressum* to Targioni-Tozzetti ("Studi sulle Cocciniglie," p. 29, and "Catalog," p. 37), and doubtless correctly, but as in neither place is the species described, the reference cannot be cited: Signoret really first described the species.

I had the scales, in April and May, from Mr. S. Stevens, on leaves of *Ficus elastica* and camellias, and from other sources on leaves of camellias. Signoret obtained his examples from Florence on leaves of *Ficus marticinensis*, and in Paris on *Ficus elastica*. Maskell finds the scales in greenhouses (the plants not mentioned) in New Zealand, stating it is an imported species. (Trans. N. Z. Inst., xi, 206, 1878).

LECANIUM FILICUM.

Chermes filicum, Boisd., Ent. Hort., p. 336.

Lecanium filicum, Sign., Ess. Cochin., p. 266, pl. xii, fig. 8.

♀. Scale short, broad-oval, very convex, smooth, with two anterior and two posterior slight blunt carinæ going rather obliquely from the back to the margin, thus interrupting the curve of the contour, and sometimes two or three short and sharp vertical carinæ at the sides joining the margin, which is broad and flat. Antennæ of eight joints, the 3rd the longest. The articulation of the tarsi with the tibiæ is very distinct, as Signoret observes. When alive the colour is reddish-brown, becoming paler or yellowish after death.

I have long known this species from various cultivated ferns, but could not determine it with certainty; for while Signoret (*l. c.*) says "celle-ci offre des carènes dorsales," his figure shows the carinæ to be obliquely transverse across the sides. However, having received some scales from Dr. Signoret, I can now identify the species. It is like *L. hemisphæricum* in having a flattened margin, but is distinguished from it in having carinæ, and, as a rule, it is smaller. It is also related to *L. hibernaculorum*, which is larger, darker, and without margin.

8, Beaufort Gardens, Lewisham :
May, 1887.

ON THE *MYCALESIS ASOCHIS* OF HEWITSON, A BUTTERFLY OF
THE SUB-FAMILY *SATYRINÆ*.

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

In the third volume of his *Exotic Butterflies*, *Mycalesis*, Pl. vii, figs. 46, 47, Hewitson figures a curious species from Old Calabar. His description is so incorrect ("the basal half of both wings white") that unless figured, this butterfly could only have been recognised by a reference to the type; as a matter of fact the wings are bone-whitish, the primaries having a broad costal border, and nearly the external half dark brown, but the secondaries only a broad border, occupying about one-fifth of the wing.

In the Hewitson cabinet, associated with his types of *M. Asochis* are two female examples of an allied but apparently perfectly distinct species, supposed by Hewitson to be females of *M. Asochis*; the true female, however, as proved by a specimen in the Museum collection, does not differ from the male to anything like the extent of these specimens.

The species regarded by Hewitson as *M. Asochis*, ♀, was briefly described by Mr. Kirby in a Catalogue of the *Lepidoptera* in the Museum of Science and Art, Dublin, in 1879, as probably the female of that species.

The male examples in the Hewitson cabinet are neither of them his type, as they do not agree accurately with his figure, and neither his males nor his females are labelled with locality-tickets; the probability is that the type was a poor specimen, and was destroyed by its owner as soon as he acquired fresher examples. A male example in our collection from the Gaboon agrees with Hewitson's figures, and a second from Accra only differs in very slight details.

A female recently received from Old Calabar only differs from the male in its superior size, browner basal area, and rather narrower borders above, and in the defined brown stripes across the wings below. I have very little doubt, therefore, about the distinctness of Hewitson's females, but in the absence of any locality-labels I hesitate to give a name. It may readily be recognised by those who possess it, from the fact, that the narrow border of the primaries is twice excavated, forming what is known as a "key pattern," or a castellated border, whilst near the anal angle of the secondaries there is a more or less defined rounded black spot, representing the ocellus of the under surface; the border, excepting at apex, is very narrow, scarcely represented by more than three closely approximated dark brown lines.

PSYCHOPSIS MEYRICKI, n. sp.

BY ROBERT McLACHLAN, F.R.S., &c.

P. MEYRICKI.

Allied to *P. insolens*, McLach. (*Journal of Entomology*, ii, p. 114, pl. vi, fig. 3), but smaller and darker. Head yellow, but the anterior swollen portion of the vertex is blackish-fuscous, which colour continues to below the base of the antennæ on the front; clothing yellow. Antennæ reddish-brown, dingy yellowish towards the base. Pronotum and entire breast yellow, with concolorous hairs. Meso- and meta-nota suffused with livid grey. Legs yellow; apex of tibiæ, and of the tarsal joints (faintly), marked with fuscous. Abdomen above livid (or pale leaden) grey, beneath yellowish; hairs yellow: superior appendages (♂) in the form of two elongate yellow valves, flattened laterally, convergent at base and apex above, furnished with very long yellow hairs, sub-obtuse at apex, with an oval callus in the middle externally; the margin of the last ventral segment is regular, and internally, seen ventrally, appear to be two smaller flattened valves, convergent apically, probably representing the inferior appendages, the triangular space between them is blackish.

Anterior-wings whitish-hyaline, but densely tessellated or freckled with pale grey markings, vaguely arranged in transverse oblique lines; three or four sub-quadrate spots on the area between the sub-costa and the sector, and others on the inner margin, are darker and more conspicuous: neuration for the most part blackish-fuscous, but with numerous pale spaces; hairs of neuration mostly yellowish, but mixed with blackish, and on the margins the hairs alternate in pale and dark spaces (conspicuous on the costal margin): two series of gradate nervules, one placed before the middle of the wing, the other extending downwards from the point where the sub-costa and radius become confluent. Posterior-wings with indications of grey freckling and darker spots, but much less conspicuous; the characteristic large rounded spot at the confluence of sub-costa and radius is pale fuscous.

Length of body, 9—10 mm. Expanse, 26—28 mm.

Hab.: Mount Kosciusko (New South Wales), 2800 ft., 20th January, 1885.

I have seven examples before me, apparently all ♂, collected by Mr. E. Meyrick, who says the insect was abundant on rocks, whither it went to avoid the sun and heat.

P. insolens, McLach., is larger and much paler; the anterior-wings have a tendency to be marked in the same manner, but with ochreous-yellow instead of grey, and in the posterior-wings there is only the large rounded ante-apical spot. Moreover, in *P. insolens*, and in all the other species, there is a third, sub-marginal, series of gradate nervules in the anterior-wings, continuous with the series of transverse nervules in the costal area; of this third series I see no trace in *P. Meyricki*.

I have said that all my examples of *P. Meyricki* appear to be ♂; so I judge from the comparatively slender abdomen. If this be so,

then it is probable that the examples of all the other species in my collection are ♀. In these the abdomen is stouter, and the parts I have termed "superior appendages" are somewhat similar, but they are closely applied to large, triangular, obtuse, inferior lateral plates, of which I see no indications in the specimens of *Meyricki*. This is a point to be elucidated, as are also the early stages and habits of *Psychopsis*, which is a purely Australian genus, and one of the most curious amongst the *Planipennia*.

Five species of *Psychopsis* are now known, viz.:—*P. mimica*, Newm., *elegans*, Guérin, *cœlivaga*, Walker, *insolens*, McLach., and *Meyricki*, McLach.

Lewisham, London: June, 1887.

NOTHOLESTES ELWESI, A NEW GENUS AND SPECIES OF
CALOPTERYGINA.

BY ROBERT McLACHLAN, F.R.S., &c.

NOTHOLESTES, *n. g.*

Resembling a large *Lestes* in form, stature, and coloration.

Wings rather narrow, hyaline, petiolated up to three-fourths (or four-fifths) of the basal area. Nodus at about the end of the first third of the wing. Basal area empty; quadrilateral traversed by a single nervule. Sectors of the arculus only slightly separated at their base, inserted rather below the middle of the arculus, which is not broken. Principal sector connected with the median for a long space. Ante-cubital nervules numerous. Sector inferior extending to beyond middle of wing. Post-costal area very narrow, not dilated at end, with a single row of cellules. Supplementary sectors between each of the chief nervures, all ending in a curved manner. Pterostigma oblong, slightly dilated.

Legs slender, moderate, ciliations very long. Abdomen long and slender, cylindrical; appendices (♂) forcipate.

It appears to me that in general characters this genus is more nearly allied to the Amazonian *Dictérias* than to others of the same group from India, but it can be immediately separated therefrom by the very long ciliation of the legs, and the far more numerous and curved supplementary sectors in the apical portion of the wings, &c. No doubt there is also relationship with the Indian *Bayadera*, but the very narrow post-costal area, with only a single row of cellules, at once separates it therefrom, notwithstanding that the legs and many points of neuriation are similar. *Anisoneura* from the same country differs in the post-costal area, and in the principal sector not being contiguous to (or connected with) the median.

The Himalayan region seems particularly fertile in odd forms of *Calopterygina*.

NOTHOLESTES ELWESI, *n. sp.*

♂. Abdomen, 36 mm. Inferior-wing, 31 mm.

Wings narrow, but gradually dilated to the rounded apex, the inferior broader than the superior; hyaline, but slightly tinged throughout with olivaceous; 14—16 ante-cubital nervules, 23—25 post-cubital; pterostigma (2 mm.) brownish-black, surmounting $2\frac{1}{2}$ cellules. Head, above, brassy-cupreous, black behind the eyes; rhinarium metallic-green; labrum metallic-cupreous, with a yellow spot on each side; second joint of antennæ yellow, the rest black; labium, &c., black. Thorax brilliant metallic-green, with a brassy tinge, the sutures blackish; sides (below the inter-alar pleuræ) and breast pale yellow, with an isolated bronzy streak on the metathoracic pleuræ; the space between the legs black.

Legs black, but the coxæ and trochanters are pale yellow, like the breast.

Abdomen bronzy-cupreous, becoming blackish after the 5th segment, and blackish beneath; 1st segment yellow at the sides and beneath; 9th segment above powdery-white (and there are indications that this white pulverulence may extend to the 8th); 10th segment nearly as long as the 9th, its margin regular, slightly rounded. Superior appendages scarcely longer than the 10th segment (owing to their form), black, forcipate, strongly geniculate in the middle; they are thinnest at the point of geniculation; the apical portion dilated, obtuse, sinuate and excised on the inner margin before the apex; externally are three sharp teeth on the basal half of the apical portion (beyond the geniculation). Inferior appendages black, shorter than the superior, flattened, nearly straight and sub-parallel; but the apices are thickened and inturned, and there is an internal tooth below the apex, so that the tips appear bifid internally with an excision between the two teeth.

♀ unknown.

Hab.: Darjiling; one ♂ given to me by H. J. Elwes, Esq., F.L.S., by whom it was captured.

In general form, metallic coloration of the body, the white-powdered 9th segment, and also in the appendages, this insect has so much resemblance to a somewhat large *Lestes*, that I had so considered it, until the neuration revealed its true position.

Lewisham, London: June, 1887.

NOTES ON *NOMADA*.

BY EDWARD SAUNDERS, F.L.S.

Mr. R. C. L. Perkins' remarks (vol. xxiii, p. 273) on those species of this genus which are inquiline on *Halictus* open a very interesting question. The females of *Halictus*, as he points out, hibernate, but this habit has not been observed in *Nomada*, and if it does not exist in that genus the question arises, how is the race of the inquiline continued?

It is, of course, not impossible that *Nomada*, like *Psithyrus*, may hibernate as an imago, although probably ere this some one would have found it in its winter quarters. If, however (as I believe is generally thought), the species of *Halictus* hibernate in the original burrows in which they reached maturity, there would seem to be no reason why the larvæ of *Nomada* should not remain in the full-fed state through the winter, passing through their final stages in the following spring, and emerging with the spring females of *Halictus*.

A careful examination of the burrows during the winter in colonies where the inquilines occur alone could prove this, and I hope Mr. Perkins himself will be able to make the necessary investigations.

Nomada is peculiar among the inquiline genera in one very striking particular, namely, the complete dissimilarity which it bears to the genera with which it associates. Nearly all the other genera resemble their hosts very closely in structure, and so remarkable in some cases is this resemblance, that it is thought by some, and certainly with a great deal of apparent probability, that the *inquilines* have only become structurally differentiated from their hosts by a gradual divergence of habit.

Nomada is known to associate with *Halictus*, *Andrena*, *Panurgus*, and *Eucera* in this country, but to none of these does it bear the slightest resemblance; in fact, its elegant shape, and the wasp-like colours of most of the species distinguish it at once from any other genus of the *Anthophila*. Professor Perez ably and carefully traces its structural relationship to *Megachile*, but on what principle it should have dissociated itself from its long-tongued allies, and associated itself with species of the short-tongued division is hard to see: possibly, its bright colours having made it an object of attack, it was unable to resist the stinging powers of the *Apidæ*, and was driven to the *Andrenidæ*, whose stinging powers are particularly feeble; but, if this be so, one has to seek for an explanation of the association of *Nomada 6-fasciata* and *Eucera*; or it is possible that the wasp-like colours of the species make them objects of terror, except to those genera of *Apidæ*, which know their own superior strength. The only other association which we have between long- and short-tongued genera is that between *Colletes* and *Epeolus*; and it is worthy of notice that the species of both these genera sting with peculiar virulence.

St. Ann's, Mason's Hill,
Bromley, Kent:
May 23rd, 1887.

NOTES ON BRITISH *TORTRICES*.

BY C. G. BARRETT, F.E.S.

(Continued from Vol. xxiii, p. 4).

Concerning the type-specimens of certain rare and reputed British species.

Through the friendly intervention of Dr. Mason, I have had an opportunity of examining the original types from which several of our rare, doubtful, and reputed British species of *Tortrices* were described.

Penthina Grevillana, Curt.—The two original specimens are in Mr. Edwin Shepherd's collection. They are not only known to be the specimens from which Curtis's figure and description were taken, but they agree accurately in markings with the figure to the most delicate dot or ripple, though it must be admitted that the *figure* is somewhat distorted, the right wing being too much arched and elongated.

After a very careful examination of these two specimens, I am thoroughly satisfied that they are pale specimens of *P. sauciana*. They agree with it in size, in shape, in the form and proportion of the dark and of the white divisions of the fore-wings, in every blacker blotch and streak in the dark portion, and in the delicate rippled lines and apical markings of the white portion, but they *look* different, because these markings are not obscured by the deep blackness which usually characterizes *sauciana*. *P. Grevillana* has long been a very doubtful species. I have never seen more than two specimens which appeared to me referable to it, and they did not agree very well with each other, nor quite satisfactorily with Curtis's figure. What species they really are may be a subject for future consideration; but I think that we should be perfectly safe in expunging from our lists a name which rests on so unsatisfactory a foundation.

Penthina ustulana, Haw.—The original type is also in Mr. E. Shepherd's collection, having upon its pin Haworth's label. It is in poor condition, and faded, but agrees fairly in shape and colour with *fuligana*, Haw., yet has the absence of marbling of brown in the fore-wings, and an indication of the yellowish dorsal blotch, which are usually characteristic of *nigricostana*. I think it impossible to decide which of these two species it belongs to, and am well satisfied that it has been dropped out of our lists.

(I think that *nigricostana* is out of place in the genus *Halonota*, and very closely allied to *Penthina fuligana* and *carbonana*.)

Retinia duplana, Hüb.—In Mr. Shepherd's collection are six of the original specimens on which this species was introduced into our

lists. They are—like all the other British specimens which have come under my notice—small dark *turionella*. Moreover, the original description of *duplana* (as British) in the Ent. Ann., 1856, p. 34, proves that the specimens were not true *duplana*: “Like a small dark *turionella*, but the thorax grey only, the head and palpi ferruginous.” But in *duplana*, as sent from Germany by Professor Zeller, the head and palpi are *grey*, and the markings and colouring quite different. The Scottish specimens are small, and the thorax is decidedly dark, agreeing with the darker wings, but no character seems to exist which is available to distinguish them from *turionella*. I think *duplana* should now be expunged from our lists.

Tortrix dissimilana, Bentley.—The original specimen is in the same collection, and was correctly referred to *piceana*, L. It is, however, rather a curious variety, having the markings edged here and there with faint black streaks. From the name which he gave it, Mr. Bentley would seem to have been acquainted with both sexes. No British specimen of the male is, however, known to be extant.

Stigmonota Heegerana, Dup. ?.—The original specimen (and probably the only known British example), labelled “taken at Whittlesea Mere in July,” is in the same collection. It is rather faded, but is unmistakably *corollana*, Hüb.,—thus confirming a correction already made.

In Mr. Shepherd’s collection are also several of the original types, on the faith of which species were included in our fauna, which were afterwards expunged as aliens. They all appear in Stephens’ Brit. Museum Catalogue, but only as reputed British species, and with the locality, “North America ?.” These specimens are carefully labelled as follows: “*Peregrinana*.”
“*Obliquana*, Bent.”

These names appear in Stephens’ Catalogue, page 90, and *obliquana* is figured very accurately by Mr. Humphreys (W. and H., v. ii, pl. 80, fig. 8). I believe this species to be *Pandemis albariana*, Walk., a native of North America. It agrees very well with the figure in Lord Walsingham’s work on North American *Tortricidæ*, plate 62, fig. 10.

“*Trileucana*.”—This is *Ptycholoma persicana*, Fitch (*blandana*, Clemens, *fragariana*, Packard), agreeing well with North American specimens sent me some years ago by Professor Fernald, of Maine State College. In Stephens’ list, p. 90, *Cræsia trileucana*.

“*Biustulana*” (two specimens).—This is figured in Westwood

and Humphreys' work (vol. ii, pl. 80, fig. 10); Stephens says of it that he has seen only two specimens, which he believes came from the West of England. He might well have said *farther west*. It is *Ptycholoma melaleucana*, Zeller, from Virginia, Maine, Pennsylvania, and Ohio. It is well figured by Lord Walsingham (pl. 62, fig. 8), and agrees with my types from Professor Fernald.

"*Flavofasciana*."—This moth is figured under the same name by Humphreys (W. and H., vol. ii, pl. 99, fig. 16), with the statement—"from Mr. Stone's collection, now in the cabinet of Mr. Bentley." From Mr. Bentley's cabinet it passed to Mr. E. Shepherd's. It is *Sericoris instrutana*, Clemens, from North America, and agrees with types from Prof. Fernald, sent as *Exartema fasciatana*.

King's Lynn, Norfolk :
March, 1887.

THE PROBABLE MIGRATION OF *APORIA CRATÆGI*.

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

I should like to say a few words with regard to the note of Mr. Goss, published in the Ent. Mo. Mag. (vol. xxiii, p. 220-221). Mr. Goss, in his first paragraph (on p. 257), shows that he does not exactly grasp the meaning I intended to convey, when he says, "By this I understand Mr. Tutt to mean that the same conditions of the climate of this country, which have been unfavourable to the development and increase of indigenous specimens of this species, and have tended towards its rarity or extinction, have also prevented its recruiting its numbers by migration, or rather immigration, from the Continent."

This sentence certainly does not exactly embody the view I hold on the subject. Facts prove that we have at various times had *Aporia cratægi* very abundant in England (sometimes for many successive years), and at other times it has been exceptionally scarce. Mr. Baker's letter (p. 256) shows one such case, my own letter (pp. 220, 221) gives another.

I believe that certain species of *Lepidoptera*, among them probably *A. cratægi*, are migratory in their habits, and that migration or immigration takes place at no fixed time or period, but is totally dependent on certain general* causes, atmospheric or otherwise, about which we are all (as far as I know) in the most perfect ignorance, and may take place in several successive seasons, or may not take place

* I have used the word "general," because the causes which induce migration here are apparently at work in other parts of the world—America, Ceylon, &c.

for many years. Certain undefined *local* causes have undoubtedly combined to make the species in question (*A. cratægi*) extinct in Britain at the present time. This seems to have previously occurred, and yet it became common again. What explains these periodic appearances so well as immigration? What I venture to suggest is this—that the insect will remain extinct in Britain until the general causes (whatever they may be) which induce migration in insects act in such a manner as to bring a wave of immigrants to our shores again. Whether the species will then establish itself for a time depends on local conditions.

Migration or immigration is, in my opinion, due to one set of causes (which we may well term general), and the establishment (permanent or otherwise) of the species is due entirely to other conditions (local), viz. :—those of the atmosphere, climate, distribution of food-plant, &c., of those localities which the immigrants take possession of.

Mr. Goss compares *Aporia cratægi* with the genus *Melitæa*. The larva of *A. cratægi* is gregarious, as are to a certain extent the species in the genus *Melitæa*. Here, to my mind, the similarity ends. He remarks that "*A. cratægi* is capable of soaring a great height when pursued or alarmed," and "is a powerful flyer." These facts separate it at once in its habits from the sluggish *Melitææ*, which sham death in the net, and, if alarmed, often fall to the ground. But even supposing this species to be generally sluggish, why should it not be migratory? We must remember that the swarms of insects are not acting under normal, but under very abnormal conditions. It is not, I presume, normal for any insect to travel thousands of miles out to sea, except at special times, and driven probably by a strong migratory instinct.

Mr. Goss also compares *A. cratægi* with *Colias Edusa*, *C. Hyale*, *Vanessa cardui*, *Sphinx convolvuli*, and other migratory and cosmopolitan species, and suggests that *A. cratægi* cannot be placed in the same category as these. Certainly not! but because *A. cratægi* is not cosmopolitan, is this a proof or a probable proof that it is not migratory? Is *Urania Leilus* cosmopolitan, or *Timetes Chiron*? Yet we have proof positive that these are migratory *within certain limits* (vide "The Naturalist in Nicaragua," by Thos. Belt, F.G.S., or the extracts of the late Mr. Newman, Ent., vol. vii, pp. 60 and 61). I believe *A. cratægi* extends over almost as wide an area in the Old World as these species in the New. *A. cratægi* is found more or less throughout Europe and Western Asia. I see no reason myself why

the insect should not be migratory because it is not cosmopolitan. How many actual swarms of *C. Edusa* have been seen on the wing migrating? Have any? Yet there are few Entomologists who doubt that it does migrate; but where is the positive proof?

Mr. Goss also asks, "If *A. cratægi* is migratory in its habits, why do we not occasionally hear of its capture in Kent and other parts of the South-East of England in those seasons when a larger number than usual of such species as *Pieris Daplidice*, *Argynnis Lathonia*, and other immigrants from the Continent occur?" I do not believe the same causes produce migration in different species. The weight of evidence is contrary to the opinion that they do. How often have the swarms of *C. Edusa* and *Hyale* been coincident? How many *C. Hyale*, for instance, were taken in the *Edusa* year (1877)?; and has a migration of *P. brassicæ* always accompanied one of *Vanessa Antiopa*?

I do not see how the absence of *A. cratægi* in years when *P. Daplidice* and *A. Lathonia* are reported "to occur in larger numbers than usual" at all influences the question as to the migratory power or not of that species.

I quite agree with Mr. Goss that as it is an abundant species in many parts of the Continent of Europe, there *ought not* to be any difficulty in ascertaining from Continental Lepidopterists whether or not it is migratory in its habits. Unfortunately in those species which are acknowledged migrants, actual migration has rarely been noted. It is, indeed, marvellous that so few cases are scattered throughout our Entomological literature.

Rayleigh Villa, Westcombe Park, S.E. :

April, 1887.

HISTORICAL NOTES ON *APORIA CRATÆGI* IN ENGLAND.

BY C. W. DALE, F.E.S.

At the meeting of the South London Entomological Society, on January 27th, Mr. Jenner Weir stated that his opinion was that in the earlier decades of the century a flight of this insect visited Sussex from some part of the continent. Whether it be so or no, I will not venture to dispute, but by consulting the works of Merrett ("Pinax"), 1667, Ray, 1710, and Petiver, in 1717, we find that *Aporia cratægi* existed in England long before then.

Mr. Goss, in the March number of Ent. Mo. Mag., gives as his opinion that the extreme scarcity, or total disappearance of *A. cratægi* may be due to a succession of wet ungenial summers and mild winters.

Mr. Carrington, at the Meeting of the South London Entomological Society, attributed it to the severe winter of either 1878 or 1879. It must be borne in mind that the year 1829 had a remarkably wet sunless summer, followed by a most severe winter; and that the winter of 1813—1814 was so severe that an ox was roasted on the Thames.

I think it is far more probable that the extinction of *A. crataegi* is due to the great increase of small birds, the natural consequence of the destruction of so many birds of prey. Kollar states: "Small birds, particularly the titmice, devour the caterpillars soon after they are hatched, as well as in the following spring, when they are dispersed upon the shoots. So eager are the birds that they break into their nests late in the autumn to obtain them."

In addition to the eight counties mentioned by Mr. Goss in Ent. Mo. Mag., vol. xxiii, pp. 217—219, *Aporia crataegi* has occurred in Devonshire (see Ent. Mo. Mag., vol. xxiii, p. 256), Norfolk, Suffolk, Cambridgeshire, Berkshire (see Curtis' British Entomology: not occurred since 1831), Middlesex, Surrey, Somersetshire, Gloucestershire, and Worcestershire (1871). The last appears to have been taken at Festiniog, in North Wales, in 1883 (see Entomologist, vol. xv, p. 255).

Glanville's Wootton: April, 1887.

[We alluded to some of the old authors cited by Mr. Dale in a foot-note on p. 277, vol. xxiii, and Mr. Hellins (*l. c.*) mentioned the influence that the protection of small birds may have had. We are still quite of opinion that *A. crataegi* is not to be classed amongst migratory species; and with reference to Mr. Parfitt's suggestion (*l. c.*) that its appearance in Devonshire was due to immigration from the continent, we would ask (assuming the existence of immigration for the sake of argument), why not immigration from Hampshire or some other English county?—Eds.]

Aporia crataegi in Wyre Forest.—A few years ago this handsome butterfly used to occur not uncommonly in the above locality, but I know of no one who has seen or captured a specimen recently. I will endeavour this season to undertake a thorough exploration of the Forest, with a view to "turning it up." I may remark that Wyre Forest is in the Counties of Worcester and Shropshire. I have never heard of the "Black Veined White" being taken in Warwickshire, though there are a few recorded instances of its occurrence in the more northerly County of Staffordshire, but none of recent date. It really seems as if this butterfly had followed in

the trail of *Lycæna semiargus*, *L. Corydon*, *Apatura Iris*, *Melanargia Galathea*, and many others, which were formerly taken in several localities in the Midlands.—W. HARCOURT BATH, Ladywood, Birmingham : June, 1887.

[Our correspondent should define more clearly what he intends by "a few years ago."—EDS.]

The influence of small birds in assisting the extinction of Aporia cratægi.—In the last No. of the Magazine, the Rev. J. Hellins says that "the protection of 'small birds' must have some influence" in diminishing the chances of the survival of a large day-flying insect.

I have collected in Kent for at least thirty years, and it must be quite twenty-five years since I last saw *Aporia cratægi* flying in that county; but, during the whole of the thirty years, I have never seen any bird but a sparrow attempt to catch a butterfly. In the second place, if it be argued that the larva would be devoured, I can only say that I never knew a small bird to eat a large caterpillar, if it could get one that could be more easily swallowed; of our indigenous species the robin and the great tit certainly select green caterpillars in preference to others, and, when feeding their young, I have watched both these birds with their mouths full of the green pests of the gooseberry and currant; from observation of cage birds I should say that the finches certainly show a similar preference, the green larvæ of *Mamestra* being chosen before the brown, though all are greedily devoured.

However, apart from these facts, my experience is that the "Wild Birds Protection Act" has not prevented the rapid decrease of many of the small birds in Kent; the wholesale destruction of woods, combined with active building operations, are more than sufficient to render such an Act a mere farce, so far as finches and warblers are concerned. It is true that blackbirds, thrushes and skylarks, which might eat the larvæ of *A. cratægi*, have all increased of late years; but the Act does not protect these birds.—ARTHUR G. BUTLER, 10, Avington Grove, Penge : April 30th, 1887.

Odour observable in males of Pieris napi.—I am able to confirm in the most positive manner the observation recorded by Mr. R. C. L. Perkins, *ante*, p. 11. I have been aware of the existence of this odour since 1829, and I published the following note on the subject in the "Mémoires de la Société Royale des Sciences de Liège," tome 2, 1844, in my "Énumération des Lépidoptères de la Belgique :"—"This is the place to remark that the ♂ of *Pieris napi* has a very strong aromatic odour, similar to that of thyme. I am surprised that no entomologist has noticed the existence of this odour, which is constant. I think that the ♂ of the var. *bryoniæ*, from the Simplon, has the same odour."

Now, in 1887, I am able to complete my old note of 1844, by saying that I have since taken in other parts of the Swiss Alps (where the ♀ *napi* type is always replaced by the var. ♀ *bryoniæ*) males giving out the same odour as the ordinary males of Belgium, &c. I likened this odour to that of thyme, but Mr. Perkins' comparison with that of verbena is more exact. It is to be desired that some biological chemist will study the cause of this odour, which exists always in the ♂ of *P. napi* and its varieties, but never in the ♀.

My note, translated above, was given when characterizing the variety *nigro-*

venosa, Selys (1844), which I have since recognised as identical with *sabellica*, Stephens (see Ann. Soc. Ent. France, 1859, Bulletin, p. xcii), so that Stephens' name has priority; this variety is intermediate between the typical form and the var. *bryoniae*.—E. DE SELYS-LONGCHAMPS, Liège, Belgium: June 6th, 1887.

Abundance of the larvæ of Abraxas grossulariata.—Latterly I became aware that some gooseberry-bushes were becoming bare of leaves, and I suspected the larvæ of *Nematus ribesii* of having caused the damage, as on former occasions; but a slight inspection was enough to show they were not the culprits, the plea of *alibi* was admitted, and they were honourably acquitted. The real raiders stood confessed and unabashed in the form of the larvæ of *Abraxas grossulariata* in such numbers that some of the bushes had nothing left on them but leaf-stalks, the devourers had then mostly migrated to other gooseberry-bushes, which were being fast reduced to the same condition, and the hordes were advancing to devour the leaves of adjacent currant-bushes. This was too much for me, and, like a celebrated living statesman who, when he is angry and wishes to relieve his feelings, proceeds to "smash something," I determined to adopt his plan of action, and smash these marauders: so I beat the bush and killed with a spud all the multitude that fell; yet, after continued vigorous thrashing, the cry was, still they come. And, after all, there were some—fine, fat fellows—that must have been directors of the company, that were the last to leave the plunder, and now came swinging gently by a delicate cord, suggesting an evasion of their responsibilities and punishment by a suspense-account. But inexorable fate was against them: I acted Atropos, and cut their thread of life, without the shears. Yet I am sure some of the wretches escaped, for several days afterwards I saw some *in situ*, that from their fair, sleek appearance, were deserving of being deemed survivors of the fittest. Notwithstanding their soft, refined looks, they were hardened sinners, for where the earth on which they fell was soft, they bore a good blow without apparent injury. This episodical *échenillage* may serve as a fresh instance of the well-known facts, that a vast swarm of the larvæ of a species may be congregated in a small space and prosper there in spite of winter-like weather; and also that in the previous year the parent moths were very scarce in that restricted region.—J. W. DOUGLAS, 8, Beaufort Gardens, Lewisham: June 3rd, 1887.

P.S.—Since the foregoing was written I have discovered that I had been aided by unseen friends in my endeavours to get rid of the caterpillars, for I have just found about a dozen of the black-banded cocoons of the Hymenopterous parasite, *Casinarina vidua*, openly attached to the bare twigs of the currant and gooseberry bushes. Adjacent to them were the empty skins of the larvæ of *Abraxas*, out of which the parasitic larvæ had come, after serving their private ends and ruining their hosts. These sappers and miners have now left their cover and show themselves fearlessly in their true though not final colours, for they will change their uniform on promotion to their ultimate rank and condition.—June 10th, 1887.

Coleophora Mühligiella.—I notice in the June number of the Ent. Mo. Mag., p. 14, Mr. Stainton has described a *Coleophora* under this name. Unfortunately there is already a species of that genus which was named *Muehligella* by Wocke

(Heinemann, p. 604). It would thus be advisable to give another name to the new species.—E. L. RAGONOT, Paris: *May 30th*, 1887.

[In compliance with Mr. Ragonot's kind suggestion, I would propose the name *Mœniacella*, derived from Francofurtum Mœniacum, where my friend Herr G. G. Mühlig lived and died—the insect will thus still be tributary to his memory.—H. T. STAINTON.]

Acrolepia marcidella in Dorsetshire.—On the 23rd of June last year (1886) I captured on the South Dorset coast a specimen of that apparently little known species *Acrolepia marcidella*, for the identification of which I am indebted to the kindness of Messrs. C. G. Barrett and H. T. Stainton. I beat it out of an old thorn hedge where it had no doubt hibernated. The only plant which is at all unusual that I can recall as growing near is *Hyoscyamus niger*. If any of your numerous correspondents have met with this insect, perhaps they might recall some conjecture as to its food-plant made at the time of capture, and so assist in discovering the larva.—C. R. DIGBY, Studland Rectory, Wareham: *May 28th*, 1887.

Tinea picarella.—My friend, the late Mr. John Sang, succeeded in breeding *picarella* last year, though I was myself quite unsuccessful. I am pleased, however, to record that I have been successful this season in rearing a few specimens of this pretty little insect from fungus.—J. GARDNER, 8, Friar Terrace, Hartlepool: *May 25th*, 1887.

Notes on Sesia conopiformis and Platyptilus Fischeri.—There are two species of *Lepidoptera* that it seems probable to me will occur with us if looked for in the right places. The first of these is *Sesia conopiformis*, Esp. In the Ent. Mo. Mag., January, 1871, there is published a list of insects caught by me at the Drachenfels—amongst these *tipuliformis* is mentioned; this occurring in an oak wood without currant bushes was always a mystery, but a better acquaintance with European *Sesie* enables me to decide that the specimen in question is *conopiformis*. To separate the two species is very difficult, but *conopiformis* is decidedly rather larger, and the colouring is brighter, the transparent fenestrum near the apex of the wing is broader, and there is a marked yellow spot at the lower extremity of the thorax between it and the abdomen. It feeds as a larva under the bark of the oak; any specimen referred to *tipuliformis* caught in the woods deserves careful examination. The second insect is *Platyptilus Fischeri*. This little plume, smaller than any of our native *Platyptili*, and very distinct from them, seems to me to occur wherever its food-plant (*Antennaria dioica*) is found. It was common as far north as Thronjøm in Norway, and is not at all rare in the Alps. Now, as the pretty *Gnaphalium* referred to is found on our Scottish hills, it is probable that the moth would occur there also; at all events, it is worth a search.—R. C. R. JORDAN, 105, Harborne Road, Edgbaston: *May*, 1887.

Variation in Scoparia ingrattella; and remarks on S. ambigalis and S. atomalis.—Varieties of *Scoparia (Eudorea) ingrattella*, somewhat resembling the varieties of *S. pyralis (dubitalis)*, mentioned by your correspondent, Mr. Eustace

R. Bankes (vol. xxiii, p. 258), occur in moderate numbers among typical *S. ingrattella*, which is found commonly on the coast near Dover, Folkestone, and Deal, but the variation is more extended and general than it seems to be in the Purbeck locality. I have a dozen striking pale varieties of *ingrattella* in my series, which I captured in July last (1886), the varieties showing almost every intermediate form between the type with white ground colour and distinct markings, and pure spotless white. I have only captured two of these latter forms, one in 1866, the other, July, 1885 (Entom., xix, p. 129); but I have one with the faintest possible trace of the chief markings, viz., the quadrate spot on the costa, and the transverse band across the base of the anterior-wings outlined in pale brown, the insect looking almost as white as the pure form; another has only a slight trace of the quadrate spot, the basal band being represented by a dot on the costa, and a very short longitudinal line where the centre of the band ought to be. These are the only markings. In others, the whole of the markings are faintly outlined, leading gradually up to the type. Even in this original home of *ingrattella* some of the typical form are inseparable from inland *dubitalis* taken in Kent and Surrey, and from others I have which were taken in the neighbourhood of Darlington. The capture by Mr. Bankes of similar varieties of *pyraella* is interesting, and serves to show how artificial is the separation of these two so-called species. There is one thing, however, I should like to see explained relative to them: typical *dubitalis* occur in large numbers in Kent and Surrey from May 28th to June 21st, but the coast species (?), *ingrattella*, is never on the wing until June 28th, or thereabouts, and continues well into July. I have paid great attention to the times of appearance of these two forms, but always with the same result. Can any one explain this?

Whilst writing about this matter, I may mention another fact that has just been brought prominently under my notice concerning two other doubtful species in this genus—*atomalis* and *ambigualis*. A short time ago, I received a pair of Shetland *atomalis* from a Shetland collector. They were undoubtedly *ambigualis*, corresponding in every particular with specimens in my series from Kent, Surrey, Yorkshire, Glasgow, and Paisley. Who is responsible for naming these Shetland insects?—J. W. TUTT, Rayleigh Villa, Westcombe Park, S.E.: May, 1887.

Occurrence in Worcestershire of Holocentropus stagnalis, Albarda, a species of Trichoptera new to Britain.—When searching for insects on May 10th, 1886, at Grimley, finding other modes of collecting all but useless, I turned to beating a hawthorn hedge, the leaves of which were about half grown, and soon dislodged a small brownish caddis-fly, which at once settled on the umbrella, closely folding its wings to its body. In this position its wings seemed to be banded with three dark brown fasciæ. Other specimens were obtained in the same way, and when the hedge and some willows on the other side of the lane had been beaten, some dozen specimens had been secured. Near the lane, in a meadow, is a shallow pond, about an acre in extent, closely filled with plants of *Typha*, *Rumex*, *Scirpus*, *Equisetum*, &c., which I supposed, and which proves, to be the natal place of the insect.

When these insects were examined at home they proved to be all ♀. They were evidently a species of *Holocentropus*, and appeared to be the one described in Mr. McLachlan's "Revision and Synopsis" as *H. stagnalis*. Mr. McLachlan concurred in this view, but the matter had to remain over in the absence of the ♂.

Early in May of this year I visited the locality thrice, but without success until the third time (May 9th), when about forty specimens of the ♂ and one ♀ were obtained by sweeping the water plants that could be reached from the margin of the pond, and one ♀ by beating the hawthorn hedge.

In the British specimens of this species the antennæ of the ♂ are much darker than those of the ♀, and the dark markings of the fore-wings are more strongly developed in the greater number of the ♂ specimens, though some are almost uniformly pale golden-brown, which is the condition of fully half of the ♀. In freshly killed ♂ the posterior wings have the cilia and adjoining membrane somewhat rosy, but this is almost wholly lost in drying. The ♂ expands 12--14 mm., the ♀ 16--18 mm.—J. E. FLETCHER, Worcester: *June, 1887.*

[*H. stagnalis* is widely distributed on the continent in flat marshy districts, but is yet only little known.—R. McL.]

Chrysopa stictoneura, Gerstäcker, = *Nothochrysa insignis*, Walker.—In the "Mittheilungen des naturwissenschaftlichen Vereins für Neuvorpommern und Rügen," xvi (1885), Dr. Gerstäcker described many new Australian forms of *Neuroptera-Planipennia* (= *Megaloptera*), and gave a list of Australian species. The descriptions are, as a rule, excellent, and I have had little difficulty in identifying many species in my collection therefrom. But there are several notable omissions of described species, and others described as new will fall as synonyms, chiefly on account of the insufficiency of the original descriptions.

With regard to *Chrysopa stictoneura*, I venture to think that Dr. Gerstäcker himself has erred in an essential point. The description agrees admirably with *Chrysopa insignis*, Walker, which is a *Nothochrysa*, as I had indicated in *Trans. Ent. Soc., London, 1868, p. 208.* In fact, the character given for the third cubital cellule in the anterior-wings, viz., "quergetheilt," is almost in itself sufficient to prove this. But another essential character of *Nothochrysa* is that the labrum should be *more or less excised.* Here, I believe, Dr. Gerstäcker has slightly erred in his description of *stictoneura*, for he says, "Oberlippe nicht ausgerandet," and "labro truncato." The excision is only shallow, but, nevertheless, sufficiently conspicuous, and every other character most distinctly agrees with *N. insignis.* Moreover the materials from which Dr. Gerstäcker worked were mostly from the Godeffroy Museum, and were for some time in my hands, and I remember to have noticed *N. insignis* amongst them. Walker's type of *C. insignis* is given vaguely as from "New Holland;" Gerstäcker's type of *stictoneura* is from Rockhampton; I possess two examples, one from Melbourne, collected by Mr. Henry Edwards, the other from Sydney, collected by Mr. E. Meyrick.—R. McLACHLAN, Lewisham, London: *June, 1887.*

Hydroptila femoralis, Eaton, and *H. longispina*, McLach., probably only one species.—This question mainly depends upon the very probable alteration in the details of the anal parts of the ♂ owing to drying, &c. The anal parts are simple. The most prominent feature is a kind of conical or "boat-shaped" superior lobe. Mr. Eaton (*Trans. Ent. Soc. Lond., 1873, p. 137*) terms it "trowel-shaped," and he adds, "and there are two long setiform processes for penis-sheaths," but his figure

(pl. iii, fig. 5) does not indicate them. He worked almost entirely from fresh insects. In my "Revision and Synopsis," p. 512, I say of the conical lobe that the lanceolate penis lies within it, and the apex of the organ (so considered) is indicated in my figure, pl. lvii, fig. 1. I worked only from dry material. Subsequently Mr. J. J. King took commonly at Ambleside (and since then in several localities in Scotland) a *Hydroptila* possessing most of the characters of *femoralis* (and notably the dark femora), in which the ♂ had the anal parts apparently similar, but there existed two extraordinarily long spines proceeding from beneath the anal lobe, one nearly straight, the other more or less spiral, both apparently chitinous. On this latter character I founded *H. longispina*, McLach., in the "First Additional Supplement" (1884) to my "Revision," p. 71, and what is no doubt an extreme condition is figured there on pl. vii. Latterly Mr. King, when working out the enormous mass of materials he had collected in *Hydroptilidæ*, said that, in his opinion, based on his materials, *H. longispina* should fall as a synonym of *H. femoralis*. And more recently he forwarded a series of specimens from the same localities, some of which should be true *femoralis*, others true *longispina*, and others sufficiently intermediate to induce me to agree with him, unless the contrary can be proved. The "two long setiform processes" described by Eaton (but which are not indicated in his figure, and are not visible in his only dry ♂ type that I possess in good condition) no doubt represent what I have considered the intromittent organ and its "sheath," the latter being the *spiral* spine. A question of what may be termed "mechanical anatomy" is involved. Notwithstanding the chitinous nature of these processes, and their great length when fully extended, they must be retractile to an extent that often prevents even the tips of them from being visible. In the case of the spiral spine this could be arranged by coiling up, but the nearly straight one must (so I think) often be absolutely retracted within the abdomen, a process that must need powerful muscles and other internal organization scarcely possible to define owing to the minute size of the insects. My original descriptions of *femoralis* and *longispina* otherwise agree remarkably; even the number of joints in the antennæ is approximately the same in both, a point of some importance, considering the difficulty of counting the joints in antennæ such as these, and the almost practical certainty that the number varies slightly in different individuals.—ID.

Note on Strongylogaster macula, Klug.—Mr. McLachlan has sent me a specimen of this saw-fly, which he captured in his garden at Lewisham on ferns on the 5th of June. I have only once met with the species myself, viz., on the Kilpatrick Hills towards the end of May, and, so far as I know, it has never been taken in England before. I believe the species of *Strongylogaster* live but a very short time in the perfect state, and all, so far as our present knowledge goes, feed on ferns during their larval existence.

Kunow, it may be added, has formed a genus, *Thrinax*, for *S. macula* and its allies; and for *S. delicatulus* another new genus, *Stromboceros*; the name *Strongylogaster* being retained for *flicis*, *cingulatus*, and *geniculatus* (cf. Wiener Ent. Zeit., iv, p. 19). To carry out this system logically it will be necessary to form more genera for certain of the exotic species at present relegated to *Strongylogaster*.—P. CAMERON, Sale: June 17th, 1887.

Hymenoptera at Ilfracombe.—I have just returned from a week's stay at Ilfracombe, during which the weather was very unsettled, but two or three bright sunny mornings enabled me to catch a few species of interest. What was to me particularly noticeable was the fine condition of some of the spring species of *Andrena*—*A. Trimmerana* and *A. nigroænea*, for instance, being captured in as good condition as one would expect to meet with them early in April, both sexes were common; in an ordinary year, at the end of May, these species would only occur occasionally and very much worn. I once (*i. e.*, in 1882) took *A. nigroænea* at Hayling Island in July, but in such a condition that it would be thought a disgrace to many well-ordered collections. I also took, on June 3rd, two specimens of *A. Gwynana* ♀, one of quite the earliest spring bees; indeed, I took the same species at Hastings this spring on March 26th. I was pleased to meet with several specimens of both sexes of *Andrena angustior*, Kirby; they frequented daisies, dandelions, *Veronica Chamædryas* and *Hieracium pilosella*. Mr. V. R. Perkins takes this species on *Allium ursinum*, but curiously enough, although there was a large patch of *Allium* on the road along which this bee occurs, I never saw a single specimen on it, although I watched for them constantly. Ilfracombe is not a locality which abounds in Aculeate *Hymenoptera*. I suppose the rocky nature of the ground is against them; but I certainly never visited any locality where so few species rewarded one's endeavours to make a collection.—EDWARD SAUNDERS, St. Ann's, Mason's Hill, Bromley, Kent: June 10th, 1887.

Compsochilus palpalis, Er., at Bromley, Kent.—A specimen of this rarity was captured by me on the 13th, about 6.30 p.m., by sweeping. I believe there are only four records of its capture in this country, viz., Tonbridge and Sheerness, Kent, Wandsworth Common, and Caterham, Surrey. Mr. Champion enumerates these four localities in this Magazine, vol. xii (1875), p. 39. Near where I was sweeping is a small pond, so that the character of the locality seems to be very similar to that in which Mr. Champion found it at Caterham. The Tonbridge specimen also was taken near a damp ditch, so that it would appear probable that this species is to be sought for in damp situations.—ID.: June 16th, 1887.

Tachinus elongatus, Gyll., at Lincoln.—A few days ago I took a specimen of this rare beetle running on a pavement in Lincoln. This is, I believe, the first recorded capture of the insect in this district.—W. W. FOWLER, The School House, Lincoln: June 12th, 1887.

Review.

THE BUTTERFLIES OF NORTH AMERICA, by W. H. EDWARDS. Third series, Part ii, 1887. Boston and New York: Houghton, Mifflin, and Co.; London: Trübner and Co. 4to.

The present part is occupied by the following species: *Colias Harfordii*, and its var. (or race) *barbara*, H. Edw., of which there is a complete life-history, illustrated by 24 figures, of which nine are devoted to the perfect insect, and the

remainder to egg, larvæ, and pupa. *Argynnis coronis*, Behr, with four exquisite figures for both sexes. A note concerning *A. Callippe*, Boisd. Finally, *Neonympha gemma*, Hüb., and *N. Henshawi*, Edw., the plate containing 25 figures, with full biological details for *N. gemma*. As heretofore, both text and plates bear evidence of the most scrupulous accuracy.

Obituary.

W. C. Unwin.—"We regret to announce the death, on April 23rd, of Mr. W. C. Unwin, of Lewes, at the advanced age of 76. Mr. Unwin was very widely known as an enthusiastic Naturalist. Without aspiring to the rank of a specialist, he possessed a knowledge of nearly every branch of Natural History, such as is seldom attained by the Naturalists of the present day, and he was especially an observer and student of our local Fauna and Flora. In his earliest years (more than fifty years ago) he devoted himself principally to ornithology, both shooting birds and stuffing them. He afterwards turned his attention to botany, and thoroughly investigated our local plants. Subsequently he collected nearly all orders of insects, and in his declining years he took up the study of mosses, in which he did good work. A glance through the list of papers which he read before the Lewes and East Sussex Natural History Society, of which he was at one time a prominent member, will show his versatility—"Summer Birds of Passage," "Humble Bees," "Land and Freshwater Shells," "Raphides," "Hymenoptera," "Collecting Mosses," were among the numerous subjects of which he treated. His published papers were somewhat numerous. In the "Naturalist" of 1853-54 he published a series of papers on the Natural History of Sussex. The lists of insects and plants in Mrs. Merrifield's "Natural History of Brighton" were chiefly compiled by him, and he also contributed several papers at various times to the "Zoologist" and other scientific periodicals. His principal work, however, was "Illustrations and Dissections of the Genera of British Mosses," published in 1878, and illustrated by his own beautifully-executed drawings. He was a skilled microscopist and draughtsman. His studies brought him at various times into communication with most of the principal Naturalists of the day. Of a kind and generous disposition, he was always willing to impart his knowledge to others, and many Naturalists remember with gratitude his ready help. The love of Nature he retained to the last, and he passed peacefully away after protracted suffering."

We take the above from the *East Sussex News* of April 29th, 1887. We are sorry to learn, from private sources, that for several years Mr. Unwin had been unable to follow his avocations, with the result that his widow is in very straightened circumstances. Her case has been taken up by the Rev. W. E. Richardson, of Lewes, who will be happy to give further information.

ENTOMOLOGICAL SOCIETY OF LONDON: *June 1st*, 1887.—Dr. DAVID SHARP, F.Z.S., President, in the Chair.

Mr. Philip Crowley exhibited the following specimens of *Diurni*, from the

Kareen Hills, Burnah :—*Papilio Zaleucus*, Hew., *Papilio Adamsoni*, Smith, *Papilio* ? sp. (male and female), and *Nymphalis Nicholii*, Smith.

Mr. T. R. Billups exhibited several specimens of an ant found at Kew, frequenting a species of palm from Tropical Australia, and which had been determined as *Tapinoma melanocephalum*, F.; also living specimens of *Carabus auratus*, from the Borough Market, and of a species of *Blaps* from Northern Africa.

Mr. Waterhouse exhibited a specimen of a Brazilian Locust, *Conocephalus*, ? sp., which he had for some time preserved alive, and which had only died that same morning. He called attention to the change of colour which he had observed in the eyes of this insect; in a bright light they were dirty white or horn-coloured, with a black dot in the middle; but at night, or if the insects were confined in a dark box, they became altogether black; shortly after death, also, the eyes became black. Mr. McLachlan observed that he had noticed a darker spot in the centre of the eye in *Ephemera*, and in other *Neuroptera*. The discussion was continued by Dr. Sharp and others, but no one seemed to be able to account for the alteration in question.

Lord Walsingham exhibited specimens of *Cateremna terebrella*, Zk., a species lately taken by himself in Britain, and recorded in Ent. Mo. Mag., xxiii, p. 82.

Mr. Meyrick read two papers "On *Pyralidina* from Australia and the South Pacific" and "Descriptions of some exotic *Micro-Lepidoptera*." In these papers about sixty new species were described. A discussion ensued, in which Dr. Sharp, Mr. Stainton, Mr. McLachlan, and others took part. Mr. Meyrick stated that, as far as the *Pyralidina* were concerned, Australia could not be regarded as a separate region, for a large number were not endemic, but appeared to have been introduced from the Malay Archipelago. The method of this immigration seemed doubtful. Mr. Meyrick was of opinion that the insects flew very long distances, and effected a settlement through their food-plant being widely distributed and common. He instanced the undoubted immigration of certain Australian species into New Zealand, a distance of 1200 miles. Mr. Stainton adduced the instance of *Margarodes unionalis*, which is a South-European insect, feeding on the olive, yet is occasionally found in Britain. Mr. Meyrick, in connection with his papers, exhibited *Oxychirotia paradoxa*, Meyr. (unique specimen representing the family *Oxychirotidae*), *Epharpastis dædala*, Meyr., and *Mixophyla erminea*, Moore. Mr. Meyrick also made some observations on the distribution of the insect fauna in the various regions of Australia; he said that it appeared to be more or less different in certain defined portions of the Continent, which might be roughly regarded as oases in the midst of desert districts: all his observations, however, had tended to upset Mr. Wallace's theory that Eastern and Western Australia were originally separated, as the gradations in the insect fauna from east to west were quite gradual; in Western Australia the *Tineina* were the only group well represented by peculiar endemic forms.

Mr. Pascoe read a paper "On the genus *Byrsops*," a genus of *Curculionidæ*.

The President announced that Lord Walsingham's collection of *Lepidoptera* and larvæ, recently presented to the nation, would be exhibited in the Hall at the Natural History Museum, South Kensington, until the end of June.—W. W. FOWLER, Hon. Secretary.

ON CERTAIN SPECIES OF *COLEOPTERA* NEW TO BRITAIN, OR
REINSTATED.

BY THE REV. W. W. FOWLER, M.A., F.L.S., &c.

HOMALOTA CONSANGUINEA, Eppelsheim.

This species appears to form a connecting link between the *H. longicornis* and *H. sordida* groups; in the European catalogue of Heyden, Reitter, and Weise it is placed in the sub-genus *Coprothassa*, which contains besides *H. sordida* and *H. melanaria*; it differs, however, from these latter species in the shape of the thorax, which is much less narrowed in front, and in the sculpture of the hind-body, which moreover is less narrowed behind; the following is a detailed description:—Pitchy-black or brownish, with the thorax slightly lighter, the elytra reddish or reddish-brown, and the apex of hind-body broadly testaceous; head rather large, finely but not very closely punctured; antennæ long and stout, pitchy-black, with base sometimes ferruginous; joints 2—3 of about equal length, much longer than 4th, 5—10 not differing much in length, the penultimate being about as long as broad, last joint long, pointed, at least as long as the two preceding together; thorax transverse, with sides rather evenly and not strongly rounded, and not strongly narrowed in front, the apex being nearly as broad as the base, punctuation fine; elytra about as long as thorax, finely sculptured; hind-body not strongly narrowed behind, very finely punctured, less evidently at apex than at base; legs clear testaceous-yellow.

Length, $2\frac{1}{2}$ —3 mm.

Three specimens of this rare continental species were taken by Mr. E. Saunders, at Hollington, near Hastings, in 1871. M. Fauvel, who kindly determined the species for me, expressed his surprise at its occurrence in Britain, as it has hitherto been confined to Eastern Germany and Austria.

SCOPÆUS COGNATUS, Muls. et Rey.

This species very much resembles *S. pusillus*, but may be known by the slightly longer elytra, and by having the intermediate tibiæ somewhat dilated, and also by the characters of the 7th segment of the hind-body in the male; in *S. pusillus* this is rather deeply and angularly, but simply, emarginate; in *S. cognatus* the emargination is rounded at apex, and is bounded by two strong arched impressions, converging in front, which make the edges of the emargination appear raised.

Length, $2\frac{1}{2}$ mm.

One specimen taken by Mr. E. Saunders, at Ventnor, Isle of Wight, and another kindly sent to me by M. Fauvel, who, I believe, obtained it from M. Javet's collection; it is labelled "Wingham," which is a village near Sandwich.

BLEDIUS DISSIMILIS, Er.

This distinct species of *Bledius* belongs to the section in which the thorax has no central impressed channel, but in its stead a smooth central line, which sometimes appears slightly raised; hitherto we have only possessed as British two species

of this group, *B. crassicollis* and *B. erraticus*. *B. dissimilis* may be at once known from the latter by the much coarser punctuation of the thorax, and from the former by having the elytra longer than the thorax, and by the fact that the posterior angles of the latter are more rounded; in all the specimens that I have taken the elytra are yellowish or testaceous, with a slight red tinge, with the suture more or less broadly dark; occasionally the dark colour covers nearly the whole of the elytra: this appears to be the *v. nigricans*, Er.; the chief distinguishing character, however, lies in the two long spines which are situated at each side of the 6th ventral segment of the hind-body of the male, and which are plainly visible from above: they are slender and curved at apex, and are very conspicuous; in *B. erraticus* they are entirely absent, and in *B. crassicollis* take the form of short teeth; *B. dissimilis* appears to be most nearly related to *B. cribricollis*, a species not hitherto found in Britain, but which is common in the northern provinces of France; it differs, however, from the latter species in its less red elytra, the suture of which is more broadly darker, in its more closely punctured thorax, of which the interstices are not quite so smooth, and in its shorter antennæ, of which the penultimate joints are more transverse.

Length, $3\frac{1}{2}$ mm.

As long ago as 1878, soon after I commenced collecting, I took two or three specimens of this species at Bridlington, Yorkshire, which were named for me as *B. erraticus*; in 1884, I found the species in the same locality in large numbers, and discovered that it certainly was not *B. erraticus*, nor did it agree with *B. crassicollis*. I afterwards determined it from Mulsant and Rey's "Brévipennes" as *B. dissimilis*, and a specimen I sent to M. Fauvel was also returned to me by him with this name; the only point that seemed doubtful was the fact that the long spines in the male are represented by Mulsant and Rey as curving outwards, whereas in my specimens they are larger than in their figure, and curved inwards; in all other points, however, the insect quite agrees with their description. The species occurs in great numbers at Bridlington, where its casts may be found on the sides of the dark clay cliffs, from their tops nearly to the shore line; it is never found in the sand with *B. arenarius*, which is also very abundant. Together with the perfect insect I found the larvæ and pupæ, the latter in little cells with polished sides formed in the clay; I know of no other British locality but Bridlington for this insect, and it is strange that it has not been recorded before: others of the rarer *Bledii*, such as *B. crassicollis*, have been found in only one or two localities, and in these in some numbers, so that it is most probable we shall find other species in Britain, such as *B. cribricollis*, &c.

BYTHINUS VALIDUS, Aubé.

Very like *B. puncticollis*, but distinguished by the characters of the male, which has the first joint of the antennæ slightly shorter, and without a dentiform appendage at apex, the femora strongly thickened, and the tibiæ robust, the posterior

pair being of equal breadth throughout; the thorax is rather broader in proportion than in the preceding genus, and the colour, as a rule, is said to be darker, but this is by no means a reliable character, as it is variable; in *B. puncticollis* the male has the two basal joints of the antennæ thickened, the first armed with a small dentiform appendage on its internal apex, and the femora ample. Length, $1\frac{1}{2}$ mm.

Found under the same circumstances as *B. puncticollis*, and apparently widely distributed and mixed with that species in collections; in Dr. Sharp's collection there are specimens from Bishop's Wood and Hampstead, as well as from several Scotch localities, and I have specimens from Bretby Wood, near Repton, Burton-on-Trent; it is evidently the insect referred to by Denny (Mon. Psel. et Scyd., p. 26) as the female of "*Arcopagus puncticollis*," of which he says, "thighs very thick in female," although what could have led him to the determination of the sex it is difficult to say.

MICRAMBE ABIETIS, Payk.

There appears to be some doubt regarding this species, which has before been introduced into the British list on the authority of large specimens of *Cryptophagus vini*; a specimen named for me on the continent as *M. abietis* appears to me to differ in no point from the species just mentioned, but I believe that Mr. Blatch and Dr. Capron have both taken the insect in the London district: it is larger, with shorter and less thick pubescence, and the anterior angles of the thorax not produced into a tooth behind; the elytra also are more finely and closely punctured.

Length, $1\frac{1}{2}$ mm.

The species occurs on pine trees; the habitat, therefore, appears to be different from that of *C. vini* (which species must also be referred to Thomson's genus *Micrambe*). I feel, however, almost certain that I have found *C. vini* on low-growing firs.

ATOMARIA RHENANA, Kr.

Closely allied to *A. basalis*, but broader and more convex, with the thorax rufous and the testaceous colour of the elytra reaching further towards the base; the antennæ are rather shorter and stouter; the thorax has the sides more slightly rounded, and almost angularly dilated about the middle, and the elytra are considerably broader and more widened before the middle.

Length, $1\frac{1}{2}$ mm.

This species has occurred at Great Yarmouth, Shoreham, Brighton, and Bognor; it appears certainly to be a good species, although it has been altogether omitted from the British list as being a variety of *A. gutta* (from which it is quite distinct), and is given as a variety of *A. basalis* in the European catalogue of Heyden, Reitter, and Weise.

MELANOPHTHALMA (CORTICARIA) SIMILATA, Gyll.

Very like *M. fuscula*, but easily distinguished by the shape of the thorax, which is nearly as long as broad, and usually has three foreæ at the base, of which

the lateral ones are more or less obsolete; the sculpture of the elytra is much stronger, and the alternate interstices are raised and somewhat carinate, especially near suture: the colour of the type form is more or less ferruginous, but the insect varies both in this point and in size. Length, $1\frac{1}{2}$ — $1\frac{3}{4}$ mm.

One specimen of the type form is in Dr. Sharp's collection, without locality, and another of the larger dark variety is in the same collection, from Braemar.

M. FULVIPES, var. MERIDIONALIS, Reitter.

The type form of *M. fulvipes* is pitchy-black, and rather larger than is the case with any of our specimens, all of which must apparently be referred to the var. *meridionalis*, Reitter, by reason of their small size, and lighter, reddish, colour.

LEMOPHLEUS PUSILLUS, Schön. (*longicornis*, Marsh.).

Rather larger than *L. duplicatus*, to which it is somewhat closely allied, and distinguished by having only one impressed line on each side of the thorax, and by the fact that the antennæ of the male are almost as long as the whole body; the elytra also are more plainly striated, and the general form is broader.

Length, $1\frac{1}{2}$ — $1\frac{3}{4}$ mm.

In granaries; imported with corn; found by Mr. Fitch, at Maldon, Essex. These granary beetles are very unsatisfactory to deal with, but if one is introduced into the British list, others must be, and we already have a considerable number of cosmopolitan insects in our catalogues.

AGARICOPHAGUS CONFORMIS, Er.

In Dr. Power's collection there are three or four specimens of *Agaricophagus* labelled *conformis*: one of these I sent to Herr Reitter, who has recently revised the whole of the *Anisotomina*, and he has confirmed it for me as that species; it appears plain, therefore, that we possess as British what is regarded as *A. conformis* on the continent; the species was introduced many years ago by Mr. Crotch, but afterwards given up, on the ground that the specimens were only forms of *A. cephalotes*; the general differences appear to be very slight, *A. conformis* being smaller, and of a shorter oval form than *A. cephalotes*, with the head smaller and the thorax more narrowed in front; the elytra also are more thickly cross striated; the head, however, varies in size in the sexes, and, therefore, is not a dependable character; in the male, however, *A. cephalotes* has the posterior femora dilated, emarginate beneath, and armed in the middle with a recurved tooth, whereas in *A. conformis* they are only armed with a minute tooth at apex: the species is so very rare that it is impossible to get many specimens for comparison, and at present I am not at all sure that we possess more than one British species, whether it be *cephalotes* or whether it be *conformis*.

ANISOTOMA RUBIGINOSA, Schmidt.

This is another of the doubtful species that have been alternately introduced into the British catalogue and afterwards given up: it is a very convex, globose-

ovate species, and is distinguished by having the thorax more convex than the elytra, by the very fine, and at the same time diffuse, punctuation of the thorax, and by the almost invisible punctuation of the interstices of the elytra. There is a specimen in Mr. Mason's collection which was returned to me from the continent as "*près rubiginosa*;" it is not sufficiently distinct to form a new species, but must, I think, be referred to *A. rubiginosa*.

It may, perhaps, be here remarked that *A. oblonga*, Er., and *A. grandis*, Fairm., are now united by the chief continental authorities, and also that *A. obesa*, Schmidt, appears to be considered as in all probability identical with *A. dubia*, Klug, and *A. similata*, Rye, as a form of *A. badia*, Sturm.

Very little is usually known about the difference between *Cyrtusa minuta*, Ahr., and *C. pauxilla*, Schm.: the former is a larger, less elongate, and more convex insect, with the posterior tibiæ gradually widened to apex, and the posterior angles of thorax right angles; it has been taken at Scarborough and in the Solway district of Scotland, but very rarely; the latter is evidently smaller, more elongate, and less convex, with the posterior tibiæ abruptly widened at apex, and the posterior angles of thorax obtuse; it is not uncommon in the London district in several localities, and has been taken at Hastings and in the New Forest. Most of the specimens standing in our collections as *C. minuta* ought probably to be referred to *C. pauxilla*.

ADALIA (COCCINELLA) OBLITERATA, L., var. FENESTRATA, Weise.

In Dr. Power's collection there are two specimens of this very distinct variety of *Adalia obliterata*, L.: it is quite black, with the apex of the elytra and a few more or less distinct spots at margins and on disc of the same yellowish or yellowish-red, and the anterior angles of the thorax somewhat broadly whitish.

The specimens were taken at Northampton, on ling, by the Rev. Hamlet Clark.

A. BOTHNICA, Payk., var. CRUCIFERA, Weise.

Most Coleopterists who are acquainted with Dr. Power's collection will remember a rather small, hemispherical, yellowish *Coccinella* labelled "like *variabilis*, but not it," which Dr. Power used to set great store by, and often endeavoured to get identified: this specimen has lately been named for me by Herr Reitter as *Adalia bothnica*, v. *crucifera*, Weise, a species which occurs in northern Europe, the mountainous districts of central Europe, and in Siberia. Dr. Power's specimen is from Moss Morran, Scotland. The genus *Adalia* differs from *Coccinella* proper in having the prosternum convex, and without carinæ, whereas in the latter genus the prosternum is depressed between the coxæ, and furnished with two carinæ; hitherto only two species have been known as British, *A. obliterata* and *A. bipunctata*. *A. bothnica* is almost circular and hemispherical. Head and thorax yellow, with distinct black markings, which are more or less confluent; elytra yellow, with the suture and six patches on each black; the side margins also, until a third before apex, are black; in the variety two of these patches on each elytron are free, two join the margin, one touches the apex, and one the suture at middle: the suture and the two patches that join it form a rough cruciform figure; the legs are pitchy; the elytra are closely and rather distinctly punctured. Length, $3\frac{1}{2}$ —4 mm.

Lincoln: June, 1887.

SUPPLEMENT TO ANNOTATED LIST OF BRITISH ANTHOMYIIDÆ.

BY R. H. MEADE.

(Continued from Vol. xxiii, p. 253).

HYLEMYIA, R. Desv.

H. COARCTATA, Fall.

The larvæ of this species have been found in the stalks of wheat, upon which they feed, often doing great damage to the crops. In May, 1882, I bred several of these flies from young wheat plants (infested by little maggots) which were sent to me by Mr. Creese, of Teddington, near Tewkesbury, at the request of Miss Ormerod.

CHORTOPHILA, Macq.

C. SYLVESTRIS, Fall.

This large species has been recorded as British by Mr. Verrall, in his "Hundred new British species of *Diptera*." It is a mountain species which he captured in Scotland, closely resembling *Hydrophoria conica* in shape, size, colour, and markings; it may, however, easily be distinguished from it by the scales of the alulets being much smaller and equal in size, by the arista being pubescent instead of plumose, and by the eyes being approximate in both sexes, instead of being contiguous in the males and widely separated in the females, as in *H. conica*. As I before mentioned in my list, Schiner placed this species, together with *C. Billbergi*, in the genus *Eriphia*, Mgn.

C. TRAPEZINA, Zett.

Mr. Verrall, in his "Hundred new species," has recorded the capture of *A. (Phorbia) striolata*, Fall., and remarks that it is the same as the fly that I had named *C. trapezina*, Zett. It is exceedingly difficult to determine the identity of many species that have been only shortly and insufficiently described, and I allow that my specimens do not correspond exactly with some that I have received from the continent under the name of *C. trapezina*, the central marks on the back of the abdomen being larger and more quadrate in the continental specimens than in the English ones, where they are triangular in form; still I cannot make them agree with the descriptions given of *P. striolata*, Fall., of which Zetterstedt says, "*Valde similis A. radicum*,"* in which the abdomen is marked by strong transverse black lines in addition to the longitudinal dorsal stripe.

C. CINEREA, Fall.

In my notes on this fly I find that I have mixed up the male and female of two distinct species. The one that I took for the male of *C. cinerea* being really that of *P. cepetorum*. I discovered my error by breeding a number of both males and females of the latter species from onions, when I found that the male flies were identical with those that I had named *C. cinerea*, while the females were quite distinct. In colour, markings, &c., the two species are very similar, but the females of *C. cinerea* are larger than those of *P. cepetorum*, and differ as well by the following points of structure. The arista in *C. cinerea* is distinctly pubescent

* Zett., Dipt. Scand., tom. xiv, fol. 6242.

throughout its entire length, while in *P. cepetorum* it is only slightly hairy for a short distance beyond the thickened base. The fronto-orbital bristles* are differently arranged in the two species. In *C. cinerea* the upper series (three in number) is placed on an outer line to the lower series, and turns outwards; the bristles in the lower series are also much smaller than the upper ones, are five or six in number, and turn inwards. In *P. cepetorum* the bristles in the upper and lower series form one extended, though curved, line; they turn, however, in opposite directions as in the other species, but there is less difference in size between the bristles in the two series, and those in the lower one are only three (sometimes four) in number. The edges of the second and third abdominal segments have larger and longer bristles in *C. cinerea* than in *P. cepetorum*; the wings also differ in the two species—in *C. cinerea* the third and fourth longitudinal veins are slightly divergent at their extremities, while in *P. cepetorum* they are quite parallel, and the third reaches the border exactly at the apex of the wing, while in *C. cinerea* it ends a little before the apex.

The males belonging to *C. cinerea* are still unknown to me.

C. LONGULA, Fall.

Zett., Schin., Rnd., *non* Meig., *nec* Macq.

This is a well-marked little species, of which I have only seen a single male, which was given to me by Mr. Brunetti, and captured by him at Balham in August, 1885. It has a narrow cylindrico-conical abdomen, marked on the dorsum with a longitudinal row of narrow triangular spots. The thorax has two dark longitudinal lines on the dorso-central region placed rather widely apart, which are formed by a series of brown spots surrounding the roots of the outer row of the dorso-central bristles. The characteristic peculiarity of this species, however, is the clouding of the transverse veins of the wings, by which it somewhat resembles *Hylemyia pullula*, Zett., and with which it was confounded by Meigen and Macquart. The face and forehead are not very prominent in this species, so it will come under my second section. Rondani has remarked this, but Schiner has fallen into the error of placing it next to *C. buccata*.

PHORBIA, R. Desv.

P. DISCRETA, Meig.

Mr. Verrall has recorded the capture of this species, of which he kindly sent me specimens. It is well marked, characterized by the eyes of the male being rather widely separated (sub-contiguous), by the thorax being striped with five rather indistinct lines, by the abdomen being flat, having brown reflexions, being marked by an interrupted longitudinal dorsal band, and black transverse lines, and by the wings being brunescent.

P. VETULA, Zett.

Mr. Verrall has also recorded the capture of this species, but, as he remarks, there is some doubt respecting it. I think it is probably an undescribed species.

* See Osten-Sacken's "Essay of Comparative Chætofaxy."

P. IGNOTA, Rond.

Both males and females were bred by Mr. Inchbald in June, 1885, from the flower heads of ragwort.

PEGOMYIA, R. Desv.

P. SILACEA, Meig., Schin.,

(olim *P. diaphana*, Auc.).

Mr. Verrall has recorded the capture of this rather rare species in Britain, and since my last list was published I have found it myself near Bradford, as well as in Oxfordshire, and have also received a specimen from Miss Prescott Decie, found near Tenbury. This species has been mixed up by authors with the *Musca flaveola* of Fallén, which it somewhat resembles. I placed the latter in the first part of my list in the genus *Mydæa*, but there have been great differences of opinion as to its proper position; Schiner arranges it among his *Limnophoræ*, under the specific name of *diaphana*, and as the eyes in some specimens are slightly hairy, it has also been classed among the *Ariciæ*. Under these circumstances I think it will be better to place it, together with its congener (*P. silacea*), in the genus *Pegomyia*. Both species have moderate and unequal sized scales to the alulets, and will therefore come into my first division of that genus. Fallén and Zetterstedt place them next each other, and the descriptions of these species have been so mixed up, that the synonymy has become very confused.

I had a most interesting correspondence at the beginning of last year with Professor Mik, of Vienna, respecting these two species, and from the information which I thus obtained, as well as from the interchange of specimens, I hope I may be able to clear up the subject. In the first place the name *diaphana* has generally been supposed to have been applied by Wiedemann to the less highly developed species which we now propose to call *silacea*; but, on Prof. Mik examining the types (of which he found three) in the Wied. Collection in Vienna, he found that they all (though named *diaphana*) belonged to the more highly developed species, the *M. flaveola* of Fallén. This being the case, Prof. Mik suggested to me that the name *diaphana* had better be dropped, for it is really only applicable to *M. flaveola*, which has a translucent abdomen, while the other has not, and it would lead to much confusion to transpose the names entirely. Meigen having described the less highly developed of these species in his 7th volume, under the name of *A. silacea*, and Schiner having followed him, Prof. Mik thought that we had better adopt this title; he promised to publish some observations himself upon the subject, but as he has not yet done so, I have pleasure in following his suggestion.

Before endeavouring to clear up the synonymy, I think it will be better briefly to point out the principal points of distinction between the two species, as neither of them have been fully described.

P. FLAVEOLA.—Frontal triangle in male mostly black, but occasionally red (young spec. ?); eyes contiguous, and sometimes slightly pubescent; frontal space in female occupying about one-third of the width of the head, and also mostly black; face glistening white in both sexes; antennæ with two basal joints yellow, and third joint black in both sexes; arista shortly ciliated, in some specimens

nearly bare; thorax testaceous and glabrous, showing the spur of a white central stripe on its front margin, and having four bristles behind the suture in the outer dorso-central row; abdomen oval, yellow, and translucent, sometimes a little infuscated on the back of the fourth and fifth segments, otherwise immaculate, edges of the second and third segments destitute of bristles on the dorsum; legs yellow, with the exception of the tarsi, all the joints of which are black; hind tibiæ of the males with a strong black spur or spine projecting from their inner ends; wings with the external transverse veins rather oblique, and sometimes a little sinuous; the internal transverse vein is placed a little before the termination of the auxillary vein.

P. SILACEA.—Frontal triangle in the male, as well as frontal space in the female, yellow; eyes contiguous in the male, and quite bare; face yellowish-white; antennæ entirely yellow in the male, but with third joint black in the female; arista shortly ciliated, length of hairs about the same as in the former species; thorax of a dead whitish-yellow colour, which is lighter at the fore part; unstriped; bristles in the dorso-central rows small, only three in the outer row behind the suture; abdomen small and flat, dull yellow, and when viewed in certain lights showing a wide dorsal interrupted stripe* as well as transverse dark lines; all the segments are furnished with a thick even row of black bristles on their posterior edges; legs yellow, with the exception of the last four joints of the tarsi; metatarsi pale; there is no spine on the inner extremity of the hind tibiæ in the male; wings, with the external transverse veins very oblique in the male, so that they lie almost parallel with the posterior borders of the wings, they are also very sinuous, being bent like the letter S; in the female these veins are much less oblique and sinuous than in the male; internal transverse veins placed exactly opposite the termination of the auxillary vein.

A comparison of the two descriptions will show that the species are widely different, and that one is more highly developed than the other. Only knowing the former when I published my list, I placed it in the genus *Mydæa* on account of the shape of the abdomen and size of the alulets, &c. Prof. Mik thinks that it should be classed among the *Aricia* (*Hyetodesia*, Meade), on account of the slight hairiness of the eyes, and he called my attention to the fact that H. Loew has described this fly as a new species by the name of *Aricia aculeata*,† giving this specific name from its having the spurs on the hind tibiæ. The almost nude state of the arista scarcely fits this species to hold such a position, and in the present unsettled, and I may say unsatisfactory, state of the generic distribution of the *Anthomyiidae*,‡ I think it will be better to place both species provisionally in the genus *Pegomyia*, which is already a very artificial group, including some species that are much more highly developed than others, but have the abdomen and legs yellow.

I will conclude these remarks with giving a sketch of what I believe to be the correct synonymy of these species.

* Meigen mentions this in his description of *A. silacea*, but it is omitted by Schiner; who says, however, that the abdomen shrinks up in drying and becomes short; this probably caused him to overlook the stripe.

† Berl. Entom. Zeitschr., 1873, pp. 33—52. Diptera nova a F. Kowarzio capta.

‡ M. J. Schnabl, of Warsaw, has lately published an elaborate memoir upon the genus *Aricia*, the scope of which he proposes greatly to enlarge. He considers the presence of hairs upon the eyes an insufficient generic distinction.

PEGOMYIA FLAVEOLA.

Syn. *Musca flaveola*, Fall.
Anthomyza flaveola, Zett.
Anthomyza varians, Zett.
Anthomyza diaphana, Wdm. et Meig.
Pegomyia diaphana, Macq.
Limnophora diaphana, Schin.
Aricia aculeata, Lw.
Mydæa flaveola et varians, Meade.

PEGOMYIA SILACEA.

Syn. *Anthomyia silacea*, Meig. et Schin.
Anthomyia diaphana, Rond.
Musca diaphana?, Fall.
Anthomyza diaphana, Zett.

P. FULGENS, Meig.,
 Macq., Rond., Wlk.?, non Schin.
A. limbatella, Zett.

This appears to be a rare species. I have only seen one specimen, which I captured some years ago upon Shirley Heath. It is characterized by having the palpi yellow with black tips, as in *P. nigratarsis*, Zett., which species it a good deal resembles, but from which it differs by having the shoulders and scutellum yellow, and the abdominal segments of the female marked by transverse black lines.

P. HYOSCYAMI, PANZ.

I bred two females of this species from larvæ which had mined, or rather blotched, the leaves of garden beet in August, 1886. This shows that phytophagous insects do not always confine themselves very closely to plants of the same family.

(To be continued).

LOBESIA PERMIXTANA OR RELIQUANA: ITS SYNONYMY AND HABITS.

BY H. T. STAINTON, F.R.S.

Hübner figured this *Tortrix*, his No. 75 (before the year 1801), under the name of *permixtana*. He subsequently figured another insect as *permixtana*, his No. 187, under the impression that the latter was really the *permixtana* of the Wiener Verzeichniss, and not wishing to have two species both bearing the name of *permixtana*, he, in 1816, in his Verzeichniss bekannter Schmetterlinge, proposed the name *reliquana* for his earlier figured species No. 75, so long known in this country and abroad as *permixtana*.

Stephens, in his Museum Catalogue of *Tortrices*, published in 1852, reverted to the name given by Hübner in his Verzeichniss to his figure No. 75, and hence *reliquana* came into our lists, but the *reliquana* of Hübner never did mean anything but *permixtana*, Hübner, No. 75, as distinct from *permixtana*, Hübner, No. 187.

Treitschke, very unintentionally no doubt, helped a little to increase the confusion. He was very probably unacquainted with the insect now under consideration. He described a *reliquana* and gave as synonyms Hübner's *permixtana*, fig. 75, and the *reliquana* of Hübner's Verzeichniss bekannter Schmetterlinge.

Treitschke's insect was evidently something different from ours, and from his notice of the larva was clearly the vine-feeding *Tortrix* now known as *botrana*, yet Treitschke thought that Hübner's fig. 75 represented a *female* of his species, whereas Hübner's figure with the two black triangular marks on the inner margin of the anterior wings, and with the *white posterior wings*, is manifestly the *male* of our well-known *permixtana*.

As in these days the *permixtana* of the Wiener Verzeichniss, and the *permixtana* figured by Hübner 187, seem alike lost to science, there seems no reason why Hübner's name of *reliquana* should not be dropped, and the name *permixtana*, given by him to his figure No. 75, restored to that insect.

It must, however, always be borne in mind that *Lobesia reliquana* of Wilkinson's British Tortrices, p. 280, and *Lobesia reliquana* of Stainton's Manual, II, 226, are identical with *Lobesia permixtana* of Staudinger and Wocke's Catalogue, p. 251, with *Grapholitha (Lobesia) permixtana* of Heinemann, p. 138, and with *Lobesia permixtana* of Snellen's De Vlinders van Nederland, Micro-Lepidoptera, p. 277.

German Entomologists seem to have generally overlooked the simple fact that *reliquana* was a synonym of Hübner's creation for his own *permixtana*, No. 75, and that, consequently, *reliquana* of Hübner has no separate existence from that insect; the pretty moth of which I am treating is therefore both the *permixtana* and the *reliquana* of Hübner.

Now as to the habits of the species. Haworth, Lepidoptera Britannica, p. 406, says only: "Habitat apud nos infrequens." He mentions the black-tipped white hind-wings, and the black hind-wings, suggesting that these may indicate the sexes, but he says nothing of localities or times of appearance.

Stephens, in his Illustrations, Haust. IV., p. 183, says: "Not very uncommon, in June, in the woods of the metropolitan district, frequenting open places and hedges; found also in plenty in the New Forest, Devonshire, &c."

Wilkinson, in his British Tortrices, p. 280, says: "Not a very common species; slightly variable in size, but tolerably constant in

colour and markings. The imago appears in May in woods and hedges, flying in the sunshine. It occurs at Darenth and Swanscombe Woods, at Dulwich, and other places round London; at Epping and the New Forests, Devonshire, &c." In the Manual of British Butterflies and Moths, II, p. 266, I give the time of appearance "May," and add: "Widely distributed, and not scarce in the South; flying in the sunshine."

Herrich-Schäffer, who adopts in his Schmetterlinge von Europa the name *Fischerana* for this species, says of it (vol. iv, p. 225): "In Mecklenburg, Bohemia, also near Ratisbon in the valleys of the Laber and the Danube; in May and June." Heinemann, in his Schmetterlinge Deutschlands und der Schweiz, Wickler, p. 138, says: "More in the North of Germany, in May and June, and again in August, among sloe." On this I must remark that I much doubt its being double-brooded.

Hartmann, in his Kleinschmetterlinge der Umgegend Münchens, p. 36, gives the somewhat startling information: "larva from September to May in the swollen knots on the stems and branches of *Juniperus communis*; imago June and July," but surely some other species must here be meant. Rössler, in his Lepidoptera von Wiesbaden, p. 247, says: "Throughout May on the margins of woods, in thickets and hedges; in the years 1857—59 almost common, since then, scarce."

Jourdeuille, in the Annales Ent. Soc. France, 1870, p. 127, says of *Lobesia permixtana*: "larva on *Anchusa officinalis*," a food-plant which is assigned by Rössler to the species he places immediately after *permixtana*, *Lobesia artemisiana*, the *Eudemis artemisiana* of Staudinger and Wocke's Catalogue.

Brischke, in the Stettiner Entomologische Zeitung, 1876, p. 68, says that he bred *Lobesia permixtana* from a larva "found August 21st, 1871, in the tips of the stem ("in den Stengelspitzen") of *Solidago virgaurea*. The larva was about 8 mm. long, pale brown-grey or brown-red; head and following segment shining brown, the latter with a pale central streak; anal shield shining brown. When full fed it entered the earth and spun a longish cocoon. The imago appeared on the 11th April, 1872." I presume it had been kept in a warm room.

I would remark here that Herr Brischke, of Danzig, only seems to have found a single larva, and though his note was not published till nearly four years after the appearance of the first *permixtana* reported to have been bred, he does not appear to have met with any more of the larvæ. The observation may be a good one, but it is extremely desirable to have it confirmed by those who have opportunities of collecting in August amongst *Solidago*. Snellen, in De

Vlinders van Nederland, *Micro-Lepidoptera*, p. 278, says: "May, June, and then in August, not common," and at p. 277 he says: "The insect flies in the early summer, and again in the after-summer. Two generations." But I hope my friend Herr P. C. T. Snellen will excuse me, when I confess that I am still very incredulous about these two broods.

I come now to my own experience of this insect; my six oldest specimens were all taken prior to 1850, and four of them before 1848, which was the first year when I labelled my captures. Hence, I have no record whatever of the origin of these four. In 1848 I took one specimen at West Wickham Wood, June 9th; in 1849 I took one at Torwood, near Larbert, Stirlingshire, June 5th. Thirty-five years elapsed before I again met with the species, but, in 1884, I captured a single specimen in a little wood at Pitlochry, Perthshire, June 27th, this wood was of mixed growth—oak, birch, mountain ash, &c., with a considerable variety of low plants.

This summer, on the 10th June (a very bright hot day), I visited that same wood at Pitlochry in the evening and found *Tortrices* freely on the wing, especially *Capua ochraceana*, *Anchylopera Mitterbacheriana*, and, above all, *Lobesia permixtana*; all the three seemed partial to oak, which I was well aware was the special food of *Mitterbacheriana*, and I could not fail to notice whilst boxing one specimen of *permixtana*, I should frequently see two or three others, or more, buzzing at the oak-shoots (one always does see more insects when both hands are fully engaged than at any other time), so that I might easily have jumped to the conclusion that there was a distinct connection between the oaks and *permixtana*. Mr. Barrett, in his "Notes on British Tortrices," had already remarked that our *permixtana* seemed partial to oak (*Ent. Mo. Mag.*, xi, 62).

However, I called to mind that *Elachista albifrontella* is very apt to swarm on oak-shoots, and as we all know that its larva, however many grasses it may eat, has nothing to do with oak, the swarming of an imago on a plant *proves* nothing as to the food of the larva.

I had not then taken notice of Herr Brischke's observation of the larva on golden rod, but, if I am not mistaken, the *Solidago* does occur in this wood at Pitlochry. Of the specimens of *Lobesia permixtana* I captured that evening (a few were so worn that they were useless) I set out nine, and hoped to have taken more on subsequent evenings, but the next day we had a complete change of weather with high wind, and few insects were on the move, and on the evening of the 12th, though I did see a few *permixtana* flying at random (not buzzing on the oak shoots) I failed to catch any. On the 13th June I left Pitlochry.

Mountsfield, Lewisham :

July 7th, 1887.

A NEW SPECIES OF *NEPTICULA* BRED FROM BIRCH, FROM
HEREFORDSHIRE (*N. WOOLHOPIELLA*).

BY H. T. STAINTON, F.R.S.

In August, 1886, Dr. J. H. Wood, of Tarrington, sent me some *Nepticula*-mines in birch leaves, which I was unable to determine. Early in September he sent me a further supply of the same mines, some being still tenanted by the larvæ. Of the mines some had considerable resemblance to those of *N. subbimaculella*, but the mine commenced with a small dark blotch, much like that of *N. continuella*. The larva (as described by Dr. Wood) was very pale green.

From the observations made by Dr. Wood, I learn that in habit this larva showed a difference from the larva of *N. argentipedella*, the latter being apparently a very sluggish feeder, seldom to be seen eating, and usually hidden beneath the dark central portion of the mine; whereas, the larva of the unknown novelty fed up much more quickly, and was always to be found with its head at the margin of the mine, either actually eating, or just ready to eat.

The larvæ which Dr. Wood so kindly sent me last September died without forming their cocoons. Dr. Wood was more fortunate: he supplied some of his larvæ with earth, and kept them out of doors during the winter, and from these he has succeeded in breeding four specimens of the imago.

These are smaller than *argentipedella*, with the apical half of the wing blacker, the fascia brighter (that is, more silvery), and rather more oblique on its inner edge; in *argentipedella* the fascia generally expands a little towards the base on the inner margin of the wing, which gives the inner edge of the fascia a rather concave appearance, in the new birch-feeder the inner edge of the fascia has not this concave appearance, it being nearly straight, though oblique.

As this insect has been first detected in Herefordshire, in the parish of Woolhope, I propose for it the name of *Nepticula woolhopeiella*.

Mountsfield, Lewisham, S.E.:

July 7th, 1887.

THREE NEW LONGICORN *COLEOPTERA* FROM SOUTH AMERICA.

BY H. W. BATES, F.R.S.

The species here described belong to the group *Onocephalini*, Family *Lamiidæ*. The genus *Stethoperma* was established by M. Lameere in the *Annales Belges* for 1884, vol. xxviii, p. 93, on the species *S. Candezei* and *S. Batesi*.

STETHOPERMA MULTIVITTIS.

Suprà olivaceo-ænea, capite suprà et thorace vitta mediana, elytrisque vittis plurimis alteris longitudinalibus alteris obliquis, fulvo-tomentosis, interstitiis vittarum postice elevatis, nitidis: corpore pedibusque olivaceo fuscis, abdomine tarsis tibiisque apice fulvis: capite fulvo-tomentoso vittis olivaceis: antennis nigris. Long., 16 mm.

Minas Geraes.

PERMA SUTURALIS.

Minus elongata, olivaceo-fusca, thorace vitta dorsali elytris vittis suturali et intra-marginali griseis, antennis (scapo excepto) fulvo-testaceis: fronte elongata, carinata infra dilatata; tuberibus antenniferis longe distantibus, intus elevatis: thorace transversim rugoso: elytris cuneiformibus, punctatis, basi granulis nonnullis parvis: antennis articulis 1—5 infra ciliatis.

Long., 12—15 mm.

Possibly the *P. aulica* of Lacordaire, which, however, is described as having the abdomen red, and the antennæ (by implication) densely ciliated as in *Onocephala*. The name, in any case, cannot stand, as it was pre-occupied by Lucas for an apparently allied species.

Rio Janeiro.

PERMA CHALCOGRAMMA.

*Fusca, fulvo-cinereo-pubescentis, elytris lineis elevatis plurimis viridi-æneis nitidis, punctulatis; antennis (scapo excepto) livido-testaceis: capite et antennis ut in *P. suturali*: tarsis fulvis.* Long., 15 mm.

Rio Janeiro.

London: May, 1887.

Mamestra brassicæ feeding on oak.—In June, 1886, I found a batch of eggs on an oak leaf gathered from a tree about one mile distant from Birmingham. I reared the larvæ at first on oak, but when they grew a fair size their nature was plain to the eye, and I changed their food to hop as being more easily procured. This year (June, 1887) I reared a plentiful stock of *Mamestra brassicæ* from these oak eggs.—R. C. R. JORDAN, 105, Harborne Road, Edgbaston: July 16th, 1887.

Coriscium sulphurellum at Teignmouth.—I was at Teignmouth for a few days at the end of May, and on the 28th I caught *Coriscium sulphurellum* on a leaf of the smooth sallow in a sallow hedge; it looked quite at home there. I was very much puzzled at first by the moth, and, indeed, should have remained so, had I not found the following diagnosis in the *Tineina* volume of the "Insecta Britannica:" "Alis anticis dilute sulphureis, atomis numerosis sparsis fuscis, interdum in maculas confluentibus;" which was very distinctly the case in my specimen.—ID.

Migration of Insects.—The time has come for us (so it seems to me) to leave off theories on this subject, and to keep to facts; to record very carefully every observation bearing on the point, as well as on those wonderful sudden abundances of species which sometimes occur; every entomologist must have noticed such. Mr. Stainton did service by recording the swarms of *Lycæna Phlœas* which visited Lewisham a few years ago. I remember myself one season the hedge which lines the well-known drive to Mountsfield being nearly leafless from *Cheimatobia brumata*. This is specially mentioned, because the character of the female puts her beyond the faintest suspicion of any migration. About ten summers ago the hawthorn here was perfectly devastated by the larvæ of *Swammerdamia cæsiella*; it then became quite a scarce insect for a year or two. It seems to me a demonstrable fact, and one which may be laid down as a basis for observation, that every insect, rare or common, may become, from causes unknown at present to us, unusually abundant, quite independent of any migration. Let us, therefore, now no longer theorize, but observe and record facts, however trivial they may seem, bearing on the point; press the lighthouses into our service; and not suppose that migration explains everything. In fact, it explains nothing. There are not armies of *Aporia cratægi* waiting at Calais or Dieppe for a favourable wind to invade our coasts; if there were, their concerted action would be the real mystery: butterflies are not, like locusts, impelled by the devastation of their own swarms to move onwards. The cause is the true marvel!—ID.

Notes on Pancalia Latreillella and P. Leeuwenhoekella.—Mr. Stainton (Ent. Mo. Mag., xxi, p. 193) asked for the observations of entomologists on the above species. As no one has, I believe, since published any notes on them, and having recently taken the species in considerable plenty, the following notice may be of interest to your readers.

Guided by the Manual, and by reference to the Doubleday Collection, some six years ago, when I first captured *Pancalia Leeuwenhoekella*, I divided my series into two lots, one containing all the specimens with dark antennæ, the other the specimens with a white ring before the tip. The arrangement was purely artificial, as I took the form with dark antennæ at the same time and place as those with white ringed antennæ. The former I called *Latreillella*, the latter *Leeuwenhoekella*.

On Saturday last (June 4th) I took a fine series of this species on the Chalk Downs near Strood in Kent. The males were flying about soon after mid-day in the hot sunshine, and the females were running about over and among the grass, but I could see none deposit eggs. They seemed very restless, and took short jerky flights from one culm to the other, running frequently down among the lower part of the culms, whence it was not easy to get them to stir. I found two specimens on the dogwood (*Cornus sanguinea*) flowers.

Having got them home, I found I had captured altogether twenty-three specimens, of which *three* have dark fuscous unicolorous antennæ, *four* have the white ring just before the tip of the antennæ very faintly marked, and in one nearly obliterated, whilst the others have the white ring very distinct. The finest have a slight thickening just below the white ring of the antennæ, but I see no long scales there, although the thickening is distinct. The antennæ of these are very characteristic, being fuscous at the base, black in the centre (this is the thickened part),

then a broad white ring followed by a fuscous tip. The ground colour of the insects varies considerably; some have the ground colour of a much lighter orange than others. I think this is more apparent than real, and due to the lighter insects being worn and having lost some of their scales. Herr Snellen's description (Ent. Mo. Mag., xxi, pp. 196, 197) is a first class one of my insects, but I find in my longer series one or two points worthy of notice. With regard to the pale silvery fascia near the base, twelve out of the twenty-three just captured have the fascia broken (as have others captured previously), and in six specimens the fascia is not continued beyond the break, extending only about one-third across the wing. The small spot on the inner margin is often absent, the caudal hook is as Herr Snellen says, very variable in position; in two of mine it is quite absent. The streak on the hind margin extends to the anal angle, and is much brighter in the female than in the males. I have one specimen perfectly unicolorous, with the exception of what Herr Snellen calls the fifth streak (on the costa). In fact, the size, number, position and shape of the spots is very inconstant.

There is a great deal of difference too in size. Some appear almost twice as large as others, those that have partially lost their fringes look *very stumpy*, but fine ones are sometimes very small.

It is certain that I have only one species, and that my species contains, I believe, undoubted specimens of *Leeuwenhoekella* and *Latreillella*, and probably *nodosella*. Some of the finest specimens in my series are without doubt the former, and unless this species sometimes has males with dark antennæ, those with dark antennæ must be the so-called *Latreillella*.

I have hardly ground for positively stating that I have anything referable to *nodosella* in my series, as I have not quite a distinct idea of the character of the thickening of the antennæ which occurs in this species. The finest *females* certainly have a slight thickening, and it must be remembered that all my insects were active when I captured them.

At any rate, I incline to Herr Snellen's opinion, so far as our own two species are concerned. Mr. Stainton's summary of Herr Snellen's opinion (Ent. Mo. Mag., xxi, 193) is that he "gets *nodosella* in Holland in company with *Latreillella*, of which he thinks it is the female, and that he thinks our *Leeuwenhoekella* consists only of worn specimens of *nodosella*, of which the thickening scales have vanished whilst actively on the wing."

I always take *Latreillella* with *Leeuwenhoekella*, and that there is much force in what Herr Snellen says with regard to the absence of the thickening scales, any one who has watched this active little species can readily believe. They scuttle rapidly about in the grass, and are so exceedingly active that there can be little doubt they soon get worn.

Some of my female specimens of *Leeuwenhoekella* are very fine, and, like the late Professor Zeller (Ent. Mo. Mag., xxi, 193), I also have perfect specimens of the female, which do not show any traces of the thickening on the antennæ so characteristic of *nodosella*. But although the insects may be fine, there seems no reason why a few scales on the antennæ should not be readily worn off as soon as the insect becomes active.

I have little doubt that Herr Snellen's view will turn out correct, and I have

no doubt that, with a little more patience and care, I shall some day obtain a specimen that has not flown, which will prove his point.—J. W. TUTT, Rayleigh Villa, Westcombe Park, S.E. : June, 1887.

[I would ask the next captor of these moths, who is so fortunate as to meet with them in any quantity, to place a number of the living insects together in a glass-topped box, in hopes that thereby some may be induced to pair; those that pair should then be separated from the rest, and the specimens of which each pair consists should be specially labelled as ♂ and ♀, and as found *paired*, and we should thus soon ascertain whether those without any white ring on the antennæ were invariably females. If in some of the pairs both specimens were found to have white ringed antennæ, and in some of the pairs both specimens were found to have the antennæ entirely dark, we should, at any rate, have learnt something we do not at present know.—H. T. S.]

Note on Lühdorfia Puziloi, Ersch.—Last mail brought me Mr. H. J. Elwes' paper on the *Parnassiidæ* (Pro. Zoo. Soc., 19th Jan., 1836), and almost simultaneously I received from my collector a series of *Lühdorfia Puziloi* for which I have been searching for years. From Mr. Elwes' valuable paper, we now learn how the horny sheath on the body of females of the *Parnassiidæ* is formed, and why it is present in some specimens and absent in others, but we are, I think, as far off as ever from understanding the *use* of this very peculiar appendage. I believe Mr. Elwes has not had the opportunity of examining a female of *Lühdorfia Puziloi*, and it would appear that in all the other species he has dissected, the horny sheath is developed into a pouch which he supposes acts in some beneficial way in the sexual act; this, however, cannot be the explanation, as strangely enough, the sheath on *Lühdorfia* is nearly flat, and could not, I think, from its shape, act as an attachment in any way. This insect appears very early in the year; my first specimens were obtained on the 15th April, but it was then getting over, the males appear before the females, and it frequents wooded paths on the mountains, and is very easy to capture.—H. PRYER, Yokohama : May 9th, 1887.

A day's collecting (chiefly Diptera) at Esher.—On the 14th of this month (June) I collected for the first time this season, and chose Esher (Surrey) as my hunting ground. The day was very hot, and though I anticipated favourable results, I was scarcely prepared for the rich harvest that fell to my net. *Diptera*, as usual, formed the principal attraction, and these were found in great abundance. It is impossible to give a list of the species captured as so many of them are new to me, and no time has yet presented itself for their determination, which, considering the number of minute *Muscidæ* taken, will be a matter of very great difficulty. Speaking only approximately, I captured of the *Tipulidæ*, 12 species (60 specimens), *Empidæ*, 7 (20), *Bibionidæ*, 2 (10), *Mycetophilidæ*, 2 (6), *Dolichopodidæ*, 9 (106), *Syrphidæ*, 4 (6), *Muscinæ*, 4 (6), *Anthomyiinæ*, 30 (164), *Acalypterata*, 570 specimens; of these latter it is impossible to do more than estimate the number of species. Thus, of the *Diptera* alone, I captured about 70 species without the *Acalypterata*, which must comprise at the least 50 or 60 species. To mention some of the insects taken: among the *Muscinæ* were only four *Morellia hortorum*, one *Cyrtoneura*, and one *Lucilia*; among the *Anthomyiinæ*, *Cænosiæ tigrina* was extremely abundant, the

var. leonina, Rond., being also very common, of this species I took over 90 specimens. *Hylemyia strigosa* and *variata* were also common, I took with these species one *pullula* and some specimens of two species which appear to be *flavipennis* and *seticrura*, *Hyetodesia basalis*, and *populi*, *Polietes lardaria* and two or three undetermined species of *Phorbia* or *Chortophila* were all very common. The *Syrphidæ* were very poorly represented, only four species being taken, *Syritta pipiens*, *Platycheirus fulviventris* and *clypeatus*, and a *Chrysogaster* I have not determined. *Empis tessellata* was common in a hedge alongside a stream, and I took five or six species of *Hilara*, also two *Rhamphomyia nigripes*. One *Leptis tringaria* represented *Leptidæ*, and a dozen or so *Dilophus vulgaris* the *Bibionidæ*. *Dolichopodidæ* were rather abundant. The species I captured were *D. vitripennis*, 70 specimens, *pluvialis*, *festivus*, *confusus*, *signatus* and *æneus*, *Gymnopternus assimilis*, *Argyra diaphana*, and a very small species I have not yet recognised. The few *Acalypterata* I have had time to make out were *Scatophaga stercoraria*, 80, *merdaria*, 40 (these two species swarmed everywhere and were continually filling my net), *lutaria*, 3, *anilis*?, 1, and two or three of what appears to be another species I do not know. Two or three species of *Borborus* were very common (80 specimens), two species of *Tephritis* (6), three of *Chlorops* (6), a very small *Paloptera* or allied genus (20), and two or three species of *Lapromyza* (12), also a species which is labelled in the British Museum as *Heteromyza nervosa* (30), but which name I look upon with some suspicion, as Schiner, in his "Cat. Sys. Eur. Dip.," makes no mention of such a species. Altogether, I took about 950 *Diptera*, and the other orders are represented as follows, though it must be understood that I confined myself intentionally to the collecting of *Diptera*, and that the other insects were taken by chance whilst sweeping rushes and grass:—

Hymenoptera (66 specimens): *Andrenidæ* (2), *Nematus* (5 or 6), *Chrysididæ* (1), and the rest small *Ichneumonidæ*, which appeared tolerably common.

Coleoptera (90 specimens): *Notiophilus* (1), *Pæderus* (1), *Tachyporus hypnorum*, and 3 other species of *Staphylinidæ*, *Aphodius*, 2 species, *Telephorus*, 4 species, *Elateridæ*, 4 species (17 specimens), *Phyllobius argentatus* (6), *uniformis* (30), *pomonæ* (10), *Strophosomus coryli* (1), *Ceuthorhynchus* sp.? (11), *Apion* (1), and two other species of two genera of other *Curculionidæ* I do not know. One species of *Halticidæ* completes the list of beetles.

Hemiptera were scarce; and in the way of *Lepidoptera* I saw only a few *P. Phlæas* and one of the skippers and a species of *Tineina* flying over the furze.

A small *Orthopteron* and eight or ten spiders (which were most unpleasantly abundant, as they spun most annoyingly during their short sojourn in my net) bring the list to a close. In all, I took about 1050 specimens, not counting a 100 or so I threw away as being too damaged to preserve; of course many are too much broken for keeping as cabinet specimens, but will be valuable as recording the species of this locality. To any one who desires *Diptera*, *Coleoptera*, or *Hymenoptera*, I can confidently recommend Esher.—E. BRUNETTI, 129, Grosvenor Park, Camberwell: June 21st, 1887.

Earinus nitidulus, Nees.—Mr. Bridgman's note in the Magazine for this month, p. 15, leads me to say that I have a bred specimen of this species, which was determined for me in the year 1870 by the Rev. T. A. Marshall. Its cocoon agrees

with Brischke's description, as quoted in the 1st part of Mr. Marshall's Monograph, and was dug at roots of a pear tree, near Worcester. Subsequent efforts to obtain more have been fruitless. I observed the omission of any reference to this specimen at the time the first part was issued, but deferred further notice of the subject in the hope of working up my *Braconidæ* as a whole.—J. E. FLETCHER, Worcester: June, 1887.

Odynerus reniformis, Gmel., at Chobham, Surrey.—On the 4th of this month I was collecting at Chobham, and was surprised to observe on a part of the common which I know particularly well, the curved tubes of an *Odynerus* projecting above the sandy soil. I waited by one of these for the return of its owner, and was pleased to find that it was the rare *O. reniformis*. I obtained three females, and could, no doubt, have taken more, as there were many tubes visible. I have collected a great deal at Chobham, especially in the exact locality above mentioned, but I have never before observed the tubes of this insect, and am very much inclined to think that it has taken up its abode there this year for the first time. This locality is about four miles from where Mr. Billups took it in 1884.—EDWARD SAUNDERS, St. Ann's, Bromley, Kent: July 8th, 1887.

Aspidiotus rapax, Comstock, in Europe (*Aspidiotus rapax*, Comstock, Rep. of Ent. of U. S. Dept. of Agr. for year 1880 [1881], pp. 307, 308, pl. xii, fig. 6).—On the leaf and flower bracts of camellia I have found in great numbers a species of *Aspidiotus* which, after microscopical examination, appeared to me to be identical with Professor Comstock's species, *A. rapax*. I therefore sent him some specimens for his opinion, and I append his answer. I thought at first that my specimens might prove to be the *A. camelliæ*, Boisduval, although they did not entirely agree with Dr. Signoret's description or figure (Ess. sur les Coch. [1868], p. 91, pl. iii, fig. 9), and I wrote to Mr. Douglas, asking him for a specimen of the *A. camelliæ*, which he mentions having been found in England (Ent. Mo. Mag., vol. xxii, p. 249). He kindly sent me several specimens, out of which I succeeded in making one suitable for microscopical examination, but this has proved to be identical with my own specimens, and therefore must be considered *A. rapax*, Comstock. Whether the *A. camelliæ*, Boisduval, may ultimately prove to be identical with *A. rapax*, Comstock, cannot at present be determined. To quote Mr. Douglas' own words:—

"As *A. camelliæ*, by description and figure, does not appear to be *exactly* the same as *A. rapax*, they must be kept separate, the difference being noted, until some lucky chance may clear the matter up."

Professor Comstock remarks in his letter:—"I think, without doubt, the specimens which you send belong to my species, *Aspidiotus rapax*. As to whether my *A. rapax* is a synonym of *A. camelliæ* I cannot express an opinion now. Boisduval's description is unrecognisable, and unless we can get typical specimens, it will be mere guess work to apply his name to any species. If there were only a single species of *Aspidiotus* that infested camellias, we would be reasonably certain that this was the one referred to; but I cannot see that anything is to be gained by throwing aside a specific name which is so fully defined that the species can be determined unquestionably from the description, for the sake of a name, the definition of which will apply to almost any species of this genus. Of course, if types of *A. camelliæ*

are in existence, and they prove to be the same as *rapax*, the earlier name must stand. . . . The only point is to be absolutely certain of the identity of the species before the name is changed."

We therefore may come to the conclusion, I think, that the *Aspidiotus rapax*, Comstock, which has hitherto been considered an American species, may now be recorded also as European, having been found both in England and Portugal.—ALBERT C. F. MORGAN, Villa Nova da Gaya, Portugal: July 11th, 1887.

Coleoptera at Tonbridge.—Whilst Mr. W. G. Blatch was staying with me during the latter part of June, we explored this neighbourhood in search of *Coleoptera*. Sweeping was a comparative failure, and bark-work was also very unsuccessful as a whole, though a *Cossus*-infected oak produced a very few *Epuræa decempunctata*, and under beech bark in connection with a fungus growth was *Cicones variegatus*. A few *Xyletinus ater* and a number of *Tillus elongatus* were actively engaged on the trunks of pollard willows. Carrion produced only a few small *Homalotæ*, &c. Our best captures were in damp spots, dried-up ponds, and marshy localities. Here were *Anchomenus livens*, *Tachyporus formosus*, *Lathrobium punctatum*, &c. In one small spot, which I have designated "Blatch's hole" in honour of its discoverer, were several *Compsochilus palpalis*, *Acrognatha mandibularis*, *Homalota vilis* (abundantly), *H. difficilis*, *H. atrata*, *H. londinensis*, *Calodera rubens*, *Oxytelus fulvipes*, *Oxypoda lentula*, *Acupalpus consputus*, *Bryaxis sanguinea*, &c. One day spent at Hythe in search of *Dyschirius extensus* and *Philonthus astutus* produced hardly anything. Even *Polystichus vittatus* and *Trechus lapidosus* which I found fairly numerous three years ago were only represented by a single example of each.—A. C. HORNER, Tonbridge: July 12th, 1887.

Note on Nothochrysa capitata, F., and Chrysopa tenella, Schnd.—A visit for a few days to the Rev. A. E. Eaton, at his Vicarage, Shepton Montague, near Wincanton, Somersetshire, resulted in the capture of a considerable number of *Chrysopidæ*. Two species are noteworthy. One ♀ *N. capitata* was taken at Stourton (Wilts.) on the 15th inst. Why this insect should continue so rare, both here and on the continent, I know not. This was the second time I had seen it alive; the first occasion being near Weybridge on July 5th, 1873 (*cf.*, Ent. Mo. Mag., x, p. 91). One ♂ and three ♀ of *Ch. tenella* occurred near Shepton Montague on the 13th. Of this I have probably not seen more than a dozen living examples during the last 25 years. Its size, and the pale yellow dorsal stripe when alive, render it liable to be passed by as only *Ch. vulgaris*. It is a very pretty species, but the pale dorsal stripe and the delicate green of the living insect soon vanish in dried examples. The other species captured were not important. All were beaten from ash, which is certainly one of the most productive trees for *Chrysopidæ*.—R. MCLACHLAN, Lewisham, London: July 18th, 1887.

Note on four species of Ephemeridæ from Eastern Amurland.—A short time ago I received a small collection of *Neuroptera* taken by Herr Gräser in the eastern portion of the district through which the great river Amur flows. There are four species of *Ephemeridæ*, which I notice at the request of my friend the Rev. A. E. Eaton, in order that a reference may be given in the forthcoming concluding Part of

his "Revisional Monograph." The materials are scanty, but allowing, in some cases, for slight colour-differences, which may possibly be due to local influences, all are, perhaps, referable to European forms.

Ephemera glaucops, Pict. One ♂ sub-imago from Nicolaijefk at the mouth of the Amur. Upon comparison with European specimens the identity seems certain; but I would remark that the markings of the abdomen are as prominent as is usually the case in the imago of European individuals, in which they are mostly obliterated or very faintly indicated in the sub-imago.

Siphylurus lacustris, Etn.?? One ♂ imago from Pokrofka on the Eastern Amur. The ventral U-shaped markings are nearly continuous on all the segments, which is not the case in the type-form, but occurs in specimens, possibly not *lacustris*, collected by Mr. Eaton in the Val Mazza, North Italy. But, supposing these latter to be distinct from *lacustris*, there are characters in the anal parts, &c., of the Amur ♂, that seem to differentiate it therefrom.

Heptagenia sulphurea, Müller. The ♂ imago from Nicolaijefk does not apparently differ from European individuals. A ♀ sub-imago from Chabarofka on the Amur is somewhat doubtful.

Heptagenia flava, Rostock. One ♀ imago, and three ♀ sub-imagos, do not apparently differ from European individuals; they also are from Nicolaijefk.

The *Ephemeridæ* of Eastern Siberia and Amurland, being hitherto practically unknown, I agree with Mr. Eaton that it is desirable to place these four species upon record.—ID.: *June*, 1887.

Obituary.

Pierre Millière died suddenly, in the 74th year of his age, on May 29th, at his residence at Cannes—we believe of *angina pectoris*. He had been in the enjoyment of his usual health till the previous day, when a sudden attack of illness caused him some uneasiness, but it speedily passed off, and no apprehension was entertained. A return of the malady on the 29th proved more serious, and in half an hour he was no more.

Of his early career we have no information. He joined the Entomological Society of France in 1851, and in the same year his first published note on an Entomological subject appeared in the "Bulletin" of that Society. This related to the experimental poisoning of two young sparrows by larvæ of *Deilephila euphorbiæ*, which had fed on *Euphorbia cyparissias*. At that time he was living at Lyon, which continued to be his residence for many years. In the *Annales Soc. Ent. France*, 1854, pp. 59—68, he gave a descriptive paper of several new *Micro-Lepidoptera*, some of which were taken on the summit of Mont Pilat near Lyon.

In April, 1855, he visited Hyères, where, in the stems of *Asphodelus ramosus*, which grows so abundantly in many parts of the Riviera, he met with the larvæ which furnished him with an interesting new *Tortrix*, *Hyerana* (*Ann. Soc. Ent. France*, 1857, p. 799, pl. 14, No. iii). In 1858 he collected at La Grande Chartreuse. Several weeks of the spring of 1859 and much of the following winter were spent at Hyères, and thenceforward, till he settled at Cannes, a large portion of each winter was passed in the South of France on the sunny shores of the Mediterranean. It was in 1858 that Millière commenced a series of Papers in the "*Annales de la Société Linnéenne de Lyon*," under the title:—"Iconographie et Description de

chenilles et Lépidoptères inédits." These continued to appear for well nigh twenty years, and constitute in their separate form three handsome 8vo volumes, each containing about 50 plates. In these papers Millière introduced many larvæ and perfect insects which he had received from Dr. Staudinger when in Spain, and a few that were sent to him by the late Henry Doubleday from Epping; but many of the species of which he treated in these papers were novelties discovered by himself in the South of France, together with larvæ of other species previously only known in the perfect state.

A mass of valuable notes have been given to the world in Millière's "Catalogue raisonné des Lépidoptères des Alpes Maritimes" (of which the third part, containing the *Micro-Lepidoptera*, appeared in 1875); a Supplement to this Catalogue appeared in 1886.

Several papers by Millière appeared in the "Annales de la Société des Sciences naturelles, Arts et Belles-lettres de Cannes" between 1875 and 1879; others in the "Naturalista Siciliano" of 1882, 1883, and 1886, &c., &c.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY:
June 23rd, 1887: R. ADKIN, Esq., F.E.S., President, in the Chair.

Mr. Wellman exhibited bred specimens of *Lobophora viretata*, Hb., from Burton-on-Trent. Mr. Oldham, a number of species from Epping Forest, including *Drepana lacertinaria*, L., *D. falcataria*, L., *Notodonta dromedarius*, L., *Eurymene dolobraria*, L., and three specimens of *Chærocampa porcellus*, L. Mr. Jager, *Erastria venustula*, Hb., received from Horsham; bred examples of *Eupithecia isogrammaria*, H.-S., *E. tenuiata*, Hb., and *E. venosata*, Fb.; the last mentioned having been two years in pupa. Mr. W. A. Pearce, *Eupithecia isogrammaria*, H.-S., and *E. castigata*, Hb. Mr. Sheldon, bred examples of *Sesia culiciformis*, L. Dr. Rendall, *Heliaca tenebrata*, Scop., taken at Hounslow. Mr. Turner, living larvæ of *Cucullia verbasci*, L. Mr. West, of Greenwich, larvæ and cases of *Coleophora palliatella*, Zinck., and *C. curruicipennella*, Fisch.

July 14th, 1887: The President in the Chair.

Dr. Rendall exhibited *Acidalia rubiginata*, Hufn., *A. marginepunctata*, Göze, *Eupithecia coronata*, Hb., *E. plumbeolata*, Haw., *Lithostege griseata*, Schiff., *Agrophila trabealis*, Scop., *Spilodes verticalis*, L., &c., all taken at Thetford. Mr. E. Joy, *Erastria venustula*, Hb., from Epping Forest. Mr. Wellman, *Dicranura furcula*, L., and *Eupithecia togata*, Hb., from Perth. Mr. Jager, *Dicranura bifida*, Hb., &c. Mr. J. T. Williams, *Heliothis dipsacea*, L., *Hydrelia uncula*, Clerck, from Suffolk. Mr. Tugwell, four varieties of the larvæ of *Cucullia chamomillæ*, Schiff., ranging from white to pink, *Sesia sphegiformis*, Fb., and *Dicranura bicuspis*, Bork. Mr. Hall, *Spilosoma mendica*, Clerck, bred from ova. Mr. Adkin, *Notodonta trepida*, Esp. (bred). Mr. Edwards, a variety of *Abraxas grossulariata*, L., the usual white ground colour being powdered over, giving it a deep grey appearance, the orange markings in the superior wings being very distinct. Mr. Baron exhibited a variety of *A. grossulariata*. Mr. South, some interesting forms of *Lycæna Icarus*, Rott., from the Isle of Wight, and called attention to a male with black spots on the hind-wings, which he had only previously seen on specimens from Sligo, Ireland.

Mr. Billups, *Xylocopa violacea*, L., and *X. latipes*, Drury, also *Taiscolia hæmorrhoidalis*, Fb., and read notes on his exhibit. Mr. Jenner Weir exhibited specimens of *Pieris oleracea*, Bois., from Hudson Bay, and *P. napi*, L., and contributed some interesting remarks. Mr. Billups stated that at West Ham the cabbages had been destroyed by the larvæ of *Pieris brassicæ*, L., but the cauliflowers were untouched.—
H. W. BARKER, *Hon. Sec.*

ENTOMOLOGICAL SOCIETY OF LONDON: *July 6th*, 1887.—Dr. DAVID SHARP, F.Z.S., President, in the Chair.

The Rev. W. T. H. Newman, M.A., 11, Park Terrace, The Crescent, Oxford, was elected a Fellow of the Society.

Mr. McLachlan remarked that at the meeting of the Society in October, 1886, he exhibited a quantity of the so-called "jumping seeds" from Mexico, containing larvæ of *Carpocapsa saltitans*, Westw. The seeds had long ceased to "jump," which proved that the larvæ were either dead, had become quiescent, or had pupated; about a fortnight ago he opened one of the seeds, and found therein a living pupa. On the 4th inst. a moth (exhibited) was produced.

The President, on behalf of the Rev. H. S. Gorham, exhibited the following *Coleoptera*, lately taken in the New Forest:—*Anoplodera sexguttata*, Fab., wholly black variety; *Grammoptera analis*, Fab.; *Colydium elongatum*, Fab.; and a specimen of *Tachinus elongatus*, Gyll., with brownish-red elytra.

Mr. S. Stevens exhibited a specimen of *Orsodacna humeralis*, Latr. (*lineola*, Panz., var.), taken by him at Norwood: he also exhibited a specimen of the same beetle taken by him fifty years ago in Coombe Wood; during the interval he had never seen it alive.

Mr. G. T. Porritt exhibited, on behalf of Mr. N. F. Dobrée, of Beverley, a series of about thirty specimens of a *Tæniocampa* he had received from Hampshire, which had previously been referred to as a red form of *T. gracilis*. Mr. Dobrée was inclined to think they were not that species, but *T. stabilis*.

Mr. A. C. Horner exhibited the following species of *Coleoptera* from the neighbourhood of Tonbridge:—*Compsochilus palpalis*, Er. (5); *Acrognathus mandibularis*, Gyll. (4); *Homalota atrata*, Mann., *H. vilis*, Er., and *H. difficilis*, Bris.; *Calodera rubens*, Er.; and *Oxytelus fulvipes*, Er. He also exhibited a *Rhizophagus* from Sherwood Forest, which appeared to belong to a new species; and several specimens of *Holopedina polypori*, Först., also from Sherwood Forest, where he had found it in company with, and probably parasitic on, *Cis vestitus*.

Mr. Elisha exhibited two larvæ of *Zelleria hepariella*, Stn.

Mr. Stainton remarked that as the greater part of the larvæ of *Zelleria* were attached to the *Oleaceæ*, it seemed strange that certain species had been found on saxifrage.

Mr. Slater read a paper "On the presence of tannin in certain Insects, and its influence on their colours." He mentioned the facts that tannin was certainly present in the tissues of the leaf-, wood-, and bark-eating species, but not in the tissues of the carnivorous beetles, and that black colour on the elytra of certain beetles appeared to be produced by the action of iron on tannin. A discussion ensued, in which Prof. Meldola, Mr. Poulton, Dr. Sharp, and others took part.—
W. W. FOWLER, *Hon. Sec.*

SUPPLEMENT TO ANNOTATED LIST OF BRITISH ANTHOMYIIDÆ.

BY R. H. MEADE.

(Concluded from page 58).

PEGOMYIA, R. Desv.

P. EPHIPIUM, Zett., Schin.

In July last (1887), after the last part of this Supplement had been sent to press, I found three males of this species (which has not yet been recorded as British) at Baslow, near Chatsworth in Derbyshire. It bears a close resemblance to both *P. fulgens* and *P. vittigera*, but is decidedly distinct from either. The scales of the alulets are rather small, but unequal in size; therefore it must be placed in my first division of the second section of this genus.

The palpi are entirely yellow. The thorax is reddish-brown on the dorsum, covered with grey tomentum, and having the shoulders and sides, as well as the front edge, yellowish-white. The scutellum is yellow. The halteres and alulets are pale yellow. The abdomen is oblong, narrow and flat, brownish-yellow (testaceous) in colour, somewhat paler and translucent at the base, and becoming nigrescent towards the end. It is hairy, and furnished beneath the apex with large, black, globular genital appendages. The legs have the tarsi black, and there is also a black patch (Wisch) on the upper surfaces of the ends of the femora; all the rest of the limbs is pale yellow. This species differs from *P. fulgens* by having the alulets rather smaller, the palpi wholly yellow (without black tips), and the femora blackened on their upper extremities. It may be known from *P. vittigera* by its having the whole dorsum of the thorax grey, instead of its being only marked by a longitudinal grey stripe; and by the femora being blackened upon their upper ends, not surrounded near their apices with a black ring as in *P. vittigera*.

I do not know the female.

CARICEA, R. Desv.

C. EXSUL, Zett., and Schin.*

Both males and females of this fine species were sent to me last year by Miss R. Prescott Decie, of Bockleton Court, Tenbury. She had captured them in Devonshire. The antennæ and palpi are black. The arista is sub-plumose. The frontal space is much narrower in the male than the female, being about one-fourth of the width of the head in the former and more than a third in the latter sex. The face is rather prominent, and of a silvery-white colour, which extends up the sides of the frontal space, the middle of which is occupied by a bluish-grey stripe. The thorax and abdomen are clear ash-grey; the former is marked by two narrow longitudinal stripes placed near together, and has the shoulders and sides white. The abdomen is oblong and sub-cylindrical in the male, ovate and pointed in the female; it is marked on the back by four reddish-brown spots; the apex in the male is but little thickened, and the genitalia small. The legs are black, with the exception of the four posterior tibiæ in the male, which are testaceous, as well as the front knees and the points of the other femora. In the female the fore tibiæ are also brown. The tibiæ are surrounded at their extremities by a group of strong spines as in *C. tigrina*.

* Schiner spells the name of this species *exul*, but I think that Zetterstedt is correct.

The alulets are large and milk-white. The wings have the external transverse veins oblique, and, as well as the internal ones, slightly clouded. The third and fourth longitudinal veins are parallel and curved backwards.

This fly seems very rare.

C. HUMILIS, Meig., Rond.

This pretty little species, which is about 3 mm. in length, has the male abdomen cylindrical, clubbed at the apex, and marked by six brown spots, as well as by a central row of small oblong marks. The antennæ and palpi are black; the arista is long and sub-plumose (Meigen says that it is bare, but the hairs are pale, very fine, and difficult to see); the legs are black, with the exception of the tibiæ and metatarsi, which are testaceous. The female closely resembles the male, except by the shape of the abdomen.

I found several specimens of this small fly at Buckingham in August, 1884.

C. SEXMACULATA, Meig.

This is also a well-marked little species, rather smaller than the last, which it closely resembles, the abdomen being marked in a similar manner; it differs from it, however, by having the legs wholly black, with the exception of the bases of the fore tibiæ, which are testaceous. The venation of the wings is also slightly different in the two species. Rondani has pointed out that in *C. humilis* the distance between the two transverse veins is equal to that of the external one from the point of the fifth longitudinal vein, and we find that in *C. sexmaculata* the external transverse vein is nearer to the end of the fifth longitudinal than to the internal transverse vein.

I found a single male in my garden near Bradford, on April 24th, 1886.

MACHORCHIS, Rond.

M. MEDITATA, Fall.

I captured a female of this rare species in my garden in July, 1886; previously I only knew the male. It closely resembles the female of *C. tigrina* in shape, size and markings, but differs by having a pubescent instead of a plumose arista, and by the abdomen being without the longitudinal central marks on the dorsum between the lateral spots, which are generally seen in *C. tigrina*.

CÆNOSIA, Meig.

C. SCRUPULOSA, Zett.

pacifica?, Meig.

This species, of which the female only has been described, differs from *C. tri-angula*, Fall., by having the thorax marked only by one central longitudinal brown stripe instead of by three broad confluent ones, and by having the eyes placed nearer together. I captured two females at Buckingham, in August, 1884.

C. PICTIPENNIS, Lw., et Schin.

SAPROMYZA *costata*?, Meig.

ORCHISIA *costata*, Rond.

Mr. Dale sent me two specimens of this curious little species (the generic position

of which is rather obscure) captured (I believe) in Dorsetshire. It is characterized by the upper halves of the wings, with the exception of the tips, being nigrescent; the colour is very dark throughout the whole of the sub-marginal cells, and gradually becomes paler as it extends downwards, terminating in the lower edge of each discoidal cell. The lower portion of the wing and the tip are quite clear. The thorax is ash-grey; the abdomen of a yellowish or brownish-grey colour, sometimes marked with an indistinct dorsal stripe, and with two small round spots on each of the last two segments in the male, and upon all the segments in the female. The antennæ have the two basal joints yellow, and the third one black, with a sub-plumose arista.

C. GENICULATA, Fall.

I admitted this species into my list in 1883, though I had not then seen a British example. I captured one, however, in my garden near Bradford in June, 1886. It may be known from *C. sexnotata*, Meig., by the points of the hind femora being black.

CHIROSIA, Rond.

Gen. ch.—Eyes bare, remote in both sexes; arista pubescent; abdomen of male narrow and elongated with small sub-anal appendages; alulets with small equal-sized scales; wings having anal veins extended to the margin.

C. ALBITARSIS, Zett., Rond.

This pretty and peculiar little species, which Mr. Verrall has recorded as a native of Scotland, has the thorax brown with grey shoulders; the abdomen dark brownish-grey, hairy, and marked with an indistinct, longitudinal, black interrupted stripe. The wings are slightly brunescent; the legs in the male have the front tarsi longer than the tibiæ, and the three proximal joints more or less marked with white.

This genus was formed by Rondani for the reception of the above-mentioned species, and as this had not been recorded as an inhabitant of Great Britain at the time my "Annotated List of British *Anthomyiidae*" was drawn up, I did not include it. In my analytical table of the genera with widely separated eyes in both sexes, which was published in the *Ent. Mo. Mag.*, vol. xx, p. 50, the genus *CHIROSIA* should have had its place between *MYCOPHAGA* and *CHELISIA*.

CHELISIA, Rond.

C. TRICOLOR, Zett.

This small and rare species bears a close general resemblance to *C. mollicula*, Fall., so I have placed it in the same genus; it must, however, be looked upon as an aberrant species, for the male is destitute of the large and complicated genital processes seen in *C. mollicula*, which form one of the characteristic features of the genus.

C. tricolor has very short (almost rudimentary) anal veins, so I cannot put it into the last genus (*Chirosia*), though it would agree with its other characters. The antennæ are wholly black; the arista is pubescent; the thorax is grey, marked with two indistinct stripes; the abdomen has the first and second segments yellow, and the third and fourth, grey, each segment being marked with two black spots. The

division between the yellow and grey segments is sharply defined, by which it differs from *C. mollicula*, in which the hind segments, when nigrescent, are only partially and irregularly so.

I found a single male at Buckingham in August, 1884, and a single female (which is a good deal larger than the male) at Conishead Priory, near Ulverston, Lancashire, in August, 1886.

SCHÆNOMYZA, Hal.

S. LITORELLA, Fall.

Mr. W. H. Harris, of Cardiff, sent me a specimen of this little maritime fly in 1886, which he had found there. It may at once be known by its generic character of having the first longitudinal veins shortened, so that the internal transverse veins are placed considerably beyond the termination of the auxillary branches of the first longitudinal vein in the costa. The alulets are so small, that this species might more properly be left among the *Acalyptera*, where Meigen placed it in the genus *Sciomyza*.

Bradford: 1887.

A NEW SPECIES OF *ÆSCHNA* FROM SOUTH AMERICA.

BY ROBERT McLACHLAN, F.R.S., &c.

This belongs to the group of more or less reddish species in which the top of the front is *not* marked with a spot in the form of the letter T; a group of small extent.

ÆSCHNA PERRENSI, n. sp.

♂. Abdomen about 55 mm. Posterior-wing, 51 mm.

Wings long and rather narrow, sub-acute at apex, hyaline, with a faint yellow tinge at extreme base of posterior; but the costa, sub-costa, and median nervure as far as the pterostigma, and most of the chief sectors as far as the nodus (together with a portion of the basal network), are bright red, giving a reddish appearance to the basal and costal portion of the wings; neuration otherwise blackish-brown. 22—24 ante-cubital nervules and 11—13 post-cubital in anterior-wings; 14—15 ante- and post-cubital in posterior. Pterostigma very narrow (5½ mm.), yellow. Furcation of sub-nodal sector short and narrow, commencing below the middle of the pterostigma and enclosing only two rows of cellules. Discoidal triangle with three simple nervules in both pairs. Anal triangle in posterior with only one nervule. Membranule blackish-cinereous, short, not extending to the middle of the anal triangle.

Head and thorax reddish, with a slight olivaceous tinge, apparently without markings of any kind, but blackish about the ocelli, and the tips of the mandibles and the margin (? the whole) of the back of the eyes are black; thorax with cinereous pilosity above.

Abdomen somewhat slender, reddish above, dingy beneath; transverse sutures faintly blackish, but there are no evident markings in the dried individual, save

that segments 3—5 appear to be somewhat yellowish at the oblique post-basal suture. Oreillets very small, triangular, and acute, the lower edge with black teeth. 10th segment nearly one-half shorter than the 9th, its margin rounded in front, only faint indications of carinæ.

Superior appendages about the length of the 9th and 10th segments united, in the form of long, narrow, lanceolate leaflets, narrower at the base, with a strong central longitudinal carina, sub-acute at apex; in the basal portion beneath (or internally), and on the margins are fine hair-bearing tubercles. Inferior appendage one-half shorter, long-triangular, its apex darker and slightly notched.

Legs: trochanters and femora red, tibiæ and tarsi black, but the tibiæ are blackish-piceous beneath; claws reddish, or reddish-piceous.

♀ unknown to me.

Hab.: Goya, Corrientes, Argentine Republic, 1 ♂ (slightly immature and somewhat crushed), collected by Mr. Perrens.

I believe this to be identical with *Æ. rufina*, from Minas Geraes, indicated by Hagen without description, and another quoted name is *erythronera*, Selys, MS. I have a ♂ given to me by my friend Baron de Selys with no locality-label, but bearing a pencil-label (in my hand) "*rufinervis*," probably an error for *rufina*. It is slightly smaller than my type, and more adult, hence the pterostigma is darker, and the red portion of the neuration not so bright. I see no structural differences.

I dedicate the species to Mr. Perrens, who on several occasions has sent me extensive consignments of *Odonata*, &c., from Corrientes.

I here mention *Æ. variegata*, Fab., Syst. Ent. (and subsequent works), which may possibly belong to the same group, but certainly not to same species. It is indicated from Terra del Fuego, and is said to be in "Mus. Dom. Banks." In order to save disappointment, I state that it no longer exists in Mus. Banks, and has probably been long ago destroyed.

Lewisham, London: June, 1887.

BUTTERFLIES OCCURRING AT DOVER AND ITS VICINITY
SINCE 1860.

BY C. G. HALL.

As our British butterflies appear to be getting scarcer, I have made the following notes with respect to those observed in this district:—

Gonepteryx rhamni.—Seen nearly every spring on fine days, but the prevalent north-easterly winds of late years have diminished its numbers; also occurs at harvest time.

Colias Edusa.—This is a true Dover insect, and occurs every year, and in certain valleys on the cliffs between Dover and Kingsdown commonly. Some years it is excessively abundant: take, for instance, 1877. The variety *Helice*, H., occasionally occurs. *C. Eyalæ*.—Much rarer than the preceding, and decidedly sporadic.

Aporia cratægi.—This elegant butterfly I took in 1862 and 1863 on the ground now covered by the Victoria Park; it never was very common, and I have not seen it since that date.

Pieris brassicæ and *rapæ*.—Always plentiful. *P. napi*.—rather local, most partial to the lanes inland. *P. Daplidicæ*.—Sporadic; Castle Hill, before the Park was made; I have never had the pleasure of taking it, but have seen it alive in the net.

Anthocharis cardamines.—This pretty species is abundant in the lanes towards Kearsney, Ewell, &c.

Leucophasia sinapis.—I have been told that it has been taken in some woods near Dover, but have no personal knowledge.

Arge Galathea.—Very abundant.

Pararge Aegeria.—Local, lanes inland, common. *P. Megæra*, same as preceding, but more abundant.

Epinephele Semele.—Very local, but abundant where it occurs; Coombe Wood, near Alkham, &c. *E. Janira*.—Needs no comment. *E. Tithonus*.—near Canterbury. *E. Hyperanthus*.—Lanes, common; especially with *E. Semele* in Coombe Wood.

Cænonympha Pamphilus.—This insect seems to have the strongest constitution of all the butterflies, and baffles east winds, and is always to be seen from the bleak sand-hills at Deal to the shady nooks in the Warren at Folkestone.

Vanessa cardui.—Sporadic, but always occurs, though its appearance in spring after hibernation seems most general; very abundant in 1883. *V. Atalanta*.—Always common, inland and in gardens. *V. Io*.—Also common, but of very uncertain appearance. *V. polychloros*.—Rather scarce, but taken in spring at Sandwich: in the quaint little town it hibernates in the old churches and barns, and is seen in the streets; commoner than usual, 1883. *V. urticæ*.—Common everywhere.

Grapta C-album.—I used to take this butterfly at Dover in 1862—3: sometimes it occurred commonly, but I have never seen it since, nor have I heard of its capture.

Argynnis Aglaia.—Very common on the hills near Coombe Wood, Houghham, &c., but difficult to catch. *A. Lathonia*.—I took two at Walmer, 1875, and have seen several alive taken on Castle Hill and other localities in the neighbourhood; commoner some years than others. *A. Euphrosyne*.—lanes, in some localities common.

Melitæa Cinxia.—Apparently sporadic, very common about 1863, not observed to my knowledge since. *M. Artemis*.—Very local, but abundant in some marshy land between Deal and Sandwich.

I have never seen or heard of any captures of either *A. Paphia*, *Adippe*, or *Selene*, or *M. Athalia*, but it is possible they occur further inland.

Nemeobius Lucina.—Not very common and local.

Thecla quercus.—Woods, inland. *T. rubi*.—same as preceding, but much commoner; also in Folkestone Warren; very plentiful this year.

Chrysophanus Phleas.—Of general occurrence, and the last butterfly to be seen on the approach of winter.

Polyommatus Argiolus.—Common amongst holly towards Ewell; very abundant in 1870. *P. Alsus*.—Very common everywhere. *P. Corydon*.—Always common on the chalk; sometimes it literally swarms. *P. Adonis*.—More local and not so plentiful; rather plentiful this year. *P. Ægon*.—Also common. *P. Agestis*.—A very common species; most plentiful, perhaps, on the sandhills at Deal.

Syrichthus malvæ.—Woods.

Thanaos Tages.—Very common.

Hesperia linea.—Also common. *H. sylvanus*.—The most common of the genus. *H. comma*.—Local; under the cliff near Kingsdown, and St. Margaret's Bay.

Other species *may* occur which have escaped my observation; and, in conclusion, I wish to say that the above notes are entirely with regard to *my* own experience.

Dover: July 6th, 1887.

OBSERVATIONS UPON *ASPIDIOTUS RAPAX*, COMSTOCK,
AND *A. CAMELLIÆ* (BOISD.), SIGNORET: TWO ALLIED SPECIES
OF *COCCIDÆ*.

BY ALBERT C. F. MORGAN, F.E.S.

I have already (p. 68, *ante*) on the one hand referred to the similarity which exists between the allied species of *A. rapax* and *A. camelliæ*, belonging to the sub-family of *Diaspinæ*, and on the other hand I have also quoted the opinions of competent authorities to the effect that we should not be justified in concluding that the two species are identical.

It may, perhaps, therefore, be convenient to bring before the reader the characteristic details of each species, in order that he may, without necessity of research, observe which are the characters common to both, and which are peculiarly distinctive of each species.

In order to do this, it will be well to recall Dr. Boisduval's* description of what he named *Kermes camelliæ*. It must be remembered that he divides the family† of *Coccidæ* into two genera only, viz., *Chermes* and *Cochinelles*. In the former he includes what are now classed as sub-families, *Diaspinæ* and *Lecaninæ*, and in the *Cochinelles* he includes the sub-family *Coccinæ*.

In his "Entomologie Horticole" (1867), p. 334, Boisduval writes thus:—

"Ce petit insecte est allongé, ovale, linéaire, un peu déprimé, d'un brun roux, souvent légèrement arqué, rappelant un peu par sa forme la *Kermés* coquille si com-

* Ess. sur l'Ent. Hort. (1867), p. 334.

† *op. cit.*, p. 301.

mun sur certaines variétés de pommiers et poiriers. La larve, lorsqu'elle est débarassée de sa coque, est d'un vert un peu roussâtre.

"Nous avons observé cet insecte sur le camellia, et une seule fois sur la Thé; il se tient, à la face supérieure des feuilles le long des nervures; on rencontre cependant quelquefois deux ou trois individus disséminés sur le limbe.

"Il ressemble par la couleur à celui des Hespérides; mais il est plus petit, et plus linéaire; il est plus adhérent, et on le détache facilement avec une petite brosse."

It would be difficult from this description to identify the species, and for this reason, perhaps, Prof. Targioni-Tozzetti, in his "Coccidarum Catalogus" (1868), does not mention it, except that on page 45, *op. cit.*, in the genus *Mytilaspis*; and after giving the synonyms of *Mytilaspis linearis*, he remarks:—"An hic referendum: *Chermes camelliae*, Boisd.?"

Signoret, however, definitely adopts Boisduval's specific name *camelliae* for a species of *Aspidiotus* found on the camellia in the conservatories of the Luxembourg and the Bois du Boulogne, and he furnishes a description of the insect, together with a figure of the anal segment (An. Soc. Ent. France, 4° series, tom. ix, 1869, p. 117, and plate 3, fig. 9). His description is as follows:—

"Le bouclier est arrondi, très convexe, quelquefois noirâtre, ce qui est dû à la fumagine dont l'arbrisseau se couvre assez souvent; autrement il est d'un brun jaunâtre plus ou moins transparent. La coque femelle (*sic* ? mâle), est un peu plus allongée. La femelle est arrondie comme chez le *nerii*, mais d'une forme plus allongée et plus large postérieurement: elle en diffère par l'extrémité de l'abdomen n'offrant que deux lamelles visibles et quelques squames plus ou moins poilues; de plus, c'est à peine si l'on y voit des filières séparées, qui ne consistent qu'en un point operculaire avec un petit poil, et les plaques de filières manquent, du moins nous n'avons jamais pu les découvrir, malgré un grand nombre de préparations à la glycérine, à la potasse caustique, à l'eau, &c., et cependant nous opérions sur des femelles offrant un grand nombre d'œufs."

Here we have a detailed description, which, with its accompanying figure, should enable us to identify Signoret's species, but at present it does not seem to have been found in America, and I am not aware that it has ever been identified in Europe.

We will now turn to Professor Comstock's description of his species, *Aspidiotus rapax*. In the Agr. Report U. S. A., 1880, p. 307 he writes:

"The scale of the female is very convex, with the exuviae between the centre and one side, and covered with secretion. The scale is grey, somewhat transparent, so that it appears yellowish when it covers a living female; the prominence which covers the exuviae is dark brown or black, usually with a central dot and concentric ring, which are white. Ventral scale snowy-white, usually entire. * * *

* * * "The body of the female is nearly circular in outline, bright yellow in colour, with more or less translucent blotches. The last segment presents the following characters: the groups of spinnerets are wanting:

"Only one pair of well-developed lobes, the median, present. These are prominent. Each one is furnished with a notch on each side; the notch on the mesal margin is distad of that on the lateral margin. The second and third pair of lobes are represented by the minute pointed projections of the margin of the body.

"The margin of the ventral surface of the segment is deeply incised twice on each side of the meson; once laterad of the first lobe, and again between the rudimentary second and third lobes. The parts of the body-wall forming the margin of these incisions are conspicuously thickened.

"There are two simple tapering plates between the median lobes, two deeply and irregularly toothed or branched plates, extending caudad of each incision, one usually simple and tapering plate between the incisions of each side, and two or three of the same character laterad of the second incision.

"The first, second, and third pairs of spines of each surface are situated near the lateral bases of the first, second, and third lobes respectively; the fourth pair are situated at a little more than one-half the distance from the median lobes to the penultimate segment."

By a careful comparison of this description of *A. rapax* with Signoret's description of *A. camelliæ*, we observe that in each species the *scale* of the female is very convex, that it is more or less transparent, and that it is yellowish in its natural state when covering the body of the female insect.

The body of the female is circular, or nearly so, in each species, and the abdominal segment presents the following similar characters.

In each species there is only one pair of well-developed lobes, and on reference to Signoret's figure, we find these lobes are notched in the same manner as in Comstock's species.

On each side of the median lobes the margin is deeply incised twice in *A. rapax*, and Signoret's figure shows similar incisions, although he does not refer to them in his description. The two simple tapering plates between the median lobes of *A. rapax* are also shown in Signoret's figure of *A. camelliæ*; and, lastly, the groups of spinnerets are wanting in both species.

Therefore, the points of similarity between the two species consist—

- (i.) In similar appearance of scale.
- (ii.) One pair only of well-developed lobes.
- (iii.) Two deep incisions in margin of anal segment, laterad of each median lobe.
- (iv.) Two simple plates between the median lobes.
- (v.) Absence of groups of spinnerets.

The characters, however, which are dissimilar in the two species are not less important than those which are common to both.

On reference to Signoret's figure, we find three spines or hairs close to the margin of the abdominal segment, just above the base of each median lobe, which are not mentioned or figured by Comstock, nor have I found them in any of the individuals which I have examined of the European *A. rapax*.

Signoret also gives five similar spines arranged transversely on the dextral side of the anus, and three similarly arranged on the sinistral side. These are not to be found in *A. rapax*.

Again, in Signoret's figure the median lobes, although showing similar and similarly situated notches to those of *A. rapax*, are not quite of the same shape. Those of *A. camelliæ* appear to be of a considerably longer form than those of *A. rapax*.

It would not, perhaps, be prudent to attach much importance to any difference which may appear to exist between the anal plates, as drawn in Signoret's figure, and those of *A. rapax*, as I do not think that Dr. Signoret makes these play so important a part in characterising species, as Prof. Comstock has more recently shown to be necessary.

There is yet one more, and as I think an important, point of difference between the two species. *A. rapax* has an entire ventral scale, that is to say, if the insect is turned over, it will be found completely enveloped in its scale, both ventrally and dorsally, which does not occur in some species; for instance, *A. nerii*, which has a mere white film ventrally, and this remains on the leaf when the insect is removed. It can scarcely be supposed that such a character would have been overlooked by so distinguished an entomologist as Dr. Signoret; on the contrary, we find that he observed this character in *one* species under his examination, and he considered it of sufficient importance to establish a new genus, which he named *Targionia*, in order to include this one species with an entire ventral scale (See Ess. sur les Coch., 1870, pp. 105, 106, *vel.* Cocc., p. 149). This genus has since been abolished by Prof. Comstock, for reasons which he gives in his Sec. Rep., 1883, p. 82. The absence, therefore, of any record by Signoret of a ventral scale in his *A. camelliæ* must, I think, be considered important.

Of course, as is well known, the difference in many of the species, and especially in those which are closely allied, of the genus *Aspidiotus* is slight, and only to be observed by microscopical examination. But as the anal plates of the insect may, perhaps, not unreasonably be supposed to assist the insect in weaving its scale, it may not be improbable that the difference in the appearance of the scales, which is observed in different species, otherwise very similar, may be caused by the differentiated form and number of the marginal plates.

Villa Nova da Gaya, Portugal :
July 28th, 1887.

MESOSA NUBILA IN HUNTINGDONSHIRE.

BY J. BROWN, F.E.S.

The scattered woods of Huntingdonshire, if taken together, occupy at the present time a considerable area of the county, and, doubtless, these woods at one period were united, and so formed one vast forest, which for many miles extended close to, and partly surrounded, the great Fen containing the large Meres, known as "Whittlesea," "Ugg," and "Ramsay;" to enumerate the natural productions of these Fens would occupy too great a space, I will, therefore, leave that for a future paper.

Notwithstanding the annual clearances in these woods, Monk's Wood remains still the largest, other small woods extend north-east towards Ramsay, and north-west to, and across the great north road running into the adjoining county, Northamptonshire.

Formerly bordering these woods were large grass meadows, where, in the middle of June to July, might be seen many specimens of *Aporia crategi* with wavy flight settling upon flowers; these meadows were also studded with large hawthorns, from the blossoms of which, at the end of May, numbers of the thick-kneed beetle *Osphya bipunctata* might be taken.

All these woods contain *Mesosa nubila*. The wood I visited (17th of April) for this Longicorn beetle was near Ramsay, the oaks in which were very old, some felling was going on, the woodcutters informed me that no oaks had been taken down for fifty years; on splitting decayed pieces from these trees, I found many perfect specimens of *M. nubila* and its larvæ in all stages under the bark; and perfect specimens of *Elater sanguineus* and many of the same from other pieces blown down by high winds in winter.

This wood, and the others previously mentioned, are open, and free of access to the people of the villages, and an enormous quantity of pieces containing these beetles are collected and broken up for fire-wood; sometimes the ground within these woods is covered with oak branches, whose vitality has been destroyed chiefly by the ravages of the larvæ of *M. nubila** and other beetles.

Any Coleopterist desirous of obtaining specimens would be well repaid by a visit to this locality.

The pieces of oak containing the larvæ, pupæ, or imago, although upon the ground, continue to supply nourishment; on examination of these pieces by splitting them, you may trace the galleries made by

* Here we venture to differ from our correspondent, believing that most of the beetles only stepped in because the vitality of the trees had been impaired from other causes.—Eds.

these larvæ, you may find many in various stages of development, and, by comparison, we may safely assume three or four years the maximum time to attain to pupa and perfect state.

The larvæ are soft, fleshy, and of a light drab colour, with a small black spot upon each segment, six small feet, and the head dark brown; to assist them in their work of feeding, they have upon each segment a tubercle that helps them to press against the side of the gallery within which they are feeding; these galleries diverge in various directions towards the outer edge of the solid wood, and towards autumn those larvæ that are full-fed have approached close to the bark, and make for themselves a chamber, change to pupæ, and remain in that state about three weeks, and then assume the perfect condition.

5, King's Parade, Cambridge :
August, 1887.

[Mr. Brown has sent us a portion of a much decayed oak branch, showing the larval gallery and the pupal chamber, in which is the perfect insect.—Eds.]

The great abundance of the Cabbage-White Butterflies (Pieris brassicæ and rapæ) in England in July and August, 1887.—This has become so notorious to every observer that we take it to be useless to insert special notices of the phenomenon. To some of us it requires the memory to be taxed to the extent of nearly 40 years in order to realize a parallel. And the extreme abundance of *P. brassicæ* is quite on a par with that of *P. rapæ*. *P. napi* we do not specially allude to, but its numbers seem to have been far greater than is usual.

The cold and comparatively dry winter, and the hot summer, have no doubt had some influence; but in regarding individuals of both *P. brassicæ* and *P. rapæ*, a very considerable proportion of the whole are in a battered condition. This might be due to the pugnacious instincts of the butterflies; but there were no indications last year to lead us to anticipate an abundance such as the present. We think it most probable that extensive immigration has taken place, and possibly in a nearly continuous manner, the heat, absence of high winds, and even the drought, seem to have been especially favourable for migration in these species, for the records of their migrations almost invariably allude to them as occurring in calm hot weather with a smooth sea. The effect on our crops of coleworts is much dreaded by some. At present we prefer to regard it as an unknown quantity. Analogous superabundances have often left only the most transient traces of their effects.

But if we do not think it necessary to insert special notices on the subject of the present abundance for the South of England, and even for the Midlands (for we learn that the insects are equally abundant there), we shall be glad to have records of a *negative* nature for the South, and *positive* information as to how far north in these islands the phenomenon has extended; and also, generally, for Ireland. It is an extremely interesting subject, and one that has several bearings.—EDITORS : London, August, 1887.

Probable immigration of White Butterflies.—I went over to Hunstanton one day towards the end of May when the white butterflies were coming out. The day was bright and sunny, but the wind, what there was of it, from the N.E. and cold. On the way *Pieris rapæ*, with doubtless *napi*, was common, but not more than a casual specimen or two of *P. brassicæ* was to be seen. But on reaching Hunstanton and in walking along the top of the cliff to Old Hunstanton, I came upon multitudes of the latter species, more I think than I ever before saw together. They were flying about the level ground on the top of the cliff, and settling in dozens on the flowers, but did not seem to be in any such numbers further inland, and as no field of any plant of the cabbage or turnip class was visible, nor any probable food plant, I concluded (and still think) that I had come upon a flight of immigrants immediately after their arrival, and before they had recovered sufficiently to pass inland. The great majority were *Pieris brassicæ*, but *P. rapæ* was also numerous. I did not notice *P. napi*. These butterflies seem to have taken very nearly the course of so large a proportion of our migratory birds.—CHAS. G. BARRETT, King's Lynn : August 18th, 1887.

Migration of Insects.—As far as change of abode (wandering or migration in the more limited application of that term) is concerned, many instances are known to entomologists in this country. For example, *Melitæa Athalia* is well known to change its breeding ground from time to time. Again, *Ino stactices* frequently changes its head quarters. It may be only from one field into another adjacent thereto ; but in one case which came under my observation, a colony had removed from a certain field to another field half a mile distant.

Perhaps no one will deny that certain species of moths and butterflies are migratory to the extent of changing their breeding ground either annually or every few years ; but as regards immigration of insects into this country, entomologists are divided in opinion. The facts bearing on immigration are less convincing than those just adverted to, which point to simple migration, and it must be admitted that we have no positive proof that foreign-born insects ever do arrive in Britain by what may be called the direct air line route. I feel assured, however, that when British entomologists, in conjunction with their *confrères* abroad, set about investigating the matter in a thoroughly practical manner, it will be found that not only do many species of *Lepidoptera* migrate considerable distances, but that several species we little suspect of being other than pure British subjects, are in reality only aliens or the descendants of aliens.

We have records of clouds and swarms of butterflies and lesser numbers down to single individuals of moths observed over the land and far out at sea ; sometimes the flight has been at a considerable elevation, and in other instances quite low. I think we can hardly question the value of these records as a whole, even if in one or two the accuracy of detail may be doubtful. They appear to establish as a fact that there are species of *Lepidoptera* which leave the place of their birth and travel far from there.

That a host of any species of butterfly should lie on the north coast of France waiting for a favourable moment to invade England, I think no one will suppose probable ; but from a point very considerably farther to the south or east, a swarm of butterflies, ay, or moths either, might ascend higher and higher into the air until

they reached a current which would waft some of them to these shores; the majority would probably fall over part of Central and North-West Europe, and many perhaps into the sea.

Dr. Jordan says (*ante* p. 64) that "butterflies are not, like locusts, impelled by the devastations of their own swarms to move onwards." In this he is right up to a certain point; but may there not be in butterflies and moths an instinctive something which urges them to seek "fresh woods and pastures new" for their progeny? In a former note on this subject (*Ent. Mo. Mag.*, vol. xxi, p. 208), I suggested that the migratory instinct of a species of *Lepidoptera* addicted to wandering is excited or suppressed by meteorological influence. This view I still entertain. I would ask, is it not probable, that if in certain seasons the weather should be of a character favourable to the welfare of a particular species of the *Rhopalocera*, for example, and the species should attain the perfect state in exceeding abundance—is it not probable, I say, under such circumstances, that the insect may, having a care for the future of its race, be actuated to leave the place of its birth and endeavour to establish itself in some distant locality? With this object in view, what better plan could the insect adopt than that of soaring aloft and suffering itself to be air-borne to its new home? There are certain objections to such a theory, but, as far as I can see, none which are fatal if migratory instinct is admitted as a first principle.—RICHARD SOUTH, 12, Abbey Gardens, St. John's Wood, N.W.: *August 9th, 1887.*

Small birds and the Lepidoptera eaten by them.—Twice I can clearly remember seeing a swallow snap up a tolerably large moth—once it was, I believe, a *Cidaria russata*, and last year, in Jersey, one carried off an *Alcis*? I was chasing, before my very nose! I have often seen the robin with *Noctua*, and the common sparrow also, frequently have I seen the latter chasing yellow-underwings; from the greater titmouse I one day took a *Triphena fimbria* in sadly battered condition. I have seen the common flycatcher take butterflies more than once. I can well remember how gracefully one swept from the bough of a chestnut and caught a *Lasiommata Aegeria* in its flight, then curving round returned to its perch again. The other day, however, I saw one serve a *Tortrix* larva in the same way, it was suspended from a beech tree by a silken thread and was eaten like a fly. I did not previously know they would eat larvæ.—R. C. R. JORDAN, 105, Harborne Road, Edgbaston, Birmingham, *July 17th, 1887.*

Harma Hecataea, Hewitson.—Having occasion to look at the drawer containing Mr. Hewitson's specimens of *Harma*, my attention was suddenly arrested by seeing the albino form of *Lachnoptera Laodice* under the name of *H. Hecataea*. How Hewitson could have made so grievous a slip it is hard to understand.—A. G. BUTLER, British Museum, Cromwell Road, S.W.: *August 5th, 1887.*

Note on Pyrausta punicealis.—I former years I used to associate this little Pyrale with chalk-downs and the like. During this month (and the end of the last) it has been common in my garden here, frequenting a small patch of *mint* less than a yard square. At times, more than a dozen could be seen at the same moment. I have never before seen it here. In 1886 the mint was luxuriant; this year, owing to the drought, it has barely sufficed for current kitchen requirements, and I have

neither seen, nor heard of any indications of larvæ on it.* Possibly the occurrence is to be put in the "sporadic" category, an unsatisfactory explanation, but it defines certain conditions that exist in many insects, and which obtain especially amongst Pyralides.

In the "Manual" *marjoram* is given as the food-plant of *P. punicealis*. Mr. Stainton provides me with the information that Bouché bred it from species of *Mentha*; Rössler found the larva gregarious on *Mentha aquatica*; Schleich on the same plant; Büttner found it on *Thymus*; and Harwood on *Nepeta cataria* (cf. Ent. Mo. Mag., xi, p. 66). Thus there is nothing very remarkable save its sudden appearance in numbers in a small London garden where it had never before been observed; and I may venture the remark that the Entomology of my garden is tolerably familiar to me, and that unusual occurrences are at once noticed. *This* year there have been several unusual occurrences in addition to the above.—R. McLACHLAN, Lewisham: August 11th, 1887.

Larva in swollen knots on the stems and branches of Juniper.—Mr. Stainton, in his notice of *Lobesia permixtana* (Ent. Mo. Mag., xxiv, p. 58), mentions (p. 60) that Herr Hartmann had observed a larva in the swollen knots on the stems and branches of *Juniperus communis*, which he regarded as that of *L. permixtana*. It seems to me, however, extremely probable that the larva here referred to must have been that of *Grapholitha opulentana*, Millière.

I am not aware that the latter feeds on *Juniperus communis*, but I have frequently bred it from swollen knots on *Juniperus oxycedrus*.

The species is not uncommon at Cannes, and is described and figured in the *Annales de la Société Entomologique de Belgique*, vol. xx, p. 62, pl. 1, fig. 9—11 (1877). I found it before our late friend Millière had published his description, and until I showed it to him, I was not aware that he had already met with it.

The figure in the plate does not give a true idea of the way in which the larva feeds. It mines in and under the bark on the swollen stems, but does not make a hollow in the centre of the stem itself; the figure gives one too much the idea of an empty gall.

I am informed by Monsieur Constant that the larva actually feeds upon a small fungus, with which these small gall-like swellings are almost invariably studded. The moth might almost be said to bear a superficial resemblance to the female of *Lobesia permixtana*.—WALSINGHAM, Merton Hall, Thetford: August 2nd, 1887.

[Millière mentions in a note that the galls on the stems of *Juniperus oxycedrus* are probably the work of a Dipteron, he having repeatedly found Dipterous larvæ in these gall-like swellings before there was any symptom of the Lepidopterous larva. Unfortunately he had not succeeded, at the time he wrote this note, in ascertaining to what these Dipterous larvæ turned. His notion was that the ♀ *opulentana* only deposited her eggs on those branches which had been already attacked by the Dipterous insect. Have we here a case of companion-larvæ?—H. T. S.]

Notes on Tortrices, &c., in Kent in 1887.—Mr. Stainton's note in the last number of the Magazine on *Lobesia reliquana* reminds me how overlooked some of

* The larvæ are common now, August 22nd.—R. McL.

our commonest *Tortrices* seem to be. *L. reliquana* in this district is an abundant insect, and flies in the late afternoon and early evening at the end of May and beginning of June, over the tops of the oak bushes and small trees. I can hardly think it feeds on golden-rod, for it is very common even in woods where the plant is entirely absent, and in collecting the stems and seed-heads for the purpose of rearing the *Eupithecia*, *Eupæcilia*, &c., &c., I never heard of any one breeding *reliquana*. It is, in my experience, confined to oak only.

Tortrices have been more frequent than usual, and in consequence of the hot weather their duration was short. *S. obscurana*, which I fancy is one of the most overlooked of our metropolitan species, was very common in June; it flies freely round the tips of the higher branches of oak trees in woods from 5 to 7.30 p.m. *A. upupana* was commoner than usual, but nearly a fortnight late in appearance, a remark that applies to many other species, such as *T. Brandेरiana*, *E. puncticostana*, *C. juliana*, *H. minutana*, *aceriana*, *C. grossana*, *S. achatana*, *D. sequana*, &c., &c.

Double broods, evidently caused by the season, are now appearing in some few instances, of which *A. derasana* is the latest I have observed. The autumn species are in great force now, and I have never seen *H. nigromaculana* or *E. dubitana* in such abundance, especially the latter; *S. spiniana* is just appearing, and is as great a puzzle as ever, although undoubtedly attached to hawthorn, how or when it feeds is a problem awaiting solution.

Respecting *Macro-Lepidoptera*, light has proved wonderfully attractive during the summer. On one evening, between 11 p.m. and 1.30 a.m., no less than forty-one species came into my room attracted by the lamp. There have been a few curious visitors, such as *A. luctuosa*, *P. bajularia*, *E. fraxinata*, *S. cinctalis*, &c., while *A. porphyrea* and *P. tersata* must have come very far, there being no heather or *Clematis vitalba* in the neighbourhood. Second appearances are of course frequent. I have noticed during the last week *S. populi*, and have bred a number of *N. dromedarius*, and the third brood of *A. subsericeata* is now coming out in my cages.—C. FENN, Eversden House, Burnt Ash Hill, Lee, Kent: August 18th, 1887.

Description of the larva of Eupæcilia flaviciliana.—In a valley among the downs near Sanderstead, where I had the previous season found *flaviciliana* flying at dusk, last July I observed a ♀ depositing her eggs in the flowers of *Knautia arvensis*. By collecting the flower-heads in the course of the following month the larvæ were obtained in some numbers, and though I failed myself, both Mr. Bird and Mr. Fletcher have succeeded this year in rearing the imago. The young larvæ, which at first are dark blackish-brown with black head, live in the florets, several often in a single head. As the seed-vessels develop, the larvæ attack them, eating out the inside and passing from one to another. The full-fed larva is plump but active, of varying colour, sometimes wholly dull green, or green with more or less of a pinkish tinge, or, lastly, entirely reddish-brown; the head and plates brown. They may be found within the receptacle, or on its outside, protected by several seed vessels spun together; but as the season advances, they are probably all alike blown down to the ground, where they spin up among rubbish. In confinement (in the linen bag in which they were being reared) they spun dirty grey cocoons among the folds, in which they passed the winter. In several instances I found larvæ which

had come to an untimely end in an unexpected way. Having eaten out the contents of one seed, the inmate had bored a lateral hole of egress, and another into the adjoining seed vessel. With its head in the fresh seed, and its tail not yet out of the empty one, the walls of the seeds would seem to have suddenly contracted, perhaps under the influence of the sun's heat, and pinned the unfortunate emigrant in such a way that he could neither advance or recede. The larvæ may be found through August and September, and even into October. The perfect insect emerges in July.—W. WARREN, Merton Cottage, Cambridge: *August 19th, 1887.*

Description of the larva of Stigmonota pallifrontana, Z.—Having found the imago of this species not uncommon, flitting about a few bushes of the *Astragalus glycyphyllos* in July, I was able in August to detect and collect the larvæ in plenty. These, when young, are pale whitish-green, with black-brown head and thoracic plate. At this period they appear to feed between the two valves of the pod, or on the soft inside of a pod; attacking the seeds themselves only as they advance in size. After clearing out the seeds of one pod they move on to another. Their presence within is betrayed by a slight discoloration near the base. This is easily discernible when the pods are green: but when, as often happens if exposed to the sun, they become purplish, the action of the larvæ inside is not so manifest. In many cases also, where the larva has attacked only the seeds without touching the inner tissue of the pod, no trace whatever exists externally, whereby its presence may be conjectured. Inasmuch as the vetch goes on flowering upwards through the latter part of June and the whole of July, the earliest pods are formed lowest down the stem, and in these larvæ produced from the eggs laid by the early ♀s may be found, while there are still flowers at the top of the branch, and later imagines depositing their eggs thereon. When full-fed, the larvæ are dull yellowish-green, with pale brown head, dirty brown thoracic plate, with its edges darker margined, and dull brown, small plate on the anal segment, spots small, brown, but distinct. At the very last a remarkable change occurs: the whole body turns a most brilliant red, clearly visible through the husk of the pod. The larvæ then eat their way out, to spin up in a convenient receptacle. I find that in confinement they take very kindly to virgin cork, into the interstices of which they at once retire and spin their cocoons.

The perfect insects fly in the afternoon from 2 to 6 o'clock; the males, which are extremely difficult to detect on the wing, buzzing vigorously in the air in the vicinity of the food-plant, while the females hover gently round the whorls of flowers, or rest on leaves near them. Although the insect has been hitherto a rarity in this country, I think I can safely predict, judging from my experience of it this season, that it will shortly be found abundant wherever its food plant occurs.—ID.

Food-plant of Eupæcilia pallidana, Z.—Having, in June, 1886, found a nice locality for this species on a dry sloping bank facing the sea, I revisited the place on the last day of July following, intent on finding the larva. I had no very definite idea what plants I ought to examine as the moths seemed to discard all flowers, but were very fond of settling on the fronds of the bracken. Having arrived at the stile overlooking the bank, I was debating with myself what plant to begin on when my eye fell on a fine bunch of *Jasione montana* which was just going out of bloom;

needless to say that I at once pounced upon a seedhead, on opening which a fine fat reddish *Eupæcilia* larva bustled out in great haste. Subsequent examination revealed larvæ of all sizes in these seedheads from the full-fed stage to mere babies, one head often containing several larvæ in various stages of growth. Owing to an accident my own batch came to grief, but Messrs. E. R. Bankes and W. H. B. Fletcher have been more successful, and have duly bred several specimens of *Eupæcilia pallidana* from these larvæ this year, the imago emerging in June.—C. R. DIGBY, Studland Rectory: August 5th, 1887.

The true position of the genus Chimarrha.—When making a critical examination of the pretty *Chimarrha marginata*, L., for my Revision and Synopsis of the European *Trichoptera*, certain points in its structure induced me to hold grave doubts as to the correctness of its position in the family *Rhyacophilidæ* in which it had been placed by Trichopterists, and in which I retained it provisionally. Dr. Fritz Müller has just published (*Entomologische Nachrichten*, xiii, No. 15, Aug., 1887) notes on a Brazilian species of *Chimarrha* which tend to prove that the genus should really be placed in the *Hydropsychidæ*, which accords with my own idea suggested in 1879. He found a pupa in a fixed case of small stones attached to a larger stone, and bred therefrom a *Chimarrha*. He urges that the case belonged to the *Hydropsychidæ* because its fixed side was closed by a web which is absent in the otherwise very similar cases of *Rhyacophilidæ*, and, as I read his remarks, there was no special inner pupal cocoon* (which exists in *Rhyacophilidæ*). For some other interesting details I refer the reader to Dr. Müller's original remarks. He offers no opinion on the condition of the terminal joint of the maxillary palpi, which, in the *Hydropsychidæ*, is multi-articulate, or, at any rate, with a semblance of being formed of more or less numerous small joints, a point on which I could not satisfy myself in 1879, so far as *Chimarrha* was concerned. But I think we may now assume that the genus belongs to the *Hydropsychidæ*, a change that will not alter its sequential position in my European arrangement, where it immediately follows that family, heading the *Rhyacophilidæ* as a special "Section." As *Ch. marginata* is usually very abundant where it occurs, there should be no difficulty in finding its larva, and Dr. Müller's remarks furnish a clue.—R. McLACHLAN, Lewisham: August 6th, 1887.

Concerning Tæniopteryx maracandica, McLach.—Having been attempting to-day to effect a provisional re-arrangement of some of my smaller *Perlidæ* of the European Fauna, which had fallen into a chaotic condition, and being occupied with the genus *Tæniopteryx*, I had occasion to re-examine *T. maracandica*, McLach., from Turkestan, described (and wing figured) in the *Neuroptera* of Fedtschenko's Travels in Turkestan, p. 34, pl. iv. (1875). The insect resembles a *Tæniopteryx* in its elongate form, and even the neuration is not distinctly opposed to its position in that genus; but I find the second joint of the tarsi is very short, and as Pictet makes this one of the essential characters in separating *Tæniopteryx* (in which all three joints are long) from *Nemoura* (in which the middle joint is very short), I think it will be better to transfer *T. maracandica* to the genus *Nemoura*. On parallel grounds Pictet retains *monilicornis* (not personally known to me) in *Tæniopteryx*, although its neuration (as figured) does not appear to differ from that of *Leuctra*.—ID.: August 1st, 1887.

* As distinct from the pupal integument.—R. McL.

The electric light as an attraction for Trichoptera.—Whilst waiting for the midnight train west, I pencil you a line. This place is a paradise for the Neuropterist. *Ephemeridæ* of four or five species abound, some very large, and *Trichoptera* are in thousands. At Niagara Falls Station the *Trichoptera* come to the electric light, and in one glass there is a layer of them at least an inch thick at the bottom, they having been killed by flying at the light.—T. D. A. COCKERELL, Buffalo Station: July 7th, 1887.

[Compare my notes in Ent. Mo. Mag., xxi, p. 91, September, 1884.—R. McL.]

Swarms of Lasius niger, L., var. alienus, Först., near Dover.—This race or variety of *L. niger*, which was at one time separated as a species (Först., Hym. Stud., Heft. 1. *Formicariæ*: and Cat. Hymen. Aculeata, F. Smith, Ent. Soc., Lon., 1871), was in the most extraordinary abundance at Buckland, near Dover, on August 7th. Being a still and sultry evening, the air was literally full of males, and the ground and walls covered by myriads of both sexes; the females had mostly denuded themselves of their wings in order to seek a suitable place for oviposition. I have seen this species in great abundance on the sandhills at Deal in certain seasons, but never anything to compare to the countless thousands on that evening. The late Mr. F. Smith (Ent. Ann., 1856, p. 94) describes an extraordinary flight of Ants at Dover, but this species was augmented by *Myrmica scabrinodis* and *lævinodis*, which I did not observe in this case. I may also mention that Mr. Smith saw them on the cliffs and sea shore, and, in this case, they seemed nearly confined to Buckland, which is nearly three miles from the town of Dover.—C. G. HALL, 14, Granville Street, Dover: August 15th, 1887.

Rare Aculeate Hymenoptera in 1887.—I have taken two species of considerable interest this season, which I had not met with previously. The first is *Passalæcus monilicornis*, of which four ♀ occurred, three of them near our house, and one near Wotton-under-Edge, about eight or nine miles from here. The other is *Halictus atricornis*, Sm., of which I took a single male in the woods near Wotton. I am not aware that it has ever been taken in any other locality than the Cheshire one before.—R. C. L. PERKINS, Sopworth Rectory, Chippenham: July, 1887.

Macropis labiata at Woking.—On the 30th July, Dr. Capron and myself visited Woking to look for this curious bee which Mr. Enock has so often taken on the *Lysimachia vulgaris* along the banks of the Woking Canal. We were each of us successful in taking a fair series of both sexes in very fine condition, flying about and settling on the *Lysimachia*; the males, however, seemed quite equally attached to the *Alisma*, which was growing in abundance in the water, in fact, I think I saw more males on the *Alisma* than on the *Lysimachia*. On leaving our hunting ground we were surprised to find both sexes plentifully on the common thistle, *Cnicus arvensis*. Mr. Bridgman also used to take it near Norwich on thistle, so it is evident that it is a species which is not very particular as to the plant it visits.—EDWARD SAUNDERS, St. Ann's, Bromley, Kent: August 15th, 1887.

Local Hemiptera at Bromley, Kent.—During the last month I have taken, on the common willow, *Salix alba*, two species of *Hemiptera*, which are certainly far

from common generally, although probably locally abundant—these are *Orthotylus diaphanus*, Kb., and *Plagiognathus Roseri*, H.-S., both of these have occurred pretty freely by beating the willows over an umbrella; with these I had the good fortune to secure a single specimen of *Oliarus leporinus*, thus adding an additional locality to those already known for this rare *Homopteron*.—ID.: August, 1887.

Diptera in Epping Forest.—Very few large *Diptera* were about when last I visited this place (July 21st). The *Acalypterate Muscidae*, which I was chiefly in search of, were tolerably abundant, the genera *Chlorops*, *Meromyza*, *Borborus*, and *Sapromyza* being well represented. There were also two or three species each of *Scatopse*, and *Agromyza*. *Hemiptera* were rather common, and a few beetles fell to my sweeping. The unfortunate proximity of the numerous stalls and booths that encircle what was once the forest, causes the remaining portion of the wood to be thronged with pleasure seekers, with the natural result of the gradual annihilation of insect life. I have some duplicates to spare should any one want them.—E. BRUNETTI, 129, Grosvenor Park, Camberwell: July, 1887.

Obituary.

Dr. Max Gemminger died at Munich on the 18th April last, having been born in the same city on the 23rd January, 1820; thus he did not long survive his younger and (in Entomology) better-known *collaborateur* Baron Von Harold. In early life he appears to have held an official position in the Museum at Trieste, but returned to Munich in 1849. Outside the great "Catalogus Coleopterorum," the idea of which he possibly originated, and which, in conjunction with Von Harold, he carried to so successful a conclusion, his entomological publications were not numerous, but as long as there are systematic Coleopterists, so long will "Gemminger and Von Harold" be familiar as household words. As a general naturalist he was known in connection with pisciculture, and especially as a skilled preparer of anatomical subjects for educational purposes. He was M.D., but probably never practised, his duties at the Munich Museum fully occupying his time.

Robert Francis Logan died at his residence, Spylaw, Colinton, near Edinburgh, on the 28th July, at the age of 60.

He was a very good observer on whom one might always thoroughly rely—but with this great capacity for benefiting our science, he was unfortunately extremely deliberate, and it was but very little of that which he had observed that was ever given to the world. He would seemed to have turned his attention to Entomology before he had reached his *teens*, as in his first published note (*Zoologist*, 1845, p. 1141), written when he was 18, he said "I have now been investigating the Entomology of this locality for about seven years."

This note referred to the capture at Duddingston (where he resided), near Edinburgh, of two specimens of *Polia occulta*, then an insect of very great rarity. In the *Zoologist* of the following year were notices of "Flowers which are particularly attractive to moths," of "*Graphiphora renigera*" (the insect we now know as *Agrotis lucerneae*, it having borne for some years the name of *Graphiphora* or

or *Spælotis catalaunca*). This insect was very rare with us in those days, but, occurring not uncommonly on the steep stony slopes of Arthur's Seat, an Entomologist settled at Duddingston had unusual opportunities of investigating its habits. Mr. Logan had bred the insect from a larva found under a stone in February, 1845, and thus became acquainted with the locality and habit of the species. A description of the larva followed at p. 1347 of the *Zoologist* for 1846.

His next notice was in the *Zoologist* for 1848, p. 2034, being a "Description of *Ephippiphora turbidana*, a new British Moth of the Family *Tortricidæ*." In the *Zoologist* for 1849, p. 2626, are three short notices by Logan:—" *Glyceria fluitans* attractive to moths," "Moths and Honey-dew," and "On setting *Lepidoptera* flat."

It is rather singular that none of the foregoing communications to the *Zoologist* are recorded in Hagen's *Bibliotheca Entomologica*, but the note on *Glyceria fluitans* seems to have been honoured with a German translation in Froriep's *Tagsbericht*, and thereby appears in Hagen as Logan's first article: "*Glyceria fluitans* zieht die Nachtschmetterlinge an."

Thenceforward, Logan was a contributor to the *Transactions of the Entomological Society of London*, to the *Proceedings of the Royal Physical Society of Edinburgh*, to Morris' "Naturalist" (where, in 1852 and 1853, in conjunction with Dr. W. H. Lowe, he brought out "The Lepidopterous Insects of Mid-Lothian," extending to 17 pages), the *Entomologists' Weekly Intelligencer*, &c.

After attending almost exclusively for many years to *Lepidoptera*, Logan had latterly turned his attention to *Coleoptera*, and, during the last few years, several notices of the capture by him of scarce Scottish beetles have appeared in the pages of this Magazine.

One of the day dreams of Mr. Logan's youth was the production in numbers of a work entitled "Illustrations of Scottish Lepidoptera," giving the transformations of a variety of species; of this, the first number was, we believe, prepared, but never published, and we fear the work never made further progress.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY :
July 28th, 1887: R. ADKIN, Esq., F.E.S., President, in the Chair.

The Rev. W. F. Johnson was elected a Member of the Society.

Mr. J. T. Williams exhibited bred examples of *Phorodesma smaragdaria*, H., and *Dianthæcia irregularis*, Hufn. Mr. West (Streatham), *Apamea ophiogramma*, Esp., taken in his garden. Mr. Tugwell, *Apatura Iris*, L., with pupæ cases. Mr. Hall, varieties of *Abraxas grossulariata*, L. Mr. South, two varieties (♂ ♀) of *Melitæa Cinxia*, L., the usual dark fulvous marginal band of the under-side breaking up into spots, or having a tendency to form ocelli; taken in the Isle of Wight, in the same spot, on the 11th and 17th June respectively. Mr. Dobson, *Lepidoptera* from the New Forest. Mr. R. Adkin, living larvæ of *Spilosoma mendica*, Clerck, reared from ova obtained from the Cork form of the species. Mr. Sheldon, *Pempelia palumbella*, H., from Leith Hill; *Ephippiphora nigricostana*, Haw. (bred); and *Eupæcilia amandana*, H.-S., which he stated he had taken in great numbers near Croydon.

August 11th, 1887.—R. SOUTH, Esq., F.E.S., Vice-President, in the Chair.

Mr. Watson exhibited *Catocala promissa*, Esp., from the New Forest. Mr. West (Streatham), bred series of *Sesia asiliformis*, Rott.; varieties of *Lycæna*

Corydon, Fb.; and *Argynnis Euphrosyne*, L. Mr. Wellman, *Dianthœcia albimacula*, Bork.; *Bryophila muralis*, Forst.; a yellow variety of *B. perla*, H.; *Plusia interrogationis*, L., from Perth; dwarfed forms of *Aspilates gilvaria*, H.; *Eubolia bipunctaria*, Schiff., and *E. limitata*, Scop.; and living larvæ of *Chariclea umbra*, Hufn., feeding on knot-grass. Mr. Mera, *Thera simulata*, Hb., from Ireland. Mr. Fremlin, a variety of *Vanessa urticæ*, L. Mr. South, a variety of *Triphæna comes*, Hb., the hind-wings being a creamy-white; and a variety of *Vanessa Io*, L. The Secretary, on behalf of Mr. Lewcock, exhibited a number of species of *Coleoptera* obtained chiefly in Surrey, and read notes; there were twelve species of *Donacia*, including *Donacia hydrochæridis*, F., *D. lemnae*, F., *D. linearis*, Hoppe., *D. menyanthidis*, F., and *D. comari*, Suf.; also *Bembidium lunatum*, Duft., about a dozen specimens taken on the banks of the Thames at Rainham, Essex, during August of last year; several species of *Malachius*; *Cryptocephalus lineola*, F., and many others. The Secretary read a letter from Mr. Adkin recording the unusual abundance of *Pieris brassicæ* and *P. rapæ* in the neighbourhood of Eastbourne; and several Members contributed the result of their observations in different localities, and a discussion ensued as to the probable cause of the appearance of these species in such numbers in the southern counties, in which Messrs. Rendall, South, Carrington, Tugwell, Wellman, Hall, Sley, and others took part.—H. W. BARKER, *Hon. Sec.*

ENTOMOLOGICAL SOCIETY OF LONDON: *August 3rd, 1887.*—Dr. DAVID SHARP, F.Z.S., President, in the Chair.

Mr. John Witherington Peers, M.A., of Wendover, near Tring; and Mr. R. G. Lynam, of the North Staffordshire Infirmary, Stoke-on-Trent, were elected Fellows of the Society.

Jonkeer May, the Dutch Consul-General, exhibited a pupa and two imagos of *Cecidomyia destructor* (Hessian Fly), which had been submitted to him for exhibition by the Agricultural Department.

Mr. W. White exhibited, and made remarks on, a specimen of *Philampelus satellitia*, Linn., from Florida, with supposed fungoid excrescences on the eyes. Mr. Stainton said he was of opinion that the supposed fungoid growth might be the pollinia of an Orchid. Mr. Poulton expressed a similar opinion, and the discussion was continued by Mr. Pascoe, Dr. Sharp, and others. He also exhibited a bred specimen of *Catephia alchymista*.

Mr. McLachlan sent for exhibition a number of oak leaves infested by *Phylloxera punctata*, Lichtenstein, which he had received from Dr. Maxwell Masters, F.R.S.

Mr. Champion exhibited two rare species of *Curculionidæ* from the Isle of Wight, viz., one specimen of *Baridius analis*, and a series of *Cathormiocerus socius*. He remarked that *C. maritimus*, Rye, had been placed in recent European Catalogues as a synonym of the last-named species, but this was an error. He also exhibited a series of *Cicindela germanica*, from Blackgang, Isle of Wight.

Mons. Alfred Wailly exhibited, and made remarks on, a number of living larvæ of *Antheræa Pernyi*, *A. Mylitta*, *Telea Polyphemus*, *Platysamia Cecropia*, *Actias Luna*, *Attacus Cynthia*, *Callosamia Promethea*, and other silk-producing species. He also exhibited imagos of the above species, imagos of *Antheræa Yama-mai*, and a number of species of *Diurni* from Sarawak.

Mr. Poulton exhibited crystals of formate of lead obtained by collecting the secretion of the larva of *Dicranura vinula* on 283 occasions. The secretion had been mixed with distilled water in which oxide of lead was suspended. The latter dissolved, and the acid of the secretion being in excess the normal formate was produced. Prof. Meldola promised to subject the crystals to combustion, so that their constitution would be proved by the final test.

Mr. Oliver Janson called attention to Mr. Pryer's new work, "Rhopalocera Nihonica," and to the fact that the illustrations had been executed by Japanese artists.—H. Goss, *Hon. Secretary*.

NOTE ON SOME BRITISH COCCIDÆ (No. 8).

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

LECANIUM BEAUMONTIÆ, *n. sp.*

♀ scale oval or obovate, very convex, light brown, the surface closely covered with minute whitish dots; on each side, at some distance from either end and from each other, two more or less strong transverse ridges, outwardly going, almost at a right angle, to the margin, inwardly joined to a strong longitudinal dorsal ridge, which sometimes extends beyond them in a less degree to the anterior and posterior margin; the margin all round somewhat broad and flattened. On the dorsal ridge is a series (three or four) of conspicuous white tubercular points, sometimes in two rows, and the lateral ridges are similarly furnished; in some mature examples the lateral ridges are almost obsolete, but their position is indicated by the raised white points. Antennæ too imperfect to describe.

Considerably like *L. filicum*, but smaller, and very distinct from that and all other species by reason of the white points on all the ridges.

Length, 3, breadth, 1.75 mm.

On a young terminal shoot of *Beaumontia grandiflora*, a native of the East Indies, received from the Royal Gardens, Kew, in February, these scales were thickly clustered. The young scales were pale and moved about freely; the mature scales (of which there were but few) contained numerous white eggs. No male scales.

LECANIUM TESTUDO.

Coccus testudo, Curtis, Gard. Chron., 1843, p. 444, and fig.

"♀. Adult, oval, very convex, dark brown, and from the similarity to a tortoise, I have named this scale *Coccus testudo*: there is an elevated ridge along the back, with two transverse ones, the first being nearest the middle, the second towards the tail; the whole of the surface is finely shagreened, with small white tufts scattered over the whole. The under-side of the scale has a broadish margin, which is ciliated, and there is a long cleft at the tail; the skin of the body is concave, dark, with a purplish tinge, with six minute legs and a largish lobe towards the anterior portion, which is furnished with a fine proboscis" (Curtis, *l. c.*).

To this may be added—length, 3—4, breadth, 2—3 mm.; antennæ pale, 8-jointed; legs unicolorous with the body; the margin of the scale, seen from be-

neath, is not well described as "ciliated," for the hairs or spines are stout and not close together, and the "white tufts" on the surface are really waxen projecting granulations.

Curtis's description so well fits the insect I have before me, that I cannot do better than adopt it, with the foregoing small addition. His description was made, 43 years ago, from two examples on a leaf of *Brexia spinosa*, a native of Madagascar; the scale does not appear to have been identified since, until that by the kindness of the Director of the Royal Gardens at Kew, I received thence, in February, a specimen attached to a leaf of *Brexia madagascariensis*, and two others full of yellow eggs on a shoot of *Cratæva gynandra*. The ♂ is unknown.

Signoret, following Targioni-Tozzetti, thinks that *L. testudo* may be the same as *L. cycadis*, Boisd., which I know only by a single scale kindly given to me by Dr. Signoret, and which does not well agree with my scales of *L. testudo*, but I am not in a position to judge by one example. (Signoret gives the length of the scale of *L. cycadis* as "about 5 centimètres," which is surely a misprint for 5 millimètres). If there be but one species, Curtis's name is the older. I am not sure of the number of the joints in the antennæ of *L. testudo*, the concavity of the reversed scale being so great that a good view of the antennæ is not to be had without the destruction of the scale, which I cannot afford to effect. Signoret says nine joints in *L. cycadis*. The ♂ of *L. cycadis* is unknown.

My specimens of *L. testudo* are all but identical with scales of *L. oleæ*, Bernh., which I received from Professor Comstock, the chief apparent difference being that the white specks thereon are smaller than on mine. Signoret says the male of *L. oleæ* was unknown to him, although the female was common (Ess. Cochîn., p. 271). Comstock states that although the ♀ was abundant on many trees in California, the ♂ was unknown. (Report for 1880, p. 336). *L. oleæ* has but eight joints in the antennæ.

Whatever may be the result of future investigations, the foregoing allusion to *Lecanium cycadis*, Boisd. (1867), gives opportunity to mention that the species appears to have been previously indicated by A. H. Haworth under the name of *Coccus palmæ*, in the "Transactions of the Entomological Society of London," vol. i, p. 307 (1812). The identity is the more assured in that Haworth's species evidently belongs to Signoret's very restricted "Série 5" of *Lecanium*, of which the leading character of the scale is "distinguished from all others by the rugose surface and the dorsal disc presenting one longitudinal and

two transverse carinæ" (Ess. Cochin., p. 268), and by the consideration that of the three species thus denominated (*L. cycadis*, *testudo*, and *oleæ*), *C. palmæ* quite agrees with *cycadis*. I subjoin Haworth's description:—

"*Palmæ. Coccus testa rufo-fusca unicolore, ovali-convexa rugulosa linea dorsali fasciisque duabus elevatis transversis.*

"Habitat in *Palmæ* foliis Horto Chelseiano, copiose. Pestis morbida, fœda.

"Long corp., 2 lin., lat., 1½."

Haworth gives as a doubtful synonym, "*Coccus aonidum*, Gmel., Syst. Nat., 2215, 2?" but the description is only that of Linné (which is not referred to) transposed, with one or two interpolations, and does not at all agree with that of Haworth; for instance, it has "Testa orbiculata, planiuscula, atro-purpurascens: centro s. vertice tuberculato, rotundo, rubro, in senescentibus aperto." This points to an Aspidiotid, not to a Lecanid, and Targioni and Signoret have so adopted *Coccus aonidum*, Linn., as the type of *Aonidia*, a new genus of *Diaspina*.

LECANIUM LONGULUM, n. sp.

♀ scale dingy pale yellowish-grey, elongate, narrow, ends broadly rounded, side margins slightly curved out, not recurved; surface smooth, transversely arched,



longitudinally level semi-cylindric, not carinate, a band of faintly dark reticulation along the sides, whence, in some examples, faint dark lines radiate to the margin; the disc occupied with a long, pale, clear, oval spot; or in some mature specimens the scale is unicolorous yellow-brown, the dorsal pale spot partly or wholly covered and on the sides minute pale dots in place of reticulation. Under-side all pale, a broad space all round the insect, a conspicuous blackish eye-spot above each antenna. Antennæ of eight joints: the 1st short; the 2nd longer, about the same length as the 4th; the 3rd longest of all; the 5th longer than the 4th, but not so long as the 3rd; the 6th, 7th and 8th shortest, the 8th longest of the three, which (especially the terminal) have all gradated sides. The 8th, indeed, simulates two joints, but the gradated structure and the want of colour make it impossible to determine with certainty whether or not there is a real articulation (fig.). Young larvæ under the scales. Length, 4—5, breadth 2—2.25 mm.

No male scales seen.

A scale remarkable for its length, narrowness, and semi-cylindric form.

On stems (rarely on the leaves) of *Acacia catechu*, from Mr. James O'Brien, Harrow; on the same plant, *Anona muricata* and *Myrica*

fragifera from the Royal Botanic Society's Gardens; and on *Averrhoa carambola* and *Spathophyllum blandum* from the Royal Gardens, Kew; all in February.

LECANIUM FUSCUM

Réaumur, Mém., iv, pl. v, fig. 2 (1740).

Chermes quercus rotundus fuscus, Geoffr., Hist. Ins., i, p. 507, 11 (1764).

Chermes quercus (nec Linn.), Fourcroy, Entom. Paris, i, p. 229, 11 (1785).

Coccus fuscus, Gmel., Syst. Nat., 13th ed., p. 2221, 33 (1788).

Nec Lecanium fuscus, Sign., Ess. Cochin., p. 250.

♀ form spheroid (diam. 6 mm.) or oblate-spheroid, the transverse diameter (7 mm.) being greater than the longitudinal (6 mm.), height in either case 5 mm. (the excised part of attachment subtracting from the sphere), constricted as if by a ligature close above the part of adhesion to the branch, but leaving a comparatively small orifice for attachment, more or less round according to the exigencies of its position on the shoot; pale yellow-brown, with an undefined yellowish band down the middle, the colour spreading out on each side of it in several small angles (eventually the colour of the scale is wholly light fuscous-brown); surface smooth, with a very few distant punctures somewhat in rows, and around the basal circumference many larger and deeper; the posterior cleft short, the superior opening in it small, obovate; anal point very small. Antennæ short, of six joints—1st short, 2nd more than twice as long, 3rd nearly twice as long as 2nd, 4th shorter than 2nd, 5th still shorter, 6th shortest of all with a few hairs attached. Larvæ yellowish, short broad-oval, antennæ of six joints.



No male scale seen.

Réaumur (*l. c.*) says—

“Fig. 2 est celle d’une petite branche d’un chêne ordinaire à laquelle tient une Gallinsecte plus grosse que le Kermes et qui est presque sphérique.”

This figure exactly represents the scale I have before me, even the median yellow band with jagged sides being indicated.

Geoffroy (*l. c.*) refers to Réaumur's figure, does not name his species, uses only the four words quoted above, and adds, “Il ne paroît pas différer de celui de l'orme.” But the resemblance to that species (*Lecanium ulmi*, Linn.) is remote, and this is confirmed by the opportune arrival on July 4th of some scales of *L. ulmi* just gathered from wych elm (*Ulmus montana*) at Alford, Lincolnshire, by Mr. James Eardley Mason, which quite corroborate my opinion, they being of less regular form, not so uniformly smooth, of a deep chestnut or piceous-brown colour, and with a large basal opening for attachment to the branch.

Fourcroy, who, in his "Entomologia Parisiensis," gave names to Geoffroy's insects, says of this species (*l. c.*)—

"No. 11. *C. quercus*, Le Kermes rond et brun du chêne. *C. quercus rotundus fuscus.*"

The name given, taken as that of Linné, is incorrect, for Linné himself, in the "Systema Naturæ," p. 740, No. 5, refers his *Coccus quercus* to "Réaumur Ins., iv, t. 6, f. 1—4," adding "Habitat in *Quercu robore*;" but neither then, nor in the "Fauna Suecica," giving any description. Réaumur (*l. c.*) says of it, *i. e.*, of figs. 1—4, that it is "une Gallinsecte en forme de rein;" this in no way applies to the fig. 2 of pl. v, representing our *L. fuscum*, which, as he says, is "presque sphérique." This figure No. 2 is not referred to by Linné for any of his species of *Coccus*.

The name *fuscus* was first applied to this species by Gmelin in the 13th edition of Linné's "Systema Naturæ," where (*l. c.*) he has—

"*Coccus fuscus. C. quercus fuscus*, Modeer, Act. Goth., i, 24, 18. Geoffr. ins. par. i, 507, 11. Réaum. ins., iv, t. 5, f. 2.

Habitat in quercu robore, albo tomento obductus."

The last three words are an addition of his own, and refer, I presume, to the cottony matter enveloping the eggs and covered by the scale; they are not in the original of Geoffroy or Réaumur which are cited. The reference to Modeer is not correct, either as to the name or its applicability to the species of Geoffroy and Réaumur indicated. Modeer (*l. c.*) has—

"EK FÄSTFLYET (*Quercus roboris*). Female scale reniform, or as if with both ends curved together, dark brown, bedecked with a white powder. . . Geoffroy calls this 'Fästfly' *Chermes quercus reniformis.*"

This is equivalent to *Coccus quercus*, Linn., as before stated, and is not the *C. fuscus* here denoted.

In his "Essai sur les Cochinelles," p. 250, Signoret describes a *Lecanium fuscus* which he attributes to Geoffroy (meaning, no doubt, his "No. 11, *Chermes quercus rotundus fuscus*," cited above), yet at the same time he disallows that the figure in Réaumur's pl. v, fig. 2, cited by Geoffroy to illustrate his species, represents it. Thus he says—

"Dans notre Catalogue nous avons indiqué l'espèce de Réaumur, pl. v, fig. 2, comme étant le *fuscus*, Geoffroy, puisqu'il y renvoyait; mais la figure de Réaumur se rapporte à un autre type qui pourrait bien être le *L. Emerici*, Planchon, car il dit 'Elles sont très semblables, par leur figure et leur grosseur, au *Kermès*, et leur couleur est peu différente de celle du *Kermès* pâle.' Un peu plus loin il ajoute:— 'qui y tiennent (aux chênes) par une base circulaire qui a peu de diamètre,' tandis que, dans *fuscus*, c'est une sphère coupée en deux et par conséquent tenant à l'arbre par une large surface circulaire, ce qui se rapporte à Geoffroy disant qu'elle ressemble à celle de l'orme."

But, at p. 274 (under *Lecanium Emerici*, Planchon), Signoret says—

“ Dans le première parti de cet ouvrage (p. 23 and p. 250) je disais qu’ *Emerici* était connu et que c’était le *quercus* de Réaumur. En effet, planche v, fig. 2, il représente une espèce qui a la plus grande ressemblance avec *Emerici*; cependant, comme il indique les chênes ordinaires comme habitat, il est plus que probable que ce n’est pas le même.”

I agree with this; *Emerici*, and all the other allied species which Signoret refers to his genus *Kermès*, live only on *Quercus coccifera* or *Q. ilex* in the South of Europe, while *Lecanium fuscum* lives only on *Quercus robur*.

Signoret (*l. c.*) describes his *Lecanium fuscus* (of which he had only a single example, taken from an oak at Vienna) thus:—

“ Elle est d’un brun marron, fortement ponctuée sur les côtés, lisse sur les dos, demi-sphérique, un peu étranglée vers l’insertion sur la branche.”

Now, “une sphère coupée en deux,” or “demi-sphérique,” is not the “rond” of Geoffroy nor the “presque sphérique” of Réaumur, and a restricted meaning is placed upon the remark of Geoffroy, “Il ne paroît pas différer de celui de l’orme,” that the words do not warrant; therefore, whatever the “*fuscus*” of Signoret may be, it is not the species of Geoffroy, to whom he attributes it, nor of Réaumur, which is all that I am now concerned to show.

The conclusion of Planchon, as expressed by Signoret, p. 274, “La plus grande confusion n’a cessé de régner sur les espèces vivant sur le chêne, ce qui n’est pas étonnant, à cause de leur ressemblance” is very just.* It is now not possible in many cases to identify a species so surely as to be able to give due credit of priority of name, mainly by reason of the too succinct or imperfect description and account of similar species given by former authors. In fact, among the *Coccidæ*, especially in the *Lecanidæ*, where the appearance varies greatly during the course of the life of a species, the insect should be closely observed in all its stages, in order to form a correct idea of specific character.

On June 24th, Mr. G. C. Bignell, of Stonehouse, Devon, sent me, from an oak in his district, some scales, described above (six of the spheroid form and two of the oblate-spheroid), all, except this slight deviation, being otherwise exactly alike; and with them the following information:—

* “Il régné à cet égard, dans les ouvrages des auteurs modernes, de singulières confusions. Les uns altèrent les vrais caractères du Kermès, en y ajoutant des particularités qui n’appartiennent qu’aux espèces voisines; d’autres, allant encore plus loin, négligent ces caractères pour y substituer ceux d’espèces différentes. De là résulte une confusion que peuvent seules faire cesser les observations directes.” Planchon “Le Kermès du chêne,” p. 17. Paris, 1864.

“In searching for oak galls yesterday I found the enclosed on the branches, mostly on or near the terminal bud of last year, that is, at the base of this year's growth, and they were on one tree only, as far as I could see. I opened one, and it appeared to be a mass of eggs, and I found some Hymenopterous larvæ feeding thereon.”

About the middle of July a quantity of the larvæ of the *Lecanium* came out and moved rapidly about, and at the same time a few of the parasites appeared in the imago state; they are most probably *Blastothrix sericea*, Dalm., a species of *Encyrtidæ* obtained by Dalman from his *Coccus gibber* (*cf. infra*).

(To be continued).

SPHINX CONVOLVULI IN NORFOLK, IN 1887.

BY CHAS. G. BARRETT, F.E.S.

When visiting Mr. Norgate at Downham last spring, I was greatly interested by his account of the extreme partiality shown by the larger hawk-moths for the flowers of *Nicotiana affinis* (white tobacco). He had seen several *Sphinx convolvuli* at one time flying round it in his own garden.

I had never seen that grand moth on the wing, nor did I possess a decent series, so took care to secure a nice lot of young plants of *Nicotiana affinis*, and get them forward by the time that all risk of night frosts was over. They were then planted in two rows at the back of beds of petunia and verbena respectively, and soon came into flower, so as to form, with their abundant opaque-white blossoms, a very effective background to these beds in the evening—though it must be confessed that in the day-time they were not equally pleasing, from a curious habit of closing many of their blossoms, and exhibiting only the dusky backs of the petals. Their perfume at night was delightful, and for the special purpose for which they were planted they must be pronounced an immense success.

On August 22nd, we were delighted by a sight of the first *Sphinx convolvuli*—excessively wild and shy. It was not then captured, nor on the following evening, when it (or another) appeared, but afterwards we had better success. From that time until last Friday (September 9th) specimens were seen almost every evening, and generally secured, and the total taken by my boys and myself exceeds a score. At the same time we hear of specimens taken in all directions: at rest in the day-time, or rushing wildly into houses at night, attracted by the lights or the flowers, and causing a desperate

commotion when unable to find the way out again. Others were taken at flowers in the gardens, and altogether a very respectable number have been secured in the neighbourhood.

Nothing that I have ever seen in the evolutions of *Apatura Iris* or *Limenitis Sibylla* approaches in grandeur and power of flight to the motions of these noble moths. Their movements resemble in ease and grace those of a swallow, but far exceed it in swiftness. There is something wonderfully lovely in their manner of glancing about from flower to flower, or skimming round the beds. By moving gently, with little perceptible movement towards them, it is easy to watch them for ten minutes at a time, sometimes within a few inches, examining flower after flower, then circling round or gliding to another part of the bed, hovering about two inches from each flower, and probing its deep nectary, with a proboscis from three to four inches long. The petunias and verbenas get a share of attention, as also occasionally the neighbouring geraniums, and even the long tubular flowers of a large species of *datura* are not entirely overlooked, but not one of these plants approaches in attractiveness to the *Nicotiana*, to which the moths always return, and about which they spend most of their time.

The slightest *sudden* movement alarms them, and causes an instantaneous retreat, but as long as we move gradually and smoothly they seem to disregard us, and a lighted lantern is actually an object of curiosity. It is most curious to see one of these moths on the approach of the light leave the flowers and hover in front of it, then rise higher, pause in front of one's face with uplifted wings, as though looking straight into one's eyes (an attitude which has certainly been seen by some of our earlier artists, for their figures exactly represent it), then pass with a loud hum close to one's ear, and return, as though satisfied, to the flowers. But the most curious performance that we have seen happened in two cases, when one of the boys, wearing a scarlet-striped jacket, was watching one of these moths. In each case the moth actually flew close to him, evidently actuated by the most lively curiosity, and appeared to touch the scarlet stripes.

S. convolvuli does not hold itself bound by the crepuscular habits of its family. It is a creature of intelligence as well as of curiosity, and knows that the twilight is too short for all the floral investigation which its large appetite demands. We have taken them at all hours, from dusk (7.30 p.m.) to midnight—later, I confess that we have not attempted much; and the state of the weather, if not

too cold, affects them but little. One of our best nights—when six were taken—was beautifully fine, with bright moonlight, the other—when seven or eight were seen, and five taken—was exceedingly wet and stormy. Certainly, rough weather is no great obstacle to them, they only seem to be rendered more careless of danger by the rough blowing about of the flowers, and I have little doubt that they are attracted a long distance by the rich perfume carried away by gusts of wind.

To the Carlylean query, “whence?” it seems politic to offer no opinion. My friends here (who eagerly claim these charming insects as genuine natives of Norfolk) urge that *Convolvulus* is quite sufficiently abundant—as it certainly is (three species),—but I have a strong suspicion that a reinforcement has arrived from abroad to join the native contingent. If so, the journey has not injured them much, either in beauty or activity. One curious circumstance about them is the very large preponderance of females, especially in the earlier captures. Of our twelve earliest specimens, only one was a male. I hear that just lately the conditions are reversed, but not more than one-fourth of *our* specimens are males.

King’s Lynn, Norfolk :
September 13th, 1887.

Sphinx convolvuli at Lee, Kent.—A fine ♀ of this insect was brought to me on the 18th inst. It was taken in a garden in the neighbourhood.—C. FENN, Burnt Ash Hill, Lee: August 22nd, 1887.

Sphinx convolvuli in Birmingham.—A specimen of this insect was captured last week in Bellbarn Road. It was found on a doorpost.—W. HARCOURT BATH, Ladywood, Birmingham: September 7th, 1887.

Sphinx convolvuli at Newmarket.—*S. convolvuli* came into my dining room and buzzed about the ceiling; one had been caught a few days before in a neighbour’s garden; and Mrs. Verrall saw two just outside the front door a few days afterwards, but when I came with my net they were gone.—G. H. VERRALL, Newmarket: September 18th, 1887.

Sphinx convolvuli at Cambridge.—Two specimens of *Sphinx convolvuli* have recently come into my hands. The first was captured in a house near here (Mill Road) on August 19th, the other was knocked down by a boy three or four days ago as it was flying on the Newmarket Road, near the Barnwell Railway Station. The last named was a good deal worn, the other was in beautiful condition and apparently not long emerged.—ALBERT H. WATERS, Willoughby House, Mill Road, Cambridge: September 12th, 1887.

ON A SPECIES OF THE FAMILY *GELECHIDÆ*, HITHERTO
UNRECOGNISED IN ENGLAND.

BY WILLIAM WARREN, F.E.S.

In the summer of 1858, Mr. Bond took in Wicken Fen some specimens of a brownish, narrow-winged *Gelechia*, which I found placed in his cabinet as *arundinetella*. Among them there was, in fact, a single specimen of this latter insect, also caught at Wicken; which, being in very good condition, and almost as dark as the others, had, no doubt, led to the confusion of the two species. Mr. Bond kindly gave me a type of the insect: this was in the spring of 1886. During that summer Mr. W. Farren, of Cambridge, worked Wicken Fen pretty thoroughly, and among the *Micros* captured there by him I detected, in the autumn, several examples of the species taken by Mr. Bond so many years before. Mr. Farren had passed them over, and even sent some away as *morosa*. I have also heard from Mr. Fletcher, of Worthing, that he possesses a pair of a *Gelechia*, taken a few years ago in Wicken Fen, which he marked ? n. sp., intermediate between *acuminatella* and *morosa*. This summer more have been taken by Mr. Albert Houghton, and I have thus been enabled to identify the species as *Doryphora questionella*, H.-S., a rather indistinct, obscure-looking insect, allied to *morosa*, Mühl., but with brownish-black, not bluish-black, and more elongate, fore-wings. The species is figured by Herrich-Schäffer, vol. v, fig. 587, and may be described as follows:—

F. w. brownish-black, elongate, of equal width throughout, with the apex rounded; the three dots only just perceptible; from the costa before the apex a small pale dash runs obliquely outwards towards the hind-margin, as in *arundinetella*, and, much more conspicuously, in *Cleodora cytisella*: but this pale dash is not always perceptible; the hind tibiæ are conspicuously ochreous.

Heinemann gives Zurich as the only locality for the insect, and *Lotus corniculatus* as its food-plant; but it is worth mentioning that Prof. Frey, of Zurich, who once bred the species from an unobserved larva, does not name any food-plant. The imago appears during the latter half of July and the beginning of August, and is caught flying round flowers before dusk, and taken at light afterwards. Mr. Stainton considers it to be closely allied to *arundinetella*.

It may be well to correct here a slight error which appears in Heinemann's account of the food-plants of *morosa*. He gives both *Lysimachia vulgaris* and *Lythrum salicaria*. This is wrong: the larvæ that feed in the *Lythrum* are those of *subdecurtella*. The larvæ of the two species are much alike, and feed in similar ways, mining down the young central shoots.

Merton Cottage, Cambridge,
September 13th, 1887.

DESCRIPTION OF A NEW *GELECHIA* OF THE "LITA" GROUP,
CLOSELY ALLIED TO *G. MACULEA*.

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

GELECHIA (LITA) BLANDULELLA, *n. sp.*

Expanse, 4—4½". Palpi whitish-grey, thickened towards the base, widely separated, curved upwards for more than half their length; antennæ white with fuscous rings throughout their entire length; head white; thorax white, freckled with a very few pale grey scales; abdomen white, freckled a little more thickly than the thorax, giving it a slightly darker appearance.

Anterior-wings—ground colour very pure white, with a few greyish scales near the base, where a slender black line is sometimes noticeable; at about one-third from the base a dark fuscous (black on the edge of the costa) streak, slanting towards the centre of the wing, terminated at the median nervure, and showing a faint trace, when it reaches the median nervure, of being turned back on the costa, so as to form a letter V, the exterior side of which is nearly invisible; parallel with the hind margin the white ground colour shows up as a slender, distinct, once-angulated, white fascia, being shaded on either side with fuscous scales, which are more thickly sprinkled on the costa; at the apex of the wing there is often a distinct dark dot; on the centre of the disk three dark dots, one just exterior to the dark streak, and two nearly in the centre of the wing (the three being in the same straight line), the two latter are sometimes joined to form a short streak. In a few specimens the oblique line is obsolete, and represented only as a dot on the median nervure. Posterior-wings pale, shiny grey, paler at the base; cilia on both anterior and posterior-wings the same colour as the hind-wings. Under-side of an unicolorous pale whitish-grey; tarsi white.

Time of appearance, from end of July to the middle of August.

This insect closely resembles *Gelechia (Lita) maculea*, but the great difference in size at once distinguishes it. The markings, too, are slightly different. In *maculea* I find that when the oblique line reaches the fold, it is sometimes carried for a short distance along the central nervure somewhat like the letter L, with no trace of an upward tendency, while in *blandulella* the black mark is (if continued) sharply angulated and carried faintly upwards to meet the costa, thus forming a V mark. In *maculea*, too, the pale fascia shows a decided tendency to double angulation; in *blandulella* the angulation is always single. In *maculea* there is no trace of the slender black line noticeable in some specimens of *blandulella*.

Mr. Stainton, who has proposed for this insect the name *blandulella*, suggested that I should describe the species under that name, *blandella* being a synonym of *maculea*; he has also pointed out that the hind margin of *blandulella* is rounder than in *maculea*.

I have taken this species on the Deal Sandhills for four years (one or two being captured in 1884), along with the common *L. marmorea*.

Last winter I was much struck with the variation in my series of sandhill *Litæ*, and the kind offices of friends in naming very similar types as different species, coupled with the fact of a new species (*semidecandrella*) having just been differentiated, puzzled me to such an extent, that I put my difficulties (in a very crude form, certainly) into print (*Entom.*, xx, 28). As a result, I at once got the aid of several of our best entomologists, to whom my insects were in many cases new. Thanks to Messrs. Stainton, C. G. Barrett and Threlfall I have partly extricated myself. My Nos. 1 and 2 (*Entom.*, xx, 29) will be referred to *blandulella*, 3 and 4 to *semidecandrella*, whilst my black one may be a var. of *marmorea*.

May I add, that those who have a series or partial series of *Knaggsiella*, other than those originally taken by Mr. Barrett, would do well to scrutinize them carefully. From all I can gather these are still unique as British, and the few he captured will not account for all I have seen marked on exchange lists, &c. Those who have *Knaggsiella* from the south coast will probably find them *semidecandrella*, with an occasional *blandulella*. The species are all distinct enough, when one has had their special characters pointed out to him, and sees them side by side, but one rarely has this chance.

Rayleigh Villa, Westcombe Park, S.E. :

September 7th, 1887.

ON THE TRUE DISTINCTION BETWEEN *LITHOSIA COMPLANA*
AND *L. LURIDEOLA*.

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

Whilst re-arranging the Museum collection of *Lithosiidæ*, in order to incorporate the Zeller and other collections, I have had occasion to look up the original figures and descriptions of all the European species. I have also found it necessary to examine separately every specimen placed by Prof. Zeller under each species, and I must say that I have been not a little surprised at the confusion which existed in the series of specimens associated under the various species by that eminent Lepidopterist.

In 1878 Mr. Moore made a critical examination of the structure of the *Lithosiidæ*, the result of which proved that nearly every British *Lithosia* belonged structurally to a distinct genus. In his revision of the Family he referred to his genus *Collita* the *L. griseola*, *L. complanula*, and *L. stramineola* of Europe; he does not, however, account for *L. complana*.

Lithosia complana is the true type of the genus *Lithosia*, and, so far as I know, it has hitherto been only distinguished from *L. complanula* = *lurideola* by a character so slight, that in the case of any other species of any other group, it would have been scorned universally as beneath notice, viz. :—

1—yellow costal stripe of equal width to hind margin *L. complana*.

2—costal stripe attenuated to a point at the tip *L. lurideola*.

Von Heinemann, however, adds that in *lurideola* the costa is evenly arched, the collar only yellow in front and at the sides, and the body and fore-wings are of a darker grey.

To attempt to follow the above distinctions has proved a hopeless task, not only to Prof. Zeller, but I believe to every one who has attempted to separate his species by them.

Following Mr. Moore, and accepting neuration as a guide in the separation of the European species, I find that *Collita lurideola*, *griseola*, var. *stramineola*, and its dwarfed form *cycladum*, Zeller, are characterized by very simple neuration, there being no false or post-discoidal cell in the primaries; in *Lithosia complana*, however, this cell is always present and usually very prominent, being visible in many specimens without the use of benzine.

With regard to colour characters, although all specimens of *C. lurideola* have the "costal stripe attenuated to a point at the tip," about half the specimens of *L. complana* in Prof. Zeller's collection (some of which were under each species) have the same character, whilst others are intermediate between the attenuated and non-attenuated types.

Neuration is not always strictly constant; but surely any structural character is more satisfactory than the extremely slight and variable colour distinctions hitherto pointed out for the separation of *L. complana* and *lurideola*.

British Museum :

July, 1887.

LIST OF BRITISH *TIPULIDÆ*, &c. ("DADDY-LONGLEGS"),
WITH NOTES.

BY G. H. VERRALL, F.E.S.

(Continued from Vol. xxiii, p. 267).

L. APERTA, n. sp. (♂ ♀).—*L. lineolellæ simillima, sed pallidior et cellulâ discali apertâ.*

This species is exceedingly like the preceding, and may possibly be only a variety of it, yet there seem to be several small characters besides the conspicuous one of the open discal cell. It is smaller, the dark line on the thorax is less shining, smaller and shorter, the antennæ are lighter coloured, the femora are usually less black at their tips, the "great cross-vein" would be placed at about one-third the distance from the base of the discal cell, were that complete, while in *L. lineolella* it is at or beyond the middle, the forks of what should be the forked vein from the discal cell are from one and a half to two and a half times as long as their petiole, the mediastinal vein seems to end abruptly without any distinct cross-veins, but upon minute examination the sub-costal cross-vein can be faintly traced close to the end of the mediastinal, while the mediastinal vein itself ends faintly in the costa; the sub-costal vein seems to end in a somewhat similarly abrupt way just before the middle of the upper branch of the radial, but really it curves abruptly but evenly into the costa, while a faint marginal cross-vein unites it to the vein below. The end of the last abdominal segment of the male is deeply undulating at the side, while in *L. lineolella* it is nearly straight. One point in favour of this being a de-pauperated form of *L. lineolella* is that further absences of venation sometimes occur in it, one male in my possession having the upper third of the great cross-vein absent on one wing and very faint on the other, while sometimes the tip of the upper branch of the radial is obsolete.

It is not at all uncommon, and extends from the south coast to Sutherlandshire.

L. ferruginea, Mg.: always easily distinguished by the entire absence of any dark line on the middle of the thorax, and by the portion of the radial vein (after the præfurca but before the fork) being just about the same length as the upper branch of the fork. The abdomen of the male has a well-defined blackish fascia just before the end, which occupies nearly all the last two segments; on the edge of the last segment of the belly are tufts of stoutish reddish-yellow hairs. I have seen it in Hants, Sussex, Kent, Suffolk, and Sutherlandshire.

L. ochracea, Mg., is a common species, easily known by the character in the table; its distribution must be universal, as I have it amongst other places from Bonchurch, Inveran, Newmarket, and Bangor.

L. bicolor, Mg.: I caught this last June tolerably commonly about a hillside pond near Dolgelley. I have also seen it rarely in Hants and Sutherlandshire.

L. punctum, Mg.: I have seen but one British specimen of this, which I caught at Rannoch on June 25th, 1870.

At 18 in my table I must ask for a correction of a serious misprint; the whole second character should not occur here at all, but *is* in its proper place at 26, those, therefore, who are working from this table will oblige by striking out the last half of 18.

L. fuscipennis, Mg.: in this and the next species I cannot follow the recent continental writers: by *L. fuscipennis* I understand an entirely ochreous species, exactly as Meigen says, "glanzend ziegelroth, welches in der seiten ins Rostgelbe uebergeht." Schiner says, "Rückenschild obenant glanzend schwarz-braun," therefore he must mean some other species. He says, at the end of his description, that his species is identical with Schummel's and Zetterstedt's *L. discoidalis*; I suppose he means *L. discicollis*, my next species. I am convinced my next species is Zetterstedt's *L. discicollis*, but I am uncertain about its being Schiner's *L. fuscipennis*, because he says *L. fuscipennis* has the basal joint of the antennæ yellow, while in what he calls *L. discicollis* that joint is grey or blackish. Westhoff gives a good character for separating some of these species, but unfortunately I do not know which is the "upper" and which the "lower" third of the discal cell, I could understand "basal" and "apical," or "inner" and "outer," but the "upper" and "lower" thirds of an oblong are beyond me. My "glanzend ziegelroth" species has occurred in some abundance in a very small spot near Frant, also in Hampshire in two or three localities.

L. discicollis, Mg.: by this I mean a species with the peculiar venation given by Meigen (as in my table), and a shining dark brown disc of thorax with testaceous pleuræ. It is very common, and my most divergent localities are Slapton, Inchnadamph, Diss and Dolgelley.

L. subtineta, Ztt.: since my list was published Mr. Jenner has taken this species near Lewes from May 23rd to June 1st. It is most allied to *L. discicollis* and *fuscipennis*, having almost their venation; a handy character in *these three species* is that *the base of the second sub-marginal cell is at a right angle with the præfurca*; *L. subtineta*, however, differs a little, as the præfurca itself in my three specimens also starts at a right angle with the sub-costal vein, and has a recurrent

veinlet. The character, however, most readily noticed is, that all the transverse veinlets and bases of cells are darkened. The great cross-vein is at or a slightly beyond the middle of the discal cell. The thorax is light brown with darker stripes, and the abdomen dark brown with yellowish incisures, the appendages being luteous.

L. lucorum, Mg., and *L. sepium*, Ver.: I have nothing to add to these species, except that *L. sepium* seems not uncommon in the south of England.

L. nemoralis, Mg.: very common, as I believe all the variations come back to one species, but yet the variations are so strong that I recommend the species to further study.

L. filata, Wlk.: this species is hopelessly unrecognisable from Walker's description, so I give a few extra characters, especially as I do not recognise in it any known continental species, although it is not uncommon in Great Britain.

It is a small blackish species with a narrow body and narrow wings, belonging to the group with a very short fork to the upper vein from the discal cell, in fact, in *L. filata* the fork is often altogether absent in one wing, and occasionally in both; the base of the discal cell is almost in a line with the two cells above it; the great cross-vein is sloping, and placed rather before the middle of the discal cell, the last vein is shortish and nearly straight. The frons is broad and hoary, the thorax slightly greyish-black, sometimes with three indefinite stripes, the "pits" shining black, and a spot on the middle near front of thorax conspicuous; the halteres are dirty whitish; the abdomen has some short yellowish hairs about the sides and on the blackish hypopygium; the legs are all blackish-brown, slightly tinged with luteous about the base of the femora. In the female the femora are rather paler.

It is somewhat common in the New Forest, and I have caught it in Kent and Sussex, and also at Loch Maree.

L. senilis, Hal.: this is another species which has been a great stumbling block, because Haliday has called it a *Dicranota*, with the 13-jointed antennæ of that genus. As a matter of fact it has the normal 16 joints. I can add but little to Haliday's remarks in Walker's "Insecta Britannica Diptera," iii, p. 307, because, as usual, Haliday has seized all the important characters; how he made the mistake about the antennæ puzzles me. The wings are broad and very pilose towards the tip, the end of the sub-costal vein is about the same as in Westwood's figure in Walker's book, only it is much less distinct, being almost lost in the large, indefinite, sub-coriaceous stigma; the discal cell is much broader at its end than at its base, the stem of the forked vein two and a half to four times as long as the

wide open fork ; the great cross-vein is after the middle of the discal cell ; the spurs of the tibiæ are minute. It is not at all uncommon, I having often caught it in Hampshire, Sussex, Kent, and this summer in North Wales.

TRICHOCEA.

The species of "winter gnats" require more minute study from all parts of the world before any decided opinions can be given as to the distinctness of species. As a rule I have only caught them between September 18th and May 8th, but I caught one this year on June 16th at Bettws-y-coed.

AMALOPIS.

- | | | |
|-------|---|--------------------------|
| 1 (2) | Ochreous large species | <i>littoralis</i> , Mg. |
| 2 (1) | Blackish or greyish species. | |
| 3 (4) | Large species, with conspicuous marks on the wings | <i>occulta</i> , Mg. |
| 4 (3) | Smaller species, with wings entirely without marks. | |
| 5 (6) | Second sub-marginal cell much shorter than the first..... | <i>immaculata</i> , Mg. |
| 6 (5) | Second sub-marginal cell only a very little shorter than the first .. | <i>unicolor</i> , Schum. |

I do not know *A. straminea*, Mg., except from Walker's type ; he described from an ochreous *Amalopsis*, of which I made the following note : "quite distinct from *A. littoralis*, no cross-vein between upper fork of radial and sub-costal, the upper vein from the discal cell has a slight petiole." I have a note also of a large *Amalopsis* in the British Museum, labelled *transversa*, which is distinct from *A. occulta*, and I believe I have two or three undescribed species in my own collection, one of which was not uncommon in North Wales last June. I will, however, leave these for another occasion.

A. littoralis, Mg. : all the specimens I have seen have the slight cloudings of *A. tipulina*, Egger, which I am convinced is a synonym. I have seen it abundantly at many places, from Ivybridge to Inveran and Barmouth.

A. occulta, Mg. : I caught several on August 22nd last at Ivybridge, which is the only time I have met with it.

A. immaculata, Mg. : Osten-Sacken is quite right in sinking the genus *Tricyphona* ; *A. immaculata* is common, though my notes only give Sussex, Hants, Suffolk and North Wales.

A. unicolor, Schum. : this was common at Rotherfield in Sussex on June 6th, 1886, but unfortunately I did not notice their being distinct from *A. immaculata* ; however, I took seven, and they are abundantly distinct beyond the characters in the table by their slightly

smaller size, thinner legs, which are only indefinitely yellowish near base of femora and on nearly all hind femora, but above all, the thorax in *A. unicolor* has four sharply marked narrow black lines, while in *A. immaculata* there is a broad central brownish-black line and two broadish side lines, none of them being very definite.

Phalacrocera replicata, L.: although I placed this among the "reputed" British species, I have since seen some specimens taken by Mr. Jenner at Lewes in, I believe, the very same locality as *Limnophila subtinctoria*. As a genus, it differs from *Cylindrotoma* chiefly by its *Tipula*-like colouring of brownish and greyish, while *Cylindrotoma* is like *Pachyrrhina*, yellow and black; individually it has a peculiar venation, figured by Osten-Sacken in his Monograph of North American *Tipulidæ*, p. 290. I am obliged to Mr. Jenner for giving me three specimens of this, as well as of *Limnophila subtinctoria*.

(To be continued).

White Butterflies.—In answer to the editorial request in the current No. of Ent. Mo. Mag. for data as to the limits in the South of England within which "Cabbage-Whites" have not been excessively abundant this summer, I may state that they have not been at all numerous hereabouts. On the contrary, they may be deemed rather scarce. In the neighbouring market towns, and in some of the villages, I have seen cabbage plants skeletonized; but elsewhere you may drive for miles without noticing a single butterfly of the kind, and in my own garden the larvæ have done scarcely any damage.—A. E. EATON, Vicarage, Shepton Montague, Castle Cary: September 3rd, 1887.

[This is a useful piece of negative evidence, and goes strongly to prove that the presumed immigrants did not reach Somersetshire. The "skeletonizing" of cabbage plants in cottage gardens is of such general occurrence, always, as to require no further comment.—EDS.]

White Butterflies.—You ask for notes from the north on this subject. All three of the Common Whites have been in most unusual numbers here for the last two months. I noticed that some specimens of *napi* were very much worn and tattered. I did not examine any other species. In a garden in the heart of the town, where there were a large number of the butterflies on the wing, I examined the cabbages after reading your note. I failed to find a single larva either of *rapæ* or *brassicæ*. There were plenty of *Mamestra brassicæ*, but none of butterflies.—JOHN E. ROBSON, Hartlepool: September, 1887.

White Butterflies.—I can corroborate, as far as this district of Roxburghshire is concerned, the unusual abundance of the two White Butterflies, *Pieris brassicæ* and *rapæ*, during July and August, but more especially during the last fortnight of the latter month. At that time a lawn here covered with the flowers of the autumnal

hawkbit might be said to have been alive with them, for their pugnacious instincts kept them in a constant turmoil: the flowers appeared to be a great attraction, for they were continually settling upon them. In contrast to the abundance of *P. brassicæ* and *rapæ, napi* was almost a rarity. I may mention that last year *P. rapæ* appeared also in pretty strong force, although not to compare in numbers to this. Last autumn I collected from plants of *Brassica* in the garden about fifty full-grown larvæ of *P. rapæ*; about one-third of these pupated all right, but the others produced hundreds of the larvæ of the usual parasites, from which this summer they emerged in legion, and this appears to be one effectual means of keeping *P. rapæ* in check.—A. ELLIOT, Caverton, Roxburgh, N. B.: *September 14th, 1887.*

Migration of insects.—I am rather surprised to see in the Ent Mo. Mag. for September that the immigration of White Butterflies is strongly supported by several Entomologists. It seems to me that this idea, though, perhaps, occasionally correct, is somewhat overdone. If your readers had walked with me, say between Lewes and Eastbourne, on a day in September, 1886, I think they would not for a moment have doubted the possibility or probability of one raising a swarm of both *Pieris brassicæ* and *P. rapæ* for ourselves. Walls, &c., were covered with the larvæ, and the cabbages in the gardens were reduced to simple ribs. Considering the great fecundity of insects, it is, perhaps, surprising to us that so few reach the imago state until we begin to calculate the number of coincident circumstances necessary for that end and the great odds against it. Suppose, for instance, ten coincident favourable circumstances necessary for the perfection of every specimen of a brood—a very moderate calculation—it is probable that ordinarily only, perhaps, two or three of these favourable circumstances actually occur. In that case we see the insect in its usual or average state of abundance. Should only one circumstance be favourable—the others unfavourable or even neutral—the insect is rare. On the contrary, should eight, nine, or ten circumstances be all favourable, the insect far exceeds its usual numbers and swarms. What the particular circumstances are that influence the abundance or paucity of various species we but imperfectly know, but among them may be instanced absence or abundance of parasites, absence or presence in varying degrees of moisture, dryness, heat, cold, or storms at various critical periods, the direct or indirect action of man, &c., &c.

That partial migration caused by over-crowding and shortness of food takes place no one will deny, and this explains the occasional presence of great numbers on the sea coast, as every movement in that direction is stopped and the species becomes as it were heaped there. If there is an extra abundance of *Aphides*, or glow-worms, or the more sluggish *Coleoptera* which frequently happens, or even of the local species of *Lepidoptera*, no one thinks of flying to immigration for a cause, but considers at once that local conditions have produced it. Then why reason differently with other species?

Some years ago I saw *Colias Edusa* by dozens drying their wings in clover fields—evidently true British bred and born—yet all the while there was the usual talk of “immigration.” If immigration is so potent a factor in producing our insect fauna, why do we not more often see the various strong flying butterflies and moths of neighbouring Europe which species may be numbered by scores?—J. H. A. JENNER, 4, East Street, Lewes: *September 5th, 1887.*

Deilephila euphorbiæ at King's Lynn.—My garden seems to be becoming a grand entomological locality. I went out at dusk this evening, net in hand, to watch for *S. convolvuli*, when I immediately saw a much smaller hawkmoth busily investigating the verbena blossoms. It was not timid, and was easily secured, and to our amazement proved to be that great rarity *Deilephila euphorbiæ*, as fine as though just emerged. It is, however, of a paler red-brown than some of the old Devonshire specimens. What can have brought it out into the imago state at this season of the year?—CHAS. G. BARRETT, King's Lynn: *September 7th, 1887.*

Eupithecia extensaria, Freyer, in Norfolk.—My eldest son, whilst collecting on the coast with Mr. Atmore, had the good fortune to meet with this exceedingly rare species. He was tapping the herbage as he walked along, when the moth flew out of a tuft of *Artemisia maritima*. They then commenced to work at this plant, and Mr. Atmore almost immediately secured another. They did not, however, continue at this rate, for the wind was rough and cold, and the insect exceedingly scarce, so that by careful working on successive days they obtained in all but nine specimens, one of which (a fine female) was sacrificed in a futile attempt to obtain eggs. I fear that ants got access to it, and devoured it.

I feel no doubt about the species, having (through Lord Walsingham's kindness) had an opportunity of seeing Freyer's original figure. It is a very handsome species, one of the largest of the *Eupitheciæ*, and, from its oblique stripes reminds one of a *Phibalapteryx*. It is whitish, with three straight grey-brown fasciæ parallel with the hind margin on the fore-wings, costa and hind margin clouded with grey-brown. There is a slight clouding on the hind-wings.

Eupithecia extensaria was first announced as British by the late Mr. Prest, of York, but the opinion was then expressed that the specimen was accidentally introduced from Russia. Subsequently Mr. Prest detected another specimen in the collection of one of the older entomologists of Hull, taken by him on wormwood at Spurn Point. These captures are noticed in the "Entomologist." No subsequent capture seems to be recorded.—ID.: *September 13th, 1887.*

A query as to the double broodedness of Orgyia antiqua.—This and other species are no doubt single or double brooded according to circumstances; but my observation this summer, and similar though less accurate observations at various times on other species, incline me to the opinion that many species are believed to be double brooded and to have "a succession of broods" without sufficient grounds. That they have "a succession of broods" is true, but the whole succession is, after all, only one brood.

I meant to rear *antiqua* this year in quantity for experimental purposes; but, finding I could not give the necessary time, turned out all but the earliest and latest larvæ. The warmth of June brought the earliest out very early, and ♀s were allowed to pair with wild ♂s which were then flying about the end of June. Eggs from these apparently fertile remain still unhatched, and intend obviously to hibernate. Other larvæ from the same broods did not become perfect insects till the middle of August, and would, if seen at large, no doubt, be regarded as a second brood. I have not seen any specimens at large for the last month, if there has been a second brood here this year it has still to emerge.—T. A. CHAPMAN, Burghill, Hereford: *September 8th, 1887.*

Description of the larva and pupa of Nascia ciliaris, Hb.—Seeing that it has excited the interest of so many entomologists resident near, or occasionally visiting, Wicken Fen, it is rather wonderful that this larva has not been described before in this Magazine. It has long been known on the Continent (Heinemann, Die Schmetterlinge Deutschlands, &c., Zweite Abtheilung, Band I, Heft ii, p. 68, 1865), and in this country to Lord Walsingham, the late Mr. Buckler (both of whom kindly gave me information about it), and to others, but I am not aware of its having been bred on this side of the water before the present year. The explanation of this is probably that during the day the larvæ crawl down deep into the herbage, so that they cannot be beaten into the tray, and that but a small proportion of the moths taken at light (the usual mode of capturing the imago) are females, while those that are taken do not lay readily, at any rate I have several times failed to obtain eggs. My own acquaintance with the larva is limited to that of three specimens, two of which I beat on successive days about the middle of September, 1882, at about 5.30 p.m., from a plant locally called Lisp, which I believe is otherwise known as *Carex riparia*. Believing in the "bird in the hand," I preserved these larvæ, greatly to the disgust of a brother entomologist. The third larva I received on October 1st, 1886, from Mr. Albert Houghton—it is the subject of this account.

In captivity it rested at full length on the under-side of a leaf of *Carex*, dropping rather readily by a silken thread when disturbed. It was sluggish, and crawled but slowly. When feeding it ate large pieces from the edges of the leaves. The head of the larva is prone, larger than the second segment, pale yellow, down the middle of it is continued the dorsal line, against this latter the lobes are edged with a faint red stripe, they have also a broad red-purple one down the middle, corresponding with the sub-dorsal line. The body is fusiform, thickest at the seventh and eighth segments. The dorsal line is olive-green, with a reddish tinge on the hind part of some of the central segments; it runs from the head to the tip of the flap, and is narrowly margined with sulphur-yellow. The sub-dorsal line is of a bright red-purple, and is continued from the sides of the head round the flap. The sides of the larva are bright yellow, most intense next the sub-dorsal line, gradually fading into the pale green of the ventral area. The warts are indistinct, of the same colour as the part on which they are situated; each bears a short black hair, four of which on the thirteenth segment are longer and more conspicuous than the rest. The spiracles are pale. The larva spent the winter in an opaque papery cocoon in an old reed stem, and pupated early in the second week in June. The moth (♀) emerged on June 22nd. The pupa measured 10 mm. by 2.5 mm. at the widest part. The head, thorax, limb cases and upper abdominal segments were nearly black, the posterior segments yellowish on the ventral aspect, shaded off into dark brown on the dorsal. The wing-cases were well marked, those of the posterior-wings projecting beyond those of the anterior. The antennal cases curve outwards at their tips round those of the wings. The thirteenth segment ends with a long, red, flattened, horny process, which bears eight hooked spines arranged in four pairs.—W. H. B. FLETCHER, Fairlawn House, Worthing: *September 3rd, 1887.*

The larva of Nascia ciliaris.—Of this larva Von Heinemann gives us the following information (Zünsler, p. 68):—

"Zincken found the larva in August on marsh-grasses in a moist alder-brake

(now dry) near Brunswick." Von Heinemann describes the larva as "Lilac, with sulphur-yellow lateral stripe and belly, and with dark yellow-margined dorsal line," which is probably also from Zincken. I was much puzzled, at first, to conceive how Von Heinemann became possessed of this information of Zincken concerning this larva, as nothing about it can be found in any of Zincken's published writings, and Von Heinemann does not give any reference.

On reflection, and on comparing dates, however, I found that Zincken and Von Heinemann were both living in Brunswick for several years contemporaneously, though the latter was much the younger.

Zincken, or to give him his full name, Zincken *genannt* Sommer, whose period of greatest literary activity was between 1817 and 1821, was born (according to Hagen) in 1770, and resided at Brunswick, where he died February 8th, 1856.

Von Heinemann was also resident at Brunswick, his career as an Entomological writer commenced in 1848. In the *Stett. Ent. Zeit.* of 1851 and 1852 he began a list of *Lepidoptera*, found in the neighbourhood of Brunswick—compiled from the observations of Dr. Zincken and other friends, in addition to his own. This list, though evidently intended to have gone much further, stopped somewhat abruptly in the middle of the *Noctuæ*, in spite of a "(Forts. folgt.)"—but in the introduction to it (*Stett. Ent. Zeit.*, 1851, p. 57) we are informed: "The correctness of the names amongst the *Micro-Lepidoptera* has been established by Herr Oberlehrer Zeller, in Glogau, those of the other *Lepidoptera*, where there was any doubt, by a comparison with the collection of Zincken-Sommer, and in all the species found only by this last Entomologist by the use of his written notices."

Hence, no doubt these MS. notes of Zincken, when no longer required for the list, in which they were used in 1851 and 1852, were not lost sight of, but became incorporated in Von Heinemann's great work, "Die Schmetterlinge Deutschlands und der Schweiz," of which the first Volume appeared in 1859.*

In the *Stett. Ent. Zeit.*, 1851, p. 61, we read of *Hesperia Steropes*, "found rarely by Zincken in July in a marshy alder-wood near Brunswick," which serves as a sample of the *written notes* of Dr. Zincken, which were utilized by the younger Brunswick entomologist, and possibly the same "marshy alder-wood" furnished him with the larva of *ciliatis*. The date of its actual occurrence is nowhere given, but Von Heinemann first published the larva of this species in 1865, and, I believe, up to that time it was totally unknown to the scientific world. Even after its publication the notice seems to have attracted very little attention. Von Nolcken, who gave a long discussion on the synonymy of the species in the *Stett. Ent. Zeit.*, 1869, pp. 272—275, makes no allusion to the larva being known, nor does he mention it in his *Lepidoptera* of Estland, Livland and Kurland, p. 308.—H. T. STAINTON, Mountsfield, Lewisham: September 12th, 1887.

*A further note on *Pancalia Leeuwenhoekella*.*—As an addendum to my note (*Ent. Mo. Mag.*, pp. 64-6), I may add that *Pancalia Leeuwenhoekella* was abundant on the Chalk Downs near Strood, Kent, throughout the whole of June, and occurred well into the month of July. On the 21st of the latter month I netted some twenty

* Unfortunately Von Heinemann did not live to complete this work, but after his death in December, 1871, it was happily brought to a conclusion by Dr. Wocke, of Breslau, the final volume bearing date 1877—seven years after the appearance of its immediate predecessor.

specimens, but they were in such a wasted condition that they were worthless for cabinet specimens, and hence I did not set them out. As I did not visit the district again until August 19th, I had no opportunity of observing when it finally disappeared.—J. W. TUTT, Rayleigh Villa, Westcombe Park, S.E. : *August, 1887.*

Gelechia semidecandrella in Norfolk.—Looking over my series of *Gelechia marmorea* last winter, I was rather surprised to find two specimens of the recently described *G. semidecandrella*. These specimens I had previously overlooked, believing them to be merely a form of the commoner insect; but there is no doubt that I took them two or three years ago at Hunstanton, where the species has again occurred this year. It has also been observed on the Merton estate.—EDWARD A. ATMORE, King's Lynn : *September 15th, 1887.*

Adela cuprella at King's Lynn.—Late in the afternoon of May 8th this year I captured near this town four fine specimens of this local species at rest on sallow bloom. During the next few days I again searched the same bush and others near it, but failed to secure another specimen. The occurrence of this beautiful insect in Norfolk has not been hitherto recorded.—ID.

Melissoblaptus cephalonica at King's Lynn.—Whilst looking for *Plodia interpunctella* and *Gelechia cerealella* on the premises of the King's Lynn Dock Company, I was pleased to find two specimens of this Lepidopteron sitting on the outside of one of the warehouses. A search inside the warehouses did not result, as I had expected, in the discovery of more specimens, although imported grain of various kinds and in large quantity was stored therein. For the last three or four years I have been on the look out for whatever might turn up of interest in the neighbourhood of our Docks, but have never noticed the species there before. Probably it is a fresh arrival here. Both this and the last two species are additions to the Lepidopterous fauna of Norfolk.—ID.

Acidalia promutata and *Melanthia ocellata* double brooded this season in Norfolk.—Perhaps the appearance of second broods of these insects this season may be worth noting. I first observed a specimen of *M. ocellata* in this district on May 30th, and during June specimens of this common insect were, as usual, of frequent occurrence. A few stragglers in worn condition continued to occur throughout the first half of July, and no more were then seen for some weeks. However, I was much surprised to find the species again putting in an appearance in splendid condition, and of average size, at the end of August and beginning of the present month (September). The appearance of this species in fine condition at so late a period in the year must surely indicate the existence this season of two broods in this part of Norfolk.

Acidalia promutata.—A single specimen of this species was taken here on June 18th. No more were seen until the 2nd of the present month (September), when I captured a specimen in splendid condition at light; another equally fine was taken on the 4th. From close observation I am able to state that this species is not normally double brooded here; that it has been so this season there can be, I think, no doubt.—ID.

The urticating properties of certain larvæ.—My own experience may help to elucidate this matter. A short time ago I was handling the cocoons of a certain species of *Bombyx*, and soon afterwards experienced the most painful itching in my fingers. On examination I found the cocoons everywhere covered with the short—in many cases minute—stubby hairs which covered the larvæ previous to its finally casting its skin. These made their way beneath the epidermis of the fingers and there remained perfectly visible for some days; the least pressure on the part causing the same irritation, and evidently due to the mechanical irritation of the hairs on the sensitive papillæ of the skin. I am rather of opinion that this explanation holds good in every case; the urticating properties being always more marked when the hairs are old and easily detached, at a time when the formic-acid secreting glands—if such there be—at the bases of the hairs would presumably be less active or probably inert.—N. MANDERS, Fort Stedman, Shan States, Birmah: *June 15th, 1887.*

[There appear to be two distinct kinds of urtication produced by the hairs of Lepidopterous larvæ. In one, and possibly the most frequent, it is, no doubt, purely mechanical; in the other a poisonous fluid is secreted by special glands and is carried up the tubular hairs.—EDS.]

Apatania fimbriata, Pict., a caddis-fly new to the British Isles.—At the beginning of August I had the pleasure of spending a week with my friend Mr. J. J. King, at Killarney. As Mr. King resided the best part of the summer there, he will no doubt in due time give a particular account of his work in a most interesting district; but, in the meantime, I desire to record the capture of a species of *Trichoptera* new to the British Isles, and perhaps to be placed with *Saxifraga umbrosa* and *Arbutus unedo* amongst things exclusively Irish.

On the 3rd we made an excursion to the Gap of Dunloe, chiefly with the object of collecting at the series of lakes situated in that well-known Pass. At the lower end of the Black Lake, not far from the point where the river leaves it, we took single specimens of an *Apatania* which appears to be *A. fimbriata*, Pict., and on the same day at the head of the Anger Lake we got a few more examples. These captures led us to revisit the locality on the 5th, when, at the last-named lake, we discovered the insect's head quarters, and took it in considerable numbers. On our way to the Horses' Glen the following day, it again turned up at Lough Garagarry; it was apparently common, but a drenching mist rolled down on us from Mangerton almost as soon as we had begun collecting, and drove us home. Mr. King tells me that after I left the district, he found it at other lakes commoner than ever, and I think it may be assumed that the species occurs in suitable localities all over the mountainous south-west corner of Ireland.

On the Continent the species inhabits the mountains of the central region. Mr. McLachlan informs me that he has always found it about *weedy streams*. In Ireland it occurred at spots where the margins of the lakes were lined with huge blocks of rock, and we took it at rest on, or flying amongst, the rocks, and by sweeping the herbage on the banks. Usually at such places the only aquatic vegetation was a scattered growth of the pretty *Lobelia Dortmanna*.—KENNETH J. MORTON, Carluke, N.B.: *September 16th, 1887.*

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY :
 August 25th, 1887 : R. ADKIN, Esq., F.E.S., President, in the Chair.

Mr. Cooper exhibited *Argyrolepis aneana*, Hb., from Essex. Mr. Mera, examples of the summer emergence of *Tephrosia crepuscularia*, Hb. Mr. West, bred *Acidalia ornata*, Scop. Mr. Sheldon, *Catoptria candidulana*, Nolck, *Retinia buolina*, Schiff., and *R. pinicolana*, Dbl. Mr. Wellman, *Agrotis cursoria*, Bork., from Burton-on-Trent, *Noctua festiva*, Hb., var. *conflua*, Tr., from Perth, and *Plusia chryson*, Esp., from Newmarket. Mr. Dobson, *Psilura monacha*, L., *Selenia tetralunaria*, Hufn., *Eugonia erosaria*, Bork., *Amphipyra pyramidea*, L., &c., bred from larvæ obtained at the New Forest. Mr. Barron, a large specimen of *Polyommatus Phleas*, L., with broad border to fore-wings. Mr. Tugwell, *Boarmia abietaria*, Hb., bred from larvæ beaten out of yew. Mr. Tutt, a *Gelechia* of doubtful species, a short series each of *Depressaria Yeatiana*, Fb., *Doryphora palustrella*, Dougl., *Crambus contaminellus*, Hb., *C. alpinellus*, Hb., dark forms of *Lita marmorea*, Haw., and a new species, *Lita blandulella*, also a blackish *Depressaria*, which Mr. Tutt stated could not be identified as belonging to any of our known British species. Mr. Sabine, *Lycæna Icarus*, Rott., males of varying blue tints, blue females, and a dwarf male barely three-fourths of an inch in span, under-side with confluent spots ; an under-side of male with left wings normal and right wings of the obsolete type ; also males of *L. bellargus*, Rott., of various shades of colour, and females more or less blue ; a fine series of *hybrids* (?), male and female between *Icarus* and *bellargus* ; and forms and varieties of *L. Corydon*, Hb. Mr. Billups read a letter from Mr. Cockerell giving notes on the fauna of West Cliff, Colorado, and exhibited specimens of *Lepidoptera* from that district.

September 8th, 1887 : T. R. BILLUPS, Esq., F.E.S., in the Chair.

Mr. J. T. Williams exhibited a small specimen of *Drepana binaria*, Schiff., and remarked on the number of dwarfed specimens of *Lepidoptera* noticed this year, which he attributed to the drought. A discussion ensued, in which Messrs. Billups, Carrington, Wellman, and others took part ; Mr. Williams also showed a specimen of *Sphinx convolvuli*, L., taken on his bedroom window at Crayford. Mr. Sheldon exhibited long series of *Agrotis agathina*, Dup., and *Noctua castanea*, Esp., taken on heather flowers at Shirley. Dr. Rendall, *Apamea gemina*, Hb., and *Hadena dissimilis*, Knoch, and contributed notes. Mr. Wellman, varieties of *Zygæna flipendulæ*, L., from Dover. Mr. Dobson, *Emmelesia albulata*, Schiff., var. *thules*, Weir, and various *Tortrices* from the Shetland Isles. Mr. E. Joy, two melanic varieties of *Vanessa urticæ*, L., bred from larvæ found at Folkestone. Mr. Tutt, varieties of *Agrotis tritici*, L., taken at Deal in 1887. Mr. Carrington, pupæ of *Dicranura vinula*, L., formed among cotton wool. Mr. Billups stated that several larvæ of this species had been found in the churchyard of St. Saviour's, Southwark. Mr. West (Greenwich), *Rhantus pulverosus*, Steph., *R. notatus*, Berg., the red variety of *Agabus bipustulatus*, L., and *Philonthus punctus*, Gr., all from Erith. Mr. Carrington, specimens of the Hessian fly, *Cecidomyia destructor*, and a discussion took place as to the probability of this insect becoming permanently established in this country. Mr. Billups exhibited, on behalf of Mr. Cockerell, species of various Orders from Colorado.—H. W. BARKER, Hon. Sec.

ENTOMOLOGICAL SOCIETY OF LONDON: *Sept. 7th, 1887.*—Dr. DAVID SHARP, F.Z.S., President, in the Chair.

Mr. Arthur Sidgwick, M.A., Fellow of Corpus Christi College, Oxford, of Woodstock Road, Oxford, was elected a Fellow of the Society.

Mr. Jenner Weir exhibited a living larva of *Myrmeleon europæus*, which he had taken at Fontainebleau on the 6th August last.

Mr. Elisha exhibited a series of bred specimens of both sexes of *Zelleria hepariella*, Stn.; and also, on behalf of Mr. C. S. Gregson, a series of eighty varieties of *Abraxas grossulariata*, selected from the specimens bred during the year 1886, from 4000 larvæ obtained from eggs laid by selected varieties, the result of crossing and interbreeding for more than twenty years.

Mr. Stainton remarked that the female of *Zelleria hepariella* had until lately been considered a distinct species, and was known as *Zelleria insignipennella*, but Mr. Elisha had proved the specific identity.

Mr. Tutt exhibited specimens of *Crambus alpinellus*, *C. contaminellus*, *Lita semidecandrella*, *L. marmorea* (dark forms), and *L. blandulella* (a new species), *Doryphora palustrella*, and *Depressaria Yeatiana*, all collected at Deal during last July and August.

Mr. Stainton observed that *Crambus alpinellus* was so named from the earliest captures of the species having been made on the lower parts of the Alps, but that it had since been found on the low sandy ground of North Germany, and its capture at Deal quite agreed with what was now known of the distribution of the species in Germany. It was first recorded as a British species by Dr. Knaggs in 1871, from two specimens taken at Southsea by Mr. Moncreaff. Mr. Stainton further observed that he had named Mr. Tutt's new species *blandulella* from its similarity to a small *maculea*, of which one of the best known synonyms was *blandella*. He also remarked that Deal was a new locality for *Doryphora palustrella*, which had hitherto only been recorded from Wicken Fen and the Norfolk Fens in England, and from the neighbourhood of Stettin on the Continent.

Mr. Waterhouse exhibited, on behalf of Mr. Coote, a variety of *Lycæna Phlæas*; also a number of *Stenobothrus rufipes*, and three specimens of *Coccinella labilis*, recently taken at Herne Bay.

Mr. Martin Jacoby exhibited specimens of *Spilopyra sumptuosa*, Baly, and *Sybriacus magnificus*, Baly. He also exhibited several species of *Galerucidæ*, belonging to a genus which he proposed to call *Neobrotica*, closely resembling in shape and coloration certain species of *Diabrotica*, but differing therefrom in structural characters. He remarked that the late Baron Von Harold had described a *Galeruca* from Africa, which, except in generic characters, exactly resembled the South American genus *Dircema*.

Dr. Sharp communicated a paper, by Mr. Thomas L. Casey, "On a new genus of African *Pselaphidæ*."

Mr. Bridgman communicated a paper entitled "Further Additions to the Rev. T. A. Marshall's Catalogue of British *Ichneumonidæ*."

Mr. Distant read a paper entitled "Contributions to a Knowledge of Oriental *Rhynchota*."

Mr. Enock read notes "On the Parasites of the Hessian Fly," and exhibited specimens of injured barley. A discussion ensued, in which Dr. Sharp, Mr. Jacoby, Mr. Billups, Mr. Waterhouse, and others took part.—H. GOSS, *Hon. Secretary*.

LIFE-HISTORY OF *SCOPULA DECREPITALIS*.

BY G. T. PORRITT, F.L.S.

We are indebted to Dr. T. A. Chapman, of Burghill, Hereford, for the discovery of the larva of this species. In June, last year, Dr. Chapman captured specimens of the moth in Scotland, flying among *Asplenium filix-femina* and *Lastrea spinulosa*, and from some of the ♀ was fortunate enough to obtain eggs. These duly hatched, and after seeing that the young larvæ fed and were making satisfactory progress, Dr. Chapman most kindly shared them with myself, Mr. Jeffrey, and, I believe, also the late Rev. J. Hellins. Those entrusted to my care fed on well, but, unfortunately, they apparently reached full growth during my absence from home, and evidently from mismanagement at this time, on my return I found some of them dead, and the others nearly so, having probably been drowned by the excess of moisture which had accumulated inside their glass, in their wanderings to find suitable places in which to spin up. Some of Dr. Chapman's and Mr. Jeffrey's larvæ did spin up, but the imago's not emerging in the early summer, it was found the larvæ had died without changing to pupæ. At the end of last month (August) Dr. Chapman was again in Scotland, and after a long search managed to find three larvæ in slightly spun webs under leaves of *L. spinulosa*, exactly in the position he expected to find them, and on the fern which he had become convinced was really the natural food.

Dr. Chapman and Mr. Jeffrey each took notes with a view to publishing the history of the species; but as they have both expressed the wish that I should do the writing of it, I have undertaken to do so; although as Dr. Chapman really knows so much more about the species than any of us, I was most anxious that it should come from his pen, in preference to my own. He very kindly placed his notes in my hands to be incorporated with my own, and as I find he has noted some details I had omitted, such as the position of the hairs, &c., besides giving description of the egg, and the first stages of the larvæ, the history is thereby rendered much more complete than would otherwise have been the case.

The eggs were laid about June 20th, on leaves of *Teucrium scorodonia*, and Dr. Chapman described them as

Amorphous-looking objects, nearly colourless, flat, and approximately round, fitting accurately into the grooves and roughnesses of the leaves of the *Teucrium*, as if at the time of laying they had been fluid, and really not looking very solid still. The surface is not, however, smooth, but faintly and irregularly rough and shagreened.

They became more white and opaque when towards hatching, and the black eye spots of the included larvæ could sometimes be detected. They hatched July 3rd. The newly emerged larvæ are colourless or whitish, very transparent, with very black eye spots, and faintly brown jaw tips; the hairs are long, as long as the diameter of the body, and directed forwards and backwards, but the disposition of the tubercles could not be ascertained, owing to the uniform colourlessness of the larvæ, they seemed to be of the usual pattern, with one bristle each.

The first moult occurred July 7th. It makes no change in the aspect of the larva, which has, however, a greenish tint from the time it begins feeding, from the intestinal contents.

The second moult occurred about July 11th, and again produced little change in the appearance of the larva. When about to moult, the eye spots present a curious aspect as black spots on the second segment. The disposition of the tubercles and hairs can now be determined with some difficulty; the dorsal tubercles are placed nearly squarely rather than in the usual trapezoidal manner; the bristles of the anterior pair are directed forwards and inwards, of the posterior backwards and outwards, and of the lateral, or super spiracular, forwards and downwards; all looking depressed to the larva instead of standing off perpendicularly to the surface.

The third moult occurred about the 15th, one as late as the 18th July.

My larvæ reached me on July 17th, and were then about a quarter of an inch long, transparent, pale yellow, but the dark green alimentary canal, with the green internal organs generally, gave it a strong green appearance; head very pale yellow, tinged with pink; eye spots black, jaws pale brown.

The fourth moult occurred July 20th.

By July 28th, a length of about five-eighths of an inch had been attained: slender, and of nearly uniform width; skin of the same glossy transparent texture as before. The dorsal, sub-dorsal, and lateral tubercles are raised bosses, surrounded by radiating lines or plaits which encroach on the dorsal bosses, but not on the sub-dorsal; in some respects the tubercles from these plaits remind one of the summit of a *Noctua* egg; the hairs of the anterior pair of dorsal tubercles are directed forwards and inwards, of the others outwards and a little backwards; the tubercles of the third and fourth segments are same as the others, but the second pairs are very small; the sub-spiracular tubercle is a compound one of some length, and carries two bristles, one directed forwards, and one backwards, both rather downwards.

Ground-colour pale yellow, but the very conspicuous dark green alimentary vessel showing through, together with the green internal organs along the sides, still form the prevailing colour of the dorsal area: the dorsal stripe is broadly bordered on each side with pale greenish-white; spiracles black; head pale yellow, with blackish ocelli, and brown mandibles, as before.

When about to moult, from abstinence from food, the dark green colouring is lost, and the larva appears almost uniformly bright pale yellow.

On and about July 31st, they were moulting for the last time, and on August 5th I described them as follows:—

Length, five-eighths to three-quarters of an inch, and rather slender; head

polished, rather broader than the second, but about the same width as the third segment; body cylindrical, and of almost uniform width throughout its entire length; skin semitranslucent.

Ground-colour pale yellow, but the green internal parts at first sight make it appear to be of that colour; head pale straw colour, mandibles brown, and the ocelli still darker brown; dorsal stripe a median shade of green, edged on each side with a broad whitish stripe; sub-dorsal stripes also of the same green colour, followed by a pale whitish line above the spiracles, and then by a waved whitish stripe along the spiracular region. Ventral surface, legs, and prolegs of the same median shade of green as the stripes of the dorsal area. Dr. Chapman says the prolegs are terminated by a circlet of two very fine hooks, though on the anal prolegs one side of the circlet is hardly developed; anterior-legs terminated by a very fine brown claw.

After ceasing to feed, and before spinning up, the colour (as is the case with others in the genus) changed considerably. The ground became bright brownish-yellow, and the dorsal stripe still browner, and the former whitish stripes lemon-yellow; the green colouring of the earlier stages had entirely disappeared, clearly showing it was caused solely by food in process of digestion.

Dr. Chapman's larvæ spun strong silken cocoons, in which doubtless the winter is spent, the change to pupa taking place in spring. Throughout life, when not feeding, the larva lives under a slight web spun over itself; and when about to moult, a much firmer domicile, almost a cocoon, indeed, is formed, so much so that in one or two instances Dr. Chapman suspected they had reached a stage at which they naturally enclosed themselves for hibernation.

Dr. Chapman, by his captures of the larvæ this year, has proved the natural food to be, as indeed he was quite sure it was, *L. spinulosa*.

Huddersfield: *September 28th*, 1887.

NOTES ON BRITISH HYMENOPTERA.

BY EDWARD SAUNDERS, F.L.S.

CRABRO PALMIPES AND VARIUS.

In my Synopsis of British *Hymenoptera* (Trans. Ent. Soc., 1880, p. 288), I have given as the chief differential character of the females of these species the colour of the anterior calcaria—those of *varius* as being pale, those of *palmipes* dark. This character, however, does not seem to be a reliable one, although Wesmael appears to have found it so, as he says, in his "Revue Critique des Hym. Fouisseurs de Belgique," p. 135, under *palmipes*, "Le plupart des auteurs ont confondu la femelle avec celle du *C. varius*. Un seul caractère suffirait cependant pour la distinguer facilement; c'est que *l'éperon des jambes de devant*

est noir, comme chez le mâle, tandis que chez le *C. varius* cet éperon est *jaune* dans les deux sexes."

Mr. R. C. L. Perkins first called my attention to this, as in a series of specimens which he took of *palmipes* (♂ ♀) this year the females had the front calcaria pale. I am, therefore, anxious to point out that this character, like most other colour characters, can not be trusted. Another distinguishing mark is said by Wesmael to be the yellow spot on the scutellum of *varius* ♀, which never occurs in *palmipes* ♀. I have, however, a *varius* ♀ with that spot so small that I have little doubt that a spotless variety must occur. Under these circumstances I think the only safe distinctions to rely upon are the following, also pointed out by Wesmael, viz., the deeper, wider meta-thoracic sulcatures of *palmipes*, and consequently the rather more restricted areas enclosed by them, the rather wider joints of its front tarsi, the basal one being slightly bent at the base, and the more prominent spines on the sides of the mesopectus. Still the two species are exceedingly closely allied, and the characters are nearly all characters of degree (unfortunately neither species is very common), but I should very much suspect that long series would contain some intermediate forms.

ANDRENA VARIANS, ROSSI, HELVOLA, Linn., and FUCATA, Sm.

These three so-called species have always been more or less of a difficulty to Entomologists. In my Synopsis of our British *Hymenoptera* I tried to give distinguishing characters to each, and I hoped I had succeeded; but information which I have gleaned this season has considerably upset the conclusions which I then arrived at.

During the spring of this year I was at St. Leonard's, and on April 23rd met with a large colony of *A. varians*, so that I was able to study that species pretty carefully. The specimens which I found were in lovely condition, and I was able in several cases to dig both sexes out of the same hole, so that no reasonable doubt could exist as to their belonging to the same species. I was surprised, however, to find that the females hardly varied at all, all having only black hairs on the face and abdomen, and none of them showing any tendency towards the pale hairing of *helvola*, and that the males were all of the large headed form, with simple mandibles, which in my Synopsis is referred to *helvola*. This experience of mine exactly corresponds with that of Mr. R. C. L. Perkins, who has taken *variens* at Oxford this spring; all his females he tells me "are true *variens* with dark face, the males all simple mandibled and quadrate headed." I am, therefore,

quite satisfied that the ♂ of my *varians* must be transferred to *helvola*, and that of my *helvola* to *varians*; also that *varians* is not a very variable species, and is easily distinguishable by the quadrate vertex of the head and simple mandibles of the ♂, and by the black-haired face and abdomen of the ♀.

Having thus (at least, to my own satisfaction) disposed of *varians*, fresh difficulties, and much greater ones, arise in attempting to find distinctive characters whereby to separate *helvola* from *fucata*. I have very seldom met with either, but here again I am very glad to be able to profit by Mr. Perkins' experience. He takes *helvola* at Oxford, and remarks that it does not appear till a fortnight or three weeks after *varians*, this year appearing about the 25th May, and frequenting May blossoms; he has also taken it on *Crepis*. At the same time of year he takes *fucata*, and from the series he has sent me for examination, I feel convinced that there are no characters to be relied upon of specific value whereby to distinguish them apart; the colour of the pubescence on the legs and abdomen varies greatly, and Mr. Perkins tells me that he has always taken the ♂ (which I have described as *varians* in my Synopsis, and which I now refer to *helvola*) in company with typical *fucata*, having on one occasion taken ♂ and ♀ in the same flower.

I am, therefore, at present disposed to amend my synonymy of these three forms thus—

varians, Rossi, Thoms., &c.

= *helvola* ♂, Smith, 1st ed., E. S., Synopsis.

helvola, Linn., Thoms., &c.

= *varians* ♂, Smith, 1st ed., E. S., Synopsis.

var. = *fucata*, Sm.

clypearis, Nyl.

St. Ann's, Mount Hermon, Woking :

September 29th, 1887.

OCCURRENCE OF *LOZOTENIA* (*CACCECIA*, HB.) *DECRETANA*, TR.,
IN NORFOLK.

BY W. WARREN, F.E.S.

Towards the end of last month, I spent a few hours in King's Lynn, and while looking over Mr. Atmore's late captures, observed a pair of this species, with which he has it seems been acquainted four or five years, but has passed it by as a pale form of *Podana* (*fulvana*, Stn.). A ♂ specimen, caught in a previous year and placed

among his *Podana*, he kindly gave me. It is not improbable that Mr. C. G. Barrett, who has this year worked the same neighbourhood, may find himself the fortunate possessor of a few examples of this pretty species. Though much resembling its commoner relative, *Podana*, it may be at once distinguished by the apices of the hind-wings, which in the ♂ are broadly whitish-ochreous, in the ♀ pale yellowish, whereas both sexes of *Podana* have them orange.

In the f. w. the ♀ of *decretana* is very much like *Podana*, but the ground-colour is rather paler, and the fringes at the apex are *not* dark brown. Of the ♂ the ground-colour is pinkish-grey, tinged with ochreous, but always without the dark brown-black tints of *Podana*, and the markings, which are pale reddish-brown, are far more clearly defined. Instead of the patch of white scales from the base, *decretana* has a streak of pale yellowish-grey scales. The basal patch is represented by an oblique brown blotch on the inner margin, from the tip of which a fine brown line runs obliquely backwards to the costa. The central fascia is clearly defined, and edged with a faintly lustrous line throughout towards the base, but externally near the costa only; towards the inner margin it becomes indeterminate. Its inside edge is strongly concave in the centre of the wing, so that the fascia itself is almost interrupted. The costal spot is large, triangular, with undefined margins, and is not produced towards the anal angle.

According to Heinemann, the species occurs in Saxony, Silesia, and Baden, but is not common. It is figured by F. R., tab. 44, fig. 2. Mr. Atmore tells me that it is distinguished by its very wild and strong flight, and that it is very local.

Fischer von Röslerstamm states that at Glogau it was taken amongst *birch*, and that it was bred for some years by von Tischer at Dresden, though in this case he does not state from what food-plant.

Merton Cottage, Cambridge:

September 25th, 1887.

THE LARVA OF *BATRACHEDRA PINICOLELLA*.

BY J. H. WOOD, M.B.

It is difficult to understand why this larva should have remained so long undiscovered, as there is nothing particularly mysterious in its habits. One circumstance, perhaps, has had much to do with the oversight, viz., the impression that the insect was connected with Scotch fir, whereas its food-plant is the spruce (*Abies excelsa*), upon the needles of which the larva feeds.

The larva hatches out in the autumn, hibernates small, begins to feed again in the spring, and becomes full-fed towards the end of May. For a short time after leaving the egg, it lives inside a needle, but afterwards for the rest of its life it occupies, like its congener, *præangusta*, a gallery, that it spins on the surface of a twig. This gallery is of a brown colour, close texture, and even regular form, but in time it gets so covered up by the accumulation of frass that it comes to bear a rough resemblance to the loose, untidy, habitations of *Coccyx hercyniana* and *nanana*. *B. pinicolella*, however, always hides within its gallery, and usually eats out the leaves for only half their length; the *Tortrices*, on the other hand, as invariably hide within an excavated needle, and in feeding clean out each needle thoroughly before attacking a fresh one. When full-fed, it spins on the under-side of the same or an adjoining twig a slender, somewhat flattened, brown cocoon, with rounded ends, and rather wider at one extremity than the other; the general appearance being strikingly like the larval gallery before it acquires its covering of frass.

The larva in its first skin is yellowish-brown, with black head and thoracic plate, and rather long and conspicuous hairs. It then moults and acquires the form and characters which it retains without appreciable change to the end, so that the following description will stand for any stage in its subsequent development:—

Rather slender, not attenuated, cylindrical, with the divisions deeply cut. Segments, when viewed from above, flat-sided, not rounded, and with a transverse wrinkle across the back of each. Colour, reddish-brown. Head black and shining. Thoracic plate black, with a white colour in front. Anal plate not noticeable. Hairs pale and inconspicuous. The pupa is long and slender, the limb-cases reaching nearly to the end of the abdomen, and being free at their tips for about the breadth of a segment. Colour, a pale dull brown, with a green tinge in the wing-cases.

Tarrington, Ledbury:
October 4th, 1887.

AN ENTOMOLOGICAL RAMBLE AT BERGEN, NORWAY,
AUGUST 20TH, 1887.

BY ROBERT C. R. JORDAN, M.D.

It was a glorious day, very warm, and the sun shining very brightly, so taking a net with me, I walked towards the Flöien, to see what might be found in the way of Lepidopterous life in rather a high latitude.

The first moth seen was *Ortholitha limitata* (*chenopodiata*), of which three or four were disturbed from the grass and *Centaurea* by the

road-side: these were light specimens, but not much more so than often happens. Then occurred *Pterophorus fuscodactylus*, two only seen, and one only caught; and here I may make a digression to state that I have taken many "plumes" in Norway in this and a previous excursion, they are: *gonodactylus*, Christiania; *ochrodactylus*, amongst *Achillæa millefolium*, both at Christiania and Hamar; *Fischeri*, Thronbjem and Lille Elvdal; *cosmodactylus*, woods at Koppang; *fuscodactylus*, Bergen; *tephradactylus*, Eidsvold, amongst *Solidago*.

But to return, my next moth was *Larentia didymata*, of which, during the day, I saw hundreds; I shall have more to say of this by and by. My first butterfly now appeared, it was *Vanessa urticæ* settled on a hawk-weed near me, a splendid specimen, small and clearly enough of the dark northern form, *polaris*; I did not take it, for I had not yet mounted my net, not having left the carriage-road; curiously enough, before leaving home, I had seen two laid up for hibernation, although the weather was at that time intensely hot; yet, here was one enjoying the sunshine; that they do live through the intense cold of a northern winter was proved by the fact that when at Jerkin, on the Dovrefjeld, in July, 1885, I used to see an old veteran in one spot every day, his feathers were few, but his life seemed happy; so also at Stören I saw *Vanessa comma*, evidently a hibernated specimen: clearly my present friend intended to delay his winter sleep awhile. Leaving the carriage-road, I followed the footpath to the Flöien, which is an eminence above Bergen, that may be likened to Arthur's Seat, and another butterfly appeared, *Erebia Blandina*, ♀. She was a very bad specimen, but yet unwilling to be made a martyr to science, for as my net was being mounted she made her escape: this was a very sunny, warm spot, the cliff reflecting the sun's rays; and I saw another butterfly, *Chionobas Jutta*, it settled on a slab of rock as usual, and my net was put fairly over it, but no rock is quite level, and it escaped by the side, and was no more seen. This butterfly was taken by me at Jerkin, in 1885, and its habit was a curious contrast to the swift-flying *C. Aello* of the Alps. *C. Jutta* when pursued never flew far, but doubled, and tried to avoid observation by settling with closed wings on a rock, and I have lost more than one before, just as I lost the present specimen; though I lingered at this warm nook, no more butterflies appeared; and the only peculiar being which came was a fine fieldfare, seeming to me somewhat strange in August. I went onwards, and upwards, and now *Cidaria populata* began to be commonly seen asleep on the under-side of the bilberry leaves and branches, sometimes making a mistake and

settling on *Cornus suecica* instead. One bad specimen of *Ablabia pratana* was also caught; some of the specimens of *C. populata* were dark, like the Rannoch ones, others the usual colour, but all large. The pole which marks the summit was soon gained, but this is not the place to speak of the wondrous way in which the city of Bergen lies spread out as in a map beneath your feet, or how the islands and inlets make the sea beyond look like so many blue lakes hemmed in by low mountain ranges. I left the Flöien and wandered on over a region of heather, cotton grass, and stunted juniper, with very few plants that are not seen in Alpine regions in England or Scotland; the sun was shining brightly, but no butterflies; as I passed on, *didymata* ceased to be common, and *Larentia cæsiata* took its place; my first halting place was a little mountain tarn called Skomager-diket, and here I sat for a little time trying to catch an *Æschna*, which haunted the lake, but would keep out of reach: midges, however, came too close; at last, I went off over the mountains to Blaamanden, and enjoyed the views and the desolate wildness immensely, but for hours I saw no human being, no bird, no animal; true there were a few frogs, and of insects there was *Bombus lapponicus* humming amongst the heather, plenty of *Eristalis* of different species, and *cæsiata* flying from the boulders as you passed them, yet the solitude was very great, and the absence of life wonderful.

On my return home, nothing new was noticed until I came to the sunny sheltered spot before mentioned, when *Erebia Blandina* was again seen flying down the cliff-side beneath me, as also one *Pararge Hiera*, a small dark and beautiful specimen, this I took, and also one ♂ *Lycæna Icarus*, very bright, large, and fine. Shortly after, *Simæthis Fabriciana* was caught, and a small *Tinea* seen, but lost; the tortoiseshell was still flying about in his old haunt, but I did not attempt to take him. *Larentia didymata* was in plenty: I saw hundreds, but what struck me as a remarkable change in habit, was that it is here evidently a day-flying insect, the ♂s especially so, indeed, I saw no ♀s on the wing, they were at rest, or *in copulâ*, but the males were hovering and searching about the herbage in great activity and great numbers; as far as my observation goes in England, it is like other *Geometræ*, a moth of the twilight: but here it is a lover of the afternoon sunshine—and this is the result of three afternoon's investigation. It is curious to speculate upon the different habits of the three *Geometræ* to-day noticed in plenty; *L. didymata*, awake in the sunshine and enjoying its life in it; *populata*, sleeping so soundly that I could box any that were found and wanted; *cæsiata*,

sleeping, but so lightly that your step disturbed it at once, and it was off over the heather, far away, yet the grey boulder gave it far greater protection than the yellow *populata* could ever have. Here, then, was a day of brilliant sunshine spent amongst the mountains, and though diligent search was made, the only *Lepidoptera* seen were six butterflies: *Lycæna Icarus*, one; *Vanessa urticæ*, one; *Chionobas Jutta*, one; *Erebia Blandina*, two; *Pararge Hiera*, one. *Geometræ*, four species: *Larentia didymata*, *cæsiata*, *Cidaria populata*, *Ortholitha limitata*; *Mimæseoptilus fuscodactylus*; *Simæthis Fabriciana*; *Ablabia pratana*. If results be measured by specimens, a very poor result of a long day's walk and work.

Bergen, Norway:

August 23rd, 1887.

P.S.—To-day and yesterday, September 6th and 7th, I took six specimens of *Platyptilus gonodactylus* amongst colt's-foot. This insect is well-known to be double-brooded, and that this is a second brood seems proved by my having in a former year taken the same plume at Christiania in June. The autumn specimens, as in England, are rather more dusky than those caught in summer.

Christiania: September 7th, 1887.

Parnassius Delius, Esp., captured in North Wales.—A specimen of *Parnassius Delius* was taken this summer near Bangor by Mr. E. W. S. Schwabe, a youthful pupil of this College, and was lately submitted to me for identification. It is the ordinary alpine form of this species, which is stated to be more restricted in range, and more exclusively alpine, than the commoner *P. Apollo*. Mr. Schwabe informs me that he took the specimen on September 1st in the mountains above the Penrhyn slate quarries, about seven miles from Bangor, near three small lakes; the sun was shining, but there had been rain earlier, and the insect was in a semi-torpid condition, and easily captured; it is rather worn. There can be no question of the authenticity of the capture; yet I think it must be regarded as highly improbable that the species is a native of these shores, or even an occasional immigrant. The most reasonable explanation seems to me to be that some admirer of the insect has imported pupæ, bred the butterflies, and turned them out in the Welsh mountains as the most suitable situation, in the hope that the species might establish itself. Perhaps some information may now be forthcoming.—E. MEYRICK, The College, Marlborough: September 28th, 1887.

[We fear it is useless to attempt to naturalize *Parnassius* here unless the Butterflies be "preserved" by Act of Parliament with the direst penalties for infringement. They are probably the easiest to capture of all Butterflies.—EDS.]

White Butterflies.—I can testify to the abundance of White Butterflies at Inverness during the last four or five days of August, and the first fortnight of September in the present year, especially as compared with the same period last year, when the weather was much finer. They were mostly *P. rapæ*. I take this

opportunity of mentioning the capture, on the 23rd inst., of *Phibalapteryx lapidata* in the upper part of Glen Nevis at a point distant about 16 miles from the head of Glen Rannoch.—A. H. CLARKE, 109, Warwick Road, S.W.: *September 28th*, 1887.

Additional Notes on the Butterflies of Dover.—*Aporia crataegi*—captured in the Warren about twelve years ago, W. Davis; one specimen much worn taken in Dover Town, 1882; in a lane near Sandwich this year seven specimens (*vide separate note*). *Pieris Daptidice*—near Diggles Tower, Dover, 1879. *Leucophasia sinapis*—Waldershare, 1880; near Alkham, 1882. *Colias Hyale* and *Edusa*—both pretty common the latter part of August and September, 1885, also the variety *Helice*. *Argynnis Selene*—in several inland woods near Shepherd's Well. *A. Adippe*—occasionally in company with *Aglais*, common throughout the district this year. *A. Iathonia*—more recent captures than Mr. Hall's have been elsewhere recorded; the last genuine specimen was that taken by Mr. J. B. Williamson at Kingsdown in 1885. *Vanessa Antiopa*—at Alkham and Fredville, 1880. *Grapta c-album*—a single specimen at Lower Hougham, 1878; several at Upper Walmer, 1882. *Epinephele Tithonus*—Mr. Hall gives a vague locality, *near Canterbury*, which certainly is neither Dover nor its vicinity; as a fact, it has not been recorded as occurring in our district, the nearest spot where it may be met with is Adisham.

I have not thought it necessary to swell the list of localities given by Mr. Hall, or to add to his remarks on the more common species, such as *malva*, &c.; they may of course be found elsewhere if required and looked for. A Coleopterist would naturally not trouble himself to specially note down their occurrence.—SYDNEY WEBB, Maidstone House, Dover: *October*, 1887.

Aporia crataegi near Sandwich in 1887.—Seven specimens of *A. crataegi* were captured on the wing in a lane near Sandwich on July 13th, by a man named Burton, who was collecting for a friend, a policeman-entomologist.—ID.

Aporia crataegi at Sittingbourne in 1887.—There has been a good deal said of late about the extinction of *Aporia crataegi* in Great Britain, and as I have not collected insects for a good many years past, I took it for granted that the butterfly actually had become extinct. My first doubt on this head was caused by a statement to the contrary from Mr. Crowley, who if asked will, I am sure, be able to give you particulars. In my recent holidays I spent a week at Sittingbourne and visited an old friend, a lover of Nature from his boyhood, Dr. John Grayling, and he volunteered the information that in June his garden was visited by great numbers of the Black-veined White. I informed him that the butterfly was supposed to be extinct, which greatly surprised him. Dr. Grayling is an old and experienced field naturalist, and not likely to have been mistaken.—A. G. BUTLER, British Museum, Cromwell Road: *October 10th*, 1887.

New locality for Lycæna Artaxerxes.—On July 9th I took two specimens of *Lycæna Artaxerxes*, and at the same place a day or two afterwards five more: two of these were in fine condition, which I have preserved, the others being in a rather worn state were set at liberty. The place where I took the Butterfly was in the banky glades of a young fir cover, a little to the north-east of Cessford Castle, and about eight miles north of the English border of Northumberland. The common

knawweed was plentiful in these glades, and upon it I saw the Butterfly settle occasionally, but I could see nothing of *Helianthemum vulgare* at that time. Mr. Barrett has seen the two specimens I kept and thinks them pretty, but rather small in size. He says he does not remember a locality so near the English border, and thinks it worth recording.—A. ELLIOT, Caverton, Roxburgh: *September 19th, 1887.*

Phytometra aenea and *Emmelesia albulata* in Roxburghshire.—I took several specimens of *Phytometra aenea* on June 16th, and on the 29th, *Emmelesia albulata*, both in the finest condition, this being the first time I have found them in Roxburghshire.—ID.

Sphinx convolvuli in Roxburghshire.—I have just had given me a specimen of *Sphinx convolvuli* taken in this locality by a boy, but sadly dilapidated in its capture.—ID.

Sphinx convolvuli at Armagh.—My neighbour, Mr. Thos. Smith, has just brought over to me a specimen of this moth which was found by Mrs. Smith lying dead outside her window this morning. This is the first time I have heard of its occurrence in this neighbourhood.—W. F. JOHNSON, Winder Terrace, Armagh: *September 21st, 1887.*

Sphinx convolvuli at Swansea, and *Deiopeia pulchella* at Folkestone.—I am able to chronicle two additional captures of *Sphinx convolvuli*, both in the course of September last. One was taken in the town of Swansea, the other about two miles out of that town, by Raymond Burr. On looking through the collection of the latter I found one example of *D. pulchella*, taken by himself in August, 1886, at its old habitat, Folkestone. The specimen is in very poor condition.—LOVELL KEAYS, 27, Lowndes Square, S.W.: *October 3rd, 1887.*

Concerning Deilephila euphorbiæ in Norfolk.—I think I can furnish a possible explanation of Mr. Barrett's capture of *Deilephila euphorbiæ* in September. They are in some years very abundant in the neighbourhood of the Bilbao River in the north of Spain during the month of June, and are not rare in September, and as twenty or thirty steamers pass the coast of Norfolk every week carrying iron ore to the north of England from that river, it is not much of a stretch of imagination to suppose that one hidden away in the folds of a sail, and disturbed in transit, when near the coast, might land and be captured; or eggs might be laid by a specimen of a June importation, which, with the hot summer that we have experienced, might be advanced to the imago state by September.

It is a curious fact connected with *D. celerio*, and I believe also with *D. euphorbiæ*, and probably with other *Sphingidæ*, that their final transformation can be so much accelerated by heat.

In the autumn of 1885 I found a Virginia creeper on my house in Spain swarming with the caterpillars of *D. celerio* of all sizes, from half-an-inch to full grown. I collected and fed about six dozen of them, but the smallest did not assume the pupa state until well on in November. The earliest pupæ produced the imago without artificial heat in September, but I thought there was no chance of the later ones doing so until the following year; I therefore took the advice of a friend

who had tried the experiment successfully with *D. euphorbiæ*, and exposed them to a temperature of 75° by day and about 60° at night, with the result that I had them all as moths the same year, the last having emerged on Christmas Day. This experience may not be new, but to me it was both new and interesting.—THOMAS BELL, Oakwood, Epping: *October 10th*, 1887.

Acidalia immorata, L.: a species new to Britain.—On June 27th last, Mr. C. H. Morris, of this town, showed me an insect of which he had just caught two specimens, on some heathy ground in this neighbourhood. When alive in the chip-box, the insect somewhat resembled the female of *Fidonia atomaria*, to a form of which I hesitatingly referred it. Subsequent examination of the two specimens (which proved to be ♂ and ♀) showed clearly it was not that species, and that it was evidently new to the British list. I have recently, thanks to the assistance of Messrs. Waterhouse and Kirby, been enabled to compare the insect with types of *Acidalia immorata*, L., collected by Prof. Zeller, in the National Collection at South Kensington, with which it agrees in every respect.

Acidalia immorata, L. (Syst. Nat., x, 528), is widely distributed on the continent. Staudinger's list gives the following distribution:—"Europe, central and north—exclusive of the polar regions and England,—Andalusia, Italy, Bulgaria, south-eastern Russia, Bithynia, north-eastern Siberia." It occurs in Holland, according to Snellen, "De Vlinders van Nederland," p. 563; and Berce, in his "Faune Entomologique Française," says it occurs in "Basses Alpes, Auvergne, Alsace, Bourgogne—but not in the environs of Paris."

Berce places it in the genus *Strenia*, with which its affinity is evident; but according to Staudinger's arrangement, it should stand in our lists close to *Acidalia emarginata*.

Its food-plant is *Calluna vulgaris*, and it was among this plant that the two specimens here mentioned were taken. It is probable that if places where *Calluna vulgaris* grows abundantly are well worked about the end of June or beginning of July, the insect will be found in other localities.—J. H. A. JENNER, 4, East Street, Lewes: *October 11th*, 1887.

Acidalia promutata and *Melanthia ocellata*.—With reference to Mr. Atmore's note (Ent. Mo. Mag., 117) on the above species, what seems to be unusual in Norfolk, is certainly the normal state of things in Kent. *A. promutata*:—I find all the specimens I have taken the last four years have been taken between July 30th and August 24th. The insect has occurred frequently at sugar on the Deal Sandhills, between these dates every autumn since 1883. I used to get both broods regularly at Strood about twelve years ago, the autumn one usually greatly outnumbering the spring brood. *M. ocellata*:—This also is another normally double brooded species, occurring abundantly in our Kent Woods in August. I believe it is double brooded in Scotland, certainly as far north as Yorkshire, and I have August specimens from South Wales.—J. W. TUTT, Westcombe Park, S.E.: *October*, 1887.

The larva of Nascia ciliaris.—It was so far back as the 14th August, 1868, that the late Mr. Buckler received from Mr. W. R. Jeffrey (then residing at Saffron Walden) a larva of this species which Mr. Jeffrey had found feeding on *Cladium*

mariscus at Wicken Fen. This larva, after being described and figured, unfortunately died; but another similar larva, which Mr. Jeffrey had retained and kept on some kind of *Carex*, became full-fed and spun itself up, but the pupa died before the following spring, so the whole experiment proved a failure.

On the 23rd September, 1869, Mr. Buckler had again the pleasure of figuring this larva from a specimen sent him by the Hon. Thomas de Grey, M.P. (now Lord Walsingham); this larva duly fed up and spun its cocoon, but, the following summer, an examination of this cocoon revealed that the larva had died without having pupated! With this, Mr. Buckler's experience of this larva seems to have ended, and as he had not succeeded in breeding the imago, he refrained, according to his usual custom, from publishing the very interesting description he had penned.

Now that at last the insect has been reared by Mr. W. H. B. Fletcher, I thought it would interest many to know for how long a period this larva has been a half-solved mystery in this country.—H. T. STANTON, Mountsfield, Lewisham: *September 26th*, 1887.

Description of the larva of Eupœcilia Degreyana.—Following the clue afforded by the report that a specimen of this insect was once bred by the late Rev. Mr. Bree from a larva found feeding in a flower of *Linaria vulgaris*, I have this year been able to find it in considerable plenty. The larva is pale yellow, active, and rather large compared with the size of the imago. Head brown; plate on the second segment pale yellow like the body, but with two black or brown spots on the hinder edge; anal plate imperceptible; spots small, obscure. Burrowing into the ground to pupate. I am unable to state at present how the first or summer brood feeds; but from the fact that all the early flowers are aborted, I suspect that the larvæ attack the young flower buds. Those collected in August and September feed within the seed-pods on the unripe seeds. A single specimen emerged the second week in September, which must have been gathered when in pupa in a flower head; this was probably a straggler of the early brood, unless, like *implicitana* sometimes, a third brood occurs.—W. WARREN, Merton Cottage, Cambridge: *September 21st*, 1887.

An Appeal for Larvæ for Description.—In consequence of the unfortunate death of the Rev. John Hellins, I have been asked to do what I can towards supplying life-histories to accompany the late Mr. Buckler's figures of the larvæ of the British *Lepidoptera* now being published by the Ray Society, in those cases in which no written or published descriptions were left by him. Thanks to the liberality of many correspondents I have been able to describe several of the larvæ required for the third Vol. There are still some which I have failed to obtain, and so, as time is short, in order to avoid as much as possible leaving arrears to be dealt with hereafter, I venture to appeal to the readers of this Magazine to give me as much help as they can. I need not say that I shall be most happy to make any return in my power in kind or coin, as may be preferred.—W. H. B. FLETCHER, Fairlawn House, Worthing: *September 22nd*, 1887.

On the life history of Euchromia purpurana, Hw.—The occurrence of this insect in localities so unlike each other as are Wicken Fen and the shingle beach of the Sussex coast has helped me greatly in guessing at its probable food-plant. A little looking about on the shore led me to notice that the moth always flew among

Sonchus arvensis. On mentioning this to Mr. Warren, he was able to tell me that if the larva fed on this plant it would be found living underground in a silken tube and gnawing the roots externally. On June 29th and July 1st last I had the pleasure of proving this to be the case, by finding the larvæ feeding not only on the roots of the *Sonchus*, but also on those of *Taraxacum officinale*, between Shoreham and Brighton, as well as of taking both pupæ and imagines.

The larva is about 16 mm. long, thin rather than stout; head small, reddish-brown, mouth parts darker; body yellowish-white, corselet pale ochreous, pulsating vessel showing as a narrow darker dorsal line, warts small and very inconspicuous, each bearing a very short, fine, dark bristle; legs yellow; ventral area paler, claspers concolorous with it.

The larva crawls quickly, wriggling sharply backwards when disturbed. It pupates just below the surface of the shingle, spinning a few small pebbles firmly together, and making between them a tough, white, fusiform cocoon twice as long as the pupa. The latter is active, not remarkable in shape, light red in colour; the abdominal segments furnished dorsally with two rows each of short teeth, those of the first row being longer than those of the second.—ID.: *September 3rd*, 1887.

Note on the food plant of Depressaria badiella, Hb.—There is in vol. xxi of this Magazine, p. 3, an account of the larva of this species as occurring on Fresh-water Down under leaves of *Hypochaeris radicata* from the pen of the late Mr. Buckler. As every one may not have on his lawn enough of this troublesome weed on which to rear his series of the moth (I hope it is nearly exterminated on mine), it is perhaps worth recording that when working for larvæ of *Euchromia purpurana* I found those of the *Depressaria* feeding not only on *Hypochaeris*, but also on *Sonchus arvensis* and *vulgaris*, on *Taraxacum*, and on other plants of the natural Order *Compositæ*.—ID.

Note on the food plants of Tortrix dumetana, Tr.; the record of a disappointment.—Early in June last I found on our Downs a *Tortrix* or *Depressaria* larva (to my eyes many of the larvæ of these genera are much alike), light and dark green in stripes, feeding on *Centaurea scabiosa*. Hurrah! thought I, here is the larva I have been looking for these many years, *Depressaria pallorella*. I went on picking away at the tubularly-rolled leaves, most of the *Depressaria*-like tubes being empty. Presently tubes and larvæ turned up on *Centaurea nigra*, *Knautia arvensis*, *Malva sylvestris*, and other plants.* Hurrah again! unrecorded habit of a *Depressaria*—begins life by feeding on one plant, and goes in for a change of diet as it grows older; must make a note of this for the Ent. Mo. Mag. My wife collected the pupæ for me, so the blunder was not found out then. My disgust may be imagined when in August a series of *Tortrix dumetana* came out, and found me without a description of what I had thought to have been a larva well known to every collector of *Micro-Lepidoptera* but myself.—ID.: *September 5th*, 1887.

Cosmopteryx Schmidiella in the Isle of Purbeck.—I have much pleasure in recording the occurrence of this interesting species in the Isle of Purbeck, where lately, by a most lucky chance, I happened to meet with the larva. At the beginning of the present month I received from Mr. W. H. B. Fletcher, who added the insect to the British list in the autumn of last year (*vide* Ent. Mo. Mag., xxiii, p. 111), a

batch of the larvæ feeding in the leaves of *Vicia sepium*; so, wishing to supply them with fresh food, I wandered in search of the vetch, and on *the very first plant* I came across, to my surprise and delight, I beheld the whitened leaves unmistakably eaten out by the larvæ of *C. Schmidtiella*. Subsequent search during the limited time at my disposal showed the species to be well established in its locality. I may mention that this recent addition to the British fauna is the only representative of the genus *Cosmopteryx* found, as yet, in the County of Dorset.—EUSTACE R. BANKES, The Rectory, Corfe Castle: *September, 1887.*

Another Caddis-fly new to the British Isles: Tinodes maculicornis, Pict.—This further addition to our list of *Trichoptera* is also from Ireland, this time from the north. Two specimens are in a small collection made at Glasslough, Co. Monaghan, on the 9th and 10th of August. They were taken along with *T. wæneri*, which swarmed, by beating the bushes surrounding the lake, and the species was probably not uncommon but overlooked amongst the hosts of its undesirable congener.

Though now recorded for the first time, *T. maculicornis* is not new to Ireland. I find that in the collections made by Miss Freeland in the same locality (*vide* vol. xx, p. 142, and vol. xxiii, p. 138), I passed by one or two unset examples of it as *T. wæneri*.

The ascertained distribution of this species is chiefly western, Portugal and France; it also occurs in Switzerland. Most of the members of the genus *Tinodes* delight in dribbling springs; *T. maculicornis* seems to prefer large rivers and lakes.—KENNETH J. MORTON, Carluke, N. B.: *October 10th, 1887.*

Additional Trichoptera from Glasslough, Ireland.—As a continuation of the series of records from this locality (see citations in preceding note), it may be well to notice the occurrence of *Glyphotaius pellucidus*, Retz., and *Leptocerus fulvus*, Ramb., both taken in August.—ID.

Cæcilius Dalii abundant in Somersetshire.—In the second week of this month the Rev. A. E. Eaton and I found this pretty and delicate Psocid abundantly in gardens and plantations at Shepton-Montague, chiefly amongst common laurel (*Prunus lauro-cerasus*) and evergreen oak (*Quercus ilex*); fagots of dead laurel branches were equally productive. It would seem that the species is especially attached to gardens, and it may have been originally introduced from a warmer climate. But its perfect hardiness is established, severe frosts and cold rain and winds prevailing at the time we met with it. I fancy this insect is widely distributed in England. Mr. J. J. King found it at Weybridge on a paling outside a garden.—R. McLACHLAN, Lewisham, London: *October 17th, 1887.*

Coleoptera in the Isle of Wight.—Whilst staying at Sandown from June 27th to July 25th last, during the greater part of the very hot weather then prevailing, I paid considerable attention to the *Coleoptera* of the district; the capture of an exceedingly rare British weevil (*Baris analis*) during a short walk on the evening of my arrival, being a great incentive to further exertions. Though I have little if anything to add to the list of *Coleoptera* known to inhabit the localities mentioned below, the recent occurrence of a few of the rarer species may be of interest. I accordingly, at my friend Mr. Fowler's suggestion, give a list of some of the most noteworthy forms observed during my stay.

Certain well-known species were, however, not to be found, viz., *Chlænium Schranki* (the locality at Luccombe has of late years been partly washed away and partly drained, and the insect would appear to have become quite extinct there), *Otiorynchus ligustici*, &c. *Cicindela germanica*—plentiful at its old locality near Blackgang Chine; I have seen no recent record of this species in the island. *Stenolophus tentonius* and *Acupalpus flavicollis*—common at Sandown, at the roots of *Juncus* at the foot of the cliffs. *Bembidium Sturmii*—one example in wet shingle, Luccombe. *Tachys bistratus*—rarely in moist sandy places, Luccombe. *Aëpus marinus*—at its usual habitat, Sandown and Ventnor (*A. Robini* was not to be found). *Hydræna nigrata*—rather commonly, Luccombe Chine. *Georyssus pygmaeus*, *Limnichus pygmaeus*, *Heterocerus fuscus*—abundant at Luccombe and Sandown in wet sandy places. *Ochthebius rufimarginatus*—rarely at Luccombe. *Phytosus*—both species on the beach, Sandown and Luccombe. *Atemeles emarginatus*—one example, running across the path, Bonchurch. *Lathrobium angustatum*—a few examples at Sandown, in company with *Stenolophus*. *Ocytus pedator*—rarely on the chalk downs, Freshwater. *Bledius opacus* (abundant), *B. spectabilis*, *B. tricornis*, *B. atricapillus*, *B. subterraneus*, and *B. arenarius*, more or less commonly, Sandown. *Oxytelus clypeo-nitens*—rather commonly in the stream at Luccombe Chine, beneath stones, in company with *Dianous*, no doubt accidentally brought down by the stream after heavy rain. *Thinobius brevipennis*—somewhat commonly at Sandown, in moist sandy places; this exceedingly minute creature is difficult to detect, and is only to be found when the sun is shining. *Ancyrophorus longipennis*—rarely, Luccombe Chine, with *Dianous*; I have not seen any record of this species occurring so far south before. *Micralymma brevipenne*—in abundance, beneath boulders, below high water mark, Sandown. *Philonthus signicornis*—not rare, moist places, Sandown. *Cyrtusa paucilla*—rarely, Sandown. *Saprinus maritimus*—beach, Sandown, rare. *Syncalyptra hirsuta*—roots of grass, &c., Freshwater, not rare. *Aphodius villosus*—Chalk Downs, Freshwater, rare. *Phaleria cadaverina*—in profusion on the beach, Sandown. *Cteniopus sulphureus*—on the Chalk Downs, Freshwater. *Mordellistena inaequalis*—rarely, by sweeping, Sandown. *Sitones cambricus*—plentiful in moist sandy places, especially by beating towards evening, Sandown; *S. meliloti*—rarely, Luccombe. *Cathormiocerus socius*—seventeen examples, by constant working at the roots of isolated plants (*Sonchus*, &c.), in clean sand at the foot of the cliffs, near Sandown; this insect very closely resembles the numerous species of *Trachyphlaeus* (*scaber*, *scabriculus*, *squamulatus*, and *alternans*) which are more or less abundant at the same locality. *C. socius* differs constantly from *C. maritimus* exactly as pointed out by Rye (*cf.* Ent. Mo. Mag., vii, p. 150, and x, p. 177); the latter is a perfectly distinct species. *Baris analis*—one specimen, crawling on the sand in a moist place at the foot of the cliffs at Sandown, on the evening of June 27th; subsequent search at the same spot and elsewhere, and at the roots of its recorded food-plant (*Inula dysenterica*), failed to produce more. So far as I am aware, this species has not been captured in England for fully 25 years, and the only recorded localities for the two or three known British examples are Ryde and Sandown. The food-plant is very abundant in the Island, though not always accessible on the steep face of the cliffs, and there is no reason why the species should remain so rare with us. *Bagous lutulentus*—not rare in moist places, Luccombe; some examples have the tarsi dark, and seem intermediate between *B. lutulentus* and *B. nigratarsis*, Thoms. *Orchestes*

scutellaris—rather common on alders, Sandown. *Ceuthorhynchus resedæ*—at the roots of its usual food-plant (*Reseda luteola*), and *Miarus graminis* (common), Chalk Downs, Freshwater. *Sibynes arenariæ*—Blackgang Chine, beneath its usual food-plant. *Cryptocephalus moræi*, *C. bilinertus*, &c.—on the Chalk Downs, Bembridge.—GEO. C. CHAMPION, Caldervale Road, Clapham, S.W.: October 13th, 1887.

Recent captures of Coleoptera at Windsor and Chobham.—Whilst staying at Egham, in Surrey, during the latter half of last month I took the opportunity of hunting up the *Coleoptera* of the neighbourhood, confining myself chiefly to Windsor and Chobham. Omitting the common species captured, the following is the result of my investigations:—

In Windsor Great Park. In nests of *Formica rufa* occurred *Thiasophila angulata*, *Dinarda Märkelii*, *Leptacinus formicetorum*, *Ptilium myrmecophilum*, *Dendrophilus pygmæus*, *Monotoma angusticollis*. Under bark: *Agathidium varians*, *Homalota linearis*, *H. immersa*, *Placusa pumilio*, *Cicones variegata* (60), *Ditoma erenata* (153), *Plegaderus dissectus* (18), *Rhizophagus perforatus* (1), *Pediacus dermestoides* (1), *Silvanus unidentatus* (25), *Læmophlæus ferrugineus* (5), *L. duplicatus* (1), *Mycetophagus atomarius* (extremely abundant in one beech stump on Snow Hill), *Aspidiphorus orbiculatus* (1). In fungi: *Homalota nigriritula*, *H. divisa*, *H. celata*, *H. canescens*, *Cis hispidus*, *C. nitidus*, *C. pygmæus*.

Chobham Common produced the following. In *Sphagnum* on the margins of ponds: *Bembidium Doris* (45), *Amara patricia* (1, an unsuspected habitat for this species), *Acupalpus dorsalis* (3), *Tachyusa atra* (2), *Myllæna intermedia* (20), *M. Kraatzi* (5), *Gymnusa brevicollis* (100), *Deinopsis erosa* (5), *Philonthus nigrita*, *P. cinerascens*, *Stenus pusillus*, *S. binotatus*, *S. pallitarsis*, *S. fornicatus* (2), *Anisosticta 19-punctata* (1 only!), *Cassida nobilis* (1), *Thyamis holsatica* (1), *Anthicus antherinus* (1), *Baris T-album* (1). In the ponds: *Pelobius Hermannii* (9), *Hydroporus flavipes* (3), *H. lepidus* (extremely abundant), *H. obscurus* (1), *H. lineatus* (1), *Colymbetes fuscus* (2), *Agabus affinis* (1), *Dytiscus circumflexus* (2), *D. punctulatus* (2), *Helochares punctatus* (1), *Philhydrus marginellus* (3), *Hydrochus angustatus* (5). In dung: *Homalota inquinula* (2), and *Trichopteryx bovina*. By brushing aquatic plants I took *Donacia comari* (3).—W. G. BLATCH, 214, Green Lane, Small Heath, Birmingham: October 9th, 1887.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY: September 22nd, 1887.—R. ADKIN, Esq., F.E.S., President, in the Chair.

Mr. Jäger exhibited *Stilbia anomala*, Haw., from Tenby, *Callimorpha Hera*, L., and var. *lutescens*, Staud., from Devon, and stated he had obtained ova, and now had the larvæ feeding. Mr. Sheldon, *Xanthia fulvago*, L., and var. *flavescens*, Esp., and remarked on the number of melanic specimens which he had observed in a particular valley in Derbyshire. Mr. Cooper, dark forms of *Eugonia quercinaria*, Hufn., upon which some interesting comments were made by Mr. Goldthwaite. Mr. Carpenter, a number of specimens of *Argynnis Paphia*, L., var. *Valezina*, Esp. Mr. Tutt, *Melanthia bicolorata*, Hufn., var. *plumbata*, Curt., from Rannoch. Mr. Oldham, *Dicycla oo*, L., from Epping Forest, a dark form of *Arctia Caia*, L., and a variety of *Pararge Megæra*, L.: it appeared from the remarks of members that *D. oo* had occurred freely at Epping and in some parts of Kent. Mr. Skinner exhibited a specimen of *Deiopeia pulchella*, L., taken at Dover, 1886, a bleached specimen of

Epinephela Janira, L., and very pale forms of *Zygæna filipendulæ*, L. Mr. Adkin, bred *Melanippe rivata*, Hb., *M. galiata*, Hb., and *Anticlea cucullata*, Hufn. Mr. Goldthwaite, varieties of the under-side of *Lycæna bellargus*, Rott. Mr. Elisha, *Gelechia hippophaella*, Schr., from Deal, *G. vilella*, Zell., *Incurvaria capitella*, Clerck, *Agrotis Ashworthii*, Dbl., &c. Mr. J. Jenner Weir, *Carpocapsa saltitans*, Westw., and living specimens of the larva of *Myrmeleon europæus*, and made some interesting remarks. Mr. West, of Greenwich, showed eight species of *Halipilus* taken by him out of one pond. Mr. Billups, on behalf of Mr. Tugwell, exhibited *Limneria ensator*, Gr., and *Macrocentrus linearis*, var. *pallidipes*, Gr., both bred from *Cucullia gnaphalii*, Hb., and, on behalf of Mr. Turner, two old wedges, which had been used to fasten the chairs holding the rails to the sleepers on L. B. & S. C. Railway, between New Cross and Forest Hill, containing nests of *Osmia rufa*, L.

October 13th, 1887.—The President in the Chair.

Dr. Rendall exhibited *Xanthia fulvago*, L., var. *flavescens*, Esp., &c. Mr. Jäger, varieties of *Luperina testacea*, Hb., from Tenby. Mr. Tugwell, a specimen of *Sphinx convolvuli*, L., taken at Greenwich, a fine streaked variety of *Spilosoma menthastris*, Esp., and other forms of this species. Mr. Wellman, bred examples of *Acidalia immutata*, L. Mr. Levett, two varieties of *Smerinthus tilix*, L. Mr. Oldham, *Lepidoptera* from India. Mr. Fremlin, specimens of *Vanessa urticae*, L., showing absence of colour. Mr. Jenner, of Lewes, exhibited two specimens of *Acidalia immorata*, L., a species new to Britain, which he stated were taken at Lewes, on heather, by Mr. H. C. Morris, of that town. Mr. South, *Melanippe sociata*, Bork., *M. montanata*, Bork., an apparently apterous specimen of *Zygæna filipendulæ*, L., bred by him at Folkestone, 1885, a specimen of *Z. lonicerae*, Esp., appearing to have four antennæ; after some discussion, Mr. Tugwell expressed an opinion that the second pair were merely the pupal coverings of the antennæ proper, as the insect did not seem to have altogether escaped from the pupa case, part of it still adhering to the head. Mr. South also showed four varieties of *Argynnis Selene*, Schiff., and one of *A. Euphrosyne*, L. Mr. West (Greenwich), *Hydaticus seminiger*, De G., and stated it was twelve years since he last met with this species. Mr. Manger, *Hymenoptera* from Brazil.—H. W. BARKER, *Hon. Secretary*.

ENTOMOLOGICAL SOCIETY OF LONDON: Oct. 5th, 1887.—Dr. DAVID SHARP, F.Z.S., President, in the Chair.

Mr. Jacoby exhibited a specimen of *Aphthonoides Beccarii*, Jac., a species of *Haltica* having a long spine on the posterior femora. He also exhibited a specimen of *Rhagiosoma madagascariensis*, and remarked that it had the appearance of a Longicorn.

Mr. Stevens exhibited a very dark specimen of *Crambus perlellus* from the Hebrides, which its captor supposed to be a new species. Mr. Porritt remarked that this brown form of *Crambus perlellus* occurred at Hartlepool with the ordinary typical form of the species, and was there regarded as only a variety of it.

Mr. Slater exhibited a specimen of *Gonepteryx Cleopatra*, which was stated to have been taken in the North of Scotland. Mr. Jenner Weir remarked that although the genus *Rhamnus*—to which the food-plant of the species belonged—was not a native of Scotland, some species had been introduced, and were cultivated in gardens.

Mr. South exhibited an interesting series of about 150 specimens of *Boarmia repandata*, bred in 1876, and during the present year, from larvæ collected on bilberry in the neighbourhood of Lynmouth, North Devon, including strongly marked examples of the typical form, extreme forms of the var. *conversaria*, Hüb., a form intermediate between the type and the variety last named, and examples of the var. *destrigaria*, Steph. Mr. South said that an examination of the entire series would show that the extreme forms were connected with the type by intermediate forms and their aberrations.

Mr. Poulton exhibited young larvæ of *Apatura Iris*, from the New Forest; also eight young larvæ of *Sphinx convolvuli* reared from ova laid on the 29th August last by a specimen captured by Mr. Pöde in South Devon. Mr. Poulton said the life-history of the species was of extreme interest, throwing much light upon that of *Sphinx ligustri*, as well as upon difficult points in the ontogeny of the species of the allied genera *Acherontia* and *Smerinthus*. Mr. Stainton commented on the interesting nature of the exhibition, and said he was not aware that the larvæ of *Sphinx convolvuli* had ever before been seen in this country in their early stages. Mr. McLachlan remarked that females of this species captured on former occasions, when the insect had been unusually abundant, had been found upon dissection to have the ovaries aborted.

Mr. R. W. Lloyd exhibited two specimens of *Elater pomonæ*, and one of *Mesosa nubila*, recently taken in the New Forest.

Mr. Porritt exhibited a series of melanic varieties of *Diurnea fagella*, from Huddersfield, and stated that the typical pale form of the species had almost disappeared from that neighbourhood.

Mr. Goss exhibited, for Mr. J. Brown, of Cambridge, a number of puparia of *Cecidomyia destructor* (Hessian fly), received by the latter from various places in Cambridgeshire, Norfolk, Suffolk, and Wiltshire. Mr. Verrall, in reply to a question by Mr. Enock, said he believed that the Hessian fly was not a recent introduction into Great Britain, but had been here probably for a great number of years. Prof. Riley said he was unable to agree with Mr. Verrall, and was of opinion that the Hessian fly had been recently introduced into this country. Its presence here had not been recorded by Sir Joseph Banks, by Curtis (who paid great attention to farm insects), by Prof. Westwood, by the late Mr. Kirby, or by any other entomologist in this country who had given especial attention to economic Entomology. It seemed highly improbable, if this insect has been here so many years, that its presence should have so long remained undetected both by entomologists and agriculturists. It had been stated that the insect was introduced into America by the Hessian troops in 1777, but this was impossible, as its existence at that date was unknown in Hesse. Mr. McLachlan, Mr. Elwes, Mr. Verrall, Mr. Jacoby, and Dr. Sharp continued the discussion.

Mr. James Edwards communicated the second and concluding part of his "Synopsis of British *Homoptera-Cicadina*."

Prof. Westwood contributed "Notes on the life-history of various species of the Neuropterous genus *Ascalaphus*."

Mr. Elwes read a paper "On the Butterflies of the Pyrenees," and exhibited a large number of species which he had recently collected there. Mr. McLachlan said he spent some weeks in the Pyrenees in 1886, and was able to confirm Mr. Elwes' statements as to the abundance of butterflies. He remarked on the occurrence of Spanish forms in the district, and on the absence, as a rule, of the peat-bogs so common in the Swiss Alps. The discussion was continued by Mr. Distant, Mr. White, Dr. Sharp, and others.—H. Goss, *Hon. Secretary*.

NOTES ON THE SPECIES OF HEINEMANN'S FAMILY *CHAULIODIDÆ*
THAT OCCUR IN ENGLAND.

BY WILLIAM WARREN, F.E.S.

In response to a request by Mr. Stainton, I have undertaken to put together a few notes on these species, embodying the latest discoveries, as yet unpublished, of their habits and mode of life. This information is, for the most part, derived from the observations of others, notably of Mr. W. H. B. Fletcher, of Worthing, whose well-known pertinacity in investigating the earlier stages of our *Micro-Lepidoptera* has been so often rewarded with success.

Heinemann assigns to his family *Chauliodidæ* five genera, viz., *Heydenia*, Hofm., *Æchmia*, St., *Chauliodus*, Tr., *Ochromolopis*, H., and *Schreckensteinia*, H. Of these the last may, I think, be dismissed as being entirely out of place in the family, while the 4th (*Ochromolopis*) containing but one species (*ictella*), not yet occurring in England, needs only to be noticed as forming a connecting link between *Chauliodus* and *Æchmia*.

The characteristics of the family, as distinguished from other families, may be shortly given thus :—

Head smooth ; ocelli absent ; antennæ without eye-caps ; palpi filiform, closely scaled. Fore-wing with additional cell, the lower median nervure forked at the base. The four genera can be also practically separated *inter se* as follows :—

A. Palpi longer than the head, ascending.

a. Inner margin of fore-wing with at least two teeth of scales ..1. *Chauliodus*.

b. Inner margin of fore-wing with only one tooth 2. *Ochromolopis*.

B. Palpi short, drooping.

a. Inner margin of fore-wing with only one tooth 3. *Æchmia*.

b. Inner margin of fore-wing without tooth4. *Heydenia*.

The larvæ of subd. A. feed mostly on the *leaves* and *flowers*, only a few species are seed feeders ; those of subd. B. exclusively on the *seeds* of their food-plants.

All the species of *Chauliodus* whose life-history is known are double-brooded. In most, if not in all, cases the ♀ imagos of the autumn brood hibernate, and lay their eggs in early spring. The larvæ are sluggish, short and stout in shape, with a glistening skin and distinct spots. When first hatched, they mine the leaves and stalks of their food-plants ; later on they feed externally on the cuticle of the leaves, which they spin together by a few threads, covered, as Mr. Stainton remarks (*Nat. Hist. Tin.*, xii, 70), with a glutinous secretion, which collects in minute globules. In habit they appear more or less gregarious. The pupa is enclosed in an open network cocoon. The

perfect insects are not often seen ; they fly at dusk in the neighbourhood of their food-plants.

Four species are at present known to occur in England, which I propose to tabulate thus :—

A. Fore-wing with *falcate* apex.

- a. Inner margin with *four* teeth of scales1. *charophyllellus*.
 b. Inner margin with *two* teeth of scales2. *Illigerellus*.

B. Fore-wing with *rounded* apex.

- a. Inner margin with *four* teeth of scales 3. *daucellus*.
 b. Inner margin with *two* teeth of scales4. *insecurellus*.

1. *charophyllellus*, Goetze, iii, 4, 169, 292 ; St., I. B., 234, Man., 2, 397 ; Frey, Tin., 267, Lep., 401 ; Hein., 411 ; Snell., 947 ; = *testaceella*, Hub., 326 ; Z., Isis, 1839, 211 ; H.-S., v, 47 and 213 ; Dup., iv, 75, 9 ; = *fasciculellus*, Stph., Ill., iv, 218, 39, 1 ; Wd., 1234.

Fore-wing variable in colour and distinctness of markings, ashy-grey, more or less tinged with ochreous. From the inner margin near the base a purplish-grey indeterminate fascia runs obliquely, first to the middle of the wing, and thence broader and darker to the costâ ; on its outer edge stands a short black dash, at each end of which is a white dot ; beyond it before the apex a longer black dash, pointed towards the base, and preceded by an angulated pale fascia. Along the costa are sundry small black dots, and before the apex along the hind margin two or three white ones. The teeth of scales are brown or black : the first and largest stands at the rise of the dark fascia ; the second, smaller, in the middle of the inner margin ; the third and fourth, quite small, being close to one another. Fringes with two (not three, as Heinemann says) blackish dividing lines, diverging, and vanishing before the anal angle. Below the apex the outer of these dark lines is strongly bent inwards towards the inner one, so that the fringes immediately below the apex become pale and unmarginated, and, in consequence, the wings appear to be more falcate than is really the case.

Sometimes the whole fore-wing is dark grey or reddish-brown, with the fascia very obscure.

The summer brood is on the wing in July and August, the second emerges in October.

Larva gregarious, yellowish- or greenish-white, with a whiter dorsal vessel and brownish spots, glassy looking ; head pale brown. On various *Umbelliferae*, especially *Heracleum sphondylium* and *Pastinaca sativa* ; feeding on the under-surface of the large lower leaves beneath a slight web, and pupating among rubbish on the ground. The first brood, which, according to Mr. Stainton, is much less numerous than the 2nd, is full fed in June, the second in September.

2. *Illigerellus*, Hüb., 333 ; Tr., ix, 2, 32 ; Dup., xi, 294, 1, p. 204 ; St., I. B., 234, Man., 2, 397, N. H. T., xii, 96 ; Ev., F. V. U., 576 ; Frey, Tin., 268, Lep., 401 ; H.-S., v, 207 ; Hein., 409 ; Snell., 847 ; = *falciformis*, Haw., 555 ; Stph., Ill., iv, 221 ; Wd., 1241.

Fore-wing dull pinkish-ochreous, clouded with tawny; a tawny streak from the centre of the base and along the costa. From the inner margin near the base a dark tawny shade runs obliquely to the centre of the fore-wing, and thence curved and broader to the costa; on its outer edge is a black dot, from which indistinct tawny streaks radiate towards the apex and anal angle, and often a smaller dot stands on the inner edge. Fringes with two dark brown dividing lines, divergent, and vanishing before the anal angle. Teeth of scales brown; the larger at the beginning of the fascia, the smaller just before the centre of the inner margin. The falcate appearance of the fore-wing is still more conspicuous in this species than in *chærophyllellus*, inasmuch as the dark outer dividing line of the fringes describes a much ampler curve below the apex, and so a much larger space of the fringes themselves is left pale and unmarginated. VI *e*, VII *b*, and VIII, IX.

Larva yellowish-green, dorsal vessel darker, head yellowish. On *Angelica sylvestris* and *Ægopodium podagraria*. It is the spring brood, feeding in May and June, which lives, as the Manual has it, in crumpled leaves, after the fashion of *Depressaria angelicella*. The summer brood was found by the Rev. C. R. Digby in August, eating round holes through the sheaths of the unexpanded umbels of *Angelica*, and feeding on the immature flowers within. The insect is probably of more general distribution than is commonly supposed. It is abundant in the fens of Cambridgeshire and Norfolk where the *Angelica* flourishes.

3. *daucellus*, Peyerimhoff, Pet. Nouv., 1870, 15, 57; Stn., E. A., 1873, p. 49, N. H. T., xii, 82.

Fore-wing long, narrow, with straight costa; bone colour, more or less tinged with ochreous, but always with the entire inner margin and a narrow streak along the centre of the wing reaching to the apex, left of the pale ground colour. A brownish cloud at the base and along the costa; a very narrow oblique greyish-brown fascia runs from the inner margin at one-third from the base to the costa, where it broadens out into a more distinct blotch; in the central pale streak before the apex is a largish dark brown spot; on the costa just before the apex are two or three dark spots, and in some cases one or two near the base. Head whitish-ochreous; palpi dark grey, teeth of scales blackish; the first, the largest, at the base of the fascia; the rest smaller, at equal distances beyond; the dividing lines of the fringes *not* interrupted below the apex, but diverging from each other, and vanishing long before the anal angle.

With us the first brood flies in Midsummer, and the second in September and October. Larvæ yellowish-green, with slightly darker dorsal vessel; head black; hinder edge of 2nd segment with a black plate divided in the centre; spots large and black. On *Daucus carota*, mining the tips of the leaves, so that they become pale brown. The larvæ were first found in England by Mr. Digby in August and September, 1883, and in the following spring by Mr. Fletcher in the Isle of Wight.

Occurs along the South Coast in Dorset and the Isle of Wight, also in Arundel Park, Sussex. The first specimens captured in England were taken in October, 1866, at Ventnor, by Mr. C. W. Dale (*vide* Ent. Ann., 1873, p. 49).

4. *insecurellus*, Stn., I. B., 234, Man., 2, 397; Hein., 410; = *Illigerellus*, Stn., Zool., 1848, p. 2035; = *dentosellus*, H.-S., 967, v, p. 208.

Fore-wing short and stumpy, the costa decidedly shouldered at one-third from the base; pale whitish-grey, dusted with darker, especially at the base of the costa. A greyish-yellow fascia rises on the inner margin before the middle, and runs widening nearly perpendicular to the costa; from the anal angle another yellowish-grey fascia runs obliquely inwards, and sometimes unites with the first near the costa; beyond it towards the apex are two other indistinctly margined yellowish-grey blotches; two small black dots, one beyond and in a line with the other, lie in the centre of the wing. The apical two-thirds often much obscured by a dark grey cloud; head pale grey; teeth of scales black, the first the larger, at the base of the first fascia, the second halfway between it and the anal angle; the dividing lines of the fringes unbroken below the apex, *not* divergent, and continued quite to the anal angle. V e, VI b, and VII e, VIII.

Larva sluggish, glossy, yellowish, with distinct brown spots; head black; plate on 2nd segment dingy, posteriorly with a sharply-defined black point next the dorsal line; dorsal line narrow, brown; sub-dorsal light brown, irregular, especially on the upper edge; anal flap with blackish plate; legs black externally. On *Thesium humifusum*, at first mining out the small leaves and feeding down inside the stalk, afterwards attacking the leaves externally; the larvæ of the summer brood also feeding on the flowers and green seeds. Pupa among the matted roots of the food-plant, or in moss growing round it. The spring brood feeds up in April and May, the second in July.

Until 1884, the only known British specimens were those taken in 1847 by Mr. Stainton and others at Stoat's Nest, beyond Croydon. In 1884, however, Mr. Fletcher captured a specimen on the chalk downs of the Isle of Wight, and I found another near Riddlesdown in Surrey. Mr. Stainton's notice (Ent. Mo. Mag., xxi, p. 255) indicating *Thesium humifusum* as the probable English food-plant, led the next year to the discovery of the larvæ in both localities, and they have since been taken in plenty on the Dorset Downs by the Rev. C. R. Digby and Mr. Bankes, and Mr. Fletcher has observed them in Sussex, in Arundel Park, and near Eastbourne.

Mr. Stainton in the Manual mentions three tufts of scales on the inner margin, a peculiarity which characterizes a continental species, *iniquellus*, Wo., only.

The second genus, *Ochromolopis*, of which the only known species

(*ictella*, H.) occurs in South Germany and Switzerland, is also probably like *Chauliodus*, double brooded. Heinemann states that it appears in June on into August, and that the larva feeds on *Thesium montanum* in May. The imago of *ictella* is dull leaden-colour, with longitudinal orange streaks; the fringes *without* dividing lines.

Genus 3, *Æchmia*, St.—This genus, with that following (*Heydenia*) are distinguished from the two preceding by the *short, drooping* palpi; the insects comprised therein are *single* brooded, the larvæ feeding in autumn on the seeds of *Umbelliferæ*.

dentella, Zell., Isis, 1839, 204; F. R., 83, 3, p. 245; H.-S., v, 259; Frey, Tin., 177, Lep., 381; Stn., I. B., 177, Man., 2, 365; Hein., 408; = *subdentella*, Stn., Cat., 20; = *atrella*, Stph., Ill., iv, 354; Wd., 1578.

Fore-wing short, broad, stumpy; deep brown-black, with a purplish tinge; tooth of scales at one-third from the base; the inner margin slightly paler before and beyond it. Fringes concolorous, dusted with darker scales near their base, and with a single dividing line before their apex. Hind-wing dark fuscous. VI.

Larva glossy, yellowish, with distinct spots, and alternate pale and dark longitudinal lines: head dark brown. On seeds of *Chærophyllum temulentum*. Living at first inside the separate seed-heads, afterwards spinning the seed-heads together with a slight web, in which the larva rests, eating out their contents. Very much like that of *Chauliodus insecurellus*. Full fed at the end of July and beginning of August. Pupa on the ground in a slight web.

The larvæ were first found in this country two years ago by Messrs. Fletcher and Digby near Arundel; last year I found them commonly all round Cambridge, always on the above-named plant; but it seems pretty certain, from notices kindly forwarded by Mr. Stainton, that on the continent they feed on the seeds of other *Umbelliferæ*. Thus E. Hofmann mentions *Pimpinella saxifraga*, as well as *Chærophyllum*, while both Sorbagen and Schmid have, it would appear, found them on *Ægopodium podagraria*. Heinemann says, "Larva on seeds; larva in August on *Angelica sylvestris*." Fischer von Röslerstamm says that the imagos were taken by Herr Zeller at Glogau, *in cop.*, on flowers of *Chærophyllum bulbosum*, towards sunset in June.

The imago is very sluggish, but may be beaten from hedge rows into an umbrella, or taken at rest on the flowers of *Umbelliferæ*; but the caught insect gives but a faint idea of the blackness of bred examples.

Genus 4, *Heydenia*, Hofm.—Agreeing with *Æchmia* in all other particulars, but the imagos in this genus are devoid of any projecting scales along the inner margin, and of dividing lines in the fringes. Our three British species may be distinguished by the number of the spots.

- A. Fore-wing with three yellow spots..... 1. *auromaculata*, Frey.
 B. Fore-wing with two yellow spots 2. *fulviguttella*, Z.
 C. Fore-wing unspotted 3. *profugella*, Stn.

1. *auromaculata*, Frey, Schweiz., E. G., ii, 7, 290, Lep., 376; Hein., 405; Ba., Ent. Mo. Mag., xxiii, 13.

Fore-wing dusky olive-brown, with three dull orange spots; the 1st on the inner margin before the middle, the 2nd between it and the apex, the 3rd below the costa towards the base; this last often indistinct, and composed of two smaller spots. The base is often dusted with orange, and sometimes an indistinct orange streak appears along the fold. Hind-wing greyish-brown. Head dull orange. VIII, IX.

Larva dirty white; head small, black; corselet smutty in front, edged with black behind; sub-dorsal lines brown, pale, indistinct; spiracles black; spots large, grey, with short dark bristles; anal flap smutty; a dull smutty bar on the 13th segment; legs black. Feeding in autumn inside the carpels of *Angelica sylvestris*, uniting them together and passing from one to another. Pupa, in captivity, among the seed-heads.

This species was first detected in Shetland in 1883 by Mr. Mc Arthur. The larvæ were collected in plenty in the autumn of 1886 by Messrs. Curzon and Salvage. It occurs also in the Swiss Highlands, and appears to be exclusively a sub-alpine form.

2. *fulviguttella*, Z., Isis, 1839, 193; H.-S., v, 140; Frey, Tin., 159, Lep., 376; Hein., 405; Snell., 738; = *minutella* (*Æc.*), Stph., Ill.,^viv, 354; Wd., 1577; = *flavimaculella* (*Æcophora*), Stn., I. B., 157, Man., 2, 351.

Fore-wing dusky olive-brown, with only two dull orange spots, one on the inner margin, and the other between it and the apex; the base sometimes also dusted with orange. VII, VIII.

Larva whitish, with brownish head. In seeds of *Angelica sylvestris* and *Heracleum sphondylium* in late autumn.

Statariella, Heyd., a continental species, seems to be an intermediate form, having sometimes only two orange spots, as in *fulviguttella*, and at others traces of the additional costal spot of *auromaculata*.

3. *profugella*, Stn., E. A., 1856, 38, 1864, 107, Man., 2, 402; Hein., 406; Frey, Lep., 376; Hodgk., Ent. Mo. Mag., x, 90.

Fore-wing pale bronzy-grey, with an ochreous tinge; head, thorax and fringes concolorous. VII, VIII.

Larva light grey, slightly hairy, and with small brown spots, feeding on the seeds of *Pimpinella saxifraga*, fastening the seed capsules together with silk. This species has occurred in Kent, but appears far more abundant in Lancashire, where it has been bred by Messrs. Threlfall and Murray, *always* from the above-mentioned plant. Other food-plants recorded are *Angelica*, *Heracleum* and *Ægopodium* (Hofm.), and *Gentiana* (Hodgk.).

The species was placed by Mr. Stainton in the Manual in his mixed genus *Asychna*, comprising *modestella* (a species allied to the *Coleophoræ*), *æratella* (which feeds in galls on *Polygonum*), and *terminella* (a leaf miner).

As an Appendix to this account of the eight species of this Family known to occur in England, it may be serviceable to give a brief list of the other twelve which are met with on the continent.

In *Chauliodus* we have seven:—*scurellus*, H.-S., v, p. 208, 968; an Alpine species, occurring in Switzerland, the larva of which is still unknown: *strictellus*, Wo., S. E. Z., 1867, p. 209; larva on *Angelica montana*, but Mr. Stainton says that Mons. Constant in Provence finds the larva on the seeds of *Peucedanum* and *Ferula*: *æquidentellus*, Hofm., S. E. Z., 1867, p. 206; larva on *Meum athamanticum*: *iniquellus*, Wo., S. E. Z., 1867, p. 209; larva on *Athamanta oreoselinum*, but, according to Mr. Stainton, Mons. Constant in Provence finds the larvæ in the seeds of *Peucedanum*: *pontificellus*, H., 181, H.-S., v, 208; larva unknown, but suspected to feed on *Thesium montanum*: *ochreomaculellus*, Mill., Ann. S. E. F., 1854, of which the larva is unknown: *Staintoniellus*, Mill., Ic., xxiv; larva on *Osyris alba*.

Ochromolopis ictella, H., 361; larva on *Thesium montanum*.

In *Heydenia* four:—*statarella*, Heyd., S. E. Z., 1863, 108; larva on seeds of *Angelica*: *devotella*, Heyd., S. E. Z., 1863, 107; larva on seeds of *Angelica* and *Heracleum*: *laserpitiella*, Pfaff., S. E. Z., 1870, 322; feeding on *Laserpitium hirsutum*: *silerinella*, Z., Verh. Z. B., 1868, 119; on *Laserpitium siler*.

Hence it will be seen that all the known larvæ of the Family are nourished on plants belonging to the two natural orders *Umbelliferæ* and *Santalaceæ*.

Merton Cottage, Cambridge:
September, 1887.

ON THE LUMINOUS LARVIFORM FEMALES OF THE *PHENGODINI*.

BY PROF. C. V. RILEY, M.A., PH.D.*

Certain interesting phosphorescent Coleopterous larvæ, reaching $2\frac{1}{2}$ to 3 inches in length, had been well known to occur in America ever since Baron Osten Sacken first minutely described them in 1862, and discussed their affinities between the *Elateridæ*, *Lampyridæ*, and *Telephoridæ*.

The structural characters most peculiar to them are, the horizontal head, protruding labium; falciform, grooved, and untoothed mandibles inserted on sides of head; certain ventral conchoid depressions; minute dorsal stigma-like glands opening by a crescent slit between the joints; and the lateral spiracles.

The great interest attaching to these larvæ is not so much in their luminosity, as in the fact that a portion of them are now known to be true and perfect females of *Phengodini*, which have, until recently, been represented in Coleopterological collections in the male sex only. The history of this discovery furnished another instance of simultaneous and independent observations on the same point in different parts of the world.

In 1883, in connection with Mr. E. A. Schwarz, I had arrived at this conclusion in Washington, with the intention of some time publishing the facts upon which it was based, when the same conclusion was being verified by Dr. Hieronymus, of Cordova, and the announcement anticipated by him, and by Dr. Haase, in 1885.

I have been accumulating material since 1869, with notes, and have critically examined in all some thirty different lots in my own collection, at the National Museum, and in the collections at Philadelphia, Boston, and Cambridge. These all belong to *Phengodes* and *Zarhipis*, with the exception, perhaps, of Osten Sacken's No. 2, which may be *Spathizus*. The differences between the larva proper and the adult female are so slight that it were difficult to separate them without some absolute index. I have been fortunate in obtaining undoubted females, coupled with their males, of *Phengodes laticollis* and *Zarhipis Riversii*; and in both genera there were absolutely no other structural differences than the somewhat shorter (relatively) mandibles and tarsal claw in the adult.

In reference to life-history, the food of *Zarhipis* is known to be *Myriapods*; the eggs in both genera are spherical, translucent, and

* Abstract of a Paper read before the British Association for the Advancement of Science, at Manchester, communicated by the Author.

laid in masses in the ground; the newly-hatched larvæ in both are structurally identical with the parent; and the female larva goes through a pseudo-pupal state prior to the final moult.

Nothing is yet known of the male larva and pupa, and the author only conjectures that certain darker, more slender larvæ structurally identical, belong to this sex.

We have many forms of degradational females in *Hexapoda*, and we have true larval reproduction; but I consider that the females of the *Phengodini* offer the most remarkable instances of imaginal or adult characteristics associated with such truly larval characters. In this larviform female of these *Phengodini* we get a glimpse, so to speak, into the remote past, and from which has been handed down to us, with but little alteration, an archetypal *Hexapod* form, which prevailed before complete metamorphosis had originated; while, on the other hand, her male companion, during the same period, has developed wing-power, and the most elaborate and complex sensorial organs—the eyes and antennæ in these beetles being among the most complex of their Order.

Whether we believe the female *Phengodes* has never reached beyond her present form, *i. e.*, represents a case of arrested development, or that she has retrogressed from a higher type, where the sexes were more nearly alike, one thing is, I think, self-evident, *viz.*, that there is direct relation between the phosphorescence and the remarkable differentiation of the sexes; and, further, that such relationship is explicable and full of meaning on evolutionary ground.

CONCERNING *ANOMALON TENUICORNE*, GR., &c.

BY JOHN B. BRIDGMAN, F.L.S.

On looking over my materials of what I considered this species, I have come to the conclusion either that *tenuicorne* is a very variable insect, or that there are several species mixed up under that name; this and *A. debile* are the only species of this group that I know of which have the transverse anal nervure divided; *debile*, Wesmael says, differs from *tenuicorne* in having the scape of antennæ fulvous, and the temples black, whilst *tenuicorne* has the scape black above, and the temples reddish; I found three varieties or species among my *tenuicorne*.

1. Two males and a female given to me some years ago by Mr. Bignell: they were bred from *Thais Polyxena*, brought, I think, by Mr. Mathew from Greece. These are larger than any British specimens I have; two are 18 mm., and the other

much smaller, is only 12 mm.; the males have the head much swollen behind the eyes, it is less so in the female; the transverse anal nervure is divided only just below the middle, and all the coxæ are black.

2. I have only one male of this form, which I believe is the true *tenuicorne*, The head is slightly swollen behind the eyes, and the transverse anal nervure is divided well below the middle, as figured by Wesmael (*Revue des Anom. de Belgique*).

3. This appears to be the commoner form in Britain. The head is decidedly narrower at the neck than against the eyes; the transverse anal nervure is divided below the middle, lower down than No. 1, and higher up than No. 2.

I can see no difference in the sculpture, it is possible that all are only varieties of one species; Holmgren says, "pleuris medio nitidis." I find the mesopleura is shining, punctate, with longitudinal rugæ above.

Mr. W. H. B. Fletcher has bred two males of this same group (having the antennæ as long as or longer than the body) from mixed larvæ from sloe, taken in Abbotswood, Sussex, which differ from the three species described, having the transverse anal nervure of the hind-wing not divided; from *brevicolle* they differ in not having the hind tarsi distinctly incrassated; the flagellum is entirely dark; and the hind-legs are dark brown, with tarsi partly pale. From *varitarsum* they differ in having the 1st joint of flagellum not more than one-fourth longer than the 2nd, in *varitarsum* it is about twice as long; the sculpture of the mesonotum is much finer, and it is much more distinctly trilobed; they differ from *flavitarsum*, Brischke, in the colour of the legs and antennæ, and in the sculpture of the thorax, which Brischke says is coarsely and densely punctured; below I give a description:—

ANOMALON NIGRIPES, *n. sp.*

Antennæ corporis longitudine, alæ nervo transverso anali non fracto pedibus posticis maxima ex parte nigro-fuscis.

Head not narrow behind the eyes; antennæ as long as the body, first joint of flagellum not more than one-fourth longer than the second; head with very fine scattered punctures, finely rugose above the antennæ, and in the neighbourhood of the ocelli. Thorax somewhat shining, finely punctate, distinctly trilobed; scutellum somewhat depressed; metathorax rather finely reticulate; abdomen and legs slender, hind tarsi slightly thickened.

Black; face, mandibles, cheeks, a spot on vertical orbits, and scape beneath, yellow; antennæ black. Abdomen red, the back of all the segments black, the seventh entirely so. Front and middle legs yellowish-red, coxæ and trochanters yellow; hind-legs nigro-fuscous, apex of coxæ reddish, extreme base of femora reddish, middle of tibiæ rufo-fuscous, apex of first tarsal joint and remaining joints reddish.

Male. Length, 10—11 mm.

Norwich: October 31st, 1887.

NOTES ON *LEPIDOPTERA* OCCURRING IN THE ITALIAN LAKE DISTRICT.

BY ALBERT H. JONES.

I reached Lugano on the 30th May last. The weather was much warmer than in England, yet such species as *Lycæna Argiolus* and *Thecla rubi* were only commencing to emerge, being in the finest possible condition, their late appearance being probably due to the fact that the weather during the spring round the Italian lakes had been unusually cold.

It added much to the pleasure of my visit to have the company for a few days of Mr. Coryndon Matthews, of Ivy Bridge, who was engaged in collecting *Diptera*. We made the first excursion to Monte Salvatore, 2982 ft. high, clothed with wood almost to the summit. Few species of *Lepidoptera* appeared to be on the wing. *Venilia maculata* was disturbed out of the undergrowth, and in open spaces occasional specimens occurred of *Papilio Podalirius* and *Machaon*, *Argynnis Selene* and *Dia*.

The woods being apparently unproductive, we turned our attention to the meadows. Moths were scarce, but butterflies were fairly numerous, chiefly represented by the genus *Melitæa*.

An interesting form of *Melitæa Phæbe* occurred; *M. Didyma*, *Aurelia*, and *Athalia* were all somewhat plentiful: of the last-named I took two beautiful dark varieties.

In one particular meadow, which afforded Mr. Matthews an abundant harvest of *Diptera*, *Spilothyrus althææ*, in beautiful condition, occurred frequently; here the local *Diasemia literalis* was to be seen flying in the bright sunshine among the long grass; *Melanargia Galatea* was very abundant on the 3rd of June, nearly all the specimens approaching var. *Procida*, and resembling on the wing a black butterfly, spotted with white; the *Lycænæ* were represented by *L. Icarus*, *Bellargus*, *Hylas*, *Argiolus*, *semiargus*, and *Cyllarus*.

At Stresa, on the South of Lago Maggiore, there was even a greater dearth of *Lepidoptera*, possibly owing to the excessive heat which prevailed. It seemed strange, as one strolled through the beautiful glades in the chestnut forests, to see only an occasional *Neptis Lucilla* or *Nemeobius Lucina*. In the meadows, by the lake side, *L. Astrarche* (the form occurring in England), *L. Lycidas*, a few, and *Polyommatus Dorilis* and *Phlæas* were to be found.

On the 7th of June, I started for an excursion up the Val Anzasca, the valley leading to the foot of Monte Rosa. The vegeta-

tion is very rich, and differs in some respects from that of the corresponding valleys north of the Alps, the large chestnut trees, extending up to nearly 4000 feet, being the chief feature.

At Ceppo Morelli, about half way up the valley, *Parnassius Apollo* occurred, most of the specimens, when flying, resembling red butterflies, from the under-side of the wings being covered with pollen of a red species of lily, on which the butterflies alighted. A very large specimen of *Saturnia pyri*, ♂, measuring $5\frac{1}{2}$ inches across the wing, flew to the light in the hotel in the village, much to the astonishment of the visitors.

A little above Ceppo Morelli the somewhat local *Parnassius Mnemosyne* was very abundant, forcibly reminding one of *Aporia cratægi* on the wing.

As one ascended the valley, the *Apollos* disappeared, and were replaced by three species of *Erebia*: *Ceto*, *Medusa*, and *Evias* (all of which species I may mention I took last year in the valleys on the north side of Monte Rosa); also *Pararge Hiera* and *Eneis Aëlle*, which latter was in its usual tattered condition.

At Macugnaga, 5115 feet, so early in the year, there was naturally but little to be seen beyond a few *P. napi*, var. *bryoniæ*.

On returning to Stresa, on the 10th of June, several additional species were to be found in the meadows, among others, beautiful violet specimens of *Polyommatus Gordius*, and a few *Argynnis Adippe*, var. *Cleodoxa*.

On arriving, on the 12th of June, at Locarno, situated at the northern extremity of Lago Maggiore, another opportunity presented itself for seeking new species in a fresh locality, but a day spent in the woods was productive of but poor results, as I only succeeded in meeting with a few *Neptis Lucilla*, *Lycæna Orion*, *Cænonympha Arcanius*, and a solitary specimen of *Vanessa polychloros*.

I made Bignasco, in the Val Maggia, my head quarters for a few days. The Val Bavona, which branches out of it, afforded good collecting ground as far as St. Carlo, at the head of the valley. In addition to many species already recorded, *Polyommatus Hippothöe*, var. *Eurybia*, and *Lycæna Eumedon* occurred not unfrequently. The beautiful *Syntomis Phægea* was common up to 5000 feet. *Vanessa Antiopa*, *Aporia cratægi*, *Leucophasia sinapis*, *G. rhamnii*, were common all round the lake district.

The question to be solved is, why there should be such a far greater amount of "butterfly life" in the valleys than in the plains. I think it is due, in a measure, to the fact that the valleys during the

winter months, say from 3000 feet, are covered with a considerable amount of snow, which affords to the hibernating larvæ great protection from their natural enemies. It is, however, quite out of my power to offer any explanation why there is such a preponderance of butterflies, and why the *Tortrices* and *Tineina* should be so poorly represented.

Shrublands, Eltham, Kent:
October 20th, 1887.

NOTES ON SOME VARIETIES OF *MELITÆÆ* FROM THE ITALIAN
LAKE DISTRICT.

BY W. F. DE V. KANE, M.A., F.E.S.

Mr. Jones has allowed me to examine two very remarkable aberrant *Melitææ* taken by him at Lugano. If they had not occurred together, I should have been inclined to refer one to *Aurelia* and the other to *Athalia*.

The first one, from the size of such of its fulvous markings as are not obliterated, appears to belong to some of the intermediate forms between *Aurelia* and *Athalia*, and is somewhat larger than Swiss specimens of *Aurelia*. Exp., 1.4. Fore-wings dark sooty-black, with a single ante-marginal series of six small fulvous spots. Hind-wings unequal in size. Basal half black, with a median and two exterior fulvous bands of blotches.

On the under-side of one fore-wing, besides normal markings, is a median transverse band of wedge-shaped black blotches, increasing in size from the costa to the inner margin. Under-side of hind-wing strongly coloured and marked.

The other specimen measures 1.45. Fore-wings similar to the first, but the series of fulvous markings is much broader, being in fact a fusion of the normal marginal and ante-marginal series.

Hind-wings black, with only a marginal and ante-marginal series of fulvous spots. The under-side of both fore-wings has a median series of wedge-shaped dashes; and the hind-wings are also strongly marked, but the base and margin of one is darkly obscured.

This latter insect approaches nearly to the description of Selys-Longchamps' var. *navarina* of *M. Athalia*, and is of the same class of aberration above and beneath as figs. 3 and 5 in Newman's description of *Athalia* (Brit. Butterflies).

And as both specimens appear to be abnormal in either development or coloration, I think that they are the result probably to privation or peculiar experience in the larval condition, and are stunted forms of *M. Athalia*.

Two ♀ of *M. Phæbe* from North Italy, are of the South European type, without doubt, and have the pale fulvous ground-colour of the wings marked by a very slight black pattern. I have similar forms from Provence and Spain.

A third example presents a very handsome aberration.

Bases of all wings black. The rays and ante-marginal black lines on fore-wings broadly black.

On the hind-wing a broad black ante-marginal band, containing a row of darker spots where the ante-marginal fulvous blotches were obliterated.

Kingstown, Ireland:
October, 1887.

A MARINE CADDIS-FLY IN NEW SOUTH WALES.

BY ROBERT McLACHLAN, F.R.S., &c.

More than five years ago I published in this Magazine (vol. xviii, p. 278, May, 1882) some notes on a marine caddis-fly in New Zealand, and in the Journal of the Linnean Society, Zoology, vol. xvi, pp. 417—422, a more detailed account was given, with figures, the insect apparently being *Philanisus plebejus*, Walker.

Some time ago, Mr. A. Sidney Olliff, of the Australian Museum, Sydney, N.S.W., informed me that caddis-worms had been found between high and low water-marks in Sydney Harbour. More recently, he forwarded two cases with larvæ, and stated that they were from shallow rock-pools at Chowder Bay, Port Jackson, in January, between high and low water-marks, and that no fresh water stream exists in the locality. He said, furthermore, that the cases are familiar to shell collectors.

These cases are cylindrical tubes, 7 and 9 mm. long respectively, by about 2 mm. in diameter; the smaller one is very slightly curved, and somewhat attenuated gradually to the tail-end; the larger is nearly straight, and of nearly equal diameter throughout. The material consists of small irregular vegetable fragments arranged *en mosaïque*.

The larva from the larger case is 7 mm. long, greyish-white in colour, but the head and pronotum slightly yellowish. The head is cut squarely in front, and the anal segment ends somewhat squarely, with very short anal claws. The division between meso- and meta-notum faintly indicated. No protuberances on the first abdominal segment. As the larva is only slightly attenuated posteriorly, the sides are nearly parallel, and the form is sub-cylindric; at present I can detect no trace of respiratory filaments. Anterior-legs very short, posterior rather long; the femora much thickened; terminal claw long and stout. (Mouth parts not at present examined; the mandibles are very short.) Altogether there is very much general resemblance to the New Zealand larva believed to be that of *Philanisus*.

The last remark is significant. After writing it, I proceeded to look over a beautiful series of *Trichoptera* given me by Mr. E. Meyrick. Amongst them is a specimen of *P. plebejus*, from Lyttleton, N. Z., and immediately below this (as placed by Mr. Meyrick) is a series of eight examples of a *Philanisus* from "Sydney, N. S. W., 21/8/84." This is very important; it proves that *Philanisus* exists also in Australia; and it tends to prove that the marine larvæ found in Sydney Harbour are those of the *Philanisus** taken by Mr. Meyrick at Sydney.

* Mr. Meyrick has kindly supplied the following particulars concerning this species:—"It was common on the rock-faces in the Government Domain, Sydney, where there is a rocky point jutting out into the sea, called 'Mrs. Macquarie's Chair.' I particularly noticed these Caddis-flies from their position, because there is no fresh water near, save that after wet weather the rock-faces become wet from the drainage through the stone from above. I therefore thought it quite possible they might be marine."

I conclude these notes by a consideration of the materials of which the cases are formed. In the New Zealand case, the materials were chiefly fragments of a *coralline* sea weed, but were evidently not so with those from New South Wales. I therefore submitted some small fragments of these latter to my friend Dr. M. C. Cooke, of the Kew Herbarium, for microscopical examination of cell-structure. He considers the fragments to be those of either *Ulva* or *Enteromorpha*; and he adds that both these genera are as much found in estuaries and far up the course of rivers as in the sea, and that they especially prefer *brackish* water. Mr. Olliff states emphatically that no fresh-water stream exists where the larvæ are found. If admixture of fresh-water be necessary for the larvæ of *Philanisus*, there remains a possibility that land springs, covered at high water, may exist on the beach where the shallow rock-pools occur. On this point I have asked for further information. In any case, the larvæ must be covered by the sea during half of their existence.

Lewisham, London :

November 5th, 1887.

Pseudopsis sulcata and *Epuræa diffusa* in Warwickshire.—In August last I captured a single specimen of *Pseudopsis sulcata* at the roots of herbage growing on the bank of a small stream at Knowle, and a few evenings later, on visiting a Cossus-infected tree at Solihull I found a few specimens of *Epuræa diffusa*, accompanied by numerous other sap-loving species, such as *Homalota cinnamomea*, *Hister succicola*, and *Soronia punctatissima*. The *Pseudopsis* and *Epuræa* are both new to the Birmingham District.—W. G. BLATCH, 214, Green Lane, Smallheath, Birmingham: October 9th, 1887.

Coleoptera in Sherwood Forest.—During a short visit to Sherwood Forest in September, 1885, I found the following species (with many others) under bark:—*Prognatha quadricornis* (very abundant under pine bark), *Athous rhombeus* (oak), *Abræus globosus*, *Rhizophagus politus*, *Scolytus destructor*, *Tomicus larieis*. In the following June I captured in the same locality *Staphylinus fulvipes* (loose bark), *Philonthus bipustulatus* (bark), *Leiodes orbiculatus* (fungus), *Cossonus linearis* (oak bark), *Antherophagus nigricornis* (elder blossom), *Omosita depressa*, *Hister succicola*, and *H. merdarius*, the last three in dead sheep.—ID.

Langelandia anophthalma, Aubé, &c., in potatoes.—As I hoped, this interesting beetle has again appeared in my potato bed, and I have taken in all some fifty specimens, both in the decaying seed and in fragments of rotting wood. I also found two or three pupæ, which were white, semi-translucent, and almost exactly similar in form to the perfect insect. *Adelops* and *Anommatus* were in profusion, and I might have taken almost any number of either; seventeen of the latter once from a single potato!

In company with them were two specimens of the very rare *Bythinus glabratus*, Rye, one unfortunately so damaged as to be quite worthless. These seemed to prefer the semi-liquid matter of the decaying potato, whereas the other species all inhabit, as a rule, the drier substance near the skin. Among the other Coleopterous tenantry were several *Falagria thoracica* and *Oxytelus insectatus*; a few common *Homalotæ*, and a single *Ocypus similis*, whose errand was probably predacious rather than vegetarian. Accompanying these were a host of *Julus*, which, so far as my own experience goes, seem to do little real harm. As an almost invariable rule they confine their attacks to the seed potatoes, and the few fresh tubers in which I have found them were nearly all diseased.—THEODORE WOOD, St. Peter's, Kent: October 3rd, 1887.

Hydrophilidæ in the Armagh district.—In addition to those already communicated by me to the Rev. W. W. Fowler as occurring here, I have taken the following:—*Philhydrus maritimus*, two specimens at Lowry's Lough, *Anacæna limbata*, F., and *A. variabilis*, Sharp, both common; *Laccobius sinuatus*, *L. alutaceus*, *L. minutus*, and *L. bipunctatus*, of these the last is very much the most plentiful, of *minutus* I have only taken one specimen, *Limnebius truncatellus*, common, *L. nitidus*, scarce, *Helophorus aneipennis*, common, *H. arvernicus*, rather rare, *Oethebius bicolor*, only one specimen, *Hydræna riparia* and *H. nigrita*, both common, *Cyclonotum orbiculare*, one specimen, *Cercyon depressum*, one specimen, *C. hæmorrhous*, *C. unipunctatus*, *C. lugubris*, *C. analis*, and *C. minutus*, all occur but sparingly. To the *Adephaga* list I may add *Chlænium nigricornis*, taken at Lowry's Lough and at Lough Neagh, *C. vestitus*, on Coney Island, Lough Neagh, *Bembidium punctulatum*, at Clay Lake, Keady, where I also took a number of *Pelophila borealis* and *Bembidium tibiale*. *Pterostichus minor*, *Anchomenus gracilis*, of which the Rev. H. S. Gorham kindly sent me types and enabled me to determine my specimens to be this species, *Amara aulica*, Panz. *Agabus unguicularis*, *Gyrinus marinus* and *G. minutus*, both these last in numbers. On Carlingford Mountain, Co. Louth, I took one specimen each of *Olisthopus rotundatus* and *Philhydrus melanocephalus*.—W. F. JOHNSON, Winder Terrace, Armagh: September 15th, 1887.

Sirex juvenus at Wotton-under-Edge.—On the 22nd September, a very fine female of this beautiful *Sirex* was observed flying about in a cottage garden, and captured and brought to me the same day for identification. The capture is worth recording, as the insect is undoubtedly scarce, in fact, this is the only instance I know of its occurrence in this part of the country.

The other species, *Sirex gigas*, is often met with, and has, in two or three instances, proved very destructive to the Deodar Cedars, which ornament our lawns and pleasure grounds.—V. R. PERKINS, Wotton-under-Edge: October 10th, 1887.

Simulium attacking larvæ in Japan.—I have called attention in the Proc. Asiatic Soc. of Japan to the fact that a minute Dipteron attacks the imago of *Stauropus persimilis*, the eastern form of *Stauropus fagi*, sucking its blood; it is a very minute yellow sand-fly, and I believe it to be a *Simulium*. I have now ascertained that this fly also attacks the larva of *Smerinthus planus*, the eastern form of *Smerinthus ocellatus*. I yesterday saw and examined under the microscope one of this fly, which had its proboscis buried in the back of a nearly full-fed larva of

Smerinthus planus. It has often been a matter of surprise to me to observe in the highest mountains, uninhabited by either man or beast, great swarms of *Simulium*, but if one species of these troublesome blood-suckers feeds upon other insects, the larger species may also do so.—H. PRYER, Yokohama: *September 7th*, 1887.

The larva of Terias Bethesba, O. Janson.—I have at last discovered the larva of this butterfly; during the month of August I observed in my garden many specimens of *Terias Bethesba*, and a fortnight ago watched two females depositing their eggs on *Cassia mimosoides*; this plant having pretty bright foliage, I had allowed to cover a small ornamental hill, and for some time noticed this butterfly frequenting this common weed. The larvæ are now full-grown; the following is a rough description:—Head globular, projecting, body uniform in thickness, tapering off abruptly; slightly pubescent; colour bright green, harmonizing with the colour of the plant; when young, it has a conspicuous pale yellow spiracular line, but before changing to pupa this line is white. The larva of *Terias multiformis* is very similar, the principal difference is that the colour is a shade darker green, and the spiracular line is always white, and when full-fed this line becomes indistinct.—ID.

P.S.—Referring to my note dated 7th inst., concerning the larva of *Terias Bethesba*, O. Janson, the imagines from their ova are just commencing to emerge, and instead of *Terias Bethesba*, they are all *lata*!! Accustomed as I am to the extraordinary "temperature" changes of Japanese butterflies, I can hardly conceive it possible that *Bethesba* and *lata* are one and the same species. There are, however, several suspicious circumstances: the first is that I know *Terias* to be a very short time in the ova, larva, and pupa stages; the second is that we now know that both *Bethesba* and *lata* feed on the same plant, *Cassia mimosoides*, there is no doubt concerning this; the third is that *Bethesba* only appears during the hottest months, July and August, and is absent during all the rest of the year, *lata* being only found during the intervening months, that is to say, it appears in September, and then hibernates in the imago during the winter, re-appearing in the spring; and, fourthly, I now remember that *lata* last spring was very abundant in my garden, which is a long strip, over an acre in extent, in precisely the same spot that I afterwards observed *Bethesba* in quantities. My friend, Mr. Nawa, of Gifu, a most enthusiastic entomologist, writes me under date of September 7th, received 10th, that he also had seen *Bethesba* depositing its eggs on *Cassia mimosoides*, but had not yet detected *lata*, for which he was on the look out; it remains to be seen whether his observations tally with mine in the result. I intend next spring to put the matter beyond doubt, by taking the same precautions as when rearing *Hecabe* and *mandarina*, and if it is a fact that *lata* and *Bethesba* are one and the same species, I venture to say it is one of the most extraordinary facts we are acquainted with in Natural History, as it would completely upset all hitherto known ideas concerning species, *lata* and *Bethesba* being entirely different in appearance and form, far more so than dozens of species of the allied genera; it is in fact an analogous case to planting a cherry stone, and finding a peach tree come up.—*September 20th*, 1887.

September 27th.—I was much surprised this morning on examining the breeding cage containing the pupæ from eggs laid by *Terias Bethesba*, to find an imago emerged, which strongly resembles *Terias Hecabe*, and which in the meantime I am

led to believe is a hybrid. The only other conclusion that I can arrive at is that we have, in Japan, only *one* species of *Terias*, *i. e.*, *multiformis*, which embraces *Hecabe*, *mandarina*, *lata*, and *Bethesba*.

The *mandarina* form are now emerging from *Hecabe* larva; this is the first time I have reversed the process, although I have often before bred *Hecabe* from eggs laid by *mandarina*.—ID.

Entomological Notes.—The following notes, suggested by reading the October and November numbers of the Ent. Mo. Mag., may prove of interest.

Pieris brassicæ and *rapæ* have been unusually abundant here this year.

I have seen *Sphinx convolvuli* several times in my garden, it would not look at verbenas or petunias, but showed a great partiality to the more gorgeous flowers of *Gladiolus*. I can confirm all that Mr. Barrett says about its noble flight, and the ease with which it may be observed.

Mr. Jenner's statement that, "partial migration, * * * * explains the occasional presence of great numbers (of insects) on the sea coast, as every movement in that direction is stopped, and the species becomes as it were heaped up there," was curiously illustrated by an occurrence that I witnessed in April, in the island of Teneriffe. Behind the town of Santa Cruz stands a range of mountains with a strangely sharp crest, near the summit the southern slopes are carpeted with a small bugloss (*Echium*) with brilliant purple flowers; on the north side of the ridge the ground falls suddenly away in precipitous crags, densely wooded with laurels and laurestinus trees, under the shade of which is the most exquisite fernery ever imagined. A strong wind was blowing from the north, which struck against the cliff, and was turned upwards by it: a large number of white butterflies, *Pieris Daplidice*, I think, impelled either by curiosity, a love of adventure, or of the beautiful, or what-not, kept flitting up these purple mountain-meadows, and making for the wooded crags; each as it reached the edge unsuspecting was cruelly swept up into the air, to a height of thirty feet or more, after a brief struggle it succumbed to *force majeure*, came down again and patiently began anew the ascent of the slope. Here the "heaping up" was literally effected; *P. Daplidice*, though common throughout the island, was nowhere so abundant as on this spot.

Many years ago, in the county of Durham, I remember seeing *Larentia didymata* flying freely over ragwort in bright sunshine, as recorded by Dr. Jordan, in Norway.

Although not to the point, I cannot refrain from alluding again to Teneriffe; on a rubbish-heap outside the town of Puerto Cruz, and also in a *stubble-field*, I more than once observed the gently-fluttering, crambus-like, flight of *Deiopeia pulchella*; on a tall, shrub-like, spurge (? *Euphorbia piscatoria*) the grandly conspicuous larvæ of *Deilephila euphorbiæ* were abundant in some places; on the snow-clad (in April) lava streams of the Pico del Teyde, Mr. Wainwright took a specimen of *Colias Edusa*, at a height of nearly 10,000 feet.—G. B. LONGSTAFF, Morthoe, North Devon: *November 9th*, 1887.

Probable extinction of Callimorpha dominula at Dover.—For many years past this insect has been locally abundant from St. Margaret's Bay to Kingsdown, near

Deal; however, the falling of the cliffs and the predatory incursions of the numerous collectors of "bizarre" varieties, who search for the insect in all its stages, is rapidly decreasing its numbers. This summer I only noticed *two* specimens, sunning themselves on the leaves of *Eupatorium cannabinum*, instead of the thousands I have seen in former years. Although a Coleopterist, I could not help admiring this lovely Lepidopteron, and, at the same time, feeling sad to think that the time is not far distant (if the *amor habendi* of some Lepidopterists should continue) when *C. dominula* will disappear from this locality. I may here mention that one of the finest and most beautiful of the suffused varieties was taken by Mr. M. Ricketts, at St. Margaret's Bay, on the 6th July, 1882, and figured and recorded elsewhere.—C. G. HALL, 14, Granville Street, Dover: *November, 1887.*

Migration of insects.—Mr. Jenner's remarks (*Ent. Mo. Mag.*, xxiv, 113) appear to explain the excessive abundance of particular insects during certain years in a far clearer light than has hitherto been done. Immigration has doubtless added many species to our lists, but surely when an insect appears in extraordinary numbers, immigration is not the only cause, nor the only answer we can give to this interesting enigma. Cold or heat, moisture or dampness, abundance or absence of parasites, surely these affect the scarcity or abundance of any insect more than immigration. Here, in Sheffield, we have had *Pieris brassicæ*, *napi*, and *rapæ*, in the utmost profusion this season; we are fifty miles away, as the crow flies, from the sea, and then there is the German Ocean to be crossed before the continent is reached. Could immigration, therefore, be the cause of this unusual quantity of butterflies? In 1877, *Colias Edusa* occurred plentifully in my father's grounds, about a mile from the centre of this town of smoke and dirt, would immigration be a satisfactory explanation of this? I think most of the readers of this Magazine will agree with me that it is most improbable, and that Mr. Jenner's supposition would be far nearer the real truth in explaining this interesting phenomenon than the theory of immigration. I may say, in conclusion, that the year in which *Edusa* occurred here so plentifully was a very dry one; connecting this circumstance with the fact that this summer, also an exceptionally dry one, has been the means of creating such an extreme abundance of three of our butterflies, we have a just cause to consider that a hot, dry season is favourable to the increase of insects generally, and a wet one the reverse. How heat or damp affects their parasites remains yet to be proved; but I should not be surprised if it were discovered that they could not withstand so great a heat as their would-be victims; for the absence of the cocoons of *Microgaster glomeratus* has been particularly noticed by me this summer, and, owing to the unusual appearance of its progeny's food, one would have expected a corresponding increase on the part of the parasite instead of the reverse, as has been the case here. Whether this supposition will hold good or not, however, remains yet to be proved.—A. E. HALL, Norbury, Pitsmoor, Sheffield: *October, 1887.*

Sphinx convolvuli in Co. Waterford.—A number of notices of the occurrence of *S. convolvuli* in various parts of England, and in one locality of Scotland, have appeared; and it strikes me it may be of interest to English and Scotch brothers of the net, as well as to Irish confrères (a union which I hope will never be repealed),

to hear that this fine insect has also occurred in the Co. Waterford. I captured three specimens this year:—first, on the 4th September, over a bed of petunias; second, on the 10th, over verbenas; third, on the 11th, over petunias. On the 9th I saw one hovering over a bed of geraniums. All three were, unfortunately, not very good specimens, but this, I think, was greatly if not altogether due to the way that they buzzed and jumped about in the net. I have been much interested in reading Mr. Barrett's article (*ante*, p. 103). His observations on the habits of *S. convolvuli* quite agree with mine.—WILLIAM W. FLEMYNG, Clonegam Rectory, Portlaw, Co. Waterford: *November 2nd*, 1887.

Nepticula tormentillella in *Yorkshire and Westmoreland*.—It seems now to be generally accepted as a fact that the *Nepticula* referred to by the late Mr. John Sang, in the *Ent. Mo. Mag.*, xxii, p. 138, is identical with the continental *N. tormentillella*; and I am informed by Mr. P. B. Mason, who has in his possession the few specimens bred by Mr. Sang, that such is undoubtedly the case. It was, therefore, with very great pleasure that, at the beginning of the present month, I met with the larva of this species on moors both in the West Riding of Yorkshire, and in Westmoreland. Unfortunately, I was rather too late to find more than a very few of the mines still tenanted, as nearly all the food-plant, *Potentilla tormentilla*, was brown and dead. I should imagine that this species, if properly searched for, would be found to be widely and pretty generally distributed on the high moors in the north of England, as I at once came across it on the only two bits of moorland which I searched, and, to judge from the number of empty mines seen, the larvæ must have been feeding in fair numbers a little earlier in the autumn.

The larva is a deep clear yellow, with the posterior portion of the dorsal vessel showing through as a darker line, and the head shining brown. It apparently begins to feed at the base of a leaflet, and gradually works on right round it until the whole leaflet is completely hollowed out and transparent, and the wanderings of the larva can only be traced by the lines of dark frass which mark its course.—EUSTACE R. BANKES, The Rectory, Corfe Castle: *October 20th*, 1887.

[*Nepticula tormentillella*, H.-S., of which a detailed description by v. Heinemann will be found in the *Berlin ent. Zeitschrift.*, 1871, p. 213, has very narrow anterior-wings, bronzy-green at the base, with the silvery fascia considerably beyond the middle (v. Heinemann says between $\frac{2}{3}$ and $\frac{3}{4}$), preceded by a purple band, and the entire apical portion of the wing also purple; the head deep black. My own Dunkeld *Nepticula*, bred from *P. tormentilla* 27 years ago, has no purple before the silvery fascia, and the head is not black, but rather of a dull dark ferruginous tint. It will be of interest to learn when the perfect insects appear, whether the Yorkshire larvæ collected by Mr. Bankes produce the true *tormentillella*, or are identical with my solitary and nameless Dunkeld insect.—H. T. STANTON: *November 14th*, 1887.]

A larval character peculiar (?) to the Gelechiidæ.—In the course of some interesting notes in the November number, Mr. Fletcher alludes to his disappointment in mistaking the larva of a *Tortrix* for a *Depressaria*, and adds, "to my eyes many of the larvæ of these genera are much alike." The occasion, therefore, seems convenient for drawing attention to a very simple character, viz., an additional spot

one on each side, on the back of segments 3 and 4, by which many of the larvæ of the *Gelechiidæ* may, I believe, be known from other larvæ, whether belonging to the *Tineina* or the *Tortricina*. These spots are much smaller than the ordinary ones, and lie close to the middle line, interior to, and slightly in advance of, the first ordinary spot. It is now about two years since I first noticed these spots, and in the interval many larvæ have been examined; the result being, that whilst they have been present in every *Depressaria* and *Gelechia*, in which the ordinary spots were distinct, they have been absent, as far as I have seen, in all the others. Should further observation confirm this, a rather curious point will, I think, have been established, and one of some practical importance in a subject, where so much is difficult and obscure. I may add that these spots have already done good service by enabling me on more than one occasion to locate at once a new or half-forgotten larva.—JOHN H. WOOD, Tarrington, Ledbury: November 11th, 1887.

Note on Batrachedra pinicolella.—I have read Dr. Wood's account of the life-history of this species (*ante*, p. 126) with considerable interest, but was rather astonished to find it stated that its food-plant is the spruce (*Abies excelsa*), and not the Scotch fir (*Pinus sylvestris*), with which latter tree I had always thought it was connected. The insect is, in some seasons, not uncommon in this district, and from the circumstances under which I have sometimes taken the imago, I think it extremely improbable that its larva is entirely a spruce-feeder. On referring to my notes, I find that on July 5th, 1885, fifteen specimens were taken by beating Scotch fir, most of them being in fine condition. Now, the nearest spruce is quite half a mile distant from where I obtained these specimens. Hence it would seem by no means unlikely that in our district *Batrachedra pinicolella* is principally, if not entirely, a Scotch fir-feeder.—E. A. ATMORE, King's Lynn, Norfolk: November 8th, 1887.

Review.

REPORT OF THE ENTOMOLOGIST FOR THE YEAR 1886, by CHARLES V. RILEY M.A., Ph.D. From the Annual Report of the Department of Agriculture for the year 1886. With 11 plates. Washington: 1887, 8vo.

It is perhaps sufficient praise to say that the contents of this Report are as varied and exhaustive as are those of its predecessors. We can only allude especially to two articles. The first is on *Icerya Purchasi*, Maskell ("the cottony cushion-scale"), which is doing enormous damage in California, into which it is presumed to have been imported from Australia in 1872. Mr. Maskell has, in another place, detailed the ravages caused by it in New Zealand. Although there seems a probability that the natural food-plants are species of *Acacia*, it unfortunately shows itself capable of subsisting on almost any plant, and it is one of the very few *Coccidæ* that are active in all stages. The details for this are very full and interesting, and are illustrated by several plates, one of which is coloured. The male is a very extraordinary creature, and in its antennæ, and otherwise, differs greatly from that sex of most *Coccidæ*. In an appendix are given the results of no less than 156 experiments with various remedial agents, the preference being given to soap washes. The second article we propose to notice is that on "Buffalo Gnats," which, translated into scientific language, means species of *Simulium* ("Midges"). In our

country the worst that can be said about our midges is that they are excessively irritating and annoying. In Hungary, &c., a species (*S. columbaezense*) has long been known to cause death in cattle and horses. In the United States there are two species that often cause great destruction to all kinds of domestic animals, the loss of stock thereby being sometimes enormous, and death in man also is said to have occurred. To realize this, one has to take into account the extent of the swarms of these minute pests, and the myriads attacking a single unfortunate animal. As in true gnats, &c., it is only the ♀ that sucks blood. As only a tithe of the ♀ *Simulia* can ever have a taste of blood, it has been surmised that this taste might, in some occult manner, benefit the race. Prof. Riley thinks otherwise, and opines that a ♀ gorged with blood dies almost instantly; what *may* be death to the attacked is certain death to the attackers. We would gladly notice other chapters in this valuable Report did space permit.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY:
 October 27th, 1887.—R. ADKIN, Esq., F.E.S., President, in the Chair.

Messrs. C. E. M. Ince and W. H. B. Fletcher, M.A., were elected Members of the Society.

Mr. C. A. Briggs exhibited dwarfed forms and varieties of *Lycæna Corydon*, Fb., taken this year. Mr. C. E. M. Ince, a variety of the under-side of *Argynnis Paphia*, L. Mr. Sheldon, living larvæ of *Eupithecia expallidata*, Gn., and *Aphomia sociella*, L., and a discussion ensued as to the hibernation of this species in the larval stage. Mr. Tutt, a cocoon of *Saturnia pavonia*, L., having two exits, there being only one pupa inside. Mr. Tutt stated that Mr. Clark, of Hackney, had met with a similar cocoon of *Bombyx trifolii*, Esp. Mr. Robinson, who was present as a visitor, *Tapinostola fulva*, Hb., *Plusia chryson*, Esp., and a specimen of a *Noctua* which Mr. Weir said was probably a variety of *Orthosia upsilon*, Bork. Mr. R. Adkin read "Notes on collecting at Eastbourne during August and part of September." At the close of the paper a discussion ensued, in which Messrs. J. J. Weir, Sheldon, Tutt, Cooper, Carrington, Tugwell, Wellman, and Billups took part.

November 10th, 1887.—The President in the Chair.

Messrs. A. M. Keay, J. H. A. Jenner, and A. Robinson, were elected Members.

Mr. J. A. Cooper exhibited a curious form of *Hadena dentina*, Esp., red forms of *Noctua glareosa*, Esp., a series of *Noctua castanea*, Esp., from Perth, and a series of *Tephrosia biundularia*, Bork, from Derbyshire. Mr. Oldham, a strongly marked variety of *Noctua baia*, Fb., &c. Mr. Tugwell, Irish, English, and Scotch forms of *Boarmia repandata*, L. Mr. Mera, fine varieties of *Arctia caia*, L., bred from ova hatched in June. Mr. Kenward also exhibited varieties of *A. caia*. Mr. J. A. Clark, *Polyommatus Phlæas*, L. (bred), and contributed notes. Mr. Druce, a melanic variety of *Vanessa urticae*, L., taken in Mexico. Mr. Sheldon, a long series of *Tephrosia biundularia*, Bork, from Derbyshire, and contributed notes. Mr. Tutt, specimens of *Dianthæcia compta*, Fb., from Germany, and a variety of *D. nana*, Rott., very closely approaching the specimens of *compta*. Mr. West (Greenwich), species of *Dytiscus*. Mr. Billups, *Astynomus ædilis*, L., *Strangalia aurulenta*, F., and *Nebria complanata*, L. Mr. Tutt read a paper on "Darwin's Theory of Hybridism."—H. W. BARKER, *Hon. Secretary*.

ENTOMOLOGICAL SOCIETY OF LONDON: Nov. 2nd, 1887.—Dr. DAVID SHARP, F.Z.S., President, in the Chair.

Mr. Stevens exhibited a specimen of *Acidalia immorata*, L., purchased by him some years ago at a sale of the collection of the late Mr. Desvignes. Mr. Stevens remarked that two specimens of the insect lately captured near Lewes had just been described by Mr. J. H. A. Jenner as a species new to Britain.

Mr. Adkin exhibited, and made remarks on, a series of male and female specimens of *Arctia mendica* from Co. Cork; also, for comparison, two specimens of *A. mendica* from Antrim, and a series of bred specimens from the London district.

Mr. Enock exhibited a specimen of *Calocoris bipunctatus* containing an internal parasitic larva.

Dr. Sharp exhibited three species of *Coleoptera* new to the British list, viz. :—*Octhebius auriculatus*, Rey, found some years ago in the Isle of Sheppey, but described only quite recently by M. Rey from specimens found at Calais and Dieppe; *Limnius rivularis*, Rosenh., found by the late Dr. J. A. Power at Woking; and *Tropiphorus obtusus*, taken by himself on the Banks of the Water of Cairn, Dumfriesshire. Dr. Sharp also exhibited a *Goliathus* recently described by Dr. O. Nickerl as a new species under the name of *Goliathus Atlas*, and remarked that the species existed in several collections, and had been supposed to be possibly a hybrid between *G. regius* and *G. cacicus*. He also exhibited a living example of the Mole Cricket, *Gyrllotalpa vulgaris*, from Southampton; between the spines of its hind legs were a number of living *Acari*.

Mr. Eland Shaw exhibited two species of *Orthoptera*, which had been unusually abundant this year, viz. :—*Nemobius sylvestris*, from the New Forest, and *Tettix subulatus*, from Charmouth, Dorset.

Mr. E. B. Poulton exhibited the cocoons of three species of *Lepidoptera*, in which the colour of the silk had been controlled by the use of appropriate colours in the larval environment at the time of spinning up. He said this colour susceptibility had been previously proved by him in 1886 in the case of *Saturnia carpinii*, and the experiments on the subject had been described in the Proc. Royal Society, 1887. It appeared from these experiments that the cocoons were dark brown when the larvæ had been placed in a black bag; white when they had been freely exposed to light with white surfaces in the immediate neighbourhood. Mr. Poulton stated that other species subjected to experiment during the past season afforded confirmatory results. Thus the mature larvæ of *Eriogaster lanestris* had been exposed to white surroundings by the Rev. W. J. H. Newman, and cream-coloured cocoons were produced in all cases; whilst two or three hundred larvæ from the same company spun the ordinary dark brown cocoons among the leaves of the food-plant. In the latter case the green surroundings appeared to act as a stimulus to the production of a colour which corresponded with that which the leaves would subsequently assume. Mr. Stainton suggested that larvæ should be placed in green boxes, with the view of ascertaining whether the cocoons would be green. He understood that it had been suggested that the cocoons formed amongst leaves became brown because the larvæ knew what colour the leaves would ultimately become. The discussion was continued by Mr. Waterhouse, Dr. Sharp, Mr. McLachlan, and others.

Mr. Klein read "Notes on *Ephestia Kühniella*," and exhibited a number of living larvæ of the species, which he said had been recently doing great damage to flour in a warehouse in the East of London.

Mr. A. G. Butler contributed a paper "On the species of the Lepidopterous genus *Euchromia*; with descriptions of new species in the collection of the British Museum."

Lord Walsingham communicated a note substituting the generic name *Homonymus* for the generic name *Ankistrophorus*—which was pre-occupied—used in his "Revision of the genera *Acrolophus* and *Anaphora*," recently published by the Society.

Mr. Waterhouse announced that at the December meeting he would exhibit a series of diagrams of wings of insects, and make some observations on the homologies of the veins.—H. Goss, *Hon. Secretary*.

ON A NEW SPECIES OF *HETÆRIUS* FROM TANGIER.

BY GEORGE LEWIS, F.L.S.

Mr. J. J. Walker captured, on the 14th March last, in the nest of a "bright red ant" at Tangier, a new species of *Hetærius* which is remarkable in having the hind angles of the thorax acutely produced, and it is the only Histerid in the Family in which this character is so conspicuous.

HETÆRIUS ACUTANGULUS, *n. sp.*

Breviter ovatus, brunneo-ferrugineus, sat nitidus; thorace dense ocellato-punctato, angulis posticis transversim productis; tibiis anticis aspere ocellato-punctatis. Long. 2.8 mm.

Head and thorax densely punctate, punctures ocellated, especially behind the neck. Forehead with two lateral striæ, which are feebly biangulate, and do not meet in front, but continue down part of the clypeus parallel to each other. The thorax is punctate throughout its entire surface, which gives an appearance of opacity, the anterior angles are obtusely produced and slightly reflexed, the sides are narrowly marginate and somewhat parallel for about three-fourths of the length, with the posterior angles produced and acuminate. There is a small rather transverse fovea at the base of the angle, and the scutellum is smooth and triangular. The elytra have three striæ, 1st complete, 2nd evanescent posteriorly, 3rd basal and short, the dorsal surface is punctulate throughout, with apices of the elytra clothed with erect hairs. Prosternum is broadly canaliculate, the canaliculation being shining, with a few irregular punctures, deep and somewhat narrowed in front, shallow and broad behind, and a little sinuate before the coxæ; the base is broadly emarginate, with the angles on either side produced somewhat acutely behind the coxæ. The sides of the thorax beneath are densely and ocellately punctured. The metasternum is finely and feebly punctulate and wholly depressed, the depression anteriorly being so deep that the mesosternum is inclined to be vertical. Propygidium and pygidium feebly and sparsely punctate, the first having erect hairs. The forelegs are opaque, roughly and densely punctate and ocellated, the second and third pairs are smoother on the inner surface, with the tibiæ very broad and nearly triangular.

This species resembles *H. Bedeli*, Lewis (Ent. Mo. Mag., vol. xxi, 1884, p. 83) in the dilatation of the tibiæ, but there the similitude

ceases. In *Bedeli* the frontal stria is raised, nearly semicircular, and not interrupted in front, and the thoracic punctures are scattered irregularly and only a few are ocellated; it is also sub-rotundate in outline.

Mr. Walker captured on the same day *Heterius arachnoides*, Fairm., but this was associated with an "active slender black ant," and I regret I cannot at present give the specific names of the *Formicidæ*. There are now ten species of *Heterius* known from the southern border of the Mediterranean.

Wimbledon :

November 15th, 1887.

NOTE ON SOME BRITISH *COCCIDÆ* (No. 8).

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

(Concluded from page 101).

LECANIUM GIBBERUM.

Coccus gibber, Dalman, K. Vet. Ac. Handl. för 1825, p. 366, 4, tab. iv, fig. 6—12 (1826). Westwood, *Introd. Mod. Class. Ins.*, ii, fig. 118, 18.

Lecanium gibber, Sign., *Ess. Coch.*, p. 252, pl. i, fig. 8, pl. xi, fig. 19.

♀. Irregularly spheroidal, the curve of the upper portion interrupted in the middle by a shallow yet wide longitudinal sulcation, thus causing on each side of it a rounded bulge or gibbosity, whence the curve of the sides is less than if the figure were a true spheroid; the base is of considerable size, varying in form and dimension to fit the inequalities of the surface of the young terminal branch to which it is attached; surface smooth, punctured round the base; colour pale fuscous, with a median, indented, yellowish band; eventually one of my two examples became reddish-brown. Antennæ (now first described) of six joints, in every respect precisely the same as in *L. fuscum* (*c. f.* fig.). Diam., 5, height, 4.50 mm.

Male unknown.

Dalman (*l. c.*) describes the species thus:—

"Femina vetusta valde turgida, gibba; brunnea, lævis, nitida; apertura retusa obovata.

"Superficies lævis, non vel obsolete tantum punctulata."

He states that the scales are found on aspen, birch, hazel, and other trees, and that their form varies much according to the configuration of the site. He gives several examples; my two specimens agree best with his fig. 8, and with Signoret's pl. xi, fig. 19.

Signoret (*l. c.*) describes the single example he obtained from an alder tree in Austria, saying of Dalman's type—"Il forme une masse composée de deux boules réunies." He thinks that Dalman has confounded several species together, because there is too much difference among them to be considered as one only, more especially as they live on different trees.

My two examples came from the same oak, and were obtained at the same time, as *L. fuscum*, and were kindly forwarded by Mr. G. C. Bignell, of Stonehouse. In view of the many points of similarity, and the few of difference, I am very much inclined to believe that this is only a form of *L. fuscum*, which has already a variation from the type in an oblate-spheroid; but at present, having no absolute proof, this is merely matter of opinion.

ERIOPELTIS LICHTENSTEINII, Sign.

In his "Essai sur les Cochinelles," p. 445, Dr. Signoret has the following:—

"Among the numerous examples of *Eriopeltis festuæ* that we have collected at Hyères, or that we have received from M. Lichtenstein, who had gathered them at Montpellier, we have always observed that there were two very distinct types—one having a sac with curly woolly filaments, almost scaly, the other, on the contrary, having a sac very densely felted. Having also received some large examples sent by M. Ritsema from Holland, we have thought it right to consider the last form as a new species, which we have named *Eriopeltis Lichtensteinii* (Bull. de la Soc. entomol., Feb. 14th, 1877, p. 47), reserving the name *festuæ* for the typical species of Boyer de Fonscolombe, which we possess, and which has the curled woolly sac.

"The necessary microscopic study would at present take up too much of our time, and it will form the subject of a more extended note hereafter."

Fonscolombe's species herein alluded to was described in the "Annales Soc. Ent. France," iii, 216, pl. 3, fig. 9, thus:—

"Son corps est ovale, allongé, entièrement couvert d'un fourreau blanc cotonneux, dont les poils sont hérissés en dehors, l'intervalle entre le corps et le coton est ordinairement rempli de quantité de petites larves d'un rouge foncé qui courent assez vite, quand on met à découvert le corps de la mère en mai; on le trouve aussi l'été, et toujours le long des feuilles et des tiges du *Festuca phanicoïdes* et du *F. caspitosa*, Desf."

In this Magazine, vol. xxii, p. 141 (1885), Mr. G. C. Bignell informs us that on the 22nd July, 1885, near Whitsand Bay, Mr. J. Scott, in his presence, found on *Festuca bromoides* two sacs of an *Eriopeltis*, both of which were sent to me; one of them produced a male, the other was full of eggs. On the 3rd August, at Bickleigh, other cases were found on the same kind of grass, and were forwarded to me: like those first sent they were the felted form and full of eggs. Mr. Bignell says of them, "Scott and I obtained several females, clothed in white cotton, but not to such an extent as when taken in October; these were obtained low down on the stems, those found at the end of September and during October are well up from the soil and very conspicuous." Some of these latter, three times larger than

the first found, were also sent to me, and were of the long curly-wool kind. Subsequently Mr. C. O. Waterhouse gave me three examples of the large white ♀ sacs which he obtained at Folkestone Warren and exhibited at the Meeting of the Entomological Society, Feb. 3rd, 1886 (Trans. Ent. Soc., 1886, Proceed., p. 1), and these are of the same kind as those found at Bickleigh in October.

We have then both of the forms of sac noticed by Signoret; the large long-wool one which he refers (and I think correctly) to *Eriopeltis festuca*, Fonsc.; the smaller, felted, short-wool one is the *E. Lichtensteinii*, Sign. I cannot find that Signoret ever made his promised investigation, which is to be regretted. He may be right in his suggestion of two species, but the conclusion I arrived at, pending further elucidation, was that the felted sacs found in July are either the same as the long-wool ones found in October, but abraded during the winter, or, more probably, that they have been produced after hibernation from the eggs contained in the latter, and are the growth of the year; this latter proposition is more consonant with the economy of the *Lecanina*. The question is open for future investigation; in the mean time we have, nominally, two species.

LICHTENSIA VIBURNI.

Lichtensia viburni, Sign., Ess. Cochin., p. 204, pl. x, fig. 7 and 7a.

Larva-scale pale citron-yellow, oval, flat, with a long median fusiform space, and four (two on each side) slight anterior lateral carinæ.

Length, 2·25, breadth, 1 mm.

♂ scale (the larval covering having been thrown off) whitish, transparent, long-oval, the median space as in the larva, but dark or brown and opaque, with slightly raised edges; from its anterior end two strong carinæ proceed obliquely to the margin in a V-form, and on each side two slighter carinæ, of which the one is about the middle, the other posterior; all the carinæ white.

Length, 2·25, breadth, 1·50 mm.

♂ imago orange-yellow; head, and anterior and posterior margin of the thoracic depression broadly, pale brown, or the head dark brown; eyes and ocelli black; antennæ yellow, very hairy, of ten joints, 3rd to 6th long, sub-equal, the others short; wings whitish, transparent, along the radial nervure roseate; halteres short, with one terminal hair; the body with two long white terminal filaments; legs dingy brownish.

Exp. of wings, 3 mm.

♀ adult scale pale citron-yellow, ovate, flat-convex, an indistinct longitudinal row of short, transverse, light brownish marks on each side of a narrow, clear median space; surface (under a lens) finely punctate, more strongly, or even crenate, on the brownish marking. Under-side all pale. Scale finally covered with a cottony pellicle. Antennæ of eight joints, the first two short, 3rd longest of all, 4th and 5th sub-equal, shorter than 3rd, 7th shorter, 6th and 8th nearly equal, the latter with gradate sides, and hairy.

Length, 3·50—4·50, breadth, 2·40—3 mm.

At the end of April Mr. G. C. Bignell, Stonehouse, Devon, sent me some leaves of ivy (*Hedera helix*) from plants growing against an adjacent garden wall, on the under-side of each of which were many (sometimes a dozen) scales, evidently of a *Lecanid*, much resembling those of *Lecanium hesperidum* in the young state; they appeared to be fixed, but I soon found that they moved about, and were in the larva condition. I despaired of rearing them on the detached leaves, and put them on ivy growing in the garden, but they did not take to the leaves, and perished.

At the end of May and on June 6th Mr. Bignell sent a further supply of ivy leaves with scales attached; nearly all of them were those of males, but the majority were empty, the perfect insect having emerged, but I was pleased to obtain seven or eight of the imago within a few days.

There were also some six or seven adult female scales, as described above. Up to this time everything pointed to the species being a *Lecanium*, but I had seen on two of the leaves small cottony masses which might have formed part of the ovisac of a *Pulvinaria*, and I thus suspected that the insects before me might possibly be of that genus. I was, however, surprised on June 7th to find that two of them had within a few hours completely covered themselves with a thin white pellicle thinly overlaid with cotton-like material, closer and more flocky on the sides towards the margin, but no visible ovisac. I then found that on account of this peculiarity of a species discovered by M. Lichtenstein at Montpellier on leaves of *laurustinus* (*Viburnum tinus*) being discordant with the genus *Pulvinaria* (which has only an inferior and posterior ovisac), and also with *Phillippia* (which makes an entire sac-envelope for itself, and of which the antennæ of the female have only six joints), Signoret (*l. c.*) had constituted for it the genus *Lichtensia*, thus characterized:—

“♀ flattened, having eight joints in the antennæ, and having, at the adult stage of life, after fecundation, a cottony pellicle which completely covers her, except at the part where she is fixed to the plant, the eggs laid in a cottony mass.”

The species I now have, evidently of this genus, does not differ from Signoret's description of *L. viburni*, except in some small points; thus he does not mention the faint brown marking of the scale of the ♀, and he gives the 7th joint of the antennæ as the shortest, which I do not perceive, he also says there is a nebulosity along the radial nerve in the wings of the male, while mine has a roseate hue there, but I do not think that, in view of the close agreement in the majority of characters, these small differences are sufficient to constitute a

distinct species. The greatest discrepancy in connection is the food-plant, but among the *Coccidæ* such variation of the food often happens and is not of itself of specific importance. Mr. Bignell informs me that there are no bushes of laurestinus near the place where the ivy grows.

It should be noted that the white eggs are laid under the maternal coverlet. One ♀ I saw walking about after the development of the cotton on the sides had begun.

The genus and species (the latter the only one known) are new to Britain.

With the larval scales were a great many others, oval, very convex, blackish in the middle, brown at the sides, each containing a pupa of a Hymenopterous parasite, which had eaten up and taken the place of the larva of the *Lichtensia*.

ORTHEZIA INSIGNIS, n. sp.

♂ (Fig. 1). Piceous-black. Head small, convex, exerted; eyes and ocelli evident. Antennæ (Fig. 2) long, pale, with blackish spots or clouds, furnished with

Fig. 3.

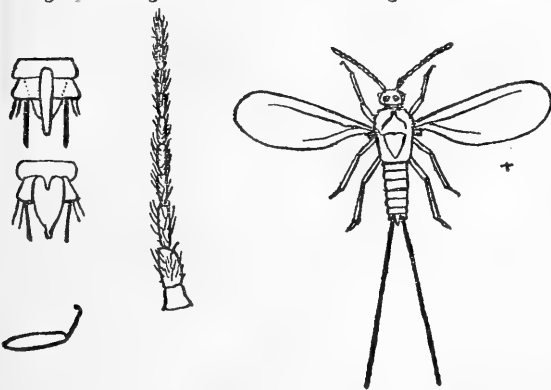
Fig. 2.

Fig. 1.

strong, outstanding hairs; composed of nine joints, exclusive of a large antenniferous process simulating a joint, 1st joint stout, sub-clavate, end rounded, 2nd cylindrical, longest of all, the remainder oblong, with obtuse ends, but the last is more pointed, all in length subequal. Thorax large, convex, prominent and rounded in front, the disc with a large, wide

and deep depression; scutellum with a large median hollow. Wings broad, ovate, diaphanous, iridescent; the furcate nerve scarcely darker. Halteres (Fig. 4) short, fine, straight, of one joint, with one apical seta. Abdomen slender, tubular, the external margin of the segments bluntly dentate; from the last segment on its lower side, closely posterior to two round tubercles, arise two white, projecting, setaceous filaments, longer than the body; being covered with cereous matter they become cylindrical, but if denuded they appear as brown setæ, and each splits into two; genitalia as shown in the Fig. 3, on the under-side of a long-cordate form. Legs pale, with dark obscurations, and strong projecting black hairs; tibiæ long; tarsi about one-fourth the length of tibiæ, with one claw.

Length of body, 1 mm.; exp. of wings, 2 mm.



♀ (Fig. 1). Head small, eyes prominent, rostrum thick, conical. Antennæ (Fig. 3) fulvous, short, tapering, of eight joints, the 1st thick, sometimes infuscate,

2nd to 7th constricted beyond the middle so as to simulate two joints, the 8th long, slender, pointed, black. Body (including the thorax) piceous-black above, short-broad-oval, surrounded (except over the head) by a marginal series of snow-white, laterally connected, lamellæ,



Fig. 3.

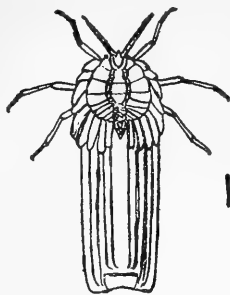


Fig. 1.

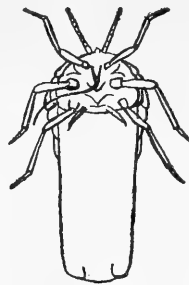


Fig. 2.

which, after the first three on each side, are directed backwards and downwards, gradually increasing in length, the posterior ones overhanging the marsupium; but of these the middle three are shorter and more distinct, the median one, over the middle channel, shortest and broadest of all, either turned up vertically or horizontal and having a median sulcation; the dark surface of the body level, nude, the segmentation plainly discernible, but on the middle are two longitudinal, narrow, contiguous yet distinct lines of small, granulose, white lamellate projections. These lines, beginning at the base of each antenna, extend backward, for a short distance convergently, but almost immediately after each curves outward and again inward, so as to leave a small, dark, oval space between them, then both are parallel and close together up to the anal extremity. Marsupium snow-white, varying in length, margins straight, parallel; the upper-side shorter than the lower, longitudinally canaliculate, the median channel wide, two others on each side of it very narrow, and further down on the rounded sides are usually slight striate indications of one or two more channels: under-side (Fig. 2) shining, semi-tubular, being transversely very arched, smooth, with the faintest traces of transverse indications of the progressive stages of development; posteriorly curved upward, apex truncate, but the lateral angles produced. Legs fulvous; thighs darker; tarsi monomerous, not one-third the length of the tibiæ; one terminal claw.

Length of body, 1 mm.; with marsupium, 2—4.5 mm.; maximum breadth of marsupium, 1.5 mm.

This remarkable species is distinguished from all others hitherto known by the male having only two anal filaments instead of a fascicle of them, and by the female having the whole dorsal surface free from cereous covering, except the two narrow, median, white, projecting lines. Some of the joints of the antennæ of the male, when the insects were fresh, if viewed from the side, appeared to be flattened, but Mr. G. S. Saunders (to whom I am indebted for the figures) says on this point, "I mounted three males in balsam after soaking them in water, spirit, and oil of cloves, and the antennæ and legs have now assumed their normal form."

In August Mr. Edward T. Browne, Uxbridge Lodge, Shepherd's Bush, sent me several examples of this species, which he had obtained in the Royal Gardens at Kew, requesting that I would describe it if new, and he added the following particulars: "First found on *Strobilanthes*, a Chinese plant, which has been in the Economic House three years; it may now be seen in the adjoining house on other foreign plants. Winged males numerous, but hard to catch; females very abundant and easily obtained."

8, Beaufort Gardens, Lewisham:
September, 1887.

THE LARVA AND CASE OF *ITHYTRICHIA LAMELLARIS*, EATON,
WITH REFERENCES TO OTHER SPECIES OF *HYDROPTILIDÆ*.

BY KENNETH J. MORTON.

Another gap in our knowledge of the life-history of those minute *Trichoptera*, the *Hydroptilidæ*, has been filled up by the discovery of the cases of *Ithytrichia lamellaris*, Eaton, a further result of the good work of Mr. Bolton. I have had the opportunity of examining cases containing both larvæ and nymphs, and propose to give some notes, which will serve for purposes of identification. The subject, however, deserves much further study; the larva, especially, possesses points equalling in interest anything that I have met with amongst *Trichoptera*, the form of the external respiratory apparatus being quite novel for the Order, and presenting some analogy to that found in the Ephemerid nymph.

The cases are made of the usual transparent material. Those of the larva have the outline oval, with a deep excision at the mouth end; towards the other end the sides come close together, the vent being in the form of a slit. The appearance of the nymph case is different, and it might well be held to belong to another species. But a close examination reveals the original case; the mouth end (or what was formerly that) has been supplied with an elongate stopper, and the other end has also been slightly produced by the addition of more material. The cases are fixed to the stems, &c., of water-plants,* and, as has been already hinted, the head of the nymph is turned towards the broader end.

In form, the larva departs entirely from the Hydroptilid type, and instead of being obese, it is rather slender, and so transparent that it is a splendid subject for microscopical examination, the organs

* *Myriophyllum* is a favourite; at Killarney I found attached to it cases of both *Agraylea* and *Ozyethira*.

of the alimentary and other systems being clearly visible. The head is elongate, with eyes placed about the middle of its length; it becomes narrower towards the mouth; behind the eyes it contracts a little, then the sides run almost parallel; antennæ long, at least two-jointed, the second joint one-third the length of first; a few long hairs scattered over the head (mouth parts I cannot separate). Thorax with three segments chitinous above, covered sparsely with long hairs; posterior legs rather long. Abdomen with four of the segments (I think, 3rd to 6th) produced into large protuberances; to these are attached by short pedicels the foliaceous branchial tracheæ (fig. 1). These protuberances are the most opaque parts of the body, apparently on account of the collection therein of the bulk of the "fat-globules." In the following segment, the form of the branchial tracheæ is different; they are triangular processes arising directly from the segment without constriction (fig. 2). At first I considered the



fig 1



fig 2



fig 3



fig 4



fig 5



fig 6

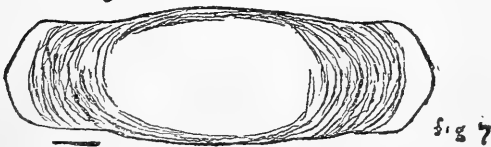


fig 7

position of these organs lateral, but after taking the larva out of the case, I am now almost sure it is dorso-ventral.

Among Pictet's figures, the case of *Ithytrichia lamellaris* agrees most closely with fig. 13, pl. xx (without name), but the larva associated with it gives no indications of the protuberances, being of the usual stout form, although in the description the segments are said to be "découpés."

The accompany-

ing outline figures will serve to show the diversity which exists in the cases of the British *Hydroptilidæ*. Figs. 3 and 4 represent respectively the larval and nymph cases of the subject of the present notice; fig. 5, larval case of *Oxyethira costalis*; fig. 6, larval case of *Orthotrichia angustella* (?); and fig. 7, larval case of *Agraylea multipunctata*. In addition to these, there is the case of the true *Hydroptilæ*, more or less reniform, and differing from the others in being covered with minute grains of sand.

Carluké, N.B.:

November 22nd, 1887.

P.S.—I have just received the Entomol. Nachrichten for November, containing a paper by Dr. Fritz Müller, entitled, "Eine deutsche *Lagenopsyche*," in which he describes a case at first referred to *Lagenopsyche* (on account of its resemblance to Brazilian cases so named by him), but now held by him to belong to *Oxyethira*, and probably to *O. costalis*. He does not appear to know that *O. costalis* has been bred in this country, and the cases noticed by Mr. McLachlan and myself (Ent. Mo. Mag., vol. xxiii, pp. 17 and 201). In my notes I quoted Müller's description of the case named *Lagenopsyche* to give a better idea of that of *O. costalis*; he says that save in the matter of colour, the description of the subject of his paper in the Entomol. Nachrichten agrees word for word with that of the cases he formerly named *Lagenopsyche*. Although Dr. Müller's figure differs from mine slightly (the only case I have now is in balsam, and possibly altered a little from pressure), I have no hesitation in referring it to *O. costalis*.—K. J. M.

Neuronia clathrata, Kol., reported from the London District.—A short time ago I noticed at Mr. Doncaster's in a box of miscellaneous and mostly very common British insects, two very fine examples of this pretty and rare British caddis-fly. The few British specimens known to exist had come from certain woods in Staffordshire and vicinity. I asked Mr. Doncaster to obtain further information as to the locality of these two specimens. He says that all the insects in the box were taken by Mr. Boden, a London collector, and the latter assures him the caddis-flies were captured in the Tottenham Marshes some three years ago. Supposing no error of memory to have occurred, this is very interesting. There is a parallel to it, for the unique British example (now destroyed) of *Agrypnia picta* (a near relative of *Neuronia*) was taken on a gas lamp at Highgate by Mr. H. Pryer, now of Japan, in June, 1868 (cf. Ent. Mo. Mag., vol. v, pp. 125 and 143).—R. McLACHLAN, Lewisham: December 7th, 1887.

ÆPOPHILUS BONNAIRII, SIGNORET.

BY JAMES H. KEYS.

On the 7th of November I found a larva of this Hemipterous insect on the shore here, when hunting for the Coleopterous *Æpus marinus*, but I regret to say that I cannot give any particulars likely to throw light on the insect's life-history. It was taken in the act of crawling about the under-side of a flattish stone, about 10 inches square by 2 inches thick. There were no sea-weeds attached to the stone, nor any growing within eight inches of it; and beneath it there was the usual composition of beaches in this neighbourhood, consisting of sand, gravel, stones of various sizes, and a sprinkling of limpet and other shells. The beach is very rocky, some of the rocks running into the sea much beyond low-water mark, and others terminating at different points above it; the beach is, moreover, strewn with large stones and boulders, some of which could not be moved without the aid of a lever. Speaking generally, the stones and rocks are densely clothed with the common *Fucus*. The situation of the stone under which I found the larval *Æpophilus*, was about 37 feet from dead low-water mark, as nearly as I can calculate.

Whilst ascertaining this fact, on the 4th inst. I busied myself with further search for *Æpophilus*, as did also my brother, who accompanied me, and his diligence was rewarded by turning up a mature specimen. This one was found about a dozen feet further up the beach than the first example, but under precisely similar circumstances, excepting that the stone under which it was found was nearer to the sea-weed-covered rocks, the lowermost plants resting on the stone.

I purpose continuing my attention to the habitat of *Æpophilus*, and trust to be able to obtain more definite information respecting its habits. I did not observe any *Æpus* under the stones with either specimen of *Æpophilus*, although examples of the former were frequent in the immediate neighbourhood.

8, Princess Street, Plymouth:
December 5th, 1887.

[The foregoing information, coupled with that afforded by the experience of Mr. E. D. Marquand, who found matured *Æpophilus* on a star-fish (Ent. Mo. Mag., xxiii, 169), tends, I think, to show that the insect feeds on sub-marine animal matter. Besides the elucidation of this subject, great interest will attach to the discovery of the way in which respiration in this insect of a terrestrial exterior form is carried on during the long portion of its existence when submerged. Observation of living examples in an aquarium might possibly determine both questions.—J. W. D.]

A YEAR'S INSECT-HUNTING AT GIBRALTAR.

BY JAMES J. WALKER, R.N., F.E.S.

The insect fauna of the south of Spain has been investigated by such well-known Entomologists as Rambur, Graslin, Rosenhauer, Dieck, &c. ; but, as far as I have been able to ascertain, nothing has been published respecting that of our British possessions at Gibraltar and the immediate neighbourhood, except some notes on the butterflies in the "Entomologist" (Nos. 246 and 247, Nov. and Dec., 1883). As I have had ample opportunities of collecting in this very interesting locality since my appointment to H. M. gunboat "Grappler" stationed here, I venture to put my experiences on record, as a contribution to the knowledge of the entomology of this extreme southern corner of the European continent, prefacing them with a brief account of the chief physical and botanical features of the district.

The Rock of Gibraltar is a huge isolated mass of hard greyish-white limestone of Jurassic age, about $2\frac{1}{2}$ miles in extreme length, with a varying width, at the sea-level, of from 440 to 1300 yards. A level sandy isthmus, scarcely ten feet above high-water mark in any part, connects it with the Spanish mainland, and from this the northern face of the Rock rises in one magnificent vertical precipice to a height of over 1200 feet. Thence, for rather more than a mile, the crest of the Rock is a narrow knife-edged ridge, running nearly north and south, and varying in height from 1356 feet near the north end, to only 660 feet at less than a quarter of a mile south of this point. It again rises to 1275 feet at the Signal Station, near the middle of the ridge, and attains its greatest elevation (1396 feet) between this spot and "O'Hara's Tower," which surmounts its southern extremity. From here the Rock descends in a series of grand precipices to the "Windmill Hill Flats," some 400 feet above the sea, and again sinks abruptly to Europa Point, which presents a cliff of about 50 feet high to the Straits. Except at "Catalan Bay," where a short sandy beach affords a site for a little village, chiefly inhabited by Genoese fishermen, the east side is quite inaccessible, being a succession of immense slopes of loose sand and gravel, standing at a steep angle, and crowned by vertical walls of rock, or else rising in an unbroken precipice from the waters of the Mediterranean. The west side, although very rugged and in many places quite precipitous, is, on the whole, of a comparatively easy slope, and several good paths lead to the summit.

Although the actual height of the Rock is quite insignificant, it can scarcely be surpassed in the striking grandeur of its appearance,

and from its summit may be obtained, on a clear day, a most extensive and charming view, embracing the whole of the Straits, and the Mediterranean shores nearly as far as Malaga, with a glimpse of the distant "Lesser Atlas" in Morocco. From its abruptness and isolation, the Rock is a great "weather-breeder," and when an easterly wind or "Levanter" prevails, as it does throughout most of the summer, the top is hidden for days together by a heavy pall of misty cloud stretching far across the Bay, while the sun is shining brightly over the adjoining country. Though the town, situated at the western foot of the Rock, is exposed to the full influence of the afternoon sunshine, the summer heat is never excessive, rarely exceeding at any time 85° in the shade. February is the coldest month, frost and snow being very rare, although not quite unknown. The average annual rainfall is about 36 inches, nearly all occurring between October and April: by the end of August the whole country, unrefreshed by a shower for the past three months, becomes as dry and brown as a high road. In this genial climate some of the butterflies continue on the wing the whole year round, and there is scarcely a sunny day in any month on which specimens of *Pieris brassicæ** and *rapæ**, *Colias Edusa**, *Satyrus Ægeria**, *Pyrameis cardui** and *Atalanta**, and *Chrysophanus Phlœas**, may not be met with in sheltered places.

Much of the western side of the Rock, above the town and its fortifications, is covered with a dense bushy vegetation, most luxuriant towards the southern end near the summit. The flora of the district is, indeed, by no means a scanty or insignificant one, no fewer than 484 species of flowering plants being enumerated by Dr. Kelaart (*Flora Calpensis*, London, 1846) as occurring on the Rock itself and the small adjoining piece of sandy ground extending to the Spanish lines: of these some 32 are introduced or cultivated, leaving the large number of 452 native to Gibraltar. The dwarf palm, *Chamærops humilis* forms a conspicuous feature in the vegetation of the Rock, and in the early spring months of February, March, and April, the abundance and beauty of the wild flowers (*Boragineæ*, *Compositæ*, *Labiataæ*, *Orchideæ*, and *Liliaceæ*, predominating) is very striking. One very pretty Crucifer, the *Iberis gibraltarica*, of Linné, has its only European station here, its large lilac flowers adorning the rock-faces in April and May, and, earlier in the year, the trefoil leaves and golden yellow blossoms of *Oxalis cernua*, Thunb., an introduced Cape plant, cover large spaces on the lower slopes. At the back of the Alameda, or public garden, is a good sized grove of Scotch firs, but on the whole, trees are rare, except in the gardens, and planted along the road sides.

In these situations may be seen fine examples of the plane, the acacia, the white poplar, the locust tree (*Ceratonia siliqua*, L.), the Australian blue gum (*Eucalyptus globulus*), the graceful *Schinus molle* of the Andes, here called the pimienta or pepper tree, and the Chinese *Phytolacca dioica*, or "bella sombra," remarkable for the immense enlargement of its soft-wooded trunk just above the root: with the usual South European fruit trees, and an occasional date palm, the fruit of which, however, rarely, if ever, ripens here. The prickly pear (*Opuntia*) and the *Agave americana* are thoroughly naturalized, and are much used in the neighbourhood to form hedges.

As is well known, the Rock is the sole European locality in which the Barbary ape (*Macacus inuus*, L.) is found in a wild state. These animals, reduced a few years ago to less than a dozen individuals, have of late increased greatly in numbers, and, being strictly protected, are very bold and fearless. The fig trees in the gardens suffer so much from their depredations when the fruit is ripening, that it is found necessary to employ men to scare them away. The Barbary partridge (*Caccabis petrosa*, Gmel.), though numerous on the Rock as well as on the opposite African coast, is, like the monkey, found nowhere else on the European continent. The osprey, the peregrine falcon, the Egyptian vulture, and Bonelli's eagle (*Nisaetus fasciatus*, Viell.), breed sparingly on the higher crags. A very great number of species of fishes is found in the Bay and the adjoining waters, and a visit to the market, especially in the early morning, rarely fails to reward the naturalist with the sight of many interesting and often rare forms.

Leaving the town by the "Landport" gate at the north end, a short walk brings one to the flat, sandy isthmus, of which the British lines enclose a strip, from sea to sea, about a quarter of a mile long, used as a race course and rifle range; a similar strip between the British and Spanish lines being "neutral ground." When I was here in 1874—5, the race course was marked out with large loose stones, under which *Coleoptera* congregated in myriads, but these have long since been removed, much to the detriment of collecting, still, the abundance of large beetles here is very striking at all times of the year, but especially in the spring and early summer. The big, unwieldy *Morica planata*, F., *Pimelia fornicata*, Sol., and *Akis acuminata*, F., are to be seen everywhere waddling clumsily about, and a little closer search will not fail to reveal *Scaurus tristis*, Ol., and *punctatus*, Hbst., *Crypticus gibbulus*, Quens., *Erodium tibialis*, L., two species of *Zophosis* and of *Stenosis*, *Tentyria maroccana*, Sol., and other

interesting Heteromerous forms; while, especially towards evening, the truculent-looking *Scarites gigas*, L., is often to be seen prowling over the sand in search of prey, having quitted his burrow at the roots of a tuft of *Ononis*. Beyond the Spanish lines is the village of "San Felipe de la Linea," which straggles over a large extent of ground, and is, I may safely say, the most filthy and squalid place I have ever seen. There is, unfortunately, no way of reaching the open country except through this delightful village, and even when the pedestrian has run the gauntlet of its thousand and one evil odours, his troubles are not yet at an end. The path for the next mile or so is along the sandy beach of the Bay, which is, except under certain conditions of the tide, exceedingly fatiguing to traverse, being cut up by the hoofs of innumerable beasts of burden, chiefly of the humbler sort. Another path leads through Linea to the foot of the Sierra Carbonera, or as it is called in Gibraltar, the "Queen of Spain's Chair," but this also traverses a mile or more of clean, loose sea sand, drifted into hillocks by the wind, and entirely destitute of vegetation. The eastern (Mediterranean) beach is very dreary and barren, and the only noteworthy insect I have found here is *Nebria complanata*, L., not uncommonly under large pieces of wreck timber, in company with *Trachyscelis aphodioides*, Latr. On the western beach, such beetles as *Isocerus purpurascens*, Hbst., *Crypticus pruinosus*, Duf., *Helops pallidus*, Curtis, *Ammophthorus rugosus*, Rosh., two species of *Phaleria* and *Psammobius porcicollis*, Ill., may be found at almost any time at the roots of sea spurge, and the conspicuous black and white spotted larva of *Brithys pancratii*, Cyr., is common on the sea lily, *Pancretium maritimum*, eating the leaves down to the sand. This sandy beach extends to Algeçiras, a distance of 12 miles round the Bay, and is intersected by the mouths of two small rivers, the Guadarranque and the Palmones, as well as by some minor streams.

A fairly good road (for Spain) leads from the beach through the Village of Campamento to the small and clean town of San Roque, rather prettily situated on the top of a low hill about six miles from Gibraltar. Beyond this the country, hitherto bare and treeless, except for a few gardens and a grove of blue gum trees at Campamento, improves very much. Two large plantations of the stone pine (*Pinus cembra*) may be mentioned as especially good collecting ground, and in the early spring the country is one sheet of beautiful wild flowers, species of *Helianthemum* and *Cistus* predominating. Just beyond the "second Pine Wood," at about nine miles from the Rock, commences the "Cork Woods," the great hunting ground of the district, which

extend for many miles along the valley of the Guadarranque and the adjoining hillsides. These woods are chiefly composed of the *Quercus suber* (cork oak) and *Q. lusitanica*, with a sprinkling of ash; and, where the ground is marshy, with alder trees of unusual size, and a very varied undergrowth. Most of the cork trees have a very curious appearance from the bark being stripped off to a height of ten or twelve feet from the ground: a good deal of the timber is recklessly cut down to be converted into charcoal, but it is rare to find a log or stump in good condition for working at. This wood never failed on every visit (and I walked out there at least weekly throughout April, May, and June) to produce something new and interesting to me; the furthest point reached on foot being the "Long Stables," 14 miles from the Rock, which is thus the limit of my collecting.

The local list of butterflies is not at present a large one, consisting of 55 species, including the specimen of *Danais Plexippus*, L.,* recorded in Ent. Mo. Mag., 1886, vol. xxiii, p. 162: and of these, 30 species, indicated by an asterisk, have been observed by me on the Rock itself. Some 900 species of *Coleoptera* have as yet rewarded my efforts, but this Order is evidently far from exhausted here, as I never fail to find one or more additions in every walk in the country: the other Orders of insects, especially the *Hemiptera* and *Hymenoptera*, appear also to be very well represented.

At the time of my arrival here, on the 20th October, 1886, the aspect of the Rock presented a curious mixture of autumn and spring, some recent copious showers of rain having caused the fresh green grass to sprout up everywhere, with a good number of flowers in favourable spots, while, at the same time, the leaves of the plane and poplar trees were brown, withered, and falling. Insects were by no means numerous on the wing, as besides those butterflies already mentioned as existing all the year round, only odd specimens of *Papilio Machaon*,* *Satyrus Megæra*,* *Lycæna bætica*, L.* and *Telicanus*, Hb.,* *Spilothyrus alcææ*, E.,* and *Macroglossa stellatarum*, were to be met with. A male *Charocampa celerio* in very fine order was brought to me on November 12th, and a few *Noctuæ* were taken on ivy bloom, which, however, does not appear to be nearly as attractive as at home.

In *Coleoptera* a great deal more work was to be done, and, during the months of November and December, I obtained a large number of species: my usual hunting ground being the lower slopes of the Sierra Carbonera and the open country between these hills and Campamento, easily reached in little more than an hour's walking. As an instance of the abundance of beetle life here, I may mention that 100 species were not unfrequently taken in an afternoon's work (on one day I bottled 135 species), and from 30 to 40 were sometimes shaken out of a single tuft of grass. Turning stones was also very remunerative, three *Carabi* (*rugosus*, F., *melancholicus*, F., and another species) being of frequent occurrence, as well as *Scarites hespericus*, Dej., *Siagona Jenissoni*, Dej. (a most active creature), and *Aptinus displosor*, Duf.

When a stone, on being raised, revealed half a dozen or more of the latter insect, as often happened, the noise of the explosions of these large and powerful "Bombardiers" was quite startling, and the volatile liquid they discharged was strong enough to cause a distinct sensation of burning in my fingers, which were deeply stained brown for several days afterwards. At least five species of *Brachinus* were present, the little pallid *B. testaceus*, Ramb., and *sclopetæ*, F., being the most noteworthy: with the latter *Drypta dentata*, Rossi, occurred very copiously in damp places. *Callistus lunatus*, F., and the beautiful *Lebia pubipennis*, Duf., were but seldom found, but the usually rare *Singilis bicolor*, Ramb., was quite plentiful, with two species of *Platytarsus*, and of *Cymindis*, *Licinus silphoides*, F. (variety), *Masoreus ægyptiacus*, Dej. (in sandyspots), *Chlænus chrysocephalus*, Rossi, and *azureus*, Dej. (rare), *Orthomus hispanica*, Dej., *Percus politus*, Dej., and the elegant *Feronia crenata*, Dej., among others. The large and fine *Ditomus cephalotes*, Dej., occurred rarely near San Roque; two species of *Aristus* were not unfrequent, with the active little *Apotomus rufus*, Rossi, under almost every big stone. Many interesting forms of *Pselaphida* and *Scydmanida* were to be seen, on close scrutiny, clinging to the under-sides of the stones with sundry *Staphylinida*, the rare and curious *Ctenomastax Kiesenwetteri*, Ktz., among them; as well as two species of the singular genus *Cossyphus* (*Dejeani*, Brême, and *incostatus*, Lap.), *Calcar elongatum*, Hbst., *Adelostoma sulcatum*, Dup., the queer little linear *Boromorpha tagenoides*, Luc., *Litoborus planicollis*, Waltl, and two species each of *Stenosis* and *Dichillus*. All these latter were to be found in the tufts of grass, with a host of other small beetles, chiefly *Rhynchophora*: among these may be mentioned *Leucohimatium elongatum*, Er., *Dermestes sardöus*, Kust., *Melyris granulata*, F. (abundant), two species each of *Sphenoptera*, *Aphanisticus*, *Trachys*, and *Throscus*, some eight or ten *Anthici*, *Scleron armatum*, Waltl (in plenty), various species of *Ptinus*, *Acalles*, *Gymnetron*, *Pachytychius*, *Baris*, *Rhytirhinus*, &c., with occasional examples of *Cleonus excoriatus*, Gyll., *Rhytideres plicatus*, Ol., the gaudy black and scarlet *Lithonoma limbata*, F., *Platynaspis villosa*, Fourc., and a *Thorictus*. Three or four brilliant green and coppery-red *Chrysomelæ* abounded on the wild mint, and the beautiful *C. americana*, L., was to be found in plenty on *Lavandula stæchas*. Walking about in the roads *Brachycerus undatus*, F., and a smaller species were not rarely seen, and the *Coprophaga* were represented, in their usual habitats, by the big black *Copris hispana*, L., *Geotrupes Hofmannseggii*, Frm., *momus*, Oliv., and *hypocrita*, Serv., *Bubas bison*, L., *Onthophagus taurus*, L., and others of the last genus, all common.

In and about small pools of water were found various *Dyschirii* and *Bledii*, *Georyssus*, sp., *Parnus hydrobates*, Kies., and a fair number of the smaller *Hydradephaga*. Among the wood-feeders the tiny *Hypoborus ficus*, Er., abounded in the small twigs of fig trees, burrowing under the bark, and an old mulberry stump at Linea was full of *Liparthrum mori*, Aubé. Hibernating under the loose flakes of bark on *Eucalyptus* trees at Campamento, were swarms of common beetles; among them the pretty little *Cardiophorus 6-punctatus*, Latr., in clusters of a dozen or more. Small puff balls yielded a good supply of *Lycoperdina bovistæ*, F.

My most interesting captures were, however, made in the nests of the large black ants (*Atta capitata*, and *barbara*), which abounded under stones. With these ants I was fortunate enough to find the rare and singular little Myrmecophilous

Carabid, *Pseudotrechus mutilatus*, Rosh., in company with the equally curious *Oöchrotus unicolor*, Luc., *Merophysia carinulata*, Rosh., *Colnocera attæ*, Ktz., and *Dinarda nigrita*, Rosh. The still more wonderful *Paussus Favieri*, Fairm., was found in the nests of a smaller brown ant (*Pheidole pallidula*), but this insect and the *Pseudotrechus* were met with more frequently in February and March.

Early in January I left for England, and returned to Gibraltar on February 15th. The weather was then cool and showery, with warm sunny days at intervals, and I found that vegetation had made much progress during my absence, and a few of the early butterflies began to put in an appearance. Thus, on the 17th, *Papilio Machaon*, *Euchloë Belemia*, E.* and hibernated *Gonepteryx Cleopatra*, L.* were on the wing, reinforced at the end of the month by *Lycæna Icarus*, Rott.* *Astrarche*, Berg.* and *Thais rumina*, L.* The latter beautiful insect abounded both on the Rock and in the Cork Woods, frequenting open bushy spots where its food-plant, *Aristolochia glauca*, Desf., grew in plenty, and it could be caught without much difficulty. *Euchloë Belemia*, on the other hand, usually cost a hard run before it was secured, being (as might be judged from its robust build) as swift and strong on the wing as *Colias Edusa*. *Thestor Ballus*, Hb.* appeared on March 9th, and *Euchloë euphenoides*, Stgr.* on the 11th, but the weather in March was not favourable for collecting, and it was not until the 26th that I was able to make my first excursion of the year to the Cork Woods. On this day, which was warm and sunny, the profusion of insect life was very remarkable, and I noticed no fewer than 25 species of butterflies on the wing. *Leucophasia sinapis*, L., was common, *Pieris Daplidice*, L.* (very pale), was not rare, and *Euchloë euphenoides*, flitting quietly from flower to flower, made quite a feature in the scene: with it were a few *E. Belia*, var. *Ausonia*, Hb., and one or two of what I take to be *E. tagis*, Hb., but am not quite sure. *Thecla rubi*, L., although common, was getting worn, and I noticed one or two of an early brood of *Lycæna Telicanus*, Hb., besides nearly all the other species of butterflies as yet mentioned. *Chelonia villica*, L., occurred singly, and worn males of *Saturnia carpini*, S. V., were rushing about in all directions in the Cork Woods. Among the *Coleoptera* were *Cicindela campestris*, var. *maroccana*, F., and *flexuosa*, F., *Melolontha papposa*, Ill., flying by hundreds near the ground in shady places, a fine black *Bolboceras*, and the curious *Sepidium bidentatum*, Sol., previously found by me in abundance at Malaga in 1876. Towards the end of the month I met with the singular little flat yellowish weevil, *Derelomus chamæropis*, F., plentifully in the male flowers of *Chamærops humilis* on the Rock.

The chief entomological feature of April was the abundance of the large *Ateuchi* (*sacer*, L., *variolosus*, F., and more rarely *semipunctatus*, F.), which were to be seen everywhere on the wing, or else, in pairs, busily providing for the future by rolling up and burying balls of stercoraceous matter much larger than themselves. The queer long-legged *Sisyphus Schafferi*, L., appears to be quite rare here, but *Gymnopleuri* of two species, and *Oniticellus*, abounded on their food, with the large black *Onitis Olivieri*, Ill. Conspicuous everywhere in the open ground was the huge red-striped *Meloë maialis*, L., and in the Cork Woods, *Endophlæus*, *Cerylon*, *Colydium*, *Plegaderus*, *Platysoma*, *Liodes*, *Hypophlæus*, and *Platypus*, were more or less copiously represented under bark. Here, too, I had the good fortune to find the remarkable Brenthid weevil, *Amorrhocephalus coronatus*, Germ., in an old cork tree

much infested with a large species of ant somewhat resembling *Formica rufa*: about a week afterwards, near Algeçiras, I met with another specimen, all but perfect and in very good condition, in a pellet of beetle remains thrown up by a nightjar, which had evidently found the weevil a somewhat indigestible morsel. The handsome *Asida holosericea*, Germ., was occasionally to be found running on the paths on the Rock and near San Roque.

On April 19th we had the last heavy rainfall of the season, no less than 6½ inches coming down in 24 hours. A vast quantity of flood refuse was brought down into the Bay by the swollen streams, and the wind and tide drove it across to the Dockyard, which, in consequence, teemed with insect life for several days. Among a host of other species I found the fine *Siagona Dejeani*, Ramb., and *Pheropsophus hispanicus*, Dej., for which I had previously searched in vain; also *Siagona europæa*, Dej., *Scybalicus oblongiusculus*, Dej., *Polystichus vittatus*, Brull., *Drypta distincta*, Rossi, *Acinopus megacephalus*, Rossi, *Calosoma indagator*, F., *Anisodactylus heros*, F., and *Scarites lævigatus*, F. After this the weather became settled for the summer, and numerous flower-hunting beetles, chiefly species of *Clythra*, *Anthrenus*, *Ædemera*, *Meligethes*, *Hoplia* (a bright yellow species, common), and *Dasytes* and other small *Malacodermata*, began to appear. Among the *Lepidoptera* were some very fine large ♂ specimens of *Euchloë cardamines*, L., in the Cork Woods on April 8th, where *Pyrgus Sao*, Hb., appeared on the 16th, but the first brood of this species was scarce and local; on the 22nd the pretty *Epinephile Pasiphaë*, E.,* was first observed, and was numerous a week later on grassy, bushy slopes. The var. *Glauce*, Hb.,* of *Euchloë Belemia* was on the wing by the 23rd, and *Melitæa Phæbe*, Kn., and *Lycæna melanops*, Bdv., were found in abundance and superb condition on the 30th, in a heathy part of the Cork Woods. On the same day I took *Lycæna bellargus*, Rott. (2 ♂), *Cerocala scapulosa*, Bdv., and the pretty pink Geometer, *Pellonia vibicaria*, Clerck.

May produced more than a dozen additional butterflies to my local list, viz.: *Epinephile Janira*, var. *Hispulla*, Hb.* (7th), and *E. Ida*, E.* (12th), *Pamphila Thaumias*, Hufn., and *Actæon*, E. (12th), *Pyrgus Proto*, E.* (14th), *Thecla spinî*, Schiff.* (14th), and *T. ilicis*, E. (21st). These were all more or less abundant except *T. spinî*, which was confined to a small space in the Cork Woods, where, on the 21st, I obtained a beautiful specimen of *Melanargia Thetis*, Hb. (*Ines*, Hfsgg.), the only one which I saw. A week later (28th), *Gonepteryx Cleopatra* was on the wing in the most lovely condition, and I saw a magnificent *Argynnis Pandora*, Schiff., in the Cork Woods, which, however, I could not capture. A visit to Algeçiras on the 16th produced *Spilothyrsus althææ*, Hb., and the beautiful blue variety *Lorquinii*, H.-S., of *Lycæna minima*, Fuess. *Cænonympha Pamphilus*, L.,* was also taken on the Rock during May, but appears to be rare here, as I heard of but two specimens. The beautiful *Zygæna lavandulæ*, Es., was seen in plenty near San Roque on the 7th, but could not be found a week later; at the end of the month, *Z. batica*, R., occurred abundantly on a species of *Cytisus*, both in the larval and perfect states, and a second smaller brood occurred in September. *Deiopeia pulchella*, L., always common, was so numerous in the middle of the month as to be a nuisance, and the larvæ of *Saturnia carpini* and *Ophiodes lunaris*, W. V., were to be seen all over the Cork Woods. The beautiful larva of *Spintherops spectrum*, F., abounded on the

white broom, *Retama monosperma*, near Linea. Among the *Coleoptera*, two fine species of *Cetonia* and four of *Larinus* frequented the flowers of the wild artichoke (*Cynara cardunculus*), in company with two species of *Agapanthia*, and a fine beetle related to *Clerus*. *Trichodes sipylus*, L. (abundant), and *octopunctatus*, F. (rare), with sundry species of *Aemæodera*, *Clytus*, *Mordella*, and *Cryptocephalus*, were found on umbels, while *Omophlus ruficollis*, F., *Cardiophorus sexpunctatus*, Latr., and *Hymenoplia strigosa*, Ill., were to be seen on almost every flower. A large and handsome *Julodis (fidelissima)*, Mars., I think) was occasionally taken on the wing, but, on the whole, the *Buprestidæ*, and especially the *Longicornes*, were very much scarcer than I had expected to find them.

In June, my first noteworthy capture was the beautiful little *Aurotis roboris*, E., flying about an oak tree in the Cork Woods on the 4th, but it appeared to be rare, and I got only one more, on the 9th. *Tanessa polychloros*, L., and *Gonepteryx rhamni*, L. (of both of which I had seen hibernated examples in the spring), were also taken on the 9th, and two pretty "Burnets," *Zygana stæchadis*, Bork., and *Sarpedon*, Hübn., were found, but were scarce and local. *Catocala paranympa*, L., was not scarce on the cork trunks, and the little chestnut-brown *Anthometra plumularia*, Bdv., was often seen flying over broom bushes. Two "clear-wings," *Sesia Ramburi*, Staud., and *Paranthrene tineiformis*, E., occurred on the flowers of wild carrot and thyme, which were also frequented by *Acontia luctuosa*, W. V., and *Acidalia ornata*, Scop. On the 18th I took, at Campamento, the only specimen of *Argynnis Latona*, E., which I have seen in the district, and, on the same day, *Colias Edusa*, var. *Helice*, Hb., was common and fine, among myriads of the ordinary form. On the 20th I saw for the first time on the Rock the conspicuous *Satyrus Fidia*, L.,* and a week later it was common. It is a very imposing looking butterfly on the wing, but flies strongly, and has a *penchant* for the roughest and most tangled spots, occasionally settling on rocks or walls, but is very shy and difficult to approach, being more easily taken in the afternoon, when it comes down to the newly watered roads. I took *Thecla spini* on the Rock on the 22nd, and, on the 26th, *Cænonympha Dorus*, E., was met with near San Roque. Second broods of *Leucophasia sinapis*, *Pyrgus Proto* and *Sao*, occurred this month, the last being much more common and widely distributed than the first brood had been. *Coleoptera*, although still very numerous in individuals, fell off greatly in number of species towards the end of the month, my chief additional captures being the bulky *Polyphylla fullo*, L., on the Rock, *Lagria lata*, F., *Trichius abdominalis*, Ménétr., and three species of *Cebrio*, unfortunately all singly; *Calosoma sycophanta*, L., was also taken near Algeçiras. A large *Myrmeleon* with spotted wings was common and very conspicuous.

In July, *Cænonympha Dorus* was plentiful in its locality near San Roque during the first half of the month, and *Hipparchia statilinus*, L., made its appearance on the 2nd, being very common on the 9th, when another brood of *Lycena bellargus* was out, but was very scarce. *L. argiolus*, L.,* which I had occasionally seen in February and March, was now not uncommon on the Rock, and *Abraxas pantaria*, L., swarmed about the ash trees in the Alameda, which were completely stripped by its larvæ. On the 13th I met with *Pyrgus fritillum*, Hb. (v. *alveus*, Hb.), by the roadside between Campamento and San Roque, but it was very local, and, on the same day, took a pair of *Thecla quercus* flying about an oak tree. The dark form (*eleus*, F.) of *Chrysophanus Phlæas* abounded during the month, and, on the 29th,

Pamphila nostradamus, F.,* was added to my local list, and was common throughout August, being constantly found at the flowers of a heliotrope bush in the Alameda in company with *Lycæna Telicanus*. *Sciapteron tabaniforme*, Rott., also occurred on the Rock.

August was a comparatively unproductive month, the butterflies being now reduced to some dozen species, mostly worn, though I added one species to my local list, *Lycæna Lysimon*, Hb., found sparingly in a waste place near Campamento on the 17th. *Lycæna bœtica* was very plentiful, much more so than I had ever seen it before, and a few good moths were taken, such as *Raphia hybris*, Hb., and *Cerura bifida*, var. *urocera*, Bdv., on poplar trunks, and *Megasoma repandum*, Hb., in the larva state near the mouth of the Palmones River, where *Ocneria dispar*, L., had evidently been abundant earlier in the season, judging from the number of its egg patches on the oak trunks. My chief captures this month were among the *Hydradephaga*, as in a small deep pool in the bed of a winter stream near Campamento, I obtained *Dytiscus circumflexus*, F., *Cybister Roeselii*, F., and another *Cybister* with entirely pitchy-black under-side (I think *C. tripunctatus*, Ol.), all three in large numbers, with *Eunectes sticticus*, L., *Pelobius tardus*, Hbst., *Hyphydrus variegatus*, Aubé, *Noterus lævis*, Sturm, and many small species of *Hydroporus*. I took *Charocampa celerio*, L., in the town on the 7th, but this is evidently not a good year for hawk-moths. I heard of only one *Sphinx convolvuli*, and saw only one or two larvæ of *Deilephila euphorbiæ*, L.; of *D. livornica*, unusually common here, I did not meet with a single specimen, and *Acherontia Atropos*, L., was represented by a single larva feeding on the thorny *Solanum sodomæum*, Willd. On the whole, September was decidedly unproductive, and, as the rains have been very late this year, October was but little better, though *Coleoptera* were becoming more numerous towards the end of the month. At the ivy blossom in the Alameda, I am now taking such moths as *Leucania extranea*, Gu., *Agrotis saucia*, Hb., and *puta*, Hb., *Laphygma exigua*, Hb., *Polia canescens*, Dup., *Hadena Solieri*, Bdv., *Calocampa vetusta*, Hb., *Margarodes unionalis*, Hb., &c., but all sparingly.

It will be seen that no very great number of species of night-flying moths have been met with by me, but this is probably due to the fact that collecting on the Rock after dark is by no means easy, owing to military restrictions, and is quite out of the question in the adjoining country. The gates of the fortress are closed for the night half an hour after sunset, and should the Entomologist unfortunately find himself the wrong side of the barrier, he would be compelled to put up with such accommodation as is to be got in the "fondas" of Linea, whose insect denizens would no doubt exact ample vengeance for the slaughter of their fellow creatures during the day.

H. M. S. "Grappler," Gibraltar:

October 31st, 1887.

There are notes on the *Coleoptera* of Gibraltar in an old paper (which we have not seen) published in the "Isis" for 1818, by Johann Natterer. In the "Reise der Novara" there are sundry allusions to insects of various Orders observed at Gibraltar. There may be others, but nothing of a faunistic nature has been published.—Eds.

Terias Bethesba and læta.—I am now able to bring positive proof of the identity of these two supposed species much sooner than I had hoped for. I yesterday received a letter from Mr. Nawa, dated Gifu, 26th September, to say that he had bred a number of *Terias læta*, which were seven days in the pupa state, but no *Bethesba*, from the larvæ he supposed to be from eggs laid by *Bethesba*. Mr. Nawa adds, that notwithstanding this, he cannot believe *læta* and *Bethesba* are the same species, but thinks the ova he obtained from female *Bethesba* all perished, and the larvæ of *læta* were unnoticed on the plants he gathered, and placed in his breeding cage. This is precisely the same idea I entertained when I first bred *Hecabe* from *mandarina*, and would certainly be probable, but for the fact that we both, working independently, 200 miles apart, obtained exactly similar results, and that I am quite certain, for my part, that neither eggs nor larvæ were accidentally introduced into my breeding cage. Mr. Nawa also points out that I am in error in stating, in the "*Rhopalocera Nihonica*," that *læta* appears from March to November. I think the mistake is easily explained, as I find, on reference to my diaries, that *læta* is last seen in the year in November, and again first in the year in March. At the time I wrote the note in the *Rhop. Nihonica* I had no idea of the important signification of this fact, and I think no one would, from its appearance, entertain a doubt but that *læta*, more so even than any other *Terias*, was a perfectly distinct species.

I am, however, now perfectly convinced that *Terias læta* and *Bethesba* are forms of the same species, and therefore propose uniting them under the name of *Terias biformis*. I enclose an outline sketch of the wings of both forms.

The most important question, however, is still unsolved. We have no clue to the reason why the hibernating form should be large with pointed wings, and the summer form small with rounded wings; the former, which is for a long period in the perfect state, is not in any way, as far as I can see, protected by this change of form; it is naturally a very conspicuous object, whether on the wing or at rest, and both forms have a feeble, slow flight.—H. PRYER, Yokohama: *October 1st, 1887*.

[The rule in cases where two supposed species are found to be only forms of one is, that the earlier existing name be adopted, not a new one coined. It seems to us a salutary rule.—EDS.]

Parnassius Delius in Wales.—I am not surprised at such cases as *P. Delius* occurring in Wales. When I was last in Switzerland every one, to my wrath and disgust, seemed to be sending flowers by the post, until even the Riffel looked almost bare! Now *Saxifraga aizoides* is lovely and common, and doubtless many plants with plenty of eggs of *Delius* were sent to England. In Wales, where *Saxifragas* are common, one or two eggs might reach maturity.—R. C. R. JORDAN, 105, Harborne Road, Edgbaston, Birmingham: *November 12th, 1887*.

Setina irrorella on Ramsey Island.—I have long promised to send you an account of the taking of *S. irrorella* on Ramsey. I will now give you the particulars. The Rev. Murray Mathew had seen it there a few years before, and we were glad to have an opportunity for taking it. It was on the occasion of our Field Club meeting at St. David's. The weather had been bright and warm up to the time of our arrival there on the evening of June 10th, so we expected to find it out in full

force on the morrow, the beginning of this month being the time it was due. In the morning, however, all was changed. A thick damp fog spread over land and sea, and it looked like anything but a fit day for the pursuit of Entomology. We started, however, soon after 10 for the shore, but when we got there we could not see the Island, though its distance was scarcely more than half a mile. A boat was waiting on the shore to take us across, and before we had rowed over the short channel which separated us from the Island the sun began to peep out, and by 12 o'clock the fog was quite dispersed. On landing, we passed over the headland which guards the south-eastern corner of the Island, and came upon a most lovely view of a bay studded with islands and rocks of all shapes, around which the sea birds were wheeling in vast numbers, filling the air with their plaintive cry. It was here, on the very edge of the cliff, that we found *S. irrorella* amongst the lichen-covered stones. Scarcely any of them were on wing; and it was not so very easy to see them, as the stones were covered with a bright orange lichen, which harmonized very nearly with the colour of the insect. On close inspection, however, they were found in considerable quantities, and in excellent condition; and from their sluggish habits were easily captured. We soon boxed more than 50 of them, and were satisfied, though we continued to meet with them along the west side of the Island also. No doubt it was on this orange coloured lichen that the larvæ were fed.—CLENELL WILKINSON, Castlemartin, Pembroke: *November 23rd, 1887.*

Food of the larva of Aphomia sociella, L.—In January, 1884, I was peeling off the bark of an old willow, which stands in the middle of a swamp, hoping to find the cocoons of *Dicranura furcula*. Behind a large piece of loose bark I came upon a number of very tough silken galleries coated with the brown decayed fibre of the bark, and containing some good-sized whitish larvæ. I took home a batch of about a dozen of these galleries spun close side by side. Shortly afterwards I found another batch of similar galleries in my workshop, under a board lying among a lot of old sawdust. From both these batches of larvæ *Aphomia sociella* emerged. This was rather a puzzle, as supposing the larvæ to have gone to these places to hibernate, where could bumble bees find a place in which to form a nest, in the one case in a swamp, in the other in a stone-flagged yard? This year the Rev. H. Williams, of Croxton, informed me that he had found a wasp's nest infested with these larvæ, which fed on the *papery walls* of the nest, and not in the cells. Is it not possible that the true food of this larva is the woody fibre, whether of decayed bark, or of the nests of various Aculeate *Hymenoptera*? I may add that Mrs. Hutchinson, of Grantsfield, to whom I wrote for information concerning the habits of this species, has, in reply, kindly forwarded me two larvæ spun up under old bark exactly in the same way as those I found on the willow; there the species swarms about old furze bushes which would supply abundance of decayed fibre. Perhaps some one of your numerous readers may be able further to clear up the life-history of this species.—C. R. DIGBY, Studland Rectory: *November 15th, 1887.*

On the supposed Nepticula tormentillella.—I have this year bred several specimens of a *Nepticula* feeding in *Potentilla tormentilla* on the moors of Westmoreland. These do not agree with the description of *Nep. tormentillella*, but are identical with

the one bred many years ago by Mr. Stainton from larvæ found near Dunkeld. The late Mr. Sang bred some specimens of a *Nepticula* from the same plant, and these Dr. Mason now possesses, along with a pair of mine. It would be interesting to hear whether these last also are identical. In any case, the new insect wants a name, and I would suggest that Mr. Stainton having first bred it, should act as godfather. I have now pupæ alive, as has also Mr. Warren, to whom I sent larvæ this autumn.—I. H. THRELFALL, Ashton, Preston: *December 5th*, 1887.

Bohemannia quadrimaculella in Norfolk.—When at Lowestoft last August, I found *Bohemannia quadrimaculella* flying in the sun, and, as usual, amongst alders. Can anybody suggest its mode of life? I should fancy that it ought to be possible for some one living in a neighbourhood where it occurs to breed it, by fixing a shoot of alder, *with seeds*, in a glass tube with muslin over the ends, and then turning a few of each sex into the cage thus formed. I have found this plan succeed with the oak-feeding *Tinagma sericiellum*.—W. C. BOYD, College Road, Cheshunt: *December 13th*, 1887.

Review.

THE LIFE AND LETTERS OF CHARLES DARWIN: Edited by his Son, FRANCIS DARWIN. 3 vols. London: John Murray. 1887.

To all who take an interest in the progress of science, there are few more interesting biographies than the present; for Charles Darwin had gained the devotion of those who admired his scientific work, as well as of those who had known him personally.

Born at Shrewsbury in 1809, his taste for collecting was "well developed" when about eight years old. At school his education under the classical system "was simply a blank" (vol. i, p. 32). Once Dr. Butler (the master) "publicly rebuked" him for working at Chemistry, "and thus wasting my time on such useless subjects" (vol. i, p. 35). Later he was too fond of his gun and "the stubbles," so that his father (a physician, and son of the author of "Zoonomia") once said to him, "you will be a disgrace to yourself and all your family." In 1825 he went to Edinburgh to study medicine, but, having no taste for anatomy he made no dissections, which "has proved one of the greatest evils of my life." In 1828 he was sent to Cambridge, with the view of becoming a clergyman; there he "got into a sporting set," but was rescued by the Rev. Prof. Henslow, and from him he received the impetus which determined his future career. At this time he was an eager collector of beetles. Writing to Sir J. Lubbock years after, he says, "I feel like an old war horse at the sound of the trumpet, when I read about the capture of rare beetles." Collecting he thought "the best sport in the world" (vol. iii, p. 114).

On the 27th of December, 1831, he sailed in the *Beagle* (a ten gun brig, a class of ships in those days sometimes called "coffins") from Devonport, on the celebrated voyage which occupied five years. During this time he collected largely; but for entomologists it will always be a matter of regret that only a few fragmentary notices of the insects were published. From their novelty, as well as from a geo-

graphical point of view, they were very interesting. Soon after his return he was led to think, from "the principle of selection by man," that there was "an unerring power at work in *Natural Selection*," acting "exclusively for the good of each organic being;" in this way he asks, "what millions on millions of generations might not effect."

The phrase "Natural Selection" is generally taken as synonymous with "Survival of the Fittest," but Wallace has clearly shown that whilst the former is a cause, the latter is an effect. Darwin himself was eventually dissatisfied with it, and would have preferred "Natural Preservation," but it was too late, the phrase was in every one's mouth. Several scientific men, indeed, thought the "term good, because its meaning is not obvious," and the Duke of Argyll stamps it as "a phrase rich in ambiguities" (*Nineteenth Century*, April, 1887).

For more than twenty years Darwin was occupied with "The Origin of Species," which he thought would be forgotten in ten years. During that time, however, he produced his "Monograph of the Family *Cirripedia*" in two volumes (Ray Society, 1851 and 1853), a work which showed his rare talent for investigation.* Whilst doubting whether it was worth so much time (eight years), he "recognised" that he had become a "trained naturalist after, and only after, the *Cirripede* work." Prof. Huxley thought "he had never done a wiser thing" than devoting himself to those "years of patient toil."

It was in 1858 that Darwin and Wallace's papers were read at the Linnean Society (July 1st). Few remarks were then made, the Fellows present thinking probably, like Sir C. Lyell, that the theory was merely a "modification of Lamarck's doctrine of development and progression" (vol. iii, pp. 14 and 16), to which attention had previously been called in the well-known "Vestiges" (1845), a work which, whatever may be said, gave a great blow to the idea of the fixity of species.

The "great work of his life" (*The Origin of Species*) was published in 1859, and at once created a furious storm of disapprobation. "No word in the English language," wrote one clergyman, "is sufficient to express my contempt for Darwin and the Darwinians." Friends like Prof. Sedgwick and Dr. Whewell were almost as bitter; the latter for many years would not allow a copy to be placed in Trinity College Library.

It is in his letters which fill the greater part of the three volumes that we see the inner life of the man. For more than forty years he suffered from the effects of his voyage, and expressions of the pain and discomfort, from what he calls his accursed stomach, are constantly occurring. For one who for so long a time never enjoyed a day's ordinary good health, to have accomplished so much, is a remarkable instance of intellectual energy.

The letters are principally answers to Sir C. Lyell, Sir J. D. Hooker, Prof. Huxley, Mr. Wallace, and others, who questioned some of his conclusions. Huxley thought he had "loaded himself with an unnecessary difficulty" in adopting the dogma of *Natura non facit saltum*; and again in considering "continued physical conditions of little moment," why "variation should occur at all." This difficulty

* See also "Observations on the Structure and Propagation of *Sagitta*," *Ann. and Mag.*, vol. xii, p. 18, *seq.* (1841).

had "greatly troubled" Darwin, he says, "if, as I must think, external conditions produce little *direct* effect—what determines each particular variation; what makes a tuft of feathers come on a cock's head; or moss on a moss rose?" (vol. ii, p. 233). In the same strain "we may ask in vain why one mouse has longer ears than another mouse, and one plant more pointed leaves than another plant?" (vol. iii, p. 25). In the *Quarterly Review* (April, 1869), Mr. Wallace wrote, "we must therefore admit the possibility that in the development of the human race, a higher intelligence (than man's) has guided the same laws for nobler ends." From this Darwin differed "grievously" (vol. iii, p. 116); further on he says, "I fear we shall never quite understand each other." Of Hooker's *Introduction to the New Zealand Flora* he complains that "parts take the wind completely out of my sails" * * * "I shall gnash my teeth and abuse you for having put so many hostile parts so confoundedly well." Elsewhere he thanks Hooker "for the dose of soft solder;" he tells Lyell, referring to his hesitation as to the immutability of species, "you cut my throat and your own throat" (vol. ii, p. 341), and he felt aggrieved that Herbert Spencer should be his "superior in the master art of wriggling."

Of Mr. Mivart's "Genesis of Species" (1871) he finds the "book is producing a great effect against 'Natural Selection,' and more especially against me" * * * "I feel very doubtful how far I shall succeed in answering him" (vol. iii, p. 144 & 146). In the 6th edition of the "Origin," Darwin devoted a chapter to these objections, the more serious of which was the absence of "the infinitely numerous fine transitional forms" "of the countless generations of countless species which have certainly existed" (Orig., p. 408).

In a letter to Karl Semper there is the following statement: "As our knowledge advances, very slight differences, considered by systematists as of no importance in structure, are continually found to be functionally important" (vol. iii, p. 161). Here many will wish that Darwin had followed Lyell's advice in a letter dated October 3rd, 1859, that he should in a future edition "here and there insert an actual case to relieve the vast number of abstract propositions" (vol. ii, p. 206).

"One of his greatest services to the study of Natural History is," says his biographer, "the revival of Teleology" (vol. iii, p. 255); yet, in regard to chance and design, Darwin writes, "again I say I am, and shall ever remain, in a hopeless muddle" (vol. ii, p. 354). See also vol. i, p. 313.

Of Darwin's extreme candour, modesty, and love of truth, there is ample evidence. As to the latter, Mr. Romanes relates that once, at one o'clock in the morning, when sitting in a room at Down with one of the sons, Mr. Darwin appeared at the door in dressing gown and slippers, to correct a remark made the previous evening, that he "was most affected by the emotions of the sublime when he stood upon one of the summits of the Cordillera (*sic*) and surveyed the magnificent prospect around," now he was sure that he "felt it even more in the forests of Brazil" (vol. iii, p. 55).

Mr. Darwin was an avowed Agnostic, not an Atheist. He did not believe in revelation (vol. i, p. 308); he had come to see that the Old Testament was "no more to be trusted than the sacred books of the Hindoos." But no man led a purer and, but for his constant ill-health, a happier life. "His *Natural History* studies had been the solace of what might have been a painful existence." At the last he said,

"I am not in the least afraid to die." If he had a fault it was perhaps that he had, according to Wallace, "the restless curiosity of the child to know the 'what for?' the 'why?' and the 'how?' of everything." This tendency sometimes led him into speculations beyond his calmer views, that were omitted or modified in subsequent editions of the "Origin."—F. P. P.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.
—The Annual Exhibition was held at the "Bridge House," London Bridge, on Wednesday, the 16th November, 1887, and, notwithstanding the dense fog that prevailed, was attended by about 1000 visitors.

The exhibits comprised all branches of Natural History, and during the evening the Scioptron Company gave two displays of micro-photographs. Among the principal Entomological exhibits were those of Mr. McLachlan, European *Trichoptera*, &c.; Mr. S. L. Mosley, life-history of the Hessian fly, *Cecidomyia destructor*, &c.; Mr. Eland Shaw, *Orthoptera*; Mr. F. Grut and Mr. Epps, Exotic *Coleoptera*; Mr. Lewcock, British *Donacia* and *Longicornia*; Mr. Billups, British *Coleoptera*, *Hymenoptera*, *Diptera*, &c.; Mr. Bignell, a case of galls and gall-flies; Mr. J. H. A. Jenner, Mr. C. H. Morris, and Mr. Cripps, British *Coleoptera*. In the Order *Lepidoptera* the exhibits were very numerous. Messrs. C. A. Briggs, A. B. Farn, T. W. Hall, E. Sabine, R. South, S. Webb, British *Lycænæ*; Mr. A. H. Jones, European *Lycænæ*; Messrs. J. Jenner Weir, S. Edwards, Frohawk, Dannatt, E. Cooke, and the Zoological Society of London, Exotic species; Mr. Elisha, collection of *Tortrices*, *Tineæ*, and *Pterophori*; Mr. Adkin, *Ephestia Kühniella*, with flour affected by the larvæ, &c.; Mr. J. A. Clark, varieties of *Z. pyrina*, &c.; Mr. S. Stevens, varieties of British *Rhopalocera*, specimen of *Melitæa Eos*, taken in 1802; Mr. Machin, *Peronea hastiana* and *crustana*; Mr. C. H. Morris, *Acidalia immorata*; Mr. Boden, varieties, including one of *Ennychia octomaculata*, and a species which was not identified; Mr. Howard Vaughan, *Cidaria truncata* and *C. immanata*; Mr. G. Baker, larvæ and imagos of *Eupithecia nanata* and *E. Curzoni*; Mr. Tugwell, collection of *Noctuæ*; Mr. Tutt, *Agrotidæ* and *Zyganidæ*; Mr. Wellman, species of *Eupithecia* and *Pterophoridæ*, &c.; Mr. Eedle, life-histories. Among the other exhibitors in this Order were Messrs. Hutchinson (Leominster), R. E. Salwey, Blackall, Druce, Goldthwaite, Percy Russ (Sligo), &c. Messrs. Neighbour and Sons exhibited bees and bee-keeping appliances, and there was a good display of microscopic objects, the Society being assisted by Members of the Quekett, South London, and Hackney Microscopical Societies.

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*, L., *Catocala promissa*, Esp., *C. sponsa*, L., *Xylina ornithopus*, Rott., *X. semibrunnea*, Haw., and *X. socia*, Rott., all from the New Forest; Mr. Mera, species taken on Wansted Flats; Mr. C. A. Briggs, a fine variety of *Arctia caia*, L.; Mr. Billups, a cocoon of a South American moth, from which over 140 of a parasite of the genus *Smiera* had emerged; Mr. Billups

also exhibited, on behalf of Mr. Mosley, a case illustrating the life-history of the Hessian Fly, with examples of infested 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 County, Colorado, which very closely resemble the shells of the genus *Valvata*; Mr. R. Adkin exhibited series of *Spilosoma mendica*, Clerck, including males varying in colour from creamy-white to smoky-brown, and females of the usual white form, bred from ova from Co. Cork, &c.: he remarked that the light coloured males were the var. *rustica*, Hüb., 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; Mr. West (of Streatham) exhibited specimens of *Locustidæ* from Switzerland.

December 8th, 1887.—The President in the Chair.

Messrs. W. White, F.E.S., A. J. Hodges, J. H. Leech, F.L.S., F.Z.S., G. H. Verrall, F.E.S., F. Grut, F.L.S., F.E.S., 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*, St., and called attention to the larger size of the summer brood; Mr. Ince, a comparative series of *Nepa cinerea*, L., 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 ago. Mr. Fenn read notes received from Mr. T. D. A. Cockerell on a case of mimicry between *Vanessa Antiopa*, L., and a species of *Locustidæ* in Colorado.—H. W. BARKER, *Hon. Secretary*.

ENTOMOLOGICAL SOCIETY OF LONDON: Dec. 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.

Mr. Jenner Weir exhibited, and made remarks on, twelve specimens of *Cicadetta hamatodes*, 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. McLachlan 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. McLachlan 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 russata*, 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. McLachlan, Mr. Jenner Weir, Dr. Sharp, and others.

Canon Fowler exhibited specimens of *Acronycta alni* and *Leiocampa dictæa*, 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 *Ichneumonidæ*.

Mr. O. Janson exhibited, for Mr. C. B. Mitford, a collection of *Lepidoptera* from Sierra Leone.

Mr. White exhibited a female specimen of *Composita olympia*, Butl., from Florida. He also exhibited 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. McLachlan, 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 illustraria*, 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. Mr. Poulton, Dr. Sharp, Prof. Meldola, and others continued the discussion.—
H. Goss, *Hon. Secretary*.

COLEOPTERA AT ARMAGH, &c., IN 1887.

BY REV. W. F. JOHNSON, M.A.

The past year has been on the whole a very successful one with me, and I have added a large number of species to my list.

Moss in January produced the following: *Helophorus arvernicus*, *Homalota elongatula*, *H. circellaris*, *Tachinus laticollis*, *Bolitobius atricapillus*, *B. exoletus*, *B. pygmæus*, *Philonthus nigrutilus*, *Cryptobium fracticorne*, *Sunius angustatus*, *Stenus Argus*, *S. fuscipes*, *Oxytelus sculptus*, *Megarthus denticollis*, *Scymnus Mulsanti* (very sparingly), *Plectroscelis concinna*, *Thyamis obliterated*, *Sitones tibialis*, *S. lineatus*, *Hypera polygoni*, *H. variabilis*, *H. Pollux*, and *Orobitis cyaneus*; of this last I only took one example at Lowry's Lough, possibly it may turn up again this season. At the edges of ponds I took several *Parnus prolifericornis*.

In February, moss produced several of the above, together with *Pterostichus vernalis*, *Homalota volans*, *Xantholinus atratus*, *Quedius semicæneus*, *Lathrobium terminatum*, *Cryptophagus pubescens*, and *Agathidium lævigatum*. The water-net procured me *Hydroporus obscurus*, *H. vittula*, *Noterus clavicornis*, *Laccobius alutaceus*, and *Hydræna nigrita*.

From moss in March I took *Dromius melanocephalus*, *Aleochara nitida*, *Stenus flavipes*, *Ceuthorhynchidius troglodytes*, and *Hypera rumicis*. Under stones were found *Anchomenus oblongus*, *A. gracilis*, and *Liosoma ovatum*, while a log of wood produced from its underside *Stenus bimaculatus*, and sweeping the early herbage *Psylliodes napi*. I noticed a great variety of *Steni* appearing at this time under stones, pieces of wood, &c.

In April, I took by sweeping the side of a drain, one *Dyschirius thoracicus*. *Bembidium Clarkii* and *B. flammulatum* turned up on the shores of Lowry's Lough. Of *B. Clarkii* I have since taken several in moss from the Mullinures in November and December. The Mullinures, which are low-lying marshy meadows, also produced *Pterostichus versicolor*, *Amara aulica*, *Agabus unguicularis*, *Cercyon depressum* (only one specimen), and *C. lugubris*. The other principal captures of the month were: *Haliphus confinis*, *Tachinus marginellus*, *Mycetoporus longulus*, *Cryptophagus saginatus*, *Apteropoda graminis*, *Alophus triguttatus*, *Barynotus mærens*, and *Rhinoncus pericarpus*.

May brought me several good things. In the immediate neighbourhood I took *Deronectes 12-pustulatus*, *Hydroporus rivalis*, *Cercyon terminatum*, *C. pygmæum*, *C. obsoletum*, *Phyllobius argentatus*. At

Lowry's Lough, *Blethisa multipunctata*, *Chlænien nigricornis*, *Anchomenus gracilis*, *Anisodactylus binotatus*, *Cœlambus 9-lineatus*, *C. 5-lineatus*, *Staphylinus erythropterus*, *Monotoma picipes* occurred, together with quantities of *Pelophila borealis*, *Anchomenus marginatus*, *Elaphrus riparius*, and such like. Having a holiday on the 24th, I went over to Portsdown, and in the People's Park there took *Laccophilus obscurus*, *Cœlambus versicolor*, *Noterus sparsus*, *Hydrobius fuscipes*, *Xantholinus punctulatus*, *Tachyporus obtusus*, *T. hypnorum*, *Telephorus testaceus*, *Lathridius lardarius*, *Agriotes obscurus*, *Corymbites quercus*, v. *ochropterus*, and *Litodactylus leucogaster*. On the same day I was driven down to the Derryadd shore of Lough Neagh, and allowed half an hour to hunt; I managed to pick up the following: *Pelophila borealis*, *Anchomenus piceus*, *A. fuliginosus*, *A. viduus*, *Bembidium bipunctatum*, *B. littorale*, *Halipilus obliquus*, *Lesteva longelytrata*, *Silpha sinuata*, and *Silpha dispar*. All were under and in water-plants and other rejectamenta on the sandy shore. On the 28th, I drove down to Maghery, on the shore of Lough Neagh: under stones on the shore of Derrywarragh Island were quantities of *Pelophila*, together with the commoner *Anchomeni* and *Bembidium bipunctatum*. Under rejectamenta was one *Silpha sinuata*; and, on crossing over to the sandy shore under the village, I found, after a long search, one *Silpha dispar*. On reeds on the canal margin several *Donacia sagittariæ* occurred.

June was, as usual, replete with insect life. *Blethisa multipunctata* and *Chlænien nigricornis* gladdened my eyes at Lowry's Lough. At Ardtrea, in the County Tyrone, I took *Athous niger*, *Phratora vulgatissima*, and *P. vitellinæ* on willows; *Cercyon granarius*, *Aphodius merdarius*, and *A. rufescens*, in dung. An expedition to Carlingford Mountain procured *Olisthopus rotundatus* under a stone, *Philhydrus melanocephalus* in a boggy pond, and *Dascillus cervinus* on ling; on the shore I got *Arpedium brachypterum*. Nearer home, I took *Anthonomus pedicularius*, *Ceuthorhynchideus melanarius*, *Phyllobius viridicollis*, *Atomaria atricapilla*, *Adrastus limbatus*, *Donacia lemncæ*, &c.

July being holiday time, I was able to make several excursions. Two of these were to Lough Neagh, calling on my way at Churchill, where there is a capital hunting ground on a heathy bog. At the latter place, I took *Coccinella ocellata* and *C. oblongopunctata*, flying and beaten from fir trees; also *Elater pomorum* and *Rhynchites betulæ* on birch trees. At Lough Neagh my chief captures were *Chlænien vestitus* and *Phyllobrotica quadrimaculata* on Coney Island, solitary specimens of *Silpha dispar* and *S. sinuata*, a number of *Cryptophagus*

cellaris, which were flying towards evening, and settled on Mrs. Johnson's dress, and one *Ohlænium nigricornis* under a stone. I spent a week at Keady, which is a few miles from this, but much higher; here I found at Clay Lake *Pelophila borealis*, *Bembidium punctulatum*, *B. atrocæruleum*, and an *Anchomenus*, which looks like *gracilipes*. About Keady I also took *Agabus unguicularis*, *A. guttatus*, *Megasternum boletophagum*, *Agriotes obscurus*, *Hypera trilineata*, *H. polygona*, *H. rumicis*, *Sitones flavescens*, *Alophus triguttatus*, and *Gastrophysa raphani*. A drive to Loughgall procured me, with other things, *Adrastus limbatus*, *Baridius T-album*, and *Galeruca tenella*; and a wet day at Portneligan, a quantity of *Cassida equestris* and *Phratora vulgatissima*, also *Baridius T-album*. The only home captures worth mention are: *Haliphus flavicollis*, *Gyrinus minutus*, *G. marinus*, *G. bicolor*, *Cœliodes quadrimaculatus*, and *Apion craccæ*.

August was not quite a blank, for I took *Cryptophagus dentatus*, *Adimonia tanaceti*, and *Apion humile*. His Grace the Primate gave me a couple of *Necrophorus ruspator*, which he got under a dead corn-crake, and one of my pupils brought me *Homalium concinnum* and *Cryptophagus scanicus*.

September's best captures were: *Bembidium 5-striatum*, *Hydrochus elongatus*, *Octhebius pygmæus*, *Hippodamia 13-pustulata*, *Enicmus transversus*, *Donacia dentata*, *Thyamis holsatica* (in moss), *Apion carduorum*, *A. striatum*, *A. immune*, *A. tenue*, *A. subulatum*, *A. frumentarium*, *Ceuthorhynchus viduatus*, and *Erirhinus æthiops*; of this last I took a considerable number on the leaves of *Iris pseudacorus* and *Sparganium ramosum*, in the Mullinures.

October's work produced a single specimen of *Hydroporus Davisii*, two of *Philhydrus testaceus*, one of *Dytiscus punctulatus*, one of *Donacia sericea*, along with several *Stenus pubescens*, *S. binotatus*, *S. pallitarsis*, and *Thyamis holsatica*.

For November I have but little to record, the only capture new to my list being *Phyllotreta tetrastigma*. Besides this, my most important capture was *Bembidium Clarkii*, which I got in moss from the Mullinures; along with it occurs another *Bembidium*, which I erroneously recorded as *B. fumigatum* (p. 16). It is, however, certainly not *fumigatum*, and it has been suggested to me that it is merely an immature form of *B. Clarkii*. As this opinion is advanced by those more experienced than myself, I do not like to dissent, but I have kept two of these beetles alive for more than three weeks, and they show no signs of becoming more like *Clarkii* now than at first, so I am, if possible, more puzzled than ever.

December, I may say, has been a blank, as I was prevented by other occupations from doing anything at the *Coleoptera*. Two bags of moss from the Mullinures produced examples of *Bembidium Clarkii*, and its immature (?) form, *B. Mannerheimi*, *B. guttula*, *B. obtusum*, *Bryaxis fossulata*, *B. juncorum*, *Tychus niger*, *Bythinus puncticollis*, and a host of others of the vulgar sort.

I hope this account of the past year's work here may, perhaps, stir up some of the Irish readers of the Ent. Mo. Mag. to take up the study of the *Coleoptera*. Ireland is a rich field, and will amply repay those who take the trouble to work it.

Winder Terrace, Armagh :

January 3rd, 1888.

[The Irish list of *Coleoptera* is so very imperfect, that in many cases the commonest species have not yet been recorded ; any notes, therefore, like the above are most valuable, and it is to be hoped that other Irish collectors will devote more of their time to the *Coleoptera*. —W. W. F.]

BRITISH HEMIPTERA: ADDITIONAL SPECIES.

BY JAMES EDWARDS, F.E.S.

CHLAMYDATUS FLAVEOLUS, Reut.

Reuter, Not. Fenn., xi, 323, 4, t. 1, fig. 6.

I have taken the true species of this name in marshy places at the roots of grass and rushes at Ranworth, Hellesdon, and Coxford in Norfolk. It may be readily distinguished from *C. pygmæus* (= *Tytthus insignis*, D. & S.) by its entirely greyish-yellow colour, larger size, and much stouter build. In the undeveloped form, which is the usual one, the elytra are much shorter than the very convex abdomen, and truncate at the apex. *C. pygmæus* is a much smaller and more delicate insect, and always has at least the head black.

LIBURNIA PELLUCIDA and its allies.

My first notions of *Liburnia pellucida* were formed from a long series named for me by one of our authorities on these insects. These specimens were certainly very diverse in appearance, but the males all agreed in having the apical angles of the upper notch of the pygofer right angles or nearly so. Later on I became aware that these different forms did not occur in company, and on attempting to classify my male specimens according to their general appearance, I found that

they naturally fell into three groups; the first characterized by its conspicuously white pronotum, the second by its black colour and brownish-yellow elytra, and the third by its entirely black appearance owing to its black body and pitch-brown elytra. Subsequent investigation shows that these three forms really represent three structurally distinct species, the males of which may be characterized as follows:—

- 1 (2) Pronotum (except a black patch behind each eye) white. Penis a blunt deflexed hook (fig. c) *pellucida*, Fab.
- 2 (1) Pronotum black or blackish, hind margin very narrowly pale.
- 3 (4) Elytra brownish-yellow. Penis bifid to base (fig. b) *difficilis*, n. sp.
- 4 (3) Elytra pitch-brown. Penis bifid, but not to the middle (fig. a) *discreta*, n. sp.

In a series of specimens several examples will always be found in which the penis is so far exerted that the characters given above may be observed with an ordinary Coddington or similar lens, the "appendicibus connatis perpendicularibus" of the anal tube described by J. Sahlberg and figured by Fieber being in reality two large flat hooks which grip the penis between them. The three species above named all occur by sweeping in marshy places, and are all included in my description of *L. pellucida* in Trans. Ent. Soc. Lond., 1886, p. 78. I cannot now give any certain characters by which the females of these three species may be separated.

LIBURNIA PUNCTULUM, Kbm.

Kirschbaum, Cicad., 25, 10.

This is a good species, and not merely a synonym of *L. pallidula*, Boh., as may be seen from the following comparative characters:—

L. PALLIDULA.

Length, $2\frac{3}{4}$ —3 mm.

Cheeks very rarely with a punctiform black spot.

Middle nerve of elytra brown at the apex, the colour very rarely reaching beyond the middle.

Appendages of anal tube reaching straight out behind (fig. e).

L. PUNCTULUM.

Length, $3\frac{3}{4}$ —4 mm.

Punctiform black spot on the cheeks very rarely wanting.

Middle nerve of elytra black to the base, brachial nerve and those of the clavus frequently black.

Appendages of anal tube distinctly curved upwards (fig. d).



My description of *L. pallidula* (l. c., p. 65) belongs to *L. punctulum*, and the female examples there queried as a distinct species are *L. pallidula* proper.

LIBURNIA REYI, Fieb.

Fieber, Grundz. Delph., 11, 7, t. 8, fig. 31 (♂ genitalia).

Crown nearly double as long as wide; elytra transparent, about two-thirds as long as the abdomen, hind margin narrowly blackish; legs pale, abnormally long, knees (especially the hinder pairs) with a distinct black spot. ♂, pronotum white, with a black patch behind each eye, side keels not reaching the hind margin; scutellum black; abdomen black, the base widely and the last segment yellow; pygofer yellow above, black beneath. ♀, dirty brownish-yellow, with pitchy markings on the abdomen, resembling in contour the same sex of *L. notula*, but a little larger.

I found this fine species amongst rushes in a marsh at Weybourne, Norfolk, in August last, in a situation which would not be readily accessible in any but an abnormally dry season.

131, Rupert Street, Norwich:
December 31st, 1887.

ACENTROPUS NIVEUS IN NORFOLK.

BY C. G. BARRETT, F.E.S.

On August 24th I went over to Stalham to meet my old friend Mr. Wheeler, and to spend a few hours in our old haunts, the fens. As we moved from the village we were delighted to see *Papilio Muchaon* (2nd brood) flying across from fen to fen. (I hope that the pleasure was reciprocal, for we could by no means follow or interfere with them). We looked longingly and proceeded. In crossing Barton Broad we suddenly found that our boat was an object of pursuit; not that there was cause for alarm, our pursuers were not dangerous, being only very lively little males of *Acentropus niveus*, which we had disturbed from their resting places on the floating weeds, and which were consequently eager to find something solid whereon to rest.

Their movements were most curious, as they did not rise from the surface of the water, but buzzed along it in a zigzag course, moving their wings with great velocity, and really making very respectable progress. On looking down we found that some had overtaken us, and had climbed on to the rudder, where they remained quiet just clear of the water, and were boxed without difficulty, as were the pursuers as they came up. Of course our movements often caused them to be immersed, but to this they appeared totally indifferent. We now searched the floating weeds and rubbish, and found more males than we cared to take, but with all our care were unable to meet with a female. The bottom of this Broad is nearly covered with *Stratiotes aloides* (water soldier), and we pulled up many plants and examined

their prickly leaves, as well as the smooth glossy ones of *Potamogeton lucens*, and other plants, but without success.

We could not spare very much time for *Acentropus* (although this was the first occasion of our having met with it in numbers in this part of England), for Dr. Plowright (who was one of the party) was eager for Micro-fungi—rusts, smuts, cluster-cups, possibilities of all kinds; not many of them realized *that* day, so we ascended the Ant River and examined *Scirpus lacustris*, *Acorus calamus*, *Ranunculus lingua*, and many other interesting plants.

At night a lamp was lighted, of course, but a dense mist arose, and we did but little, except get wet. A couple of *Nonagria neurica* came (another had gratified me by jumping off a reed-stem as I passed in the twilight), also *Apamea fibrosa*, *Schoenobius gigantellus*, *Phibalapteryx lignata* commonly, *Peronea Shepherdana*, the white form of *Hydrocampa stagnalis*, and a few other things; and although this was gratifying to me (in spite of soaked feet) after so many years of absence, it was not such a night as one hopes for in the fens.

When returning in the morning there was no time to look after *Acentropus*, but being dissatisfied with our failure to find females, I sent my son over there a few days later. He pulled, with much labour, across the Broad in the teeth of a violent breeze which had inopportunately got up, but, from the roughness of the water, scarcely an *Acentropus* could be found. He filled a great basket with as much as he could well bring home of pulled-up plants of *Stratiotes*, *Potamogeton*, *Zannichellia*, &c., but the result was utterly disappointing. Hours were spent over them, but not a female nor a cocoon could I find.

A day or two later I found *Acentropus* in plenty in a pond not half a mile from my own house; rather humiliating to have sent a messenger a journey of over 100 miles after it; but here again it seemed impossible to find a female. There was no boat on this pond, but, with a water net, I fished up floating weeds, swept growing plants, and pulled some up from the bottom, and at last I did find one miserable half-crushed wretch with partially developed flaps of wings, such as she might well be ashamed of. Search at twilight and at night with a lamp yielded no further result, and the probability seems to be that *here* the females are semi-apterous, and having no temptation to fly (in the absence of the power), they keep themselves secluded among the weeds at the bottom of the water. But, as the species *must* at times move to fresh ponds, I still cherish the hope that, perhaps in an earlier brood, well developed females with large wings, such as used to be taken at Hampstead, and elsewhere, will yet be found here.

King's Lynn, Norfolk :

January 16th, 1888.

TROPICAL AFRICAN COLEOPTERA; CHIEFLY FROM THE ZANZIBAR MAINLAND.

BY H. W. BATES, F.R.S., &c.

(Continued from Vol. xxiii, p. 57).

DRIMOSTOMA EXPLANATUM.—D. Westermanni (Chaud.) *proxime affine sed differt thoracis lateribus lævibus, etc. Sat late oblongum sub-convexum, piceo-nigrum politum, partibus oris antennis pedibusque piceo-fulvis; palpis apice recte truncatis; capite brevi, sulcis frontalibus profundis usque post oculos extensis, sutura frontali profunda ibique epistomatis margine plicato; angulis lateralibus (supra antennis) dilatatis reflexis: thorace lato, toto impunctato, lateribus sat regulariter arcuatis, late et regulariter a basi usque ad apicem explanato-reflexis, lineis transversis nullis, sulculo dorsali acuto integro, sulcis basalibus linearibus profundissimis, angulis basalibus dentiferis: elytris basi dilatatis, humeris rotundatis nec dentatis, acute et profunde striatis striis fundo punctulatis vix crenatis, interstitiis latis fere planis; corpore subtus lævi.* Long., 9½ mm.

Cameroons; one example. Belongs to the small group of the genus in which the antennæ are slender, not moniliform, and the elytra broadly oblong-ovate.

DRIMOSTOMA EUGLYPTUM.—D. punctifronti (Chaud.) *affine; gracilius ovatum elytris convexioribus; piceo-nigrum politum, partibus oris antennis pedibusque rufis: fronte utrinque grosse confluentem punctata, sulcis obtectis: thorace parvo sub-rotundato, angulis posticis obtusis denticulo parvo, supra lævissimo, margine subtili, sulcis basalibus late excavatis: elytris crenato-sulcatis interstitiis convexis; meso et metasternis ventrequè utrinque punctatis. Antennæ moniliformes.* Long., 5 mm.

Old Calabar.

GALERITA RUBENS.—*Magna, elytris elongato-ovatis versus basin parum angustatis, costis parum elevatis interstitisque alutaceis subtiliter sparsim setifero-punctulatis; capite thorace antennis pedibus et pectore rufis subnitidis, elytris nigris, abdomine fusco basi rufo: capite sat gracile post oculos semi-ovato; thorace medio rotundato-dilatato, antice gradatim longe rotundato, postice valde sinuatim, angustato, angulis posticis paullo exstantibus, capite et thorace sat crebre hic illic rugulose punctulatis, nitidis.* Long., 26 mm.

Old Calabar.

Differs from all other African species by its broad elongate-ovate elytra, the costæ of which are narrow and much less elevated than in *G. femoralis*, and the shoulders a little less marked.

ANTHIA PRÆSIGNIS.—A. Petersii (Klug) *affinis, thorace pone dilatationem abrupte sinuato-angustato elytrisque valde elongatis parallelis. Nigra, subnitida, supra breviter nigro-setosa; thorace vitta laterali (basin haud attin-*

genti) elytrisque margine et macula rotundata prope basin inter carinas 5^{am} et 7^{am} cretaceo-tomentosis: thorace sicut in A. Petersii et A. Burchellii grosse punctato, elytris costis utrinque angustioribus octo, interstitiis (sulcis) haud pilosis fere triseriatim punctulatis apiceque distincte oblique truncatis.

Long., 44 mm., ♂.

Mamboia (Mr. Last).

The white pubescent lateral margin of the elytra is strongly contrasted with the deep black of the rest of the surface, and forms a sharply-defined border, extending from the 8th rib to the margin, but it does not quite reach the base, and is there accompanied by a small spot lying between the 7th and 8th ribs, and a larger rounded and more densely tomentose spot situated between the 5th and 7th ribs, both of which latter are curved, and the 8th depressed to form a rounded pit for its reception. The punctuation of the thorax and under-side is very similar to that of the two species named.

ANTHIA PULCHERRIMA.—*Gracilis, elytris elongato-ovatis convexis apice sinuato-truncatis. Nigra supra opaca subtus nitida; capite fere sicut in A. biguttata (Bon.) elongato, oculis parum prominentibus, confluentur punctato fulvo-pubescenti, vertice et occipite medio unicariniatis sulcis frontalibus curvatis postice conjunctis interspatioque planato: thorace parvo, dense haud grosse confluentur punctato, vitta mediana rufo-fulvo pubescenti, postice valde sinuato-angustato, basi verticaliter declivi: elytris vitta lata suturali alteraque marginali rufo-fulvo pubescentibus, pube adpressa, elytris singulis inter vittas septemcostatis foveisque duabus ochraceo-pubescentibus, prima discoidali reniformi ante medium, secunda obliqua medio prope apicem.*

Long., 32 mm., ♀.

River Lujenda, East Africa (Mr. Last).

This beautiful species differs from all other *Anthia* in colours and markings, and in the sinuate-truncate apex of the elytra. In the length of its labrum, however, and general form, it agrees with *Anthia* better than with *Cycloloba*, which has similarly-truncated elytra. The tawny or ochreous-red pile which forms the central thoracic vitta and the sutural and marginal vittæ of the elytra, is long, dense, and laid transversely on a plane surface, and the ochreous discoidal spots lie in foveæ which break the continuity of the narrow shining costæ, the anterior spot occupying two, and the posterior four, of the costæ; the opaque interstices of the costæ form exceedingly deep and sharply-cut grooves.

Fam. *COPRIDÆ*.

SCARABÆUS PLATYNOTUS.—*Latus mediocriter convexus, supra purpureo-ocypreus, viridi-æneo relucens, subopacus; clypeo angulariter reticulato-punctato, vertice aspere granulato, tuberculo medio parvo acuto, genis reticulatis*

marginē laterali serratis apice sinuato-truncatis: thorace latissimo, granulis rotundatis nigris nitidis minus crebre adpersis, lineā dorsali spatiisque posticis lævibus opacis: elytris crenato-striatis interstitiis (suturali excepto) alutaceis atomis nitidis cupreis crebre obsitis et sat confertim foveolatis. Pygidium metallicum opacum aspere granulatum, copore subtus nigro-nitidum. Pedes nigri, tibiis intus nigro-pilosis. Femora antica subtus longe ante apicem acute-dentata, tibiisque subtus medio acute dentatis inter dentem at apicem bituberculatis. Mesosternum apice haud productum obtuse rotundatum. Long., 36 mm., ♀.

Nguru, East Central Africa (Mr. Last).

Nearest allied to *S. subæneus* (Harold), but amply distinguished by its much broader form, opaque upper-surface, the sparser and larger granulation of the thorax without trace of punctures, the very much larger foveæ of the elytral interstices, and other structural characters.

SCABRÆUS POROSUS.—*Convexus ænescenti-cupreus, nitidus: clypeo et genis reticulato-punctatis, vertice crebre punctato, tuberculo elongato lævi frontali, genarum lateribus extus incurvatis: thorace lateribus fere sicut in S. ægyptiorum granulatis, sed medio (præcipue postice) grossius punctato, vitta mediana (postice dilatata) et areola utrinque lævibus: elytris punctulato-striatis interstitiis (1—3 versus basin lævibus exceptis) subtilissime alutaceis, nitide atomatis et subseriatim grossius punctatis. Subtus cum pedibus splendide viridi-vel æneo-metallicus. Mesosternum ante coxas triangulare apice sub-compressum. ♀. Tibiæ posticæ fusco-fimbriatæ; femora antica inermia, tibiæ subtus versus apicem tuberculatæ.*

Long., 24—27 mm., ♂ ♀.

Mpwapwa, E. Africa (Mr. Last).

Of the numerous metallic species allied to *S. ægyptiorum* and *S. cupreus*, most nearly allied to *S. festivus* (Harold). The two very nearly agree in the form and sculpture of the head and thorax, but the general colour is different: *S. porosus* being duller coppery, with strong brassy or brassy-green tints, and *S. festivus* rich coppery-red, greenish when viewed from behind, and the elytra are glabrous over two or three interstices in the basal moiety. The shape of the mesosternal process is also different, more pointed and compressed. Five examples of each have been compared.

ANACHALCOS AURESCENS.—*Oblongus aurescenti-cupreus parum nitidus, creberrime sicut in A. cupreo punctulatus; thorace valde transverso lateribus explanatis margineque late rotundato nec ante medium angulato. ♂, tibiæ posticæ prope apicem leviter curvatæ, apice intus perparum prolongatæ sulcoque inferiori (inter carinas ciliatas) sat angusto polito: pygidium apicē medio alto reflexum recurvum, subtus in laminam ventralem politam dilatatum; abdomen punctulatum, segmento 5^{um} medio plunum.*

Long., 25 mm., ♂ ♀.

Usambara (Archdeacon Farler).

Distinguished from *A. procerus*, which is also an oblong species, by its very much smaller size and broader and shorter thorax (the thorax in *A. procerus* being for this genus remarkably long), and in the ♂ also by the shorter and less curved tibiæ, and the narrower groove of their under-surface.

ANACHALCOS MAGNUS.—*Quoad formam et colorem A. cupreo similis, sed multo major thoraceque margine laterali obtuse rotundato nec angulato. Creberrime punctulatus. ♂, tibiæ posticæ sicut in A. procero biflexuosæ sed minus elongatæ, apice intus sat prolongatæ et calcari brevi, sulco inferiori lato: pygidium apice medio alte reflexum (velut uncinatum) laminaque ventrali polita, segmento 5^o medio transverse callosum. Long., 30 mm., ♂ ♀.*

River Lujenda, East Central Africa (Mr. Last).

In most of its characters, intermediate between *A. cupreus* and *A. procerus*, the latter of which was found in the same neighbourhood by Mr. Last. In *A. cupreus*, the apex of the pygidium in the ♂ is broadly rounded, and the margin equally and only slightly reflexed. This obtains both in East African and West African examples.

ONTHOPHAGUS LUJENDÆ.—*O. lanistæ (Castl.) affinis et similis; differt (♂) capitis cornu mox a basi deflecto medioque subtus valide unidentato, necnon thorace cornubus recurvis latioribus et brevioribus, antice profunde bifoveato et dorso late lævisulcato. Læte viridis elytris pygidioque fulvis, clypeo et pygidio fulvo-pilosis, thorace lateribus crebre punctatis. ♀ differt ab O. lanista, ♀, tantum thorace usque ad lobum basalem canaliculato, medio basi solum lævi. Long., 13—15 mm.*

R. Lujenda (Mr. Last). A large series of examples offering no variation.

The species is almost exactly intermediate, in structure as well as in locality, between *O. lanista*, of the Cape and Natal, and *O. negus* (Raffray), of Abyssinia. In the latter, the large deep thoracic foveæ are within and behind the horns, in *O. lujendæ* they lie at the base and in front of each horn, and are smaller, rounder, and better defined.

ONTHOPHAGUS PLATO.—*Oblongus, latissimus, depressus, niger opacus; capite brevi semicirculari ruguloso-granulato; thorace dense sed discrete nitido-granulato, parum convexo antice medio leviter depresso, medio basi triangulariter breviter producto, margine laterali ante angulum basalem dentifero deinde sinuato; elytris sat acute punctulato-striatis interstitiis planissimis, minute discrete pilifero-punctulatis pilis griseis recumbentibus: subtus nigro-nitidus.—♂, carina anterior subobsoleta, posterior in laminam latam obliquam elevata utrinque cornu valido compresso curvato apice subuncinato ante medium intus uniramoso: thorace disco tuberculis duobus altis acutis distantibus. Long., 31 mm.*

Damaraland (Andersson).

Nearest allied to *O. rarus*, Guér.

(To be continued.)

MIGRATION OF INSECTS.

BY REV. CANON FOWLER, M.A., F.L.S.

The following notes have been kindly extracted for me by Mr. J. Cordeaux from his reports on the Migration of Birds published for the British Association. Mr. Cordeaux, who is the chief authority on this subject in the kingdom, has kindly promised to obtain for me further information regarding flights of *Lepidoptera*, &c., from the various lighthouses and lightships with which he is in communication; he informs me that the collection of *Lepidoptera* taken by Herr Gätke on Heligoland is extremely interesting, and would, probably, if examined by an expert, revolutionize many of our ideas of distribution.

The note given below from Heligoland is most interesting. If we had any doubt as to the powers of flight possessed by insects, the record "great numbers of *Bombyx neustria* east to west; numerous flights passing on," would serve to dispel it, when we remember that after leaving the small island they have 500 miles of sea to cross before reaching land; nor is this flight by any means surprising when we remember that small birds, like the gold-crested wren, regularly make the same flight, and some far greater ones. A short while ago Mr. Cordeaux showed me a small finch that had struck against a lighthouse in the North of Scotland, which must have come from Cashmere. If we reflect on these facts we shall see that there is nothing very extraordinary in species flying across the Channel; the only wonder is that more do not come, although it is probably a fact that many of the specimens of our ordinary species are foreigners, and species that have not been acclimatized would have no instinct to migrate. I hope, however, to be in a position to give further information on the subject before very long.

MIGRATION REPORT, 1884.

Heligoland.—Mr. Gätke writes, "Night, July 2nd to 3rd, thousands of *Plusia gamma*; 3rd, myriads of Dragon-flies; night, 21st to 22nd, great numbers of *Bombyx neustria*, east to west; 22nd to 23rd, the same; 27th to 28th, numerous flights passing on."

MIGRATION REPORT, 1885.

Happisburgh Lightvessel, Norfolk, June 7th, 4 p.m., S.S.E. (2) O.M.—"One death's-head moth, caught alive, several small white moths and black flies rested."

Languard Point Lighthouse, July 4th, 9.35 p.m.—"Millions of very small brown-coloured flies pitched on lantern glass, and had to be washed off to keep the light clear. They sting like a musquito. Wind S. (1), B.C.M."

Hanois Lighthouse, Guernsey, Sept. 13th, S.E., cloudy.—"Silver gamma moth all the evening round lantern. Sept. 22nd, S.E., B.C.V., 2 p.m., Ants flying past lighthouse, some settled."

Rhinns of Islay Lighthouse, facing north coast of Ireland. Hundreds of moths are reported flying about the lantern on Sept. 7th, also on night of Sept. 3rd.—“We have had an enormous number of what are locally called ‘Jenny Long-legs’ about the station for the past three or four weeks, and in the morning there are great numbers of their legs and wings on the pavement. This morning, after putting out the light, I watched, when I saw about twenty ‘mosscheepers’ (*i.e.* Pipits) working hard to make their breakfasts from them. I never before saw so many ‘Long-legs’ in the fall. There is a usual run in April.” (Messrs. Peter Anderson and James Ducat).

MIGRATION REPORT, 1886.

Fidra Lighthouse, East Coast, Scotland, under date Sept. 18th, Mr. Ross says:—“Had I known moths would have been of any use to you, I believe I could have given you a varied, rare, and enormous parcel. Last month it was moths everywhere after darkness set in—I had to sweep them down with a towel, some very large and beautiful.” * * * “One beautiful specimen—not a moth, I think—of a size between a daddy long-legs and dragon-fly, and much the same shape; enormous bronze wings, beautiful vermilion body, black head, with a red (or yellow?) streak (or spot?), and antennæ more like a young lobster than any thing else.”

Tees 5^m Buoy Lightvessel, April 30th, 1886, Wind E., light.—“A great many bumble-bees and a few wasps during day, flying to N.W., several remained on board.”

Coquet Island Lighthouse, Sept. 12th, W. (5)—“Hundreds of small flies all night in lantern.”

Cockle Lightvessel, Norfolk Coast, Sept. 14th, 11 a.m., calm.—“Great quantities of bluish-coloured flies—left again at 1 p.m.”

Languard Lighthouse, September.—“The mosquitoes,” Mr. Owen Boyle writes. “have been very numerous throughout the months of July, August, and September, They have been very troublesome; some people had swelled hands, puffed faces, and even black eyes from their stings.” Oct. 4th.—“Ladybirds in large numbers on the breakwater at noon and up to sunset. At 3 p.m. they were to be seen in thousands.”

Hanois Lighthouse, Guernsey, Oct. 31st, 8 p.m.—“A quantity of silver gamma moths, also a few brown ones, but smaller than the gamma.”

January, 1888.

ASPIDIOTUS ZONATUS, FRAUENFELD.

BY ALBERT C. F. MORGAN, F.E.S.

ASPIDIOTUS ZONATUS, Frauenf., Verhandl. z.-b. Gesells. Wien, 1868, p. 888; Sign., Ess. Cochen., pp. 109, 511, 630, pl. i, fig. 14; Doug., Ent. Mo. Mag., xxiii, pp. 150, 151.

ASPIDIOTUS QUERCUS, Sign., Ess. Cochen., pp. 106, 511.

During the month of October last, and since, I have found in the neighbourhood of Oporto, in two situations, some distance from each other, an *Aspidiotus*, on the backs of the leaves of an oak (*Quercus robur*, var. *pedunculata*). The leaves were inhabited by both male and female scales, although the former were more numerous than the latter.

I at first thought that the species must be new, as the female insect does not entirely agree with any described species that I am aware of; but I am now induced to think that my specimens are *Aspidiotus zonatus*, Frauenf., = *quercus*, Sign., and that the females which have been described by Signoret (*l. c.*) and by Mr. Douglas (*Ent. Mo. Mag.*, xxiii, pp. 150, 151) must have been young individuals, whilst those which I have found are the fully developed adults, and it will be necessary to give my reasons for coming to the above conclusion.

Signoret describes two species of *Aspidiotus* as feeding on the oak. His *A. ilicis* (*Ess. Cochen.*, p. 97) cannot, I think, be identified with that which I have found, either from description or figure (*op. cit.*, pl. iv, figs. 3, 3a).

His description of *A. quercus* (*l. c.*) agrees in some respects with my examples; for instance, speaking of the scales, he says, "Celui des femelles est arrondi, celui des mâles très allongé, avec la dépouille au centre et jaune." This description entirely agrees with my specimens; but, on the other hand, he states that he has not been able to see any groups of spinnerets in the female, whereas my specimens show four groups.

In describing the male, Signoret writes (*l. c.*), "Les antennes sont courtes." I did not find any perfect male imago on my oak leaves—only pupæ, but Mr. Douglas kindly sent me some leaves of the same species of oak as my own, and on those I found more than one male. These had elongate antennæ, about the length of the body of the insect.

Mr. Douglas gives the measurement of his male scales as ranging from 1.075 mm. to 1.45 mm., and those of his which I measured I found to be about 1.115 mm., whilst my own measured about 1.25 mm. I do not see any difference between those which he sent me and my own, as regards colour or shape, and after making allowance for the important discovery by Mr. Douglas (*l. c.*) of the discrepancy as to measurement in Signoret's translation of Frauenfeld's description of *A. zonatus*, I do not think there is any reliable difference between the male insect and scale of the *A. zonatus*, Frauenf., and those found by Mr. Douglas and myself.

Signoret (*op. cit.*, p. 106), referring to his *A. quercus*, states that it appears to him distinct from *A. zonatus*, but he afterwards appears to have modified his opinion on this point, and refers to the two species as being synonymous (*op. cit.*, pp. 511, 630), and he finally affirms this to be the case in his letter to Mr. Douglas (*Ent. Mo. Mag.*, xxiii, p. 151).

Therefore, as far as the male is concerned, there seems sufficient reason for concluding that my specimens are of the same species as those found by Dr. Signoret in France, Mr. Douglas in England, and by Frauenfeld in Austria, viz., *A. zonatus*.

As regards the females, however, an important distinction between *A. quercus*, Sign., and my specimens consists in the absence of spinnerets in the former, and the presence of four groups in the latter, and on examining those received from Mr. Douglas, of which there were very few females, I find the same difference; but with this exception, viz., absence of spinnerets, Mr. Douglas' specimens show the same characters as my own. I should suppose that those which Mr. Douglas sent me are

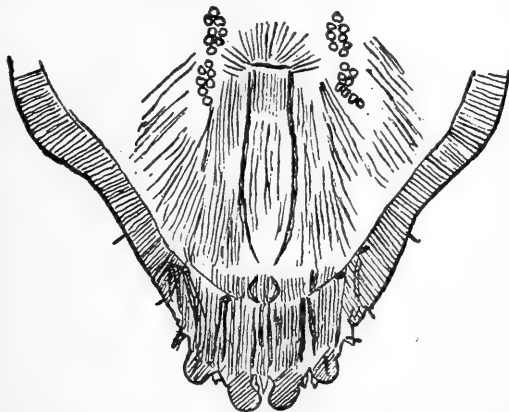
young females, as they were round and small, and with but little scale, also only one exuviae; and the spinnerets are, I think, seldom seen in the *Aspidioti* until they are adult, or at least, until they have cast their skin twice.

I observe that Signoret, speaking of his *A. ilicis*, makes the following observation (Ess. Cochen., p. 98): "Dans beaucoup d'individus femelles, je n'ai pu voir les plaques de filières. Cela tient-il à la préparation ou y a-t-il quelques individus anormaux qui n'en prennent pas?" As far as my own limited experience goes, I find the spinnerets are not seen until the age of the insect is somewhat advanced. If I am right in concluding that Mr. Douglas' specimens were young, this will account for his measurement of the female scale being only half a millimètre, whilst mine measure one millimètre.

Mr. Douglas tells me that he only made one gathering, in September, 1886, of oak leaves, from the same tree; some he sent to Dr. Signoret, and some he sent to me. Signoret identified those which he received as being the same as his own—"Les échantillons sur chêne sont l'*Aspidiotus zonatus*, Frauenf., = *Asp. quercus*, Sign." (Ent. Mo. Mag., xxiii, p. 151), and I think there is no doubt that those which I received are the same as my own; we are therefore led to the conclusion that my specimens are the *Aspidiotus zonatus*, Frauenf., and it may now be desirable to describe the specific characters of the species, as Signoret's description, whilst not very detailed, must necessarily be modified, and Frauenfeld only describes the male.

The female scale measures about one millimètre, of a smoky-white colour, and more or less elliptical form. The body of the insect may be seen underneath the scale, the two exuviae lying transversely with it. Exuviae naked, situated in the centre of the scale.

The female insect measures rather less than a millimètre, about .9 mm. Form oval, segmentation distinct, with marginate and undulated margin. The last seg-



ment shows the following characters (see figure):— Four groups of spinnerets, each consisting of from five to eight. The anterior group is situated so close to, as almost to form one with, the posterior group. There are three pairs of lobes, the first and second pairs being well developed, but the third pair is frequently merely rudimentary. The median pair is the largest, rounded at the posterior end, with a notch

on the outer lateral margin, but with its inner lateral margin entire. The second pair is not as large as the median pair, but is similar in shape and character, whilst the third pair is inconstant. The bases of the lobes seem to extend anteriorly into the body, making it appear longitudinally plicated. These are I think what Prof. Comstock terms "thickenings of the body wall," and they are remarkably noticeable in this species, especially if the insect is observed before being thoroughly prepared for microscopical examination.

The spines or hairs are not very conspicuous, and are situated as seems most usual with the *Aspidioti*, *i. e.*, one at the base, rather laterally of each of the lobes, and there are sometimes to be seen one minute hair about a quarter and another about half-way between the apex of the last and the commencement of the penultimate segment.

The plates are very small, and are not always visible, but there seem to be two simple plates between the median lobes, and two similar ones between the first and second lobes, as well as two anterior to the third rudimentary lobe.

The male scale has already been well described by Mr. Douglas (*op. cit.*).

The male insect measures about .8 mm. from front of head to tip of wings, when the latter are lying incumbent. It is of a yellow colour, mottled with orange-brown. Antennæ elongate, pubescent, 10 jointed. The basal and 2nd joint short, the 3rd, 4th, 5th, 6th and 7th are the longest and are equal, the 8th, 9th and 10 being shorter and sub-equal, the last joint suddenly constricted at the tip and terminating with a hair. Wings white; one branched nervure.

Thoracic transverse band very dark, almost black. Usual balancers, terminated with a hooked bristle. Exserted genital organ about half the length of the body.

Villa Nova da Gaya, Portugal:

January 6th, 1888.

[I quite agree with the author's conclusions.—J. W. D.].

Note on Orthezia insignis (*cf.*, p. 169 *ante*).—From the Botanic Gardens, Cambridge, Mr. R. Irwin Lynch, the Curator, has had the goodness to send me living examples of this insect on *Eranthemum nervosum*, a plant of the same Natural Order as *Strobilanthes* (*Acanthaceæ*), on which I had it from Kew, and Mr. Lynch kindly supplies the following information. "No doubt the insect came from Kew, where I knew it years ago, but certainly it did not come upon the *Eranthemum*. It is numerous enough on a specimen of this plant, and I think it does about as much harm as a mealy bug. I believe I have seen the insect on other *Acanthaceæ*, but not on a plant of any other Order." In a note on this species by Mr. Edward T. Browne, published in the "Journal of the Quekett Microscopical Club," Ser. ii, Vol. iii, No. 20, Dec., 1887, he states that at the Royal Gardens, Kew, "the insects have been gradually spreading, in spite of the measures taken to annihilate them: now they may be found on *Scutellaria* and other foreign plants in an adjoining house."

On the two small terminal shoots of the *Eranthemum* sent by Mr. Lynch were several examples of the adult female fixed by the rostrum immersed to its base in the stem; a few ♀ without marsupium wandering about; and a great many very small larvæ, some of them just hatched, all the very miniatures of their mothers before the development of the postnuptial marsupium; these were stationary on and sucking the stem. The motto of the Horticultural Society "*Alienis mensibus æstas*" is as applicable to these insects as to the exotic plants on which they feed, for now, in our mid winter, under the fostering influence of artificial warmth, they are as lively as others of their race were in summer time.—J. W. DOUGLAS, 8, Beaufort Gardens, Lewisham: January 19th, 1888.

ON SOME NEW OR LITTLE KNOWN BRITISH PARASITIC
CYNIPIDÆ.

BY P. CAMERON, F.E.S.

1. *The parasitic Cynipidæ described by Prof. Westwood in the Mag. of Nat. Hist., 1833.*

Prof. Westwood has very kindly lent me for examination his type specimens, and this has enabled me to clear up some doubtful points in synonymy:—

Eucolla crassinerva. This is *E. maculata*, Htg., as indicated by Dahlbom (Skand. Hym., 1846, No. 20). It forms the type of Förster's genus *Psilodora*.

Kleidotoma psiloides = *K. bicolor*, Gir. = *K. ruficornis*, Thoms.

Anacharis rufipes = *Ægilips Dalmani*, Reinhard.

Anacharis fumipennis. This is a hitherto unrecognised species of *Ægilips*. It has the scutellum formed as in *Dalmani* (or, as it must be now called, *rufipes*), *striolata*, and *bicolorata* (cf. Cameron, Trans. Ent. Soc., 1883, p. 374). From the latter two it is readily known by the mesonotum not being transversely striolated; from *rufipes* by the thorax being densely pilose, by the scutellum being somewhat shorter, by the petiole being longer, it being three times longer than broad, and piceous; this being also the case with the base of the abdomen; and by the wings being uniformly smoky. The legs are testaceous. As it is not described in any continental work, I give a description of it here:—

ÆGILIPS FUMIPENNIS, Westwood.

Black; the legs testaceous; mandibles piceous-red, darker at the apex; petiole and base of abdomen piceous; flagellum of antennæ fuscous. Antennæ shorter than the body; thorax densely pilose; parapsidal furrows shallow, indistinct; scutellar foveæ indistinct; scutellum obtuse, rugose; metanotum rugose, tricarinate; petiole three times longer than broad, striolated; abdomen shining; wings uniformly smoky; first abscissa of radius three-fourths the length of second; nervures fuscous. Length, 2.5 mm.

The following is a synopsis of the British species of *Ægilips*:

- 1 (12) Scutellum conical, not ending in a spine.
- 2 (5) Scutellum smooth, impunctate in front and at the sides.
- 3 (4) Scutellar foveæ obsolete; legs and antennæ bright yellow...*nitidula*, Dal.
- 4 (3) „ „ distinct; legs and antennæ red*ruficornis*, Cam.
- 5 (2) Scutellum rugose.
- 6 (9) Mesonotum transversely striated.
- 7 (8) Scutellar foveæ almost obsolete, mesonotum shining; first abscissa of radius one-half the length of second; legs testaceous and yellow...
striolata, Cam.

- 8 (7) Scutellar foveæ deep; mesonotum opaque; first abscissa of radius scarcely shorter than second; legs dull red *bicolorata*, Cam.
- 9 (6) Mesonotum not transversely rugose.
- 10 (11) Wings hyaline; thorax not deeply pilose; petiole twice longer than broad
rufipes, West.
- 11 (10) Wings uniformly smoky, thorax densely pilose, petiole three times longer than broad
fumipennis, West.
- 12 (1) Scutellum ending in a spine.
- 13 (14) Mesonotum semi-opaque, transversely striated, petiole much longer than broad (in ♂), foveæ at base of scutellum obsolete. *subulifera*, Thoms.
- 14 (13) Mesonotum not striated; scutellar foveæ large.
- 15 (16) Spine short, obliquely truncated at apex, not one-fourth the length of scutellum; legs fuscous; petiole shorter than broad *scotica*, Cam.
- 16 (15) Spine long, curved, more than one-third the length of scutellum; legs and antennæ red; petiole a little longer than broad *armata*, Gir.

PHÆNOGLYPHIS FORTICORNIS, *sp. nov.*

Reddish-testaceous; the vertex and the top and apex of abdomen, castaneous; the legs yellow, tinged with red; the antennæ fuscous, the basal five joints testaceous; wings hyaline, nervures fuscous; radial cellule elongated, narrow; the first abscissa of radius two and a half times the length of the second; antennæ longer than the body, stout. Eyes lead coloured. ♀. Length, 1½ mm.

Differs from *P. xanthochroa* in being smaller, in the antennæ being stouter and only yellowish at the base, in the vertex being broadly dark castaneous, in the radial cellule being narrower, and in the ground colour of the body being of a much more decided rufous tinge.

Förster makes no mention of *Phænoglyphis* having a longitudinal furrow on the mesopleura, and I cannot make out, owing to the bad condition of my representative of *P. xanthochroa*, if one is present in that species; but it is certainly present in *P. forticornis*. Further, Förster states that the radial cellule is not twice so long as broad, which is certainly the case in *xanthochroa*; and in it also the areolet is complete, another point in which it differs from Förster's description.

Förster describes a "genus" *Hemichrosis*, which agrees with *Phænoglyphis* in having the parapsidal furrows indicated (although not complete), while the scutellum has no fovea at its base. *Hemichrosis* is further defined from *Phænoglyphis* in the radial cellule being almost twice as long as broad, and the areolet is complete. The latter two points are merely specific, while no sharp line of demarcation can be drawn as to the completeness of the parapsidal furrows. Thus, the only real point of distinction between the two lies in, according to Förster, *Hemichrosis* not having a fovea at the base of the scutellum.

In *P. salicis* there is an obscure fovea at the base, so that this character cannot be said to be a valid one. Our three species may be defined as follows:—

- 1 (4) Body rufo-testaceous; second abscissa of radius twice the length of first.
- 2 (3) Antennæ entirely rufo-testaceous *xanthochroa*, För., = *rufa*, Thoms.
- 3 (2) „ fuscous, testaceous at base *forticornis*, Cam.
- 4 (1) Body black; second abscissa of radius not twice the length of the first...
salicis, Cam.

The European species of parasitic *Cynipidæ*, especially the *Allotrina* and *Eucoilina* stand very much indeed in need of revision, no work on the latter two groups having appeared since the publication of Thomson's Monograph of the Swedish species, now over a quarter of a century ago, beyond a few stray descriptions. There is great difficulty in obtaining specimens, and thus it is no easy matter to get material for a thorough revision of the European species. Being at present occupied with parasitic *Cynipidæ*, I shall be exceedingly obliged for the loan of any specimens from any part of the globe, but especially from Europe.

Sale, Cheshire :

December 13th 1887.

Lepidoptera at Armagh in 1887.—Although I devote most of my spare time to the *Coleoptera*, I pick up occasionally a few *Lepidoptera*, and, during the past year, made one or two good captures, at least from an Irish point of view. On January 14th a fine specimen of *Gonoptera libatrix* was brought to me by one of my pupils who had caught it in his bedroom. Pupæ dug in the autumn of 1886 produced *Taniocampa stabilis*, *T. instabilis*, *T. gothica*, *Hadena thalassina*, *Phigalia pedaria*, Fb., = *pilosaria*, Hb., D. L., &c. *Vanessa urticae* first showed itself on March 26th. The "Whites" were not very plentiful in the early part of the year, but their larvæ made fearful havoc among the cabbages. However, the ichneumons were not idle, and I have seldom noticed so many of their little golden clusters of pupæ. In July I was astonished at seeing a specimen of *Argynnis Paphia* close to the town, a species I had never observed here before. I was unsuccessful in my endeavours to take it, but on August 8th I took two specimens at Benburb, on the borders of County Tyrone. *Vanessa Atalanta* also made its appearance in September, and I captured a very fine specimen, the only one I have ever taken here, though I have seen them occasionally. *V. cardui*, which generally visits us, did not show at all, much to my astonishment. *Lycæna Icarus* was unusually abundant and in fine condition. At Churchill, on July 2nd, I took a good number of *Cænonympha Typhon*, = *Davus*, which Mr. Kane informs me has not been recorded from Ulster before, and is of the intermediate type between *Davus*, Fab., and the *v. Philoxenus*, of Yorkshire. At the same place I captured *Bombyx quercus*, *Odonestis potatoaria*, *Nemeophila plantaginis*, *Strenia clathrata*, *Ematuga atomaria*, *Aspilates strigillaria*, and *Selidosema plumaria*, = *ericetaria*. Of this last I took quite a large series on a heathy

bog just outside the Verner demesne, being late in the season, however, most of them were rather the worse for wear. From the stems of *Typha latifolia* I got some pupæ of *Nonagria typhæ*,=*arundinis*, of which four came to maturity. The Mullinures (low damp meadows just outside the town) provided me with *Zygæna filipendulæ*, *Z. loniceræ*, and *Z. trifolii*. *Amphipyra tragopogonis* occurred in numbers in holes in a poplar tree. Cocoons from Lowry's Lough produced two beautiful specimens of *Plusia festuæ*, and in my garden I took at night *P. v-aureum*,=*pulchrina*, *P. chrysitis*, *P. gamma*, *Xylophasia polyodon*,=*monoglyphæ*, *Triphæna janthina*, *Cidaria prunata*, *C. fulvata*, *Cerostoma xylostella*, *Xanthosetia Zægana* and a multitude of others not worth mentioning. Lastly, *Sphinx convolvuli*, as already recorded (p. 132), was found dead outside a window by Mr. T. Smith, and I picked up *Triphæna fimbria* dead on a footpath, that being the first time I had met with it here. It will be seen from the above notes that the *Rhopalocera* are very poorly represented here, and the *Heterocera*, while more numerous and having some good species among them, are mostly of the commoner kinds as far as my knowledge of them goes at present.—W. F. JOHNSON, Winder Terrace, Armagh: Jan. 4th, 1888.

Tinea granella at King's Lynn.—This town, having a large import trade in corn, serves naturally as an opening for immigration of corn-feeding insects. *Ephestia interpunctella* sometimes abounds in, and outside, the warehouses—bearing a most comical resemblance when at rest to a *black oat grain* sticking against a wall—while *Gelechia cerealella* is at times even more plentiful, and still better concealed by its extraordinary resemblance to a bit of chaff. But the really important grain-pest here is *Tinea granella*. Its abundance is at times almost beyond belief, the streets near the river swarm with it on warm evenings to such an extent as to arouse the wonder of the inhabitants. In a corn warehouse I have found that the wooden upright supports and partitions wherever the wood was soft or slightly decayed were honeycombed on the surface with the holes made by the full-fed larvæ for pupation, and, in every protected corner, chink and cranny, the empty pupa-cases were still sticking out of these holes as thickly together as the hairs in a brush—thousands of pupa skins giving the wood an extraordinary appearance.

But the larvæ cannot always find soft wood into which to bore, and they wander out through doors and windows in search of some suitable place for pupation, and may be collected in scores under lintels, in the holes and interstices of bricks, or under boards or other articles lying upon the ground. They are warmly appreciated as delicate tit-bits by the swarms of sparrows which obtain their livelihood generally in a far less creditable manner from the heaps of grain, and it is most curious to see (as I can often from my office window) a hundred or more of these ubiquitous birds on the warehouse and dwellings opposite, a large party of them every now and then flying to, and hovering against, the granary wall, or even perching upon the roughest places and so picking out these wandering larvæ. The freshly arrived cargoes of grain from some warm climate furnish them in abundance and full-fed, and they seize such mild days as we have just experienced to seek their fortunes—to the great joy of the sparrows.

The larva is rather plump with deeply divided segments, and tapers slightly behind, yellowish-white, "fat-white," with head pale brown and jaws rather darker, dorsal plate very pale brown, shading at the margins into yellowish, divided in the

middle, and also with a pale *transverse* line. Anal plate and feet yellowish-white. It emerges from pupa in the following summer, and has apparently two broods, but the natives are constantly reinforced by fresh arrivals from abroad, and as there is always grain in the warehouse so there, probably, are always larvæ feeding in it.—CHAS. G. BARRETT, King's Lynn, Norfolk: *January 16th*, 1888.

Note on Micropteryx salopiella, Stn.—The abundance of birch, both trees and bushes, or the heaths in this district afforded me last spring an opportunity, such as I have not had for many years, of renewing my acquaintance with several of the birch-frequenting species of *Micropteryx*. *Purpurella* was by far the most abundant, but *semipurpurella*, *unimaculella*, and even *Sparmannella* were to be found in fair numbers, although the last named species, from its partiality to large trees, was more difficult to secure. Very often the sexes were found paired, and an insight was thus afforded into the sexual differences in shape and colour of the fore-wings which obtain in some of the species.

This brings me to the object of the present note. I found that the females of *unimaculella* differ from the males in that their fore-wings are rather broader and more ovate, the pale blotch above the anal angle broader and hardly so crescent-shape, but extending more than two-thirds across the wing, and the remainder of the fore-wings beautifully clouded and mottled with purple and golden. When alive these markings were distinct and most noticeable (much more so than they are now), and I thought that I then understood, what has hitherto always puzzled me, why Dr. Wocke, in his (and Staudinger's) "Catalog," sunk *salopiella*, Stn., as the ♀ of *unimaculella*, an error which has, of course, been copied elsewhere.

I am not aware that *salopiella* has been taken on the continent, or if taken, recognised. It is local in England, but widely distributed, but, as far as I know, is not found in *this* district. My specimens were taken near Haslemere, Surrey. It is most closely allied to *purpurella* and *Sparmannella*, having the beautifully reticulated crimson-purple and golden markings of the former, with the broad-oval fore-wings of the latter, but its pale spot does not simply occupy the anal angle, *but is a broad triangle*, having its base on the dorsal margin of the wing and its apex very nearly reaching to the costa. It is altogether distinct from the female of *unimaculella*, and yet there is sufficient similarity in the descriptions to excuse one unacquainted with *salopiella* in making the mistake.—ID.: *November 20th*, 1887.

Coleoptera and frost.—The other day we had a snowstorm, but since then although it has frozen hard every night, the days have been warm and sunny. Walking down to West Cliff this morning, I noted the effect of the frost upon the *Coleoptera*; they were assembled in vast numbers under every available piece of wood or stone, presumably for the sake of warmth. It was on the Prairie, and there was no other available shelter, the *Yucca*, *Bigelovia*, &c., being useless for this purpose. It seemed as though every stone or log had under it an ants' nest, in which all the ants had become transformed into beetles. Most were *Geodephaga*, as might be expected—two or three species of *Bembidium* allied to *littorale*, a small *Pterostichus* about the size of *strenuus*, and an *Amara*; also two striped *Chryso-melidæ*, two species of *Coccinella*, some *Curculionidæ*, and others, together with some species of *Heteroptera*, a few small *Diptera*, an Homopteron of the *Cicada*

group (black with a reddish margin), and many spiders. I also took one example of *Strachia*, which curiously resembled the more abundant of the two *Chrysomelidæ*, being marked with exactly the same tints of vermilion, black, and cream colour, and in a nearly similar manner. As the *Strachia* is in all probability disagreeable to the taste, I suppose this to be a case of protective resemblance on the part of the beetle. The only thing against this is the apparent rarity of the *Strachia*, which I have not seen elsewhere, while I have found the beetle also at Dillon on the Pacific slope, and near Saguache in the San Luis Valley.—T. D. A. COCKERELL, West Cliff, Custer Co., Colo., U. S. A. : *November 12th*, 1887.

Haplocnemus impressus, Marsh.—A few days ago, while in the neighbourhood of Dean Forest, I made a search for this rare species in an orchard near Newnham-on-Severn, where I have taken it sparingly on one or two occasions under bark of old pear trees. I could not, however, discover the perfect insect, but obtained one larva; the species has been recorded rarely from the London district, the New Forest, Granville's Wootton (Dorset), Sutton Park (Birmingham), and Carlisle, and also from the Forth and Tay districts of Scotland. It is however, apparently, commoner than *H. nigricornis*, which has occurred near London, and has also been recorded from Hastings, the New Forest, Leicestershire and Yorkshire. In the latter county it has been taken by beating birches in woods in July. As a rule both the species are found under bark, but in summer they come out upon flower and foliage. By some authors *H. impressus* and *H. nigricornis* have been considered identical, but, apart from the fact that the latter species is dark bluish-green, and the former bronze or blackish-bronze, the punctuation of the elytra is rather coarser and more diffuse in *H. nigricornis*, and, in some specimens at all events, the thorax is more finely punctured; the structural differences are, however, it must be allowed, very slight.—W. W. FOWLER, Lincoln : *January 10th*, 1888.

Nothochrysa capitata in Norfolk.—There appears to be some occult connection between an unusually hot summer and the occurrence of this rare "Lace-wing." At p. 69 *ante*, I recorded an example from Stourton, Wilts. My friend Mr. Barrett recently sent me two examples (out of three seen) taken at Bawsey Heath, near King's Lynn, by beating fir trees. He hopes to obtain more next year. I share this hope, but think its realization depends much upon the "season."—R. McLACHLAN, Lewisham : *November 10th*, 1887.

Notes on Philopotamus montanus, var. *scoticus*.—At Cloghereen, near Killarney, there is a swiftly flowing stream which is fed by a small lake, which, in its turn, is supplied by land springs, the water in both lake and stream even during August being icy cold; along the banks of the stream I captured large numbers of *Philopotamus montanus*, var. *scoticus*, but, although diligent search was made at intervals during five and six weeks, no example of the type of *montanus* could be obtained, whilst, at almost every other stream in the district, it occurred very commonly, although the variety was not obtained. Towards the top of Mangerton there is a spring-fed lake from which a stream flows (which, by the way, supplies the town of Killarney with water); only the ordinary type of *P. montanus* occurs along its banks, this stream appears to be very similar to the one at Cloghereen, excepting that it is at a higher elevation. The variety *scoticus* seems to be, upon the whole, a larger insect, the

wings being more ample, but I could not detect any difference in the anal parts from those of the type. It may be worth mentioning that the ♀ of the variety *scoticus* appears to be much more scarce than that of the type. The proportion of the ♀ to the ♂ of *scoticus* being about 7 per cent., and of the type 27 per cent.—JAMES J. F. X. KING, 207, Sauchiehall Street, Glasgow: *January, 1888.*

[There is much yet to be learned with respect to the presumed varieties, based on colour characters, of *Philopotamus montanus*. I have already pointed out (Rev. and Synop. of European *Trichoptera*, p. 383) that Donovan's original figure of *montanus* resembles the var. *scoticus* rather than what we are accustomed to consider the "type" form. Then again there are the vars. *chrysopterus* (Morton) from Clydesdale, and *cesareus* (McLach.) from Jersey. Also the very striking form that I ventured to consider a distinct species, and described as *insularis*, from Guernsey. The presumed var. *cesareus* appears to be peculiar to Jersey to the exclusion of any other form of the species. The presumed species *insularis* appears equally peculiar to Guernsey, and exclusive there. But the presumed vars. *chrysopterus* and *scoticus* are in a somewhat different position. They are only isolated, inasmuch as they seem exclusively confined to certain streams within easy distance of localities where the so-called "type" occurs in abundance but without the vars. I bring these points prominently forward because they are fraught with importance. There is much yet to be learned.—R. MCLACHLAN.]

Apatania muliebris, *McLach.*—Towards the end of August, during a short visit to London, I spent a day at Arundel in search of *Apatania muliebris*, McL., having had the locality indicated to me by Mr. McLachlan. Since his last visit it has been considerably changed, retaining walls for a mill pond have been erected, and the miniature waste-fall has been destroyed, but, notwithstanding the above serious alterations in the surroundings, I might have obtained any number of the species, at least, the ♀, for as yet the ♂ has not been taken.—ID.

[It is interesting to find that *A. muliebris* still holds its own, without the apparent necessity for a husband, in the old locality, notwithstanding changes in its very limited habitat. I have previously detailed my numerous visits to this locality, in former times, in the hope of finding the ♂.—R. MCLACHLAN.]

Obituary.

George Robert Waterhouse, F.Z.S., died at his residence at Putney on the 21st of January, aged 77. A detailed notice will appear in our next No.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY: December 22nd, 1887.—The President, R. ADKIN, Esq., F.E.S., in the Chair.

Messrs. H. Hayward, F. E. Pow, F. S. Pilkington, M.D., W. R. Hicking, H. I. Smith, C. Kedgley, F. Livesey, E. A. Fitch, F.L.S., F.E.S., G. T. Porritt, F.L.S., F.E.S., J. A. Smith, W. Turpin, S. Mosley, J. Butterfield, W. Farren, I. Echersall, and the Rev. Canon Fowler, M.A., F.L.S., F.E.S., were elected members.

The only exhibits were a lilac-coloured variety of *Lycæna Icarus*, Rott., and an hermaphrodite specimen of *L. Corydon*, Fb., by Mr. C. B. Smith, and a fine irradiated variety of the under-side of *L. Icarus*, by Mr. A. C. Smith.

The Secretary read the Council's report from which it appeared that, during the year, 51 members had been elected, bringing the total membership to 148. The Treasurer read an abstract of the accounts, showing a balance to the Society's credit of £9 8s. 6d. The election of officers for 1888 was then taken with the following results:—Mr. T. R. Billups, F.E.S., President; Mr. John T. Carrington, F.L.S., Vice-President; Mr. E. Step, Hon. Treasurer; Mr. D. J. Rice, Hon. Librarian; Mr. W. West (Greenwich), Hon. Curator; Mr. H. W. Barker, Hon. Secretary; Mr. H. J. Turner, Hon. Assistant Secretary; Messrs. R. Adkin, F.E.S., T. W. Hall, F.E.S., R. South, F.E.S., W. H. Tugwell, J. W. Tutt, F.E.S., J. R. Wellman, and J. Jenner Weir, F.L.S., F.Z.S., F.E.S., Council.

January 12th, 1888: T. R. BILLUPS, Esq., F.E.S., President, in the Chair.

Messrs. F. W. Hawes, C. E. Runnacles, and A. E. D. Gould, were elected members.

Mr. J. Jenner Weir exhibited *Cicadetta hæmatodes*, and stated, as far as he knew, a dozen specimens had been taken during the past season in the New Forest; out of the dozen captured there was only one male. Mr. Tugwell, specimens of *Dianthæcia casia*, W. V., from Germany, and the dark variety from the Ise of Man; also a number of continental examples of reputed or very rare species of British *Lepidoptera*. Mr. Dobson, *Agriopsis aprilina*, L., and a short discussion took place as to the reason of the colour in this species fading so quickly when compared with *Moma Orion*, Esp., and *Geometra papilionaria*, L. Mr. Tutt contributed remarks on the reputed appearance of *Acidalia strigaria*, Hb., in Kent, and suggested they might have been small specimens of *A. renutaria*, Hb. 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.*

ENTOMOLOGICAL SOCIETY OF LONDON; *Fifty-fifth Annual Meeting: January 18th*, 1888.—Dr. DAVID SHARP, F.Z.S., 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 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. Herbert 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. Henry J. Elwes, F.L.S.; Sir John Lubbock, Bart., M.P., F.R.S.; Mr. Robert McLachlan, F.R.S.; Mr. P. Brooke Mason, M.R.C.S., F.L.S.; Mr. Edward Poulton, M.A., F.L.S.; Mr. Osbert Salvin, M.A., F.R.S.; Mr. Henry T. Stainton, F.R.S.; and Lord Walsingham, M.A., F.R.S.

The President delivered an Address, and a vote of thanks to him was moved by Mr. McLachlan, 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. C. O. Waterhouse, and carried. Mr. E. Saunders, Mr. H. Goss, Canon Fowler, and Mr. F. Grut, made some remarks in acknowledgment. Mr. Waterhouse proposed a vote of thanks to the Council, which was seconded by Mr. White, and carried.—H. GOSS, *Hon. Secretary*.

ADDITIONS TO THE BRITISH *ICHNEUMONIDÆ*.

BY EDWARD CAPRON, M.D., F.E.S.

PEZOMACHUS PILOSUS, n. sp.

Pitchy-black, with diffuse, longish, bristly hairs; base of antennæ, upper surface of the thorax, and first segment of abdomen, lighter; legs red; aculeus barely so long as first abdominal segment.

♀. Head dull black, wider than thorax; antennæ stoutish, thicker beyond the middle than at base and apex, joints three and four subequal, two to five yellowish-red; prothorax entirely black; mesothorax with upper part pitchy-red, with a blackish spot in the middle; metathorax slightly ridged each side, in the middle smooth and somewhat excavated; its upper part reddish, with sides and sloping part black. First abdominal segment rather long, gradually widened behind, pitchy-red, with a narrow black band just behind the projecting spiracles, which are situated between the middle and posterior third. Abdomen shining piceous-black, with diffuse, long bristly hairs, between which the surface appears very finely areolated. Length, 5—6 mill.

A very distinct species, recognisable by its bristly hairs which also clothe the thorax.

Shiere, 1887, three examples.

CHORINÆUS TRICARINATUS, Holmg.

Holmg., Disp. method. Exoch. Scandin., p. 77, tab. II, fig. 12; Thoms., Deutsch. Entom. Zeits., xxxi, 1887, p. 202.

Shiere, both ♂ and ♀, 1887.

HOLOMERISTUS TENUICINCTUS, Foerst.

Foerst., Uebersicht der Plectiscoiden, p. 81.

Shiere, two ♀.

PIMPLA VARICAUDA, n. sp.

Black, apex of abdomen red-marked; legs, anterior pair, reddish-yellow; posterior, with base of femora, apex of tibiæ and tarsi, darker; aculeus about one-sixth of abdomen.

♀. Head scarcely wider than thorax; antennæ two-thirds length of body, black, yellow beneath; thorax closely punctured; metathorax with distinct areas; abdomen almost cylindrical, 1st segment longer than the 2nd, which is slightly transverse; 2nd to the 4th, black above, with a very narrow yellow apical edge; 5th, reddish-ochre, with a triangular black mark in the centre; 6th and 7th entirely red. All the segments yellow beneath; coxæ black; trochanters yellow with black marks.

Shiere, two ♀.

I sent this insect, as well as the *Pezomachus*, to Mr. Bridgman, who considers both of them to be undescribed.

Shiere: February 3rd, 1888.

DESCRIPTION OF A NEW SPECIES OF *PHYLLOTOMA*, WITH NOTE
ON *NEMATUS CRASSICORNIS*, HTG.

BY P. CAMERON, F.E.S.

PHYLLOTOMA FUMIPENNIS, *sp. n.*

Black, the abdomen above with æneous tints; the palpi, the labrum, clypeus, the inner orbits of the eyes broadly, the tegulæ, a thin line on the base of the pronotum, the trochanters, the knees broadly and the tibiæ beneath, white; the tibiæ above fuscous-black; the tarsi blackish, paler at the junction of the joints; spurs pale; wings dark fuscous throughout; antennæ as long as the abdomen, densely covered with pale pubescence, the apical joints brownish beneath; 12-jointed, the 3rd joint nearly one-half longer than the 4th. Head densely pilose; the pleuræ sparsely covered with longish white hair. Wings large, broad; the third cubital cellule dilated at the apex, as long as the first; the recurrent nervures received before the middle of the cellules. Length, 4.5 mm.

In the table given in my *Mon. Brit. Phyt. Hym.*, i, p. 284, the above described species will come in as follows:—

- 5 (2) Antennæ 12—13-jointed; wings for the greater part smoky.
 5a (5b) Wings uniformly fuscous; tegulæ and a narrow line on the pronotum white; legs black, the trochanters, knees and tibiæ beneath, white; abdomen æneous above *fumipennis*.
 5b (5a) Wings smoky, hyaline at the apex; tegulæ black, legs pale yellow, black at the base; abdomen not æneous above *ochropoda*.

P. fumipennis is a smaller and broader species than *ochropoda*; the abdomen especially being broader and not much longer than the head and thorax united; the head between the antennæ is broader, flatter, and does not project so much, the antennæ also being more widely separated.

Taken on alder by Mr. J. B. Bridgman at Norwich.

NEMATUS CRASSICORNIS, Htg.

This species has never clearly been recognised by recent writers on the *Tenthredinidæ*. Thomson refers it doubtfully to his *armatus*; André, without any doubt at all; Brischke and Zaddach do not mention it; but a ♂ of the species I have described as *N. ruficornis* (*Mon. Brit. Phyt. Hym.*, ii, 62) was returned to me by Zaddach bearing the name of "*crassicornis*." There is a species in this country which agrees very well with Hartig's description of the latter, and more particularly in having the clypeus "eingebuchtet," a point in which it differs from all the other species of the *ruficornis* group, which have the clypeus distinctly transverse in both sexes. As this forms an addition to our lists of species, I give a description of it, leaving

it for future research to decide whether it is really the *crassicornis*, Htg., or not. It is certainly not described by Thomson, nor, so far as I can make out, by Brischke and Zaddach.

NEMATUS CRASSICORNIS, Htg.

Blattwespen u. Holzwespen, p. 204.

Black; the apex of the coxæ, the trochanters, the base and apical three-fourths of the four anterior femora, the posterior femora at base and apex, the four anterior tarsi, the basal three-fourths of the hind tibiæ, and the tegulæ, white; the labrum brownish towards the apex. Wings hyaline, somewhat suffused with fuscous in the middle; the costa white; the stigma dark fuscous; the nervures fuscous. Head shining, shortly pilose, the front and vertex punctured, but not strongly, pentagonal area obsolete; antennal fovea small; clypeus distinctly roundly, but not very deeply, incised; apex of labrum transverse. Palpi white towards the apex. Thorax shortly, but rather densely, pilose; the mesonotum obsoletely punctured. Cenchri clear white. Abdomen longer than the head and thorax united; the anal segment and cerci reddish; the latter short, thick, about three times longer than broad. Antennæ as long as the thorax and abdomen united; moderately stout, distinctly tapering towards the apex; the third joint slightly curved beneath, and a little longer than the fourth; the flagellum black above, reddish-brown beneath. First transverse cubital nervure almost obsolete; the second cubital cellule with a horny point; the third cubital cellule about one-fourth longer than broad, dilated towards the apex. Claws with a subapical tooth. The male has the antennæ thicker, the third joint distinctly curved; the flagellum entirely red. The last segment of the abdomen above projects in the middle, this middle part being raised and separated from the sides by furrows.

Length, 7 mm. ♀; ♂, 6 mm.

I have several English specimens, and Mr. Bridgman takes it at Norwich. In form and coloration it comes nearest to *N. ruficornis*, but the incurved clypeus at once separates it.

Sale, Cheshire: *January 14th*, 1888.

NOTES ON BRITISH *TORTRICES*.

BY C. G. BARRETT, F.E.S.

(Continued from page 36).

Ten years ago, in the course of these notes, I remarked respecting *Argyrolepia maritimana*, Wilk., "Professor Zeller assures me that this is only a large dark variety of *zephyrana*." * * * "To this opinion, in the absence of counter evidence, it seems advisable to submit."

This remark of the lamented Professor was made upon examination of the only specimen of *maritimana*, Wilk., which I was able to send him, and, until now, no counter evidence has been forthcoming.

But now Mr. W. H. Harwood, of Colchester, who has found the species in Essex, has forwarded specimens and supplied me with information which throws considerable light on the subject.

It appears that, although both forms—or species—are found in Essex, they do not occur together, the normal *zephyrana* (*dubrisana*, Curt.) being common on railway and other banks where wild carrot (*Daucus carota*) grows, at the end of May and beginning of June, and readily taken on the wing—as, indeed, it is elsewhere,—while *maritimana* occurs only on sand-hills, the larva feeding in the stems and roots of sea-holly (*Eryngium maritimum*), and is so sluggish that Mr. Harwood has not been able to take it on the wing, but can only rear it from the *Eryngium* stems, and that it does not emerge until the end of June or July.

In carefully comparing the two forms, I find that in *zephyrana* (*dubrisana*) the central fascia of the fore-wings is very oblique, rising on the dorsal margin near the base, and terminating in the middle of the costa. Beyond it is a second broad fascia arising near the anal angle, and parallel with the first.

Maritimana has also two fasciæ, but the first is strongly angulated in the middle, so that its extremities are opposite each other. The second is nearly straight across the wing, except that its inner margin is two or three times angulated. A still more important distinction is in the greater breadth of wing of *maritimana*, and its less oblique hind margin. It is of a deeper richer yellow than *zephyrana*, but has similar silvery lines. Its hind-wings are darker than those of *zephyrana*, but have the base *white*, with grey reticulations.

These distinctions seem to be of specific value, and I now think that *Argyrolepia maritimana* may safely be admitted as a distinct species.

Stigmonota Leplastriana, Curt.—The Rev. C. R. Digby most kindly sent me a number of larvæ of this species in shoots of wild cabbage (*Brassica oleracea*). They were in the small shoots just where they spring from the main stem, and had bored quite through the pieces of shoot when they reached me. I therefore procured from a neighbouring garden a good sized cabbage plant which had run up for blossom and had numerous side shoots. This I planted in a large flower pot and laid the pieces of wild cabbage containing the larvæ on the earth around it. Very soon, as the pieces decayed, the larvæ deserted them, climbed the plant and entered the side shoots, so that, before long, each one was tenanted, and bore evidence, in the shape of a little heap of frass protruding from a hole close to the joint, that the inmate was satisfac-

torily employed. The larvæ fed on the pith of the side shoots, eating them out so completely that they withered, but did not enter the main stem. They were cylindrical, rather plump, shining pale glaucous or almost yellowish-white, with darker dorsal vessel. Head deep shining black, dorsal plate blackish-brown, anal plate pale brown, feet pale greenish, spots not observable. When full-fed they descended to the earth to spin up, and were easily reared.

Catoptria candidulana, Nolck. — I found larvæ in plenty in September, 1886, on *Artemisia maritima* growing in salt marshes. They bore a curious resemblance to those of some of the *Homæosomæ*, and were plump, much wrinkled, each segment being divided transversely by a fold of skin, marking off the hinder third of the segment. Colour dull whitish with narrow dorsal line, and broad sub-dorsal stripes of a dull purplish, interrupted at every division and fold by the ground colour. Spots large, whitish; head shining brown; dorsal plate large, broadly whitish in front, shading off to brown behind, but with a white line down the centre. Anal plate and legs mottled with brown and white, prolegs white. When young the head and plates are black. Rather sluggish, living among the flowers of *Artemisia maritima*, uniting them together with a silken tube which runs up the spike, and eating out the flowers and young seeds. Greatly preferring the ordinary dense, upright spikes, but occasionally found on the lax, spreading variety of the plant, in which case it moves about from one lateral spike to another, making a small covering web on each. When full-fed it leaves the plant and spins up among *débris* or in the mud, of which it must have an exceedingly damp experience for the nine or ten months which elapse before it enters the pupa state.

King's Lynn, Norfolk :

November 19th, 1887.

CONTRIBUTION TO THE LIFE-HISTORY OF *NEPHOPTERYX*
ABIETELLA, S. V., WITH A DESCRIPTION OF ITS LARVA.

BY EDWARD A. ATMORE, F.E.S.

From time to time during the last few years I have casually met with the imagines of *Nephopteryx abietella*, and late in April, 1885, whilst searching for pupæ of *Retinia turionana* in the shoots of small Scotch fir trees, I made my first acquaintance with its larva. On that occasion a single full-grown larva was found, feeding much like that of *turionana* does earlier in the year, viz., in a central shoot, and

causing an abundant exudation of resinous matter. I did not examine this larva very carefully, so that from its superficial resemblance to that of the *Tortrix*, both in point of colour and its mode of feeding, it was placed in a jar with the pupæ of *R. turionana*. At the end of June I was pleased to find that a beautiful specimen of the Phycid had emerged, doubtless resulting from the larva to which I have briefly alluded.

From this time I became desirous of renewing my acquaintance with the habits of *N. abietella* in the larval state, and accordingly, on the 23rd of April of the following year (1886), a visit was made to a locality in which I had occasionally taken an imago. Here, after a vigorous, though I confess for a long time unsuccessful, search, two larvæ of large size were found, feeding in central and terminal shoots. After much time had been spent in a vain endeavour to find others, it occurred to me that this larva might probably have more than one method of feeding. Acting upon the impulse of the moment, the search was resumed, this time I am glad to be able to say, with more success. On some trees, dead shoots of the previous year's growth, varying from two to four inches or more in length, were detected. A subsequent examination of one of these plainly indicated that, at some time or other, it must have been tenanted by a larva. Following up the clue thus obtained, several of these withered stems or shoots were collected, and in one of them a larva of *N. abietella* was fortunately discovered. Continuing the search I had the satisfaction of returning home with a total of fifteen larvæ. Of these I note that two only were found feeding in the young sprouting shoots; one, which must have nearly attained its full growth, had betaken itself to a small cone, then only in process of formation, and about the size of a small hazel nut, and which, by the way, it had reduced to a mere shell, the protruding frass from a small hole near the base betraying its presence. All the others, twelve in number, and varying in size from comparatively small to the nearly full-grown larva, were found burrowing in shoots of the previous year, eating out the pith. It would seem, therefore, that although the larvæ may occasionally feed in the young shoots or very young cones, they are far more generally to be found in the one year old shoots. I obtained one larva from a tree not more than three feet high, but the majority of them were obtained from lateral branches of trees varying from ten to fifteen feet high, and here I would observe that outlying or detached trees yield the best results. The stem or shoot which contains or has contained a larva may be known by its decayed or sickly appearance, the terminal shoots

showing a decided absence of vitality, and the acicular leaves (or needles, as they are more generally known) being shrivelled and brown. The mine or burrow is from one and a half to three or more inches long, contains a quantity of frass, and is terminated at each end by a round hole for exit, and these holes are usually situated on opposite sides of the shoot. If the burrow contains a larva, frass of a pale reddish-brown colour is seen to be protruding from the lower hole. When the larva is of large size, it is by no means uncommon to find two or three mines of different length immediately succeeding each other on the same stem, in which case the largest one, and that which is furthest from the apex of the stem or shoot, will contain the larva.

A Coleopteron (*Hylurgus piniperda*) also mines the one year old shoots of Scotch fir, and, judging from injuries committed by it, is far too common in this district. Its mine or burrow is scarcely ever more than two inches, and often not more than an inch or inch and a half long, and there is but one hole for exit, which is situated at the base of the burrow. Moreover, around the hole a quantity of a yellowish resinous substance is to be noticed. This resinous exudation is never observable near the holes caused by the larva of the Phycid, so that the eye soon becomes accustomed to distinguish between the working of the Coleopteron and of the Lepidopteron.

DESCRIPTION OF THE LARVA.—The full-grown larva is active, and of about five-eighths of an inch in length; cylindrical, but tapering slightly behind. Dull greyish or dull greyish-white, with the narrow dorsal and broad sub-dorsal lines dark smoky-grey; spots similar, with abundant hairs. Intestinal canal dark green, giving a greenish tinge to the body. Head shining dark brownish-black; thoracic plate dark brown, usually grey towards its anterior edge. Anal plate, ventral surface, and legs, horn colour.

Burrowing in a last year's shoot of *Pinus sylvestris* (Scotch fir), eating out the pith, and partially filling the passage with frass, but having a round hole for exit at each end of the tunnel. Occasionally feeding in young sprouting shoots, or in a *very small* cone. Pupates probably in a cocoon beneath moss or rubbish, and emerges between the end of June and the middle of August.

Most of my larvæ appeared to be still feeding about the middle of May, when, in consequence of protracted illness, I was unable to give them further attention, so that all (with the exception of three which had successfully pupated, and producing moths on the 22nd, 23rd, and 28th July) died as larvæ, probably from the stems becoming too dry. This year I again looked for larvæ of this species at the end of April and beginning of May, but could find only two shoots containing them. I think they must have fed up earlier than in the preceding year, for several empty shoots were noticed, which bore

every indication of having but recently contained larvæ. Of the two larvæ found last spring, one died from some unknown cause shortly after it came into my possession, and the other was unfortunately the victim of a parasite. I am therefore unable to state with certainty how the larva pupates; but there can be little doubt that it leaves the shoot to spin a cocoon between moss, or *débris*, and the soil.

M. Ragonot (*vide* Ent. Mo. Mag., vol. xxii, p. 52), under the title of *Nephoptyx abietella*, S. V., describes both imago and larva of two closely allied species attached to Scotch fir, viz., *N. decuriella*, Hb., = *abietella* (S. V.), Zincken, and *N. sylvestrella* of Ratzeburg. The latter species has not been noticed to occur in England; but the description he gives of the larva of *N. decuriella* (*abietella*) does not agree with that of our insect. Assuming, therefore, M. Ragonot's description to be correct, that of the present notice suggests the probable existence of another or third species.

King's Lynn, Norfolk :
December 31st, 1887.

Note on Dioryctria decuriella and its allies.—In reply to your query respecting a species of *Dioryctria* bred from a larva found feeding on *Pinus sylvestris* by Mr. Atmore, I beg to say that *decuriella*, Hb. (*abietella*, S. V.), feeds both on firs and pines; as mentioned in my "Revision," the larva is reddish-brown and lives in the cones, young shoots, and decayed wood of the *Coniferæ*; the absence of the reddish-brown patch before the first line and, no doubt, the smaller size of Mr. Atmore's insect, proves that it must be referred to *decuriella*, Hb. The life-history of the other species which feeds on fir has been given at length by Duponchel (*Ann. Soc. Ent. France*, 1832, p. 300, pl. x), under the name of *decuriella*, Hb. I have read again with care Ratzeburg's descriptions and find they are very ambiguous. He seems to have felt that there were two species under the name of *abietella*, but he could not find sufficient characters to separate them. His observations on the larvæ prove that he had no clear idea of the differences in colour and mode of living, for he states that the larva of his *sylvestrella* is reddish-brown, closely resembling that of *abietella*, and feeds in the cones, but adding that, according to Fintelmann, some larvæ are of a dirty pale green, and that Fintelmann found the larvæ feeding in exudations of resin on firs. This being the case, I am now of opinion that it is better to adopt for the species whose greenish larva feeds in the resin, or, at least, induces the resin to run by its ravages in the trunks of firs, the name of *splendidella*, given by Herrich-Schäffer; for this author has very well figured the insect (*Tin.*, pl. 7, fig. 43), and in his description, page 79, he separates *splendidella* from *abietella*, giving *splendidella* as a peculiar form of *abietella*, S. V. The name of *splendidella*, Mann, was a manuscript name, and applied, in reality, to *pinguis*, Hw.; however, it is likely that Mann sent Herrich-Schäffer, under this name, both the *Dioryctria* and *Euzophera*, as both are represented on plate 7 as *splendidella* (fig. 43 and 44), but the *Dioryctria*, having first been described and figured, must bear the name of *splendidella*, of which it is well worthy with its silvery-grey wings with black markings, varied with reddish-brown, and its large size. The North American *Pinipestis reniculella*, Grote, and *P. abietivorella*, Grote, I consider only dark forms of *decuriella*, Hb., and, of course, the generic name of *Pinipestis*, Grote, is simply synonymous with *Dioryctria*, Z.—E. L. RAGONOT, 12, Quai de la Rapée, Paris: February 11th, 1888.

LARVÆ OF LEPIDOPTERA FEEDING ON COCCIDÆ.

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

The "Bulletin des Séances de la Société Entomologique de France," 25th August, 1886, p. 234, contains a Note by M. Peragallo, of Nice, on the coccophagous habits of the larva of *Erastria scitula*, Hübn., which is designated "une chenille utile à l'agriculture." This Note has been deemed of sufficient interest to be translated into German, and it appears as an article in the part of the "Stettiner entomologische Zeitung" just published (48 Jahrg., p. 274).

The narrative of M. Peragallo shows that under some conglomerated scales of *Ceroplastes rusci* on branches of a fig tree, covered by a peculiar pergameneous web, was a larva (or pupa), which M. Millière recognised as that of *Erastria scitula*, Hübn., and he has described it in the "Revue d'Entomologie," 1884. From the shelter-places formed by the scales he collected these *Erastria* larvæ in the winter, not only on the figs, but also on oleanders and Yuccas attacked by Coccids of different kinds having firm shells, and he obtained the moths in May. On the 1st July, when clearing away the numerous black shells of *Lecanium* from the lower leaves of a Yucca growing in his garden at Nice, he observed in the midst of the Coccids some cots of all sizes of *Erastria*, the inhabitants of which (of all ages) moved about each with a shell on its back. Having watched them, more particularly those not larger than the head of a pin, he arrived at the following conclusion. The females of *Erastria* disclosed in May couple, and then lay their eggs in the midst of the female Coccids, which at that time are full of yellowish-salmon-coloured eggs. The little larva when hatched enters a shell, and soon empties it; when the young larva does not find enough nourishment in the shell it leaves it, and, still keeping the shell on its back, seeks a second, and plunges its head into the new victim; and when it has emptied this, like the first, it takes the shell on its back and welds it to the first.* When the larva is full-fed, and has constructed for itself a carapace composed of at least four shells, which had contained 1000 or 1200 eggs, it fastens itself, in order to undergo its transformation, to a branch or leaf, or in a crevice of the bark, and often, in company with others of its species, towards the base, isolating itself by means of a pergameneous web adhering to the leaf or branch.

It is certain that *Erastria scitula* feeds exclusively on the eggs contained in the firm shell of *Ceroplastes* and *Lecanium*; that it uses

* In a similar manner the larvæ of *Hemerobii* disguise themselves with the skins of their Aphidian victims — J. W. D.

the empty shells to form a portable shelter in which to undergo its transformation; and, finally, that there are two broods in a year.

Millière (*op. cit.*, Tome iii, p. i, pl. i) describes the larva, which, he says, the naturalist, Hemmighofen, of Barcelona, was the first to discover, and to whom is due the knowledge of the early stages of this moth; but it is to M. Peragallo we owe the exact perception of the very interesting habits of the larva, which were previously unknown. The figures show the moth, and larvæ *in situ* on a branch, each with its covering of the empty shells of a *Lecanium*, which bears some resemblance to the carapace of a small tortoise. M. Millière adds that, although the larva has a very remarkable form, it is not unique among the *Noctuidæ*, for he has figured in his "Iconographie," iii, pl. 139, No. 4, the larva of *Thalpochares communimacula*, which has the same abnormal form, and has, doubtless, the same habits as that of *E. scitula*. He suggests that the two species should be separated from *Thalpochares*, and form a distinct genus. The genus *Thalpochares* was instituted by Lederer in the "Verhandl. z.-b. Verein," as he states in his "Noctuiden Europa's," p. 185 (1857), in lieu of *Anthophila* and *Micra*, both names being pre-occupied; and he places in his genus seven species, including *communimacula*, S.V. Of this he says he had no particular knowledge, but that the larva lives in a web, and is associated with a species of red Coccid, which is attached to sloe, whitethorn, and peach-trees. *Scitula*, which he says is common in Germany, he left, with seven other species, in the genus *Erastria*, Hübn., saying nothing about the food of the larva, beyond the general remark that, with two exceptions, *all* of them feed on grasses, which is certainly incorrect, for that of *E. venustula* feeds on the flowers of *Potentilla reptans* and *P. tormentilla*, and brambles (*Rubus*).

The purpose to be served by the covering of empty shells on the larvæ is not suggested by either author, but there can be no doubt that it effects a protection from enemies that would otherwise attack the larvæ and not the Coccids. We have not yet found in Britain either the *Erastria* or the elegant, white, octagonal shells of *Cero-plastes*, but we have on many woodland and fruit trees several other species of *Lecanidæ*, which, although doubtless they do some harm by the abstraction of the sap, on which they live, yet do no appreciable mischief, probably because in this climate they are not sufficiently numerous, and *Erastria* or other predaceous Lepidopterous insect would not thrive on the short allowance it would find. I ought, perhaps, to except *Lecanium ribis*, A. Fitch, which clusters in great

quantities on the branches of currant bushes, and, I am informed, sometimes plays havoc even to the destruction of the bushes. Another Coccid, *Mytilaspis pomorum*, Bouché, often abounds on the stems of apple and other fruit trees, especially if from any cause the tree be sickly, to that extent that the tree dies. Although the scales are comparatively small, and the inhabitants are kept in check by parasitic *Hymenoptera* and *Acari*, there is yet room for the aid of Lepidopterous or other beneficent agents, though it may be doubted if the owners of the trees would recognise them in this capacity.

There are other and previous records of the destruction of Coccids by Lepidopterous larvæ. In the "Report of the Entomologist of the United States Department of Agriculture for 1879," by Professor J. H. Comstock, several such coccophagous larvæ are enumerated; the descriptions of them and the resulting moths are too long to give in this résumé, but I cite the salient points of the economy of the respective species.

Dakruma coccidivora, Comst. (Fam. *Pyralidæ*).

In a colony of scales of *Pulvinaria innumerabilis*, Rathvon,* was found a larva of this Pyralid, living within the cottony mass excreted by one of the Coccids. Other scales were found to be similarly tenanted, and the eggs that had been laid, or the young Coccids that had been developed from them, had been destroyed. Although the larva is well protected, living as it does within the mass of cottony excretion, it spins about its body a delicate silken tube. When a branch is thickly infested by the *Pulvinaria*, these tubes extend from one shell to another; the caterpillars moving freely about within these silken passages. The cocoon is made within the tubes, the pupa being plainly visible through the texture. The moth emerges within a month or six weeks. More than forty moths were bred, and there was no indication of the larvæ having fed on the tree on which the scales were found, nor any evidence that they had eaten any of the excretory masses in which they live. These predaceous larvæ were so numerous that it was difficult to find a scale not infested by them, and the efficiency of the check to the spread of the *Pulvinaria* is seen in the fact that the scales have not as yet become commonly distributed in Washington. The same moth was also bred from other Coccids received from Florida,—a *Lecanium*, a *Dactylopius*, and *Lecanium hesperidum*, showing that it is widely distributed and always predaceous.

Dakruma pallida, Comst.

The larvæ of this species were found living within a spherical gall-like *Kermes*, on oak near Sanford, Fla., and other specimens were found feeding on the eggs of another species of *Kermes* at Fort George, Fla. When full-fed, the larva leaves the Coccid and makes a cocoon, which is attached to the outside of the Coccid, or to a neighbouring twig.

* Figured in Comstock's "Report" for 1880, pl. 11, fig. 6. The species is probably synonymous with the *P. vitis*, Linn., of Europe; in America it lives on maple, negundo, grape, Osage orange, and other plants, often in such numbers as to be a pest.—J. W. D.

Blastobasis coccivorella, Chambers, n. sp. (Fam. *Tineidæ*).

The larvæ feed inside the scales of an undescribed *Kermes*, allied to *K. pallidus*, Réaum. Many specimens of the *Kermes* were found on oak at Cedar Keys, Fla., and on March 15th, the larvæ of the moth commenced to pupate. A round hole was first cut through the scale, which had hitherto been intact, and a comparatively compact cocoon was spun outside, attached to the edges of the hole. Moths appeared on the 1st and 10th April.

Euclementia Bassettella, Clemens (Fam. *Tineidæ*).

From the large gall-like *Kermes* found on oak at Cedar Keys was also bred a beautiful greenish-black moth, with its fore-wings marked with reddish-orange. This was first described by Clemens (Proc. Ent. Soc. Phil., ii, p. 423),* under the name of *Hamadryas Bassettella*, after Mr. Bassett, in Connecticut, who had stated that he had bred it from a gall; but Prof. Riley pointed out that the supposed oak-gall was really a Coccid.

I wonder if there are not more instances in which "galls" have been reported to have yielded *Lepidoptera*, and these have really been produced from the shells of Coccids, often so like true galls that in France they are called "*Gallinsectes*." Collectors will, perhaps, make a note.

In "Nature," December 30th, 1886, p. 215, is a notice of the papers read at the meeting of the Linnean Society of New South Wales, on October 27th previous, as follows:—

"Descriptions of new *Lepidoptera*, by E. Meyrick, B.A., F.E.S. In this paper descriptions are given of sixteen new species of Australian *Lepidoptera*, belonging to fourteen genera, of which six are new. Among them is *Thalpochares coccophaga*, of which, at the December meeting, Mr. Masters exhibited specimens of both moths and larvæ, and called attention to the singular habits of the latter, which feed on a species of *Coccus* infesting a *Macrosamia*, living concealed in a cocoon-like shelter, formed of the exuvæ of the *Coccus*, and finally pupating therein."

It thus appears that in Europe, N. America, and Australia, there are *Lepidoptera* of different Families, whose larvæ are exclusively coccophagous, and it cannot be doubted that more are yet unknown. In other regions where *Coccidæ* abound, there is also a wide field for investigation: possibly resulting in the discovery of new species, or the identification of the larvæ of some already known only in the perfect state. Whether or not man may be able to utilize the devourers of Coccids to his purpose remains to be tried; the idea seems feasible.

8, Beaufort Gardens, Lewisham:
November 26th, 1887.

* See also "The Tineina of North America, by Dr. B. Clemens, with Notes by the Editor H. T. Stainton." London, 1872.—J. W. D.

INFORMATION WANTED AS TO *SELENIA ILLUNARIA*, &c.

BY F. MERRIFIELD, F.E.S.

In connection with some systematic experiments I am trying with *Selenia illunaria* (*bilunaria*) and *illustraria* (*tetralunaria*), I should be greatly obliged by information derived from personal knowledge, or from trustworthy authorities, as to the distribution, time of appearance, size, colour, and habits of these insects in different parts of Europe, or of the British Isles, and should be grateful for fertile eggs of typical specimens taken wild anywhere else than in the South of England. There seems no doubt that both species are generally double-brooded in the centre and south of Europe, and single-brooded in the north; and that where there is but one brood, it resembles in size and markings the first or spring emergence in those places where the insects are double-brooded. I will make any return in my power, and can promise in the spring fertile eggs of both species from healthy south of England examples. Guenée gives what appears rather strange times of appearance for *illunaria*, which he describes as occurring throughout Europe in March, April, and May, and then in *September* and *October*. In the south of England, I believe, the second brood appears in *July*, as stated in Mr. Stainton's Manual, but extending into August. There is another matter on which these two authorities appear to differ. Mr. Stainton, speaking of *illustraria* in its winged state, says that the summer or August brood is more plentiful than the larger specimens of May. M. Guenée, speaking of the caterpillars of the genus *Selenia*, writes as follows: "These caterpillars live exclusively on trees, and have in general two generations: the first and most numerous, which is disclosed in autumn, appears as a moth in the April or May following; the second, which is, so to speak, exceptional, though destined to ensure the autumnal reproduction, gives in general but a small number of individuals. These circumstances, which, by the way, are common to many other *Lepidoptera*, demand here particular attention, because they touch on a question of variation among *Lepidoptera* which is not yet entirely solved, and requires to be further investigated." There is a further point on which I shall be glad of information, and it relates to the third European species of the genus, viz., *S. lunaria*, and that is as to the position of its wings at rest, whether it resembles that of the wings of *illunaria*, which meet over the back like those of a butterfly, or is more like the position of *illustraria*, which rests with the wings recurved, but widely separated. May I suggest to

those of your readers who may meet with any of the *Selenias* in the approaching spring kindly to make known the result of their observation on any of the points I have adverted to, all of which it is desirable on several accounts to clear up.

24, Vernon Terrace, Brighton :
February, 1888.

Notes on the larva of Olindia ulmana, Hb.—Until the present month, the only reference I have ever seen to the larva of this species was in Frey's "Lepidoptera der Schweiz," p. 295. He there states that it feeds on *Aquilegia vulgaris*, spinning the leaves up. That this, however, could not be the only food plant was evident from the fact, that the imago has been frequently taken where the plant was quite absent. Still Prof. Frey is invariably so accurate in his statements, that I have no doubt the above record is true, and that *Aquilegia vulgaris* is one of the food plants. Mr. F. Bond tells me that he suspected *Lythrum salicaria*, also a low growing plant. On the other hand, the majority of Micro-Lepidopterists, from its name, have always associated the insect with elm; and Mr. Atmore once beat the imagos in some plenty from an elm hedge in Norfolk. I have, however, now to thank Mr. W. H. B. Fletcher of Worthing for drawing my attention to a far earlier and more circumstantial record than that of Frey.

In the "Annales de la Société Entomologique de Belgique," vol. vii, 1863, p. 43, Dr. Breyer gives *Ranunculus ficaria* as another food plant, with a succinct account of the larva's habits. It is strange, indeed, that this notice should have escaped observation, both in England and on the continent, for nearly a quarter of a century!

Dr. Breyer's note runs as follows:—"This pretty *Tortrix*, of which fresh examples are so rarely seen in collections, is widely distributed, without being anywhere common. Hitherto the larva has remained entirely unknown. For three years I have been on the track, but only this season have I been lucky enough to rear the species. The larva is found in early spring on the leaves of *Ranunculus ficaria*. It folds a piece of the edge of the leaf down on the under-side, so as to form a cylindrical tube, which serves as a shelter, and gnaws the leaf in the neighbourhood of its dwelling. In order to rear the species, the food plant should be potted, it would not feed on faded leaves or leaves kept in water, and the pot should be covered with a bell glass or a lid which is airtight, or the larvæ will escape. Pupa-tion takes place in a cocoon on the ground, the imago emerging during the second half of May. The period during which the insect is out is very short; by the end of a fortnight the species is worn."

Dr. Breyer promised to give a full description with plate of the larva in the next year's volume, but I can find no further mention or notice of either.—W. WARREN, Merton Cottage, Cambridge: February 9th, 1888.

[The food plant here given accords well with the only locality in which I ever met with *Olindia ulmana*. It was whilst searching for *Halonota turbidana* amongst its food plant (*Tussilago petasites*) on the banks of a small tributary of the Teign,

at Chudleigh, in Devonshire, on the 13th and 14th June, 1850, that I obtained my specimens of *O. ulmana*. I can readily conceive that in early spring the ground there is yellow over with the flowers of *Ranunculus ficaria*.—H. T. S.]

Habit of Nemotois fasciellus.—Last April I received from the late Mr. W. Farren half-a-dozen larvæ of this species; he had found them feeding on *Ballota nigra*, near Cambridge. Mr. Farren, having collected a number of these larvæ, put a plant of *Ballota* in a large flower pot, and on top of the soil he placed a quantity of dry fibrous rubbish, from one and a half to two inches in depth; he then plunged the pot in the garden, turned the larvæ on to it, and tied a piece of coarse muslin over all; lest they should suffer from excess of wet he fixed a piece of glass above the top of the plant to keep out most of the rain. The larvæ fed up well under this treatment, and when their time for pupation arrived, they burrowed right through the fibrous rubbish down into the solid earth and there fixed their cases, end up, just below the surface of the earth. Afterwards, on taking the cases out, Mr. Farren found they were anchored by a silken thread to any little pieces of fibre which were handy. He also noticed that the antennal cases, which are very long, are detached and loose from the body of the pupa. From 46 larvæ he bred 43 moths, so that these larvæ were certainly unusually free from parasites. Whether that is the general characteristic of the species is, however, a matter for further observation. The foregoing notes were kindly furnished to me by Miss Farren during her father's last illness.—H. T. STANTON, Mountsfield, Lewisham: *February 1st, 1888.*

The Coleophora of the Potentilla, which was originally found in St. Leonard's Forest, Horsham, by Mr. W. C. Boyd several years ago.—This insect has been so long known under the manuscript name of *Coleophora potentillæ* of Boyd, that it seems quite time it should have the pleasure of seeing its name in type.

Allied to *C. paripennella* and *ahenella* (noticed Ent. Mo. Mag., xvi, 165), *C. potentillæ* is smaller than either; the expansion of the wings varying from 4—4½ lines, whereas the exp. al. of *paripennella* is 5 lines and that of *ahenella* rather more.

The anterior wings are more slender than in either of the two above-named species, and are bronzy-green or bronzy-grey; whereas, those of *paripennella* are brownish-bronze, and *ahenella* only differs in colour from that species by being a little darker. The antennæ of *potentillæ* are sharply annulated throughout their length (in this respect resembling *ahenella* and very different from *paripennella*), with only the first two basal joints entirely dark and slightly thickened.

The larva of *potentillæ* is an autumnal feeder, allied in habit to *paripennella*, and, like that insect, feeding indifferently on several plants. Mr. Boyd has an idea that it sits flatter on the leaf than the larva of *paripennella*, though I am scarcely able to conceive how that can be possible; the case much resembles in structure that of *paripennella*, but is, I believe, always paler.

After the insect had been found in St. Leonard's Forest, Horsham, by Mr. Boyd, Mr. W. H. B. Fletcher met with it on the Downs near Arundel, Steyning and Worthing, feeding on bramble, raspberry, rose, *Spiræa filipendula* and *Poterium sanguisorba*, as well as on *Potentilla tormentilla*.

Mr. Fletcher finds that in captivity the larvæ eat readily the leaves of strawberry. Mr. Elisha has, I believe, met with the insect in Epping Forest.—ID.

Cæcilius atricornis, McL., in *Arundel Park*.—I was fortunate enough to take five specimens of *Cæcilius atricornis*, McL., by beating laurel, hawthorn, &c.; no doubt many more might have been taken had time permitted, as the *Psocid* was not confined to a limited area, but occurred at various points around the lake. I do not think that *C. atricornis* has been taken by beating before, the previous records mentioning that the specimens were obtained among rubbish in dry ditches.—J. J. F. X. KING, Glasgow: *January*, 1888.

Quedius longicornis, Kr.—A short while ago I found among my *Quedii* a specimen of this very rare species. I captured it under the trunk of a tree lying on the ground in Bretby Wood, near Burton-on-Trent, while searching for *Boletobius inclinans*, which occurred very sparingly in the same locality. Mr. Blatch has taken the species in Buddon Wood, Leicestershire, but I know of no other record from England. It has been taken very rarely in the Solway District of Scotland by Dr. Sharp.—W. W. FOWLER, Lincoln: *January 10th*, 1888.

The Entomology of Gibraltar.—I am still working fairly hard at the entomology of this most interesting locality, with, on the whole, very good success, at any rate in *Coleoptera*, in which I have increased my local list to nearly 1100 species. We had a great deal of rain just after Christmas (12 inches in 7 days!), so there was a vast accumulation of flood refuse about the streams, most productive in beetles; indeed now, after a fortnight's fine weather, it still repays examination. Perhaps my most interesting capture has been the little ants' nest "*Hister*," lately described by Mr. Lewis (*ante* p. 164) as *Heterius acutangulus*, of which I have lately found two examples in this neighbourhood. I went for a short walk on the lower slopes of the Rock this afternoon, and saw ten species of butterflies on the wing. *Colias Edusa* was plentiful, and some of the specimens were so newly emerged that they could scarcely fly. *Euchloë Belemia* is out, but this I saw more than a month ago at Tangier. I have been devoting a little attention to the ants lately, at Mr. Saunders' suggestion.—J. J. WALKER, H.M.S. "Grappler," Gibraltar: *Jan. 27th*, 1888.

Dicerca prolongata, Le Conte.—Early in December, while I was chopping up an aspen tree (*Populus tremuloïdes*, Michx.) here, I came across the remains of a beetle, belonging to the *Buprestidæ*, in the burrows of some larvæ which had evidently destroyed the life of the tree. I sent this to the Agricultural Department at Washington, and am informed that the species is *Dicerca prolongata*, a beetle previously recorded for Colorado by Packard (Bull. 7, U. S. Ent. Com.), but supposed by him to be a pine feeder, though, he adds, his specimen was found on a poplar tree. Not long after, I found one of the burrows in another *P. tremuloïdes* tree tenanted by a Coleopterous larva, which I have no doubt is that of *D. prolongata*, from its great resemblance to the figure of the larva of *Dicerca divaricata*, Say, as figured in 3rd Rept. U. S. Ent. Com., pl. vi, fig. 2. *D. divaricata* has long been known as injurious to cherry and peach trees, and it is therefore interesting to find a species in Colorado destroying the poplar. In places where the trees were valued it might be considered a decidedly injurious insect, but I find it rather beneficial than otherwise myself, since the dead trees supply me with firewood, a thing not to

be despised with the temperature often below zero. So far as I have observed, *P. tremuloïdes* is less susceptible to the attacks of leaf-insects than the *P. tremula* of Europe.—T. D. A. COCKERELL, West Cliff, Custer Co., Colorado: *Jan. 6th*, 1888.

Captures of Coleoptera in the Hastings district.—The following captures of *Coleoptera* in the Hastings district, during the months of November, December, and January, may be of interest. *Ilyobates nigricollis* (1), in a *Boletus*; *Staphylinus stercorarius*, running across a pathway; *Lathrobium longulum*, *Anchomenus oblongus*, and *Cephennium thoracicum*, in *Sphagnum*; *Helops cœruleus* (1), *Endomychus coccineus* (13), *Tetratoma fungorum* (5), *Platynaspis villosa* (2), *Rhinosinus viridipennis*, and *Pogonocherus hispidus* (1), under loose bark; *Ennearthron affine* and *cornutum*, *Engis rufifrons* and *humeralis*, *Cryptophagus scanicus*, *Triphyllus punctatus*, *Cis bidentatus*, and *Homalium cœsum*, in fungi. At Fairlight I took a specimen of *Coryphium angusticolle* from an old bird's nest, and found another under bark near Ore. *Corticaria crenulata* and *curta* were in the greatest profusion at the roots of *Glaucium* at Bo Peep; but I looked in vain for *Syncalypta hirsuta*. *Elmis œneus* was common at Guestling and Ecclesbourne, and at the former locality I took a single specimen of *E. Volkmar*. The only other things worth mentioning were *Opilus mollis*, *Scymnus limbatus*, *Hylesinus crenatus*, *Orchestes alni*, and *Tychius meliloti*.

Among some *Coleoptera* taken some years ago, the Rev. W. W. Fowler has kindly named the following, not previously recorded from this district:—*Epurea florea*, *Rhizophagus parallellocollis*, *Colon latum*, and *Cis alni*.—W. H. BENNETT, 11, George Street, Hastings: *February*, 1888.

Review.

THE BUTTERFLIES OF NORTH AMERICA: by W. H. EDWARDS. 3rd Series, Parts III and IV. Boston and New York: Houghton, Mifflin & Co. London: Trübner & Co. 1887.

Three out of the six magnificent plates in these two parts are devoted to species of *Argynnis*, one to *Melitæa*, one to *Colias*, and one to *Cænonympha*. All are of the usual excellency, the species of the last named genus has over forty separate figures allotted to it, representing variation, transformations, details of structure, &c. The text shows that no pains have been spared in acquiring the fullest and latest information from all points of view.

Obituary.

George Robert Waterhouse was born at Somers Town, on March 6th, 1810. He commenced his career as an Architect, for which profession he had been educated, devoting his spare time to the study of Natural History, some articles in the "Penny Cyclopaedia" on Fishes and Insects being among his earliest writings. In 1833 the Entomological Society of London was founded, with Mr. Waterhouse as its first Curator, and with his decease, that Society loses the last of those who were present at its first meeting, although four of the original members still remain. In 1835 he accepted the appointment of Curator to the Museum of the Royal Institute at Liverpool, which he, in a little more than a year, exchanged for the Curatorship to

the Zoological Society of London. By the spring of the next year he had prepared a Catalogue of the Mammals in the Museum. This, however, was not published until 1838, owing to his having introduced his own classification, which was strongly opposed by some members of the Museum Committee. About this time he wrote the volume on Marsupials in Sir W. Jardine's "Naturalist's Library," and also the account of the Mammals collected by C. Darwin during the voyage of H. M. S. "Beagle," as well as several papers on the *Coleoptera* collected during the same voyage, including an account of those of the Galapagos Islands. In 1843 (Nov.) he was appointed an Assistant in the Geological Department in the British Museum, and in 1844 commenced his work on the "Natural History of Mammalia," which occupied all his available spare time until the completion of the 2nd volume, in 1848, when the publisher was unable to continue his work. He was President of the Entomological Society in 1849 and 1850, and in this latter year he was elected an Honorary Fellow of the Zoological Society. In 1851 (Dec.) he succeeded Mr. König as "Keeper of the Mineralogical branch of the Natural History Department" in the British Museum, the geological collections being at that time associated with the minerals. In 1855 he prepared an article on the Geographical Distribution of the Rodents for Keith Johnston's Physical Atlas. In 1858 he visited Germany to examine a collection of fossils offered for sale to the Trustees of the British Museum. In it was the famous *Archæopteryx*. In this year, and until 1861, he was engaged in the preparation of his "Catalogue of British Coleoptera," which gave such an impetus to the study of this Order of Insects among British Entomologists, and which was especially valuable in consequence of the clearing up of the synonymy of many species described by J. F. Stephens, hitherto resting uncertain. Mr. Waterhouse was Vice-President of the Zoological Society in 1862—3. Besides the separate works already alluded to, the Royal Society's Catalogue of Scientific Papers enumerates 117 of which he was the author. He was an excellent draughtsman: many of his papers were illustrated by himself. Latterly he occupied himself with literary researches, and in his official capacity was much engaged in the preparation for the removal to South Kensington of the Geological Collections, which, since 1857, had been separated from the Minerals. By his advice, which his early training as an Architect qualified him to give, the basement and ground floors of the right wing of the New Museum were considerably modified so as to increase the accommodation for the Collections. This work harassed him much, and feeling unequal to the anxiety consequent on the approaching removal, he resigned his appointment in 1880. In 1885 he had a paralytic stroke, from which he never entirely recovered; and he died January 21st, 1888, in his 78th year. Of his three sons, the eldest is the well-known Assistant in the British Museum, who promises to eclipse his father's fame as a Coleopterist; the second is the Librarian to the Zoological Society; the youngest was for some time Entomological Curator to the present Marquis of Ripon. His second daughter is the widow of Mr. E. C. Rye, one of the founders of this Magazine, whose untimely decease his colleagues remain to deplore. A taste for Natural History pursuits appears to have existed in his family, for one of his brothers (still living) was for many years Curator of the Museum at Adelaide, South Australia. Two traits were especially prominent in Mr. Waterhouse's character: a nervous striving at scientific accuracy in all his writings; and an amiability, even under the most trying circumstances, that endeared him to all his friends.

Dr. John Thomas Boswell, F.L.S. (formerly known as Dr. Boswell Syme), died at Balmuto, Fifeshire, on January 31st, aged 66. He was born at Edinburgh, and educated as a Civil Engineer, and, for a time, followed his profession. But his name will always be associated with the second edition of "Sowerby's English Botany," which he brought to a successful conclusion. For a time he was Lecturer on Botany at the Charing Cross and Middlesex Hospitals. Practically a Botanist, he took an interest in Entomology also, and formed a fine collection of British *Lepidoptera*, but as an Entomologist he is perhaps almost forgotten by the present generation. He was especially fortunate in his treatment of the larger *Sphingidæ*, especially *Deilephila galii*, and a chronological account of his experiences with regard to this insect appeared in Vol. ii of this Magazine (1865), but outside botanical subjects he wrote little, and his habits were essentially quiet and retiring. On the death of a relative some 20 years ago, he succeeded to the estate at Balmuto (and dropped the name of "Syme"), where his family is said to have existed continuously since the 14th century.

William Farren, of 14, King's Parade, Cambridge, died on the 21st November, 1887, at the age of 51. He was one of the early Members of the Cambridge Entomological Society, where, as far back as 1857, he exhibited *Micro-Lepidoptera* captured by him in Kent; he afterwards made various collecting expeditions to Wicken Fen, to Suffolk, and to the New Forest, and where, in 1861, he resided five months. Entomology then became squeezed out with him by other occupations, such as Photography and Rose-growing. But, latterly, the pursuit of Entomology was again taken up, and, assisted by his son, his collection rapidly increased.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY:
January 26th, 1888.—T. R. BILLUPS, Esq., F.E.S., President, in the Chair.

Mr. Tugwell exhibited, for comparison, German and Welsh specimens of *Xylina furcifera*, Hufn. Mr. J. Stringer, varied series of *Hybernia defoliaria*, Clerck. Mr. Cooper remarked that whilst searching for *H. leucophæaria*, during the previous week, he had seen numbers of *H. defoliaria* at rest on the trees, and it now seemed usual to meet with this species in the spring. Mr. Adkin, bred specimens of *Ptilophora plumigera*, Esp., which had recently emerged, and thought that the cold weather experienced at the time the species usually appeared had kept them back. Mr. Carrington contributed notes as to the effect of temperature on the emergence of *Lepidoptera*. Mr. Tutt, on behalf of Mr. Alderson, varieties of *Aplecta tincta*, Brahm., *Scopelosoma satellitia*, L., *Anaitis plagiata*, L., a melanic specimen of *Phigalia pedaria*, Fb., and a curious form of *Teniocampa munda*, Esp., which he stated were all taken in the neighbourhood of Bromley. Mr. Carrington said that he had frequently taken this form of *T. munda*. Mr. Billups, on behalf of Mr. W. F. de V. Kane, *Rhopalomesites Tardii*, Curt., 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 *Dianthæia compta*, Fb., and *D. nana*, Rott., and contributed notes; also long series of what he said were known in this country as *Cerastis vaccinii*, L., and *C. spadicea*, Hb., which he considered were two forms of one species, but, at present, was unable to bring forward any evidence 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 Hübner's name of *spadicea* with the dark *Cerastis*, which, after comparison with German species of the genus, must be referred to *Orrhodia ligula*, Esp., but whether *ligula* was distinct from *vaccinii* was a question for further research. Long series of British and German forms were shown to illustrate this. And, on behalf of Mr. Leach, Mr. South showed examples of *Coleoptera* mounted on small triangular pieces of glass, thus allowing the under surface to be examined. Mr. Tutt, *Xylophasia rurea*, Fb., showing the different forms of variation. Mr. Hawes, a variety of *Epinephele Janira*, L., one of the upper-wings being completely bleached, and a variety of *Argynnis Paphia*, L., both these varieties were taken in the New Forest, 1885. Mr. Jäger, an aberration of *Vanessa Antiopa*, L., the white border of the upper-wings being suffused with blue spots, the specimen having been bred in Germany, with another in which the aberration appeared also on the under-wings. Mr. R. Adkin, the life-history of *Ephestia Kuhnii*, Z., in a living state, and called attention to a colony of larvæ just emerged and making their way into the flour. Mr. Croker, a specimen of *Crioceris merdigera*, F. Mr. T. R. Billups, on behalf of the Rev. W. F. Johnson, of Armagh, a short series of *Bembidium Clarkii*, Daw., taken at Armagh.—
H. W. BARKER, *Hon. Secretary.*

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 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.

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 insects collected by Mr. Alexander Carson, on Kavalla, an island in Lake Tanganyika. 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 to both Natal and Senegal. The most remarkable of the insects was a large Lepidopterous caterpillar; it was covered with very thick sharp spines, all pointed except the terminal which was furcate.

Mr. Champion exhibited specimens of *Casonia Olivieri*, Buq., *Edichirus, unicolor*, Aubé, *Paussus Favieri*, Fairm., *Colydium elongatum*, Fab., *Endophlæus spinulosus*, Latr., *Heterius arachnoides*, Fairm., *Pseudotrechus matilatus*, Rosenh., *Singilis bicolor*, Ramb., *Phyllomorpha laciniata*, Will., all recently collected by Mr. J. J. Walker, R.N., 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 the species of *Ocnere* 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.

Mr. 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 Tibet, 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 other district 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 at which the various species occur, for which Mr. 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, Mr. Elwes, and others took part in the discussion which ensued.—H. Goss, *Hon. Secretary*.

TROPICAL AFRICAN COLEOPTERA; CHIEFLY FROM THE ZANZIBAR MAINLAND.

BY H. W. BATES, F.R.S., &c.

(Concluded from page 203).

ONTHOPHAGUS PANOPLUS.—*Late oblongus convexus, subæneo-niger opacus; capite brevi, obtuse triangulari, granulato et punctulato, media fronte tuberculo minuto, vertice latissime carinato et tri-cornuto, cornubus lateralibus valde curvatis, elongatis compressis, apice truncatis, cornu mediano validiori, breviori, recto, lateraliter compresso, apice verticaliter bifurcato: thorace magno (elytris longiori et latiori) margine prope angulos posticos haud dentato, medio dorso antice late et profunde excavato lævi, cornuque obliquo elongato paullo compresso rugoso; thorace postice et lateraliter æqualiter discrete granulato: elytris striatis, interstitiis subtilissime striguloso-ulutaceis sparsim granulatis. Subtus cum pedibus niger politus. Long., 14 mm., ♂.*

Mamboia (Mr. Last).

Distinguished from the allied species of the group by the extraordinary development of the centre point of the posterior carina. It forms a robust horn, inclined towards the long dorsal horn of the

thorax, and at the apex dilated and furcate, the fork being in the plane of the axis of the body, not transverse.

ONTHOPHAGUS CHRYSOPES.—*O. semiris* (Thoms.) *affinis*. *Caput et thorax late rufo-aurata, elytra cæruleo-violacea, pygidium pedes et pectus viridi-ænea. Caput passim grosse (haud profunde) granulato-rugosum, oviforme basi truncato, clypeo marginibus reflexis media fronte tuberculo parvo, vertice carina brevi parum elevata utrinque breviter erecte cornuta; thorace dense oblongo-granulato versus basin medio læviori et punctulato, medio prope marginem anticum tuberculo brevi; elytris obsolete striatis, sat dense setifero-punctulatis; pygidio corporeque subtus fulvo-pilosis. ♂. Tibiæ antice apice intus spiniformiter productæ. Long., 14 mm., ♂.*

Nguru, E. Africa (Dr. Baxter).

The triangular median lobe of the base of the thorax is much less depressed than in *O. rangifer*, *lanista*, &c. In the short bicorned crown, the species resembles *O. semiris* (Thoms.), from the Gaboon.

ONTHOPHAGUS COMETES.—*O. semiris similis sed valde differt vertice unituberculato, etc. Cupreus antice viridi-auratus elytris fusco-cupreis, dense breviter fulvo-pilosus: capite ovato (basi truncato) crebre granulato vertice unituberculato; thorace passim dense asperato-punctato, lobo triangulâri basali depresso solum lævi, dorso longitudinaliter impresso nec tuberculato: elytris sat exarato-striatis interstitiis crebre asperato-punctulatis. Corpus subtus cum pedibus cupreo-auratus nitidus. ♀. Tibiæ anticæ apice intus simplices. Long., 12 mm., ♀.*

Gaboon.

Both sexes, doubtless, have the same armature of the head, such being the case in *O. semiris*, which is bituberculated, and in *O. Brucei*, which is unituberculated.

ONTHOPHAGUS DICELLA.—*Brevis, robustus, convexus, castaneo-fuscus, sublævis, elytris basi obscure rufo-maculatis: capite subtiliter punctulato, margine flexuoso, clypeo antice valde sinuato-angustato apice reflexo et obtuse bidentato, carina anteriori obtuse arcuata, posteriori acutiori recta; thorace valde transverso angulisque anticis late fulcatis, antice lævi, subverticali bi-concavo, dorso valde convexo, antice cornu lato divaricato-furcato, horizontali, armato, postice punctulato (versus latera granulato) basi integriter marginato medio perparum angulato: metasterno haud carinato: elytris subtiliter punctulato-striatis, interstitiis planis alutaceis sparse minute setifero-punctulatis. Long., 13 mm., ♂.*

Mamboia (Mr. Last).

ONTHOPHAGUS CRÆSULUS.—*O. helciato* (Har.) *affinis; brevis, igneo-cupreus elytris cupreo-rufis; capite plano inermi, punctulato, clypeo apice lute et alte reflexo subsinuato; thorace dorso in gibbere subcuboidali elevato, profunde sat dense sed discrete punctulato, basi medio leviter angulato*

integriter marginato: elytris leviter punctato-striatis interstitiis sat crebre asperato-punctulatis: pygidio convexo, crebre, discrete et profunde umbilicato-punctulato; tibiis anticis extus et inter dentes denticulatis. ♂. Vertex tuberculo minuto. Thorax gibbere fortius elevato antice utrinque angulato, dorsoque utrinque sub angulum profunde concavo sublævi. ♀. Vertex tuberculo transverso vel breviter carinato. Thorax gibbere multo obtusiori et antice utrinque perparum concavus.
 Long., 7—9 mm., ♂ ♀.

Natal.

Belongs, with *O. helciatus*, from north-east Africa, and the following, to a small group of African species, which have a cuboidal thoracic elevation (quadrate and vertical anteriorly, in well-developed males), and the head distinguished by its plane surface, and the absence of the usual sharp carinæ and armature.

ONTHOPHAGUS EPILAMPRUS.—*O. crœsulo proxime affinis, differt tantum coloribus, capite cum thorace æneo-aurato elytrisque fuscis, et in sculptura, thorace undique punctis majoribus et minoribus intermixtis. Clypeus apice recurvus rotundatus, verticeque carinula obsoleta, elytris alutaceis sericeo-opacis, interstitiis sparse et tenuissime setifero-punctulatis; pygidio subopaco subtiliter setifero-punctulato; corpore subtus cum pedibus obscure æneus, femoribus rufescentibus.*
 Long., 9 mm., ♀.

Cameroons.

DIASTELLOPALPUS QUINQUEDENS.—*Onthophago lamellicolli (Quedenfeldt) affinis: differt colore cupreo-fusco carinaque posteriori capitis quinquedentata. Late oblongo-ovatus, robustus, convexus, supra brevissime subtus longius fulvo-fusco pubescens; capite sat elongato triangularem semiovato; thorace ante medium valde rotundato-dilatato deinde profunde sinuato-angustato, angulis posticis rotundatis basi utrinque flexuoso medio producto-triangularem planato; antice verticali et supra flexuoso-carinato, carina medio breviter lobato-producto, lobo apice lato levissime sinuato, antice medio sub lobo concavo polito, cætera superficie discrete granulato prope medium basin lævi excepto: elytris subtiliter punctulato-striatis, interstitiis planis sat crebre sed discrete aspere punctulatis.*
 Long., 16—22 mm., ♂ ♀.

Mamboia, East Central Africa (Mr. Last).

Closely allied to *O. lamellicollis* (Quedenf.), of West Central Africa, but differing in the posterior highly-raised carina having (in all developments) five small teeth instead of four; of the five the central one is always distinctly formed, those at the outer angles are also well-marked, but the intermediate two are always obtuse, and in the lower developments indicated only by a slight undulation. The colour is dark, slightly brassy or coppery-brown, with the thorax always distinctly coppery. The sexes show no distinction in the apex of the anterior tibiæ; the only apparent differential characters being in the longer (♀) or shorter (♂) apical ventral segment.

The genus *Diastellopalpus* has been recently founded by von Lansberge, to include *D. tridens*, *D. noctis*, *D. Johnstoni*, and *D. lamellicollis*, a natural group, in which the first joint of the labial palpi is triangularly dilated, and the antennal club cupuliform. In all the species the metasternum anteriorly has a prominent carina, with a more or less free and acute apex.

DIASTELLOPALPUS THOMSONI.—*Late oblongo-ovatus, subtus chalybeus supra capite thorace et pygidio viridi-æneis (sub-cæruleis) elytris nigris nitidis: clypeo semiovato grosse scabroso: thorace ante medium dilatato (angulis anticis breviter falcatis) postice valde sinuato-angustato angulis rotundatis, medio basi paullulum producto-triangulari ibique nec planato sed sulculo profundo basali interrupto; supra grosse distanter granulato disco posteriori aspere punctato; elytris striis punctulatis vix impressis interstitiis planis confuse sed discrete setifero-punctulatis. ♂. Carina frontalis brevis, verticeque cornu brevi triangulari erecto armato. Thorax antice verticalis lævis et supra breviter quadridentatus, dentibus duobus intermediis per carinam brevem angulatam conjunctis et antice verticaliter obtusius carinatis, dentibus exterioribus majoribus liberis. ♀. Carina frontalis elongata valida, verticeque carina quadridentata. Thorax antice sub-verticalis carina brevi, bituberculata fere sicut in ♂ sed dentibus lateralibus nullis.*

Long., 16—20 mm., ♂ ♀.

Taveta, Kilimanjaro (Mr. Joseph Thomson).

The anterior tibiæ are not produced at their inner apex in the ♂, but show on the upper surface near the base of the tarsi a smooth tubercle, apparently the rudiment of the apical dentiform process, so frequently distinguishing the ♂ in *Onthophagus*. In *D. tridens* (Fab.), ♂, this process does not project laterally, but forms a triangular tooth in the same position as the rudimentary tubercle of *D. Thomsoni*, ♂.

DIASTELLOPALPUS EBENINUS.—*Late oblongo-ovatus, robustus, nigerrimus nitidus femoribus plus minusve castaneo-rufis. Clypeus sat breviter rotundato-triangularis rugulosus, carina frontali (♂ ♀) valida: thorace postice valde sinuato-angustato, angulis anticis haud recurvis posticis rotundatis, margine basali medio subacute productis ibique breviter carinato vel denticulato, dorso passim crebre sed discrete punctato-granulato, postice tantum punctato: elytris politis subtiliter punctulato-striatis, interstitiis fere planis sat crebre setifero-punctulatis setis nigris. ♂. Carina verticis alta fere ab oculo usque ad oculum extensa, verticaliter sub-arcuata. Thorax antice alte verticalis haud profunde punctatus, suprâ carina valida verticaliter arcuata, utrinque fere usque ad foveam lateralem extensa. ♀. Carina verticis altior, curvata, angulis utrinque dentiformiter productis.*

Long., 16—19 mm., ♂ ♀.

Cameroons and Old Calabar. Four examples.

The armature of the ♂ so much resembles that of the opposite

sex generally in the *Onthophagi*, that I should have hesitated to describe the single specimen as a ♂ if it were not for the corroboration afforded by the produced and angulated inner apices of the anterior tibiæ, the same being obliquely truncated in the other three (♀) examples.

DIASTELLOPALPUS MONAPOIDES.—*Late subquadrato-ovatus, nigro-nitidus*: clypeo semiovato, subtriangulari, grosse discrete granulato: thorace brevi et lato, angulis anticis subfulcatis postice valde sinuato-angustato angulis posticis rotundatis, basi vix flexuoso et medio parum producto ibique sulco marginali anguste interrupto, dorso aspere verrucoso polito: elytris interstitiis valde convexis sparsim setifero-punctulatis (setis nigris) striis in fundis vix impressis. ♂. Carina frontalis parum elevata, verticeque in cornu acuto robusto sed parum elevato, retrorsum curvato, armato. Thorax antice alte verticalis, brevis, supra cornubus brevibus et validis quatuor quorum intermediis (oblique spectantibus) sinu subtiliter carinulato separatis, duobus exterioribus porrectis liberis a cornubus medianis sinu profundo separatis. Tibiæ anticæ supra prope tarsos leviter tuberculatæ. Long., 24 mm., ♂.

Mamboia (Mr. Last). One example.

A distinct and remarkable species, somewhat resembling the Australian *Onthophagus (Monapus) pentacanthus*, Harold.

PHALOPS EUPLYNES.—Ph. Wittei (Har.) proxime affinis; differt inter alia genis triangulariter lobatis. Viridi-æneus, elytris flavo-testaceis parce fusco-marmoratis: clypeo dimidio anteriori polito sparsim punctulato, postice setifero-punctato, gradatim acuminato apice reflexo subacuto, lamina occipitali fissa nutanti, utrinque intus unidentata: thorace æqualiter et sat distanter granulato toto griseo-pubescenti: elytris vix nitidis breviter griseo-setosis, interstitiis planis, subtilissime alutaceis et disperse granulatis: subtus nigro-nitidus. Long., 12 mm., ♂.

Damara Land (Andersson).

Differs from *P. Wittei* and *P. Dregei* in the genæ being dilated into a sub-triangular lobe (rounded at the apex), different in shape from the same part in all other species of *Phalops*. The head, from the hind part of the clypeus nearly to the summit of the long fissile occipital plate, is clothed with long, erect, grey hairs. The pubescence of the thorax is recumbent and curled; that of the elytra similar, but more sparsely scattered.

Family CETONIIDÆ.

FORNASINIUS VITTATUS.—*Oblongus, nigro-nitidus, thorace lineis impressis quinque elytrisque vittis suturali et marginali aliisque 2—3 intermediis cretaceo-tomentosis. Thorax fere æqualiter convexus paullo ante medium dilatatus, disperse punctatus, lateribus cum angulis posticis rotundatis; elytris subtilius disperse*

punctatis; scutello nigro nitido utrinque sulcato. Subtus nigro pilosus. ♂. Clypeus antice paullo dilatatus angulis lateraliter exstantibus, margine anteriori medio cornu erecto gradatim leviter dilatato apice sinuato-truncato; fronte plana, granulata bicornuta, cornubus brevibus antrorsum curvatis. Tibiæ anticæ validæ compressæ, extus acute tridentatæ. Long., 45 mm., ♂.

Southern Masai Country, near Ugogo (Dr. Baxter).

Differs from the two previously described species by many characters, the chief of which is the narrow clypeal horn, gradually and slightly dilated towards its apex, where it is sinuate-truncate, instead of bifurcate. The chalky tomentose markings of the elytra are arranged in longitudinal stripes, the marginal one being the broadest, and continuing round the apex to the narrower sutural vitta, two other shorter discoidal vittæ being partly dilacerated. There is also a large basal spot on each elytron.

CERATORHINA (DÆDYCORHINA) MACULARIA.—*Mediocriter elongata, antice et postice angustata, supra deplanata, velutino-opaca, erecte pilosa; olivaceo-fusca; capite, pedibus (tarsis nigris exceptis) vitta utrinque obliqua prothoracis, scutello maculisque plurimis elytrorum, fulvo-rufis; elytris sutura et costis utrinque duabus elevatis. Processus sternalis fere sicut in C. nireus mediocriter productus sed paullulum acutior et sutura in medium sita. ♂. Clypeus latissimus, quadratus, angulis acutis, medio in cornu lato suberecto postice profunde concavo, elevato: fronte toto valde concava margine utrinque alte et acute elevato tridentato; vertice medio sub-horizontaliter cornuto cornu juxta basin angulatim dilatato et apice sinuato-truncato. Pedes antiqui elongati, graciles, tibiæ arcuatæ, apice intus et extus acute productæ, et extus (haud procul ab apice) unituberculatæ.*

Long., 27 mm., ♂.

Mamboia (Mr. Last).

This very remarkable species does not fall into any of the numerous sub-genera into which the genus *Ceratorhina* has been divided, a new generic name (*Dædycorhina*, in allusion to the scoop-formed nasal horn) is, therefore, proposed for it. The long, rather narrow and bowed anterior tibiæ are unlike those of any other species of the group, but they somewhat resemble the form shown in *Ischnoscelis Dohrni*, Westw. In the velvety surface and markings, the species resembles the *Chordoderæ*. The tawny-red spots of the elytra are, on each, 10—12 in number, extremely irregular in size and arranged longitudinally, those near the suture tending to form short fasciæ.

Carleton Road, Tufnell Park:
February, 1888.

ERRATUM.—The length of *Onthophagus Plato* (*ante*, p. 203) should be 21 mm., not 31 mm., as printed.

TORTRICES IN NORFOLK IN 1887.

BY C. G. BARRETT, F.E.S.

This district is so rich in *Tortrices* that it would be manifestly ungrateful in me to allow a season to pass without some notice of them.

Tortrix Lafauriana, Ragonot.—As a matter of course, I looked eagerly for the larva of this fine species: following Mr. Atmore's friendly directions, and having, through the good offices of a kind friend, obtained admission to the strictly guarded (and rich) game preserves in which it loves to dwell, was not disappointed. The green larva was readily discovered in its tube of upright joined leaves in the top of the shoot of *Myrica gale*. Here it appears to be little troubled with parasites, for I think that we reared almost every larva obtained. The moth is rather sluggish, flying only on the most favourable evenings. The large size of the body of the female must render flight laborious.

Tortrix decretana, Tr. (*cf. ante*, p. 125).—Several specimens of this novelty occurred, reared, I believe, among common species, but I overlooked them at the time, taking them to be pale varieties of *Podana*, which the species closely resembles in both sexes; indeed, these specimens are much more like typical *Podana* than are some aberrations of the latter. The shape of the wings in the two species is precisely the same, but the whole tone of colour in *decretana* is paler, the ground-colour of its hind-wings being whitish in both sexes, with grey shading and a *faint tinge* of reddish-brown at the apex, while the fore-wings in the male are of a lighter chocolate-red, and of the female a slightly paler brown. The only distinguishing character that seems really reliable is in the shape of the line forming the anterior margin of the central fascia. In *Podana* this line is very oblique, but not angulated, only slightly curved or sinuous; while in *decretana* it is twice or thrice angulated; after crossing the costal cell it turns abruptly along the nervure away from the base, then abruptly again across the discal cell, thus forming two right angles, then bends again in the previous direction, and passes with a decided curve to the middle of the dorsal margin. It is curious that the most reliable distinguishing character in several of the species of this group is to be found in the form of the same transverse line. *Decretana* is recorded from Germany, Switzerland, and Russia. Its larva, according to v. Tischer, is very similar to that of *Podana*, but without the little black shield on the anal flap. Feeding on birch and hazel in June.

Tortrix cinnamomeana, Tr.—Not common, but occasionally met with.

Penthina corticana, Hb. (*picana*, Froel.).—This very pretty species was not scarce among birch in June and July; *betuletana*, Hw., taking its place in August.

Penthina capreana, Hb.—Mr. Atmore found some larvæ in May, from which he reared a lovely series. I was not so fortunate, but specimens of the moth occurred all through July in widely separated places. They seem to rest high up in the large willow bushes, and often fall to the ground with hardly a flutter when disturbed. They are a little more active after sunset, and probably fly at night.

Penthina sellana, Hb.—A very few specimens occurred in the dry open places frequented by *Eupæcilia anthemidana*, near Thetford.

Phloxodes Demarniana, F. R.—This species, which used to be taken in the London district, has apparently been rare for many years. I took two or three at West Wickham thirty years ago, and had never seen a living specimen since. Mr. Atmore and his brother have taken single specimens in several recent years, but in the past summer it must have been more common, for between Mr. Atmore, my son, and myself, more than a dozen were secured. It appears to rest on the branches of well-grown birch trees, and to prefer the higher branches, so that it is difficult to disturb, and, consequently, more difficult to capture, requiring *one* to beat the branches, *another* to capture the moth.

Sericoris bifasciana, Hw.—Occasionally among firs near Lynn and near Thetford; in the latter locality I saw it sitting upon the loose brown scales which form the blossom of the fir—*Pinus sylvestris*,—evidently just emerged and in great beauty. From a lot of shoots and blossoms of fir very kindly sent me from Bournemouth by Mr. McRae, I reared a most beautiful series of this species, most of them of the lovely pink colour, which is not always observable in captured specimens. They appeared from the middle of June to quite the end of July, by which time *Retinia sylvestrana* was emerging from the same lot of fir blossoms.

Sericoris micana, Froel. (*olivana*, Tr.).—I was very glad indeed to renew my acquaintance with this pretty species in a marshy spot in one of the river valleys. It was flying about a patch of *Spiræa ulmaria* and other marsh plants, restricting itself—quite unnecessarily—to a very few yards of the marsh. The few females observed seemed to hide among tall grass under the willow bushes.

Pædisca ? rufimitrana, H.-S.—I had the pleasure of making the acquaintance of this species in the living state at Merton, under the guidance of Mr. Hartley Durrant. I was late for it—the beginning of August—and it was getting worn, but we obtained several good specimens from trees of *Abies cephalonica*. It seems to be principally attached to this handsome fir, which grows in plenty, and in great vigour and beauty at Merton Hall.

Mixodia Ratzeburghiana, Rtz.—This species was not uncommon at the same time and place, but occurred only among *Pinus sylvestris*. Subsequently a single specimen turned up near Lynn, where it had not previously been observed.

Mixodia rubiginosana, H.-S.—This species also occurred near Lynn, in June: half a dozen specimens being beaten out of one or two young trees of *Pinus sylvestris*. None could be found except in these trees, although the fir was plentiful around. Probably these were all produced from the eggs of a wandering female in the previous year, for this was its first occurrence in the locality, although single specimens have been taken in several previous years, within a few miles, by Mr. Atmore. It is most interesting to notice the gradual spread of this species (*Bouchardana*, Dbl.) over the country. Formerly, it was only taken in the highlands of Perthshire, and was there a great rarity; after a time it was found more commonly near Paisley; more recently it has occurred somewhere in the London district (although the locality is very naturally kept a profound secret by the captors), and this year it occurred near Thetford, as well as here. Doubtless, it is sometimes introduced with young trees from Scotland, but it takes kindly to inadvertent acclimatisation, and will probably be known in time wherever Scotch fir grows in plenty.

Phoxopteryx diminutana, Hw.—This graceful species has been rather commoner than usual, always about sallow bushes in marshy places, but sluggish and hard to take, except at sunset, when it flies. In the day-time it darts to the ground when disturbed, and is generally secure from capture; but my friend Mr. Atmore circumvented some of them even then, for they *could not* endure his tobacco smoke.

Phoxopteryx uncana, Hüb.—Most abundant on a marshy heath, and interesting from the beauty and size of many of the specimens.

Phoxopteryx biarcuana, Stph., and *inornatana*, H.-S. (*subarcuana*, Dougl.).—Both more than usually plentiful among *Salix fusca*, and the former species very fine and handsome. Of the latter I noticed a second brood in August.

Phoxopteryx siculana, Hb.—Among its food-plant, *Rhamnus frangula*, but scarce.

Catoptria candidulana, Nolek.—Flying in plenty late on sunny afternoons in July over its food-plant, *Artemisia maritima*, settling on the shoots, and apparently on little else, but constantly buzzing, in the manner of its allies, about the same spot. Excessively local.

Orthotania ericetana, Westw.—Not scarce in rough fields.

Eupæcilia dubitana, Hb.—Common in rough fields, where its usual food-plants *do not* grow. Appeared principally to frequent *Carduus arvensis*.

Eupæcilia udana, Gn.—Among *Alisma plantago*, occasionally, and at long intervals. Varying more than usual in size.

Eupæcilia notulana, Z.—Local, in a marsh, among *Mentha hirsuta*.

Argyrolepis subbaumanniana, Wilk.—Found, but rarely, in a chalk-pit, to which I made a pilgrimage, in the faith that it would not be absent from the kind of spots it most affects. Not previously found in this district.

King's Lynn, Norfolk :

January 19th, 1888.

DESCRIPTIONS OF THE LARVÆ OF *BUTALIS SICCELLA* AND
B. VARIELLA.

BY E. R. BANKES, M.A., F.E.S.

BUTALIS SICCELLA.

In my notice of this species in Ent. Mo. Mag., xxiii, 275—6, I expressed the opinion that *Thymus serpyllum* might very likely prove to be the food-plant of the larva, and subsequent investigation has shown that surmise to have been correct, as far as it went.

On May 5th, 1887, I made an expedition down to the locality near Weymouth, where I had, in the previous year, captured specimens of *B. siccella*, with the fixed determination to discover the larva. At first I could make nothing of it, owing to the dampness of the sand from recent showers, but, by dint of perseverance, my efforts were finally crowned with success, for I discovered unmistakable *Butalis* larvæ (which could, I knew, belong to no other species but *siccella*), living in long silken galleries attached to half-buried stems of *Thymus serpyllum* and *Lotus corniculatus*, both of which plants showed evident signs of having been freely eaten by the larvæ. It seems that they

also *occasionally* turn their attention to other plants, such as *Plantago lanceolata*, as I found the tubes attached to several partially hollowed-out leaves.

Unfortunately the larvæ continue feeding for a very long time, and are most difficult to rear, as, in spite of every possible care and attention, I only succeeded in breeding four specimens out of a large number of larvæ, and Mr. W. H. B. Fletcher had no better result from the batch of larvæ I sent him.

The following description was taken on May 7th:—

Head horny, polished, brownish-black; plate on second segment dark brown, and polished. Body very long, thin, and cylindrical, dull reddish-purple, with the spaces between most of the segments showing paler and of a pinkish hue, but greenish-white between the first four segments; no dorsal or sub-dorsal lines or spots, but there is one paler pinkish stripe along each side in the region of the spiracles. Anal segment with a rather small, horny, polished, brownish-black plate; ventral surface and prolegs reddish-pink; anterior legs black and highly polished.

Length, about $4\frac{1}{2}$ lines.

The larvæ live on the surface of and below the sand, in very long silken tubes, composed of sand and silk interwoven, and attached to half-buried stems of *Thymus serpyllum* and *Lotus corniculatus*. I was unable to discover the position of the pupa, but it seems probable that it is enclosed in a silken cocoon just below the surface of the sand, as in the case of *B. variella*.

The perfect insects (four in number) emerged from July 3rd to 12th. I can now corroborate the statement of Professor Zeller (quoted in the Ent. Mo. Mag., xxiii, p. 275) as to the fondness of *B. siccella* for frequenting flowers in the sunshine, as I found them extremely partial to those of *Hypochæris radicata*, from which they could be boxed with a little dexterity. The blossoms, on which Prof. Zeller had particularly noticed them, were those of *Jasione montana* and *Potentilla argentea*.

BUTALIS VARIELLA.

Wishing to compare *Butalis variella* with *B. siccella* in the larval state, I paid a visit to the locality for the former on May 16th, 1887, and procured a good supply of larvæ, which, when placed side by side with those of *B. siccella*, at once proved these two species to be totally distinct, although the differences between the perfect insects (already pointed out in Ent. Mo. Mag., xxiii, pp. 275—6) could leave but little room for the doubts expressed by von Heinemann as to their specific distinctness.

The larva of *B. variella* was, I believe, altogether unknown until

discovered by the Rev. C. R. Digby on April 3rd, 1883, but, as no notes on it have yet been published, with his permission I append a description taken on May 17th :—

The narrow, pointed, and much flattened head is black, horny, and highly polished; it is retractile into the 2nd segment, which is much broader, and covered by a horny, polished, dark brown plate. Body very long and cylindrical, dull purplish-brown, with no dorsal or sub-dorsal lines or spots, and not showing paler between the segments; there is a single stripe, rather lighter in colour than the body, along each side in the region of the spiracles; anal segment shining, dirty yellowish-brown, with no darker plate. Ventral surface and prolegs dirty brownish-yellow; anterior legs black, and highly polished. Length, 5—6 lines.

The larvæ live on the surface of and below the sand, in very long silken tubes, composed of sand and silk interwoven, and attached to half-buried twigs of *Calluna vulgaris* and *Erica cinerea*, upon which they feed. The tubes inhabited by this species often measure several inches in length, while those of *B. siccella* are equally long in proportion to the size of the larva. The pupa is enclosed in a rather long curved cocoon just below the surface of the sand.

I may add that, like *B. siccella*, this species is exceedingly difficult to rear into the perfect state, and the larvæ, at any rate in confinement, seem to continue feeding for an almost interminable length of time. Although I am well acquainted with the larvæ, and have several times tried to rear them, I have never yet succeeded in breeding even a single specimen of the moth, though the Rev. C. R. Digby has been rather more fortunate with them.

The Rectory, Corfe Castle :
February 10th, 1888.

DESCRIPTION OF THE LARVA OF *LEUCANIA TURCA*.

BY G. T. PORRITT, F.L.S.

On the 24th July, 1886, I received from the Rev. C. R. N. Burrows, of Brentwood, a good supply of eggs of *Leucania turca*. They were from two ♀, and were deposited in rather large batches, out of sight, in the crevices of the chip box; and in a state of nature would, no doubt, be placed either under bark, or in the crevices of grass. They were glossy, pale straw colour, with deep depression on the upper-side.

On the 27th I found they were hatching, and the newly-emerged larvæ were smoky-olive, with brown head, and darker brown mandibles. They thrive well on short grasses, and on *Dactylis glomerata*, and by August 28th were about five-eighths of an inch long. Body cylindrical, and of nearly uniform width; head polished, slightly narrower than the second, and still narrower than the third

segment, the lobes rounded; skin soft and smooth. Ground-colour rich dark green, more or less (in different specimens) dusted with yellowish-brown, some, indeed, being entirely yellowish-brown; head pale brown, the ocelli, mandibles, and some marks near the top of each lobe, darker; a line, bluish on the posterior segments (paler in the brown larvæ), and white on the anterior segments, edged on each side with a smoky line, forms the dorsal stripe; sub-dorsal lines waved, of the same colour, but less distinct, as is also a straighter line above the spiracles; the broad spiracular stripe yellowish-white, intersected throughout by a narrow green line. Ventral area, legs and prolegs, uniformly dingy greenish, or yellowish-brown, in accordance with the prevailing colour of the dorsal area.

I described them again on November 2nd, when they seemed to be hibernating, though even then they evidently fed during mild evenings.

Length, about three-quarters of an inch, and moderately stout in proportion; head glossy, with the lobes rounded, a very little narrower than the second segment; body cylindrical, and of almost uniform width; skin smooth, and the segmental divisions distinctly defined. Ground-colour reddish-brown, marked with smoke colour; head yellowish-brown, with dark mandibles; dorsal line yellowish-white, finely edged with smoke colour, and on it, at the segmental divisions, a smoke-coloured spot; sub-dorsal lines of the same pale colour, but less distinct, also edged with smoke colour; a broad pink stripe extends along the spiracular region; spiracles oblong, black, those on the 12th segment enclosing a pale spot. Ventral surface, legs and prolegs, brownish-pink.

At the end of May, some of the larvæ appeared to be full-grown, and on the 29th I described them as follows:—

Length, about one and quarter inches, and proportionately stout; head glossy, with the lobes rounded, a little narrower than the second, and still narrower than the third segment; body obese and cylindrical, tapering a little towards the head, and somewhat abruptly at the anal extremity; skin soft and smooth, but when the larva is crawling, the segments are considerably puckered, and that, together with the distinct segmental divisions, gives to it a wrinkled appearance. Ground-colour of the dorsal area ochreous-yellow, thickly freckled with smoke-coloured and purple dots, and on the anterior segments strongly suffused with purple; head and corselet brown, the former thickly dotted with paler spots; the straight pale ochreous medio-dorsal line, extending (as do also the sub-dorsal lines) right through the corselet, clear and distinct; and at each division of the segments, on this line, is a large conspicuous smoky mark; sub-dorsal lines waved and less conspicuous, also ochreous; spiracles large and distinct, black, with pale centre and edging; below the spiracles and throughout the ventral area the ground-colour is also ochreous, thickly freckled, and anteriorly strongly suffused with purple, but, being without the admixture of smoke colour, is paler than the dorsal area.

The first larva went down on the 4th, and the last on the 16th of June; the moths emerged during the early part of July, most of them during my absence from home.

Huddersfield: *March 3rd*, 1888.

EPHESTIA SEMIRUFA (HAW. ?), STN.

BY JOHN H. WOOD, M.B.

Just opposite one of my windows stands a fine old ivy bush, and one dark night in September, 1886, when *Noctuæ* were coming freely to a light in the room, there flew in along with them a rather worn knot-horn, that did not quite look like the common *Ephestia elutella*; so, instead of being dropped there and then into the ammonia bottle, it was put on one side with the hope that, as it was a female, eggs might be obtained. A few were fortunately laid, and they soon hatched. The larvæ fed up the same autumn on nut-kernels, spun their cocoons in rolls of paper, and pupated some time in May, the perfect insects (2 ♂, 2 ♀) coming out in June. Specimens were recently sent to Mr. Barrett, who at once pronounced them to be *semirufa*; but I cannot do better than give his own words:—"You cannot easily know how delighted I am to see genuine fresh *Eph. semirufa* such as these unquestionably are, I had almost given up the species as hopeless;" adding, "my notes on this species in the Magazine ten years ago are quite insufficient as a description of it. Will you, therefore, amend them by sending a full description." This I now venture to do:—

♂. ochreous-grey, dusted with dark grey. First line, starting from the costa at junction of inner with middle third, reaches the hind margin just beyond the middle; dark grey, broad and strongly marked as far as the fold, thence to the hind margin, faint and obscure; edged internally by a pale band, rather lighter than the ground colour. Second line rather nearer the hind margin at its inner than its outer extremity; double, enclosing a nearly straight whitish line; dark grey, and strongly marked as far as the fold, and then becoming fainter. The two discal spots are minute, but well defined, and immediately below them are indications of a third spot, a spur apparently from the second line. A row of dark grey crescents along the hind margin. Costa slightly dilated at the base, and with a distinct lappet of hair-like scales. ♀ has almost the appearance of another insect, being much suffused with red, especially at the base, inner, and hind margins. Moreover, the pale included line in the second line has a distinct bend below the costa, equally noticeable in the captured and bred specimens. Hind-wings in both sexes pale grey.

Perhaps the most obvious feature in looking at these bred specimens, and comparing them with *elutella*, is the striking beauty and richness of their colouring, and the singular resemblance of the red females—except for the absence of white scaling—to *Pempelia adornatella*. At the same time the characters, that have usually been relied on to distinguish it from *elutella*, are evident enough, such as the larger size, more arched costa, greater relative breadth of fore-wing, and the narrower, more wedge-shaped, central area, due to the

position of the first line. I will now say a word about the costal lappets, flaps of membrane, folded back beneath the fore-wings, and clothed with highly specialized scales. The first point to be noticed is their large size in our insect, as compared with *elutella*. Examined with a pocket lens the body of the flap in *elutella* is seen to be covered with large coarse scales, whilst along its free border is a curled fringe of moderately long hair-like scales. In *semirufa*, the coarse scales are apparently absent, and the whole surface is thickly covered with long, straight, hair-scales, to the great length and number of which the lappet owes its size. Pursuing the subject further, with a sharp lancet I removed a lappet bodily from each insect, and placed them under a microscope. I found that the coarse scales in *elutella* are clavate, and darkly granular from the presence of pigment; and that similar scales, though less numerous, are really present in *semirufa*, but are hidden by the hair-scales. The latter bodies, however, are unmistakably different in the two insects. In both they may be described as spear-shaped, and provided at the end with a minute projecting point; but in *elutella* they are little more than half as long as in *semirufa*, and are at the same time nearly half as broad again, thus reversing the proportions; their shafts are also curved, which explains the curl in the fringe already mentioned, and they have lancet-shaped ends, whereas in *semirufa* they are blunt-ended. I have entered thus minutely into the subjects of the lappets, because, as they are what we call secondary sexual characters, it seems to me that the differences in their structure are of great importance, and ought to count a long way in settling the question of species, even if they do not absolutely decide it.

The larva is cylindrical, of moderate proportions, tapering but slightly at either extremity. White, tinged on the upper surface with pale smoky. Head pale brown or amber. Thoracic plate black, divided by a pale line. Anal plate also black. Spots black, small, but distinct; the trapezoidals arranged almost in a straight line, one behind the other.

There yet remains one point deserving, perhaps, a few remarks. Although my larvæ took very kindly to their nuts, it is not to be supposed that they feed upon them in a wild state, but, probably, like many of their congeners, they have accommodating appetites, and live on almost any kind of material, animal or vegetable, provided only it be not living. This being so, it may not have been accidental that it was out of ivy that Dr. Jordan beat his specimens many years ago in Devonshire, or that in my own case the same plant grew close at hand, for these old ivy bushes are stored with refuse materials of many kinds,

and are, therefore, as likely as not to be the home of the insect. Examining them in various ways, and more especially watching them in still summer evenings, when the *Ephestias* are in the habit of flying, may lead to our turning up the insect in greater numbers, and learning something more about it.

Tarrington, Ledbury :
February, 1888.

NOTES ON DR. HERMANN MÜLLER'S "FERTILISATION OF
FLOWERS."

BY EDWARD SAUNDERS, F.L.S.

I have recently had occasion to consult the late Dr. Hermann Müller's "Fertilisation of Flowers," as translated by Mr. D'Arcy W. Thompson, but although I have been, as every one must be, much interested in his remarks on the *Hymenoptera* given at p. 45, *et seq.*, I feel compelled to make a few observations on some of the data on which he founded his deductions, and which appear to me to be incorrect, and, therefore, likely to cause such deductions to be misleading. I do not discuss Dr. Müller's theories as to the ancestry of the *Anthophila*, as I feel myself quite incompetent to do so; but my first remarks shall be on the genus which he considered first among the bees, viz., *Prosopis*.

Of the species of this genus, he says, p. 47: "In their almost hairless bodies, the narrow first tarsal joint, scantily provided with hairs, and their very slightly elongated mouth parts, they completely resemble the sand wasps, and only claim to be admitted to the family of bees by their manner of feeding the young."

Dr. Müller apparently overlooked the beautifully pectinate hairs on the thorax and abdominal bands of the various species of this genus, and also the branched hairs which exist on the coxæ, trochanters, and femora (I have figured a metathoracic hair of *Prosopis*: Trans. Ent. Soc. Lond., 1878, pl. vi, fig. 14), affording characters which, if my observations be correct, distinguish them at once from any of the family of sand wasps. From *Prosopis* Dr. Müller goes at once on to *Sphecodes*, so that he altogether omits *Colletes*, another genus of the *Obtusilinguæ*, which has the tongue short and bifid, as in *Prosopis*, but which is densely clothed in all the known species with beautifully branched hairs, in fact, the hairs of *Colletes* and its kindred Australasian genera *Lamprocolletes*, &c., are probably more strikingly branched than those of any other known genera (for figures of hairs from

metathorax and scopa of *Colletes*, see Trans. Ent. Soc. Lond., 1878, pl. vi, figs. 5, 6, 12, 12a): also both *Prosopis* and *Colletes* have the lingua beautifully and finely ridged transversely, and set with bristles, a peculiarity which Dr. Müller attributed more especially to the higher *Hymenoptera* (vide p. 56), although it exists also conspicuously in some of the sandwasps.

One can hardly help feeling a doubt as to whether the habit of lining the brood cavities with slime can have had much to do with the shape of the tongue. It is hard to see why *Sphecodes*, &c., should require "deeply seated honey" more than *Prosopis*, also (unless this desire be granted for *Prosopis* as well) why if their ancestors, the sand wasps (*vide* Dr. Müller), had short bifid tongues, without any slimy habits, the slimy habit of *Prosopis* should be relied on to account for its conservative tendencies.

Following Dr. Müller to his remarks on *Sphecodes*, at p. 50, one reads: "In *Sphecodes* the whole body is sparingly covered with hairs which show the first traces of feathery branching." As I have already pointed out, far more distinctly branched hairs exist in genera which in Dr. Müller's scale would be placed decidedly lower down; I may here mention a peculiarity in *Sphecodes* and *Halictus*, which, so far as I know, exists in no other genus of the *Anthophila*, viz., that they have no apparent apparatus for projecting the mentum and lingua; in most of the genera this office is performed by what are called the *lora* (or retractors, Dr. M.), these are two joints, each of which swings on the apex of one of the cardines, and are united at their apices, so as to form a Λ -shaped body; the mentum, which bears the lingua at its apex, is attached to the centre of the Λ , and is retracted or projected according as the Λ is inverted or not. In some genera, *Andrena*, *Colletes*, *Prosopis*, and *Panurgus*, the *lora* do not form distinct arms, but the membrane which covers the space between the cardines is chitinized and darkened towards the apex, where its convexity forms an apical arch; to the centre of this arch the mentum is attached, and the membrane being elastic, the arch performs the same functions as the *lora*, only, probably, in a less perfect way; but in *Sphecodes* and *Halictus*, I have failed to find either *lora* or chitinous arch: and in this respect I should say they are decidedly lower down in the scale than *Prosopis* or *Colletes*.

I have mentioned *Panurgus* above as one of those genera in which no distinct *lora* occur, and in this respect it would appear to be decidedly less advanced than *Macropis*, *Dasyroda*, and *Cilissa*, although in the elongate lingua, and the form of the labial palpi, as well as in

the long acute paraglossæ, it advances towards the higher *Apidæ*; this genus, therefore, offers another case which breaks the continuity of such a scale as that proposed in the "Fertilisation of Flowers."

Again, at p. 53, Dr. Müller would appear to have placed *Macropis* on a higher level than *Eucera*, *Anthophora*, &c., on account of its having contracted the "new habit" of "moistening the pollen with honey before placing it in the collecting apparatus;" but *Macropis* is a short-tongued bee, structurally closely allied to *Andrena*, &c., so that in this case structure and usefulness of habit would not appear to have progressed together.

At p. 55, it is said of the *Dasygastræ* that "the whole or nearly the whole ventral surface of the abdomen is covered with a brush of stiff bristles, inclined backwards, which vary in length, closeness, and colour in different species, but are always smooth, without trace of feathery branching." I would only remark here that in many of the species these hairs are beautifully spirally grooved (see Trans. Ent. Soc. Lond., 1878, pl. xi, fig. 3); and in one genus, *Chelostoma*, they have distinct long filamentary branches (see Trans. Ent. Soc. Lond., 1878, pl. vi, fig. 8).

I do not make these remarks in any way to dispute Dr. Müller's theory of the gradual development of the mouth parts in *Hymenoptera*, I only think that there are signs that such development did not occur along the exact lines which he suggested; and having noticed these little inaccuracies, which happen to be in matters to which I have given special attention, I feel bound to point them out. Coming from such an important authority as Dr. Hermann Müller, one cannot but feel that they would be likely to be accepted, and might be made the foundation of many erratic conclusions.

St. Ann's, Mount Hermon, Woking:

January 13th, 1888.

DESCRIPTIONS OF SOME NEW SPECIES OF *MICRO-LEPIDOPTERA* FROM ALGERIA.

BY GEORGE T. BAKER, F.L.S.

CONCHYLIS LAMBESSANA, *n. sp.*

Alæ anticæ albidæ, ad basim fuscæ, vittis duabus obliquis fuscis vitta media ad marginem inferiorem attingente, vitta posteriore, angustiore et brevior; ciliis albidis tessellatis; alæ posticæ argenteo-cinereæ; ciliis albidis.

The anterior wings are white, with an irregular patch of fawn-brown at the base, and a broad oblique median stripe of the same colour extending from the costa

to the inner margin. This is followed by another narrower brown stripe near the posterior margin, which does not touch the inner border. The white ground colour between is also somewhat mottled with brown. Just in front of the apex are two pale brown spots, and the hind margin is also dotted with the same hue. The fringes are white intersected with brown, and with a dark dividing line.

The posterior-wings are silvery-grey, slightly brownish by the hind margin, the white fringes (having a somewhat indistinct dividing line) are edged with very pale brown at the apex. Expanse, $16\frac{1}{2}$ mm.

I have one specimen of this pretty species, taken at Lambessa.

NEMOTOIS CONSTANTINELLA, *n. sp.*

Alæ anticæ aureæ, cum ciliis coloris ejusdem; alæ posticæ albidæ hyalinae lineæ marginali fusca; ciliis albidis.

The anterior wings are of an uniform golden-bronze, inclining to a coppery tint towards the posterior margin.

The posterior wings are of a transparent white, with the apex greyish, the posterior margin being bordered by a fine brown line. Fringes whitish.

Expanse, 14 mm.

This is somewhat nearly allied to *prodigellus*, but may at once be recognised by its larger size, and by the bronze being of a paler or greener hue. I have two specimens from Lambessa.

GELECHIA ALGERIELLA, *n. sp.*

Alæ anticæ angustæ fusco-cinereæ strigis duabus centralibus minutissimis nigris; ciliis cinereis; alæ posticæ ciliaque cinereæ.

Anterior wings warm brownish-grey, with the apical portion thickly covered with pale ash-grey scales, interspersed with a few black scales. There is a small dark central dash just on the fold, followed posteriorly by another somewhat nearer the costa, between which spots are more pale ash-grey scales. Fringes grey, with a dark dividing line, extending from the apex for half the length of the fringe.

Posterior wings grey, deeply emarginate beneath the apex, with fringes of the same hue.

In the ♀ the two small dark dashes are quite obsolete, and the grey scaling is very slight indeed.

Antennæ dark grey, head and thorax same hue as fore-wings. Palpi grey in ♂, very pale in ♀, the head is also much paler in the ♀. Legs unicolorous, pale greyish-brown, the fore-legs being decidedly the darkest.

Expanse, ♂, 20, ♀, $21\frac{1}{2}$ mm.

I have two ♂ and one ♀, all of which were captured at Lambessa.

CLEODORA CONSTANTINA, *n. sp.*

Alæ anticæ cinereo fuscæ, strigis tribus nigris, albo marginatis, striga centrali majore obliqua; alæ posticæ cinereo-fuscæ, ciliis pallidioribus.

Anterior wings greyish-brown, with a small dark central dash in a white streak, followed by a small dark dash in a white streak, which is again followed posteriorly by an indistinct dark dot surrounded with white near the costa. These white

markings form a sort of broken, oblique, whitish shading from just in front of the apex to the centre of the wing. Immediately before the apex, which is strongly bordered with black, are two very short, oblique, parallel lines. The fringes are dark brown at the apex, becoming whitish at the anal angle, and being tessellated with white.

The posterior wings are darkish grey, deeply emarginate beneath the apex, with paler fringes. Head, collar and palpi (the latter being slightly tipped with grey) white. Thorax and abdomen as anterior wings. Expanse, 16—17 mm.

This species is somewhat nearly allied to *anthemidella*, but may be distinguished from it by the decidedly darker and browner hue of the fore-wings. The hind-wings are also more deeply emarginate beneath the apex; also the oblique white stripe from the costa to the hind margin below the apex, usually so distinct in *anthemidella*, is quite wanting in my insect.

I have two specimens, both from Lambessa.

COLEOPHORA PECHI, *n. sp.*

Ala antica ciliaque ochrea; cum venis pallidioribus; ala postica ciliaque fusco-cinerea.

Anterior wings uniformly ochreous, with all the neuration mapped out in a paler hue of the same colour. Fringes ochreous, with a darker patch on the apex.

Posterior wings dark grey, with fringes of the same colour. Head, palpi and thorax same hue as the fore-wings, abdomen as hind-wings, with the anal extremity fulvous. The legs are all slightly ochreous. Expanse, 16 mm.

I regret that I have no case with the only specimen sent me, which was also taken at Lambessa.

COLEOPHORA DUBIELLA, *n. sp.*

Ala antica albo-margaritacea, striga fusco-ochracea e basi oriente, prope medium fissa, ramo superiore, majore, ad apicem currente, inferiore tantum ad angulum analem margine interiore fusco-ochraceo; ala postica ciliaque hyalina cinerea.

Anterior wings pearly-white, with a broad, central, longitudinal stripe of ochreous-brown, branched beyond the centre, the upper one extending to the apex, and the lower to the anal angle, the inner margin is broadly bordered with ochreous, except at the base. Fringes brown at the apex, shading rapidly into pale grey at the anal angle.

Posterior wings lustrous-grey, with fringes of the same colour. Head, face and thorax pure white, antennæ white, annulated with black, palpi slightly greyish, abdomen fuscous, with whitish legs and tarsi. Expanse, 19—20 mm.

The pistol-shaped case is brownish-white, becoming blackish towards the head. This is enclosed within two beautiful nautilus-shaped lateral covers of a strongly shagreened silky texture, of a greyish hue, becoming brownish near the head. I have three specimens from Lambessa.

This species is somewhat nearly allied to *solenella*, but may be readily recognised by its larger size, decidedly darker brown, and by the white colour being less silvery. The case is also very different, that of *solenella* being of a uniform reddish-brown hue, almost straight, and half as long again as in my species.

16, Clarendon Road, Edgbaston :

January 26th, 1888.

P.S.—Since writing the above, I have, through the kindness of Dr. Staudinger, been enabled to compare my *Coleophora dubiella* with the type of his *squamosella*, to which it is closely allied, the shape of the cases being somewhat similar. The shape of the lateral covers of *squamosella* is, however, straighter (not nautilus-shaped), much less roughly shagreened, and whiter in colour. The interior case is also straighter. The imago is easily recognisable, my species being larger, decidedly darker and browner, and the white colour is very much less silvery.

Dr. Staudinger informs me that my insect feeds on a species of *Artemisia*.—March 16th.

THE EGG AND YOUNG LARVA OF *ANTHOCHARIS CARDAMINES*.

BY T. A. CHAPMAN, M.D.

In 1886 White Butterflies were very scarce, and it so happened that any white butterfly that I saw in May and June proved to be a ♀ *cardamines*. *P. rapæ* was so scarce that I could not obtain any eggs for comparison with those of *cardamines*, and I had to wait till 1887 in order to do so.

In June I observed the ♀ of *cardamines* settling on the flowers of *Alliaria officinalis* ("Jack-in-the-hedge," or, garlic mustard), and saw it occasionally deposit an egg as well as sip the honey. At the date when this occurs there is usually about an inch of the stem occupied by seed pods already formed, and the pedicel selected for the egg is usually that of a flower nearly over, so that it might equally be called a young pod, the guide used by the butterfly is obviously such a portion of the stem or pedicel as she can conveniently reach, whilst her proboscis also reaches the open flowers. Only one egg is laid on one head, if a second be found, it is the result of the visit of another butterfly. The *Alliaria* grows in patches or colonies, and each such colony usually presented one head of blossom containing an egg,

though there were exceptions of some colonies being uninhabited, and others presenting several eggs. A large patch of *Alliaria* did not afford a second egg more frequently than a small one. These statements might, no doubt, have to be modified according to the abundance of the butterfly in different seasons, but it would remain true that each butterfly lays her eggs solitarily and distributes them over a wide area.

The *Alliaria* is undoubtedly the food-plant of *cardamines* in this district; I have found the eggs on turnips and charlock, but these and the other *Cruciferæ* it may affect are exceptional.

The egg is very like that of *P. rapæ*, but is larger and darker; both are of the inverted vase shape, common in the *Pieridæ*. In *cardamines* the height of the egg is 1·10 mm., the greatest diameter, ·52 mm., the longitudinal ribs are thirteen in number, several coalescing towards the top, so that the rosette at top has ten or eleven rays. The colour, when first laid, is very pale pearly-green, almost white, getting darker and passing through yellow to deep orange or almost brown. *Rapæ* (always laid on a leaf) is ·90 mm. in height, ·41 mm. in diameter, has eleven ribs uniting into about seven at top. The colour is rather greener, passing quickly into yellow and never darker than a pale yellow. The bright orange colour makes the eggs of *cardamines* very conspicuous amongst white flowers and green stems of the *Alliaria*, so that they are easily found.

It hatches on the eighth day, there is little doubt this period will vary with the temperature. The larva takes from sixteen to twenty-four days to feed up, the shorter period being that of a larva hatched June 30th, and fed, therefore, during July. A still larger period is probably the rule with larvæ hatched early in May, as must often happen. The following are the dates of moulting in two instances:—

Hatched	June 26th	June 30th.
1st Moulth	„ 30th.....	July 3rd.
2nd „	July 2nd.....	„ 5th.
3rd „	„ 5th	„ 8th.
4th „	„ 7th.....	„ 11th.
Change to pupa	„ 12th.....	„ 19th.

The newly-hatched larva attacks a small pod just below the stigma, as it gets older it is less particular, but always feeds on the pods and their contained seeds; I never saw one touch a leaf. It has the ordinary trapezoidal subdorsal and lateral tubercles. In subsequent skins these gradually subside as the seven sub-segments become more distinct with their rows of tubercular dots, until, in the last skin, the

typical tubercles cannot be very certainly distinguished from the secondary dots. The hairs of the typical tubercles and, to a less extent, of the secondary dots in the second and third skins, are tipped with globules of fluid. Similar globules may be detected on the hairs of the young larvæ of *rapæ* and *brassicæ*, but in *cardamines* they are much larger and more conspicuous, so that no doubt of the nature of the club at the end of each hair is possible, especially as they are shortly renewed if wiped off. They are proportionately largest in the youngest larva in its first skin, but are more numerous in the second, and still more in the third, as the secondary dots develop, and here they are proportionately larger on the hairs of the tubercles proper than on those of the dots. I have no theory to suggest as to the object and use of this curious provision.

Burghill, Hereford :

February, 1888.

DESCRIPTION OF A NEW GENUS AND SPECIES OF *LYCÆNIDÆ*.

BY HAMILTON H. DRUCE, F.E.S.

PSEUDALETIS, *n. g.*

Allied to *Spindasis*, but the fore-wings much less triangular and considerably longer, and the hind-wings much more produced at the apex. Head smaller. Antennæ rather short, gradually thickening towards the end, while in *Spindasis* they are distinctly clubbed. Palpi exceedingly minute, and densely clothed with scales. Abdomen robust, with a thick tuft of hair at the anus. Neuration as *Spindasis*.

Type: *Pseudaletis Agrippina*.

The species described by me as *Spindasis Clymenus* will come into this genus.

PSEUDALETIS AGRIPPINA, *n. sp.*

♀. *Upper-side*—Primaries and secondaries bright orange-red, rather broadly bordered (except along the costal margin) with black, containing an irregular marginal row of pure white spots.

Primaries: costal margin narrowly bordered with black, darkest at the base; at the apex are three gradually decreasing pure white spots, followed by two much smaller and again by a large spot at the posterior angle. Secondaries with three marginal white spots at the apex, followed by two smaller and again by a larger spot between the last median nervule and the sub-median nervure, beyond which, at the anal angle, there is a broad white patch extending to the orange, with the inner half rather thickly covered with long black hairs. There are also two short black tails.

Under-side as above, excepting that the black border so distinct on the upper-side is wanting, and that inside the rows of spots at the apices and anal angles of both wings there are rows of smaller white spots running parallel. The base of the

fore-wing between the costa and the costal nervure is distinctly white. Head, palpi and thorax orange-yellow; legs brownish. Abdomen black, ringed with white, and a large buff coloured anal tuft. Expanse of wings, $2\frac{1}{4}$ inches.

Hab.: West Africa, Cameroon Mountains. Mus. Druce.

This fine species bears a close resemblance to *Aletis helcita*, L. (which occurs at the same place), it appears to be very rare, as amongst the enormous number of butterflies received from the Cameroons it does not seem to have been noticed before.

London: *March*, 1888.

NEPTICULA SERELLA, N. SP.

BY H. T. STANTON, F.R.S.

Sero nunquam est ad bonos mores via is a sentence which one learnt many, many years ago; perhaps, if "the way to good manners is never too late," it may be never too late to describe a new species, however long one may have had a specimen.

The subject of the present notice was found in the larva state as far back as 1859, and the imago appeared in 1860, but till quite recently I had only seen that single specimen.

Now, through the kindness of Mr. I. H. Threlfall and Mr. P. B. Mason, I have had three other specimens simultaneously before me, and no longer hesitate to give my aged specimen a name.

All these three specimens were bred by Mr. Threlfall from larvæ found in *Potentilla tormentilla*, on the moors of Westmoreland (see *ante*, p. 186).

Exp. al., 2 lines.

Head dull dark ferruginous, with a still darker central spot.

Anterior-wings with the basal portion of a uniform glossy golden-brown, beyond the middle is a nearly straight, moderately broad, pale golden fascia, apical portion of the wing very dark purple, almost black, with the cilia (which have no dividing line) slightly paler.

My original specimen was bred from a larva found on Birnam Hill, near Dunkeld, September 11th, 1859; the imago appeared in July, 1860.

The continental *N. tormentillella*, of which I have several bred specimens, has narrower anterior-wings, with the basal portion bronzy-green, and a purple band before the metallic fascia, which is rather silvery than pale golden, the apical portion of the wing purple, but not nearly so dark as in *N. serella*; head black.

Mountsfield, Lewisham:

March 20th, 1888.

White Butterflies in Japan.—My September number of the Magazine is just to hand, conveying the intelligence of great swarms of “Whites” in England last year. Now the *Pieridæ* are great favourites of mine, and I am always on the look out for anything concerning this group, and have therefore read with much interest all that has been written upon this “inundation,” and will give a few notes of my own.

1886 was the great “White” year in Japan. *Pieris napi* was very abundant, but *Pieris rapæ* swarmed. I first noticed great quantities of the latter while travelling from Yokohama to Tokyo early in May. All along the line are fields of rape and radish, which were swarming with *Pieris rapæ*, the train disturbing those on the embankments until we seemed to be accompanied from station to station by a little fluttering white cloud. Shortly after this I left Yokohama for the Ryukyu Islands, and next had my attention attracted by the “White” in the Bay of Kagoshima. This was my first visit to Satsuma, and I was therefore on deck before sunrise, anxious to see this most beautiful Bay. As the sun gained power I first noticed solitary specimens of *Pieris rapæ* slowly drifting down the Bay in a southerly direction; as the morning advanced there were hundreds all going to the same quarter before a light breeze which barely ruffled the surface of the water. I had plenty of time for observation, as when we reached Kagoshima before noon, the Port Officials politely but firmly insisted upon our remaining in quarantine for twenty-four hours, and all that day, until between 3 and 4 p.m., when they ceased, the flight was going on. The only other butterfly seen was a fine specimen of *Papilio Machaon*, which flew about the steamer until captured. After leaving the Bay the next day not a single “White” was to be seen. There were none on Amami Ohoshima where I landed, nor on Okinawa where I collected for three days. I left my collector on that Island, and he remained for some months, with orders to take everything; among the specimens (some thousands) there was not a single specimen of a White!

Now, notwithstanding that I saw the “Whites” apparently “migrating” in the most approved fashion, in thousands, I do not for a moment suppose that the “migration theory” accounts for the superabundant appearance of this or any other species, either in Japan or England. In the first place, there is no evidence or reason to suppose that the swarms seen at Yokohama and Kagoshima had migrated there from anywhere else; and secondly, it is quite incredible that had the swarm seen at Kagoshima been capable of migrating even in a limited acceptance of the term, that not a single specimen should have been seen on the adjacent Ryukyu.

I believe that Mr. Jenner’s remarks (Ent. Mo. Mag, xxiv, p. 113) sum up the whole mystery. Butterflies multiply so rapidly, that the produce of a few pairs exceptionally favoured by circumstances is sufficient to account for the wholesale appearance of any species either the same season or the next. I have had a very good instance of this during the past autumn and early winter. We have in Japan eleven species of *Vanessidæ*, ten of these are abundant, one (*Vanessa cardui*) is scarce, and until this year I had only a few specimens, taken singly, at various localities; but this season it was abundant for the first time during seventeen years, and I could have taken hundreds. This season has been extraordinarily mild, resulting in an extra brood, hence its abundance.—H. PRYER, Yokohama: January 19th, 1888.

Rhyacophila munda in West-Central France.—In a box of *Trichoptera* just received from my esteemed correspondent M. René Martin of Le Blanc (Indre), I find a single ♂ example of this insect, which thus loses its claim to be peculiarly British. It was described by me in 1862 in the *Trans. Ent. Soc. Lond.*, ser. 3, vol. i, p. 309, from examples found in 1861 at the streams in South Devon originating on Dartmoor, where I have since taken it on several occasions. In September, 1863, I found it, in company with *Rh. obliterata*, in certain localities in North Wales. These localities represented the extent of its known distribution. I could hardly imagine it really was peculiarly British; nevertheless, during more than a quarter of a century no one had recorded it on the continent, nor, until now, have I ever seen an example in the multitudinous collections from all parts of continental Europe forwarded for examination during that period. And it is a species with special structure so remarkable as to constitute a distinct group of the genus. If once again our insular *amour propre* has been wounded in no longer being able to claim a certain species as peculiar to our country, there is more than sufficient compensation in the addition gained to the knowledge of its distribution; personally, I rejoice; it is what I hoped for, and what I felt sure *must* happen some day. But I had looked for the record from some locality (probably in Brittany) further north than Le Blanc. Who is there that collects *Trichoptera* in Brittany?

M. Martin is located in a wonderfully rich (and peculiar) district. On the one hand he finds certain species there formerly known only from Portugal; on the other he is able to take from us the exclusive right to almost the only *Trichopteron* we could claim as distinctly British. He also finds *Rhyacophila Pascoei*, McLach., in his district, but that, although unique a few years ago, has proved to be wide spread; even the Seine at Paris produces it.—R. McLACHLAN, Lewisham, London: *February 25th*, 1888.

Review.

AN ACCOUNT OF THE INSECTS NOXIOUS TO AGRICULTURE AND PLANTS IN NEW ZEALAND: THE SCALE-INSECTS (COCCIDIDÆ). By W. M. MASKELL, F.R.M.S., Registrar of the University of New Zealand. Wellington: By authority: G. Didsbury, Government Printer. 1887. 23 plates, pp. 1—116. 8vo.

This work consists of a revised collection, in classified order, of the descriptive papers on *Coccidæ*, which have been contributed by the author during several years to the "Transactions of the New Zealand Institute." Now summarized and brought into a compendious form, this volume will doubtless prove useful to the persons for whom it is primarily intended—the cultivators whose trees and plants often suffer greatly from the attacks of *Coccids*,—by teaching them the nature of the insects, and the best methods of destroying them; and it has also a general scientific value in the masterly way in which the subject is treated from an entomological point of view. The primary groups, the genera of the whole world, as well as the species indigenous to, or introduced into, New Zealand, are concisely differentiated and described. The excellent figures, well lithographed from the author's drawings, those of the perfect insects being coloured, efficiently realize the wonderful forms, and are particularly illustrative and interesting to residents in other countries, of the genera *Lecanochiton*, *Ctenochiton*, *Inglisia*, *Eriochiton*, and *Cælostoma*, all hitherto special to N. Zealand; there is also a full-page plate of the notorious *Icerya*

Purchasi, which is supposed to have been introduced from Australia, but is now a dreadful pest on all kinds of plants in N. Zealand; in Auckland it has destroyed whole orchards of orange and lemon trees. It has also done immense damage in Australia, South Africa, and California, and as it might readily be introduced into this country, and prove very destructive to plants under glass, cultivators should be warned to watch for its advent, for then only, in view of what Professor Riley terms "its alarming prolificacy," could effectual means be adopted to prevent its spread in this country. The best means of enabling horticulturists generally to identify the insect would be to put them in possession of this book of Mr. Maskell, and the "Report for 1886," of Prof. Riley, noticed in our number for December last, p. 161.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY:
February 23rd, 1888.—T. R. BILLUPS, Esq., F.E.S., President, in the Chair.

Mr. Routledge exhibited a number of preserved Lepidopterous larvæ. The Secretary read "Notes on the *Geodephaga* in Ireland," contributed by the Rev. W. F. Johnson, of Armagh. The author said the number of species of *Geodephaga* at present known to occur in Ireland was only some 140, out of the three hundred 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 76 species of *Geodephaga*, many of which had not been previously recorded as Irish. A list of the species captured, with observations thereon, followed; and, in conclusion, the author said he could not regard the list with anything like satisfaction. It was only a beginning, and would serve to show where the gaps were, and what remained to be done. 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. An exhibition of microscopical objects was then given: Messrs. Dadswell, Terry, Macer, Coombs, Shaw, Turner, Adkin, West, Tutt, and Medland, exhibiting.

March 8th, 1888.—The President in the Chair.

Messrs. H. Robson and H. A. Auld were elected Members.

Mr. R. Adkin exhibited a variety of *Eubolia bipunctaria*, Schiff.: 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. Danenberg, at Boxhill, July, 1886. Mr. C. H. Watson, a variety of *Phibalapteryx tersata*, W. V., from New Forest, 1887. A note was read by the Secretary from Mr. T. D. A. Cockerell, on the origin of *Gonepteryx Cleopatra* L., 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*, Edwards, which emerged from hibernated pupæ, and had the orange patch much reduced. 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? A further note from Mr. Cockerell was also read with regard to *Agrotis suffusa*, Hübn., which he said was abundant in America.—H. W. BARKER, *Hon. Secretary*.

ENTOMOLOGICAL SOCIETY OF LONDON: *March 7th*, 1888.—Dr. DAVID SHARP, F.Z.S., President, in the Chair.

Mr. Frederic Pennington, Jun., of Broome Hall, Holmwood, Surrey; Mr. W. Crush, of Westcombe Park, Blackheath, S.E.; and Mr. J. P. Cregoe, of Charleston, U.S.A., were elected Fellows.

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); *Palæonympha opalina*, Butl.; new or unknown species of *Lethe*, *Apatura*, and *Nepthis*; 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 belonged to the var. *Valezina*, the typical form of the species 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 years obtained a series of forms intermediate between the typical female and the variety *Valezina*. Mr. McLachlan, 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. McLachlan 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 maize 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 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*.

DESCRIPTION OF A NEW SPECIES OF *ALEURODES*.

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

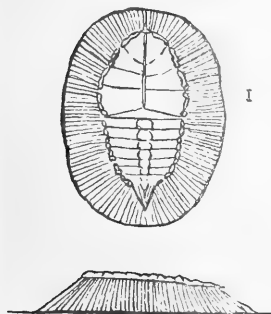
ALEURODES RIBIUM.

Head, thorax and abdomen yellow; antennæ and legs pale; wings milk-white, immaculate. Eyes black, elongate, sub-reniform, ends broadly rounded, contracted on both sides to the middle, and there crossed by a white farinaceous fillet, each portion viewed from beneath with seven straight, transverse rows of distinct white atoms. Antennæ of seven joints; 1st very short; 2nd stout, bulbous, almost obconic, the end hollowed out; the others thin; 3rd longer than 2nd, cylindrical; 4th to 6th somewhat shorter, sub-equal; 7th longer, pointed.

Expanse of wings, 2·60—2·75 mm.

Larva short broad-oval, flat, shining, at first pale green, afterwards pale citron-yellow, without hairs; sides sloping upwards and inwards from the circumference to an oval ring, smaller than but parallel to the circumference, the edge of the ring set with a catenulated series of small, obtuse elevations; within the ring, on a flattened surface, is a dim outline, in slight relief, of the back of the insect beneath the integument, with segmental indications, and on the median line of the abdomen four or five small obtuse elevations; the sloped sides with close, delicate, transverse striæ.

Length, 1·5, breadth, 1 mm.



The imago, except as to the dotted eyes, as noted above (a structure that, although not recorded, may possibly exist in other species, and be visible only in fresh examples), presents nothing remarkable, the best specific characters, as usual in the genus, being demonstrated in the larva. I believe that before winter the larvæ had passed into the pupa state, of which, as is well known there is, in this genus, scarcely an outward and visible sign, but in this species, in the adult larval state the outline of the insect below the integument is more strongly defined in the thoracic region, and there are mostly dark, suffused spots there and on the sides posteriorly, which character disappears in the pupa.

The number of joints in the antennæ of the imago, even of the same species, has been variously stated by different authors, of which I subjoin some examples.

A. prolella, Linn. (*chelidoniæ*, Latr.), Latreille (Gen. Crust. et Ins., iii, 174, 1, and Règne Anim., iv, 188, pl. 69, fig. 16), six joints. Burmeister (Handb., ii, 1, p. 82), six joints, 2nd very long, 3—5 equal lengths; his figure pl. 2, fig. 7, represents joint 1 as very short, 2 very long, nearly half the length of the antenna, 3—5 nearly equal, 6 longer than 3. Heeger (Sitzungsber. d. k. k. Akad. d. Wissens., 1855, xviii, 35) remarks that Burmeister has probably overlooked the small, distinctly separated

basal joint. Westwood (Intr. Mod. Class. Ins., ii, 442), six joints, but his fig. 118, 3, shows seven joints. Amyot and Serville (Hémipt., 614), six joints. Signoret (Ann. Soc. Ent. France, 4 Ser., t. viii, 377), seven joints, 1 very short, 2 larger, globose, three following almost filiform, 3rd longest, contracted a little in the middle, 3, 5, 6 and 7 sub-equal, together scarcely longer than 3. Signoret gives seven joints as a normal generic character.

A. aceris, Geoffr., Bouché (Stett. ent. Zeit., xii, 109), ♂, ten joints, 1 and 2 almost spherical, 3 longish and thicker, 4 thin, as long as the first three together, 5 shorter, 6 thin, longer than 4, the remainder oblong, shorter, in length sub-equal: ♀, nine joints of like proportions. Signoret (*op. cit.*, p. 394), seven joints, 1 short, globose, 2 twice as long, clavate, 3 two and a half times as long as 2, nearly as long as the last four, undulated, very small at its base, afterwards thicker; 4 and 7 of equal length and shortest; 5 and 6 of equal length, and a little longer than 4 and 7; 5 globose at the extremity; the last five circularly striate.

A. asarumis, Shimer (Trans. Amer. Ento. Soc., i, 281), six joints, 1st thick, clavate.

Koch (Pflanzenläuse, p. 324) describes four species: *chelidonii*, Latr.; *brassicæ*, Koch; *carpini*, Koch; *loniceræ*, Koch; all as having six joints in the antennæ; but on pl. 54, figs. 393, 394, 395 and 396 all four have seven joints. He says of *A. loniceræ*, "Das vierte Glied der Fühler in drei Gelenke abgetheilt."

Signoret (*op. cit.*, p. 381) remarks, respecting the intercalary joints of the antennæ, "As to the 4th joint of the antennæ being divided into several, it is a fact that this is seen more or less in all the joints of the antennæ of the species of this genus, and is more or less visible according to the aspect examined." This is doubtless the key to the discrepancies exhibited in the descriptions and figures of more than the normal seven joints that I have referred to; where only six joints are recorded, I must believe that the basal joint has been regarded as an antenniferous process. It must, however, be admitted that in consequence of the farinosity, the intercalary joints, and the transverse striation (which is very evident under a high power), the recognition of the normal number of articulations is very difficult; yet I believe I have given those of this species correctly.

In September, 1886, I saw some larvæ of an *Aleurodes* attached to the under-side of the leaves of black and red currant bushes (*Ribes nigrum* and *rubrum*), and as they did not agree with any description, I concluded they were a new species; but to be sure, I sent some to Dr. Franz Löw, Vienna, and he confirmed my belief. I had hoped that the imago would appear before or in October, but the larvæ remained on the leaves, and fell with them late in October. I then gathered a quantity and put them into an open plant pot, where they remained exposed to the weather all the winter. I also put some five or six into a gauze-covered glass and kept indoors, and I gummed a dozen on to card. Of the latter one became an imago in about a week; one only of those in the glass was transformed in February. At the end of April I sent a few of those kept out of doors to Dr.

Löw, and he obtained from them seven perfect insects in May. Of the remainder that I had kept out of doors, two only developed on June 6th, but no more came out, and it was not until June 30th and during the following week that I saw a few on the currant trees in the garden. The wonder is that there were any, for after I had gathered up the fallen leaves there were two or three days of continuous rain, and then no more leaves were to be seen, for all that had remained had been buried by worms, and the adherent insects with them. Such are the chances and changes of their life; this season has not been more propitious, for very few larvæ have appeared, and I also may have helped to thin the race.

8, Beaufort Gardens, Lewisham:

October 22nd, 1887.

NOTES ON SOME NORWEGIAN *CRAMBI*.

BY G. T. BAKER, F.L.S.

When my friend Dr. Jordan was in Norway last autumn, and in the summer of 1885, he made some interesting captures among the *Crambi*, all of which he was good enough to give me; and as, comparatively speaking, but little is known of the Scandanavian insect fauna, amongst the majority of the British entomologists, it may be well to give a list of all he took of this genus.

Crambus cerussellus, Schif.—One ♀ was taken at Trondhjem, on July 6th.

C. alienellus, Zk.—Several of this species were taken in one of the marshy tracts at Koppang during the first week of July; one very dark specimen with scarcely a trace of the white inner margin is worthy of note. The nearest British allies to *alienellus* are *hamellus* and *dumetellus*, between which, with several intermediate species, Dr. Wocke places it, in his and Staudinger's catalogue. I append a short description of it:—

Olive-brown, occasionally with a slight golden lustre, with a narrow white longitudinal stripe, distinctly toothed somewhat beyond the middle, followed by a small white blotch. The longitudinal stripe does not reach quite so near the costa as in *dumetellus*. Just in front of the hind margin is the usual angled, oblique, shining, lead-coloured line, from the costa to the inner margin, which inner margin is whitish, once intersected with brown near the centre. The hind-wings are brownish-grey.

C. pratellus, L.—Common everywhere, and some very dark and silvery-streaked forms occurred, one being so much streaked, and

having no more than a trace of the usual longitudinal white stripe that I think it must be a hybrid between *pratellus* and *hortuellus*.

C. dumetellus, Hb.—Several fine specimens occurred at Elverum in the first week of July, they are brighter than most of my continental specimens, with, perhaps, the exception of one or two examples which I took at Chamounix. I notice a curious circumstance with this insect: all my English specimens, from the New Forest and the south of England, are much brighter and more golden in colour than any continental ones, whilst some eight or nine Scotch examples from Rannoch revert to the duller hue.

C. hortuellus, Hb.—This was also abundant everywhere, some of the ♂ being unusually dark; there are also one or two specimens approaching the Lapland variety, *montanellus*, so closely that it is scarcely possible to distinguish them.

C. truncatellus, Zett.—Dr. Jordan had the good fortune to take one of this fine species at Tuset on July 9th. It has no near ally among our *Crambi*; the following description may, therefore, be useful:—

Ground-colour greyish, with two oblique rust-brown stripes from the costa to the inner margin, the posterior one dentated. The hind margin is broadly bordered with rust-brown, and the costa is also browner than the inner margin. Fringes brown, tessellated with white. Hind-wings darker grey.

My Norway specimen is much darker and uniformly browner than those I have from Lapland; the two oblique stripes are also somewhat obliterated. This *Crambus* has, I believe, only been hitherto recorded from Lapland, Finland, and Livonia. Herr A. Bang-Haas tells me that Dr. Staudinger and he have never received it from Norway, so that this is probably a new locality for it.

C. falsellus, Schiff.—Faleida; end of August.

C. myellus, Hb.—Ormein (Romsdal); end of August. One specimen of this local and widely dispersed insect occurred.

C. furcatellus, Zett.—This was taken rarely at Jerkin, during the second week in July; the specimens do not vary from the typical form.

C. culmellus, L. S. N.—This was also abundant everywhere, and is of the typical form.

C. tristellus, S. V.—The ordinary form occurred at Faleida at the end of August.

C. perllellus, Sc.—Dr. Jordan took only one specimen at Christiania, which is also of the ordinary silvery form.

ON THE KNOT-HORN LARVA WHICH INFESTS THE CONES OF
SPRUCE FIR.

BY H. T. STANTON, F.R.S.

Since the publication of Mr. Atmore's notes on the larva of *Nephopteryx abietella*, which he met with burrowing in old and young shoots of Scotch fir (*Pinus sylvestris*) in the spring, my attention has been called by Mr. C. G. Barrett to a larva found in the cones of spruce fir (*Pinus abies* or *Abies excelsa*) in the autumn, which he had supposed to be that of *Nephopteryx abietella*.

The perfect insects bred by Dr. Wood certainly seem to be referable to the *splendidella*, H.-S. (the name now adopted by M. Ragonot, Ent. Mo. Mag., vol. xxiv, p. 224, for the *sylvestrella* of his Revision, Ent. Mo. Mag., vol. xxii, p. 52); as probably this insect is still in very few of our collections,* I have thought it desirable to publish the following extracts from the note books of the late W. Buckler, so as to call attention more emphatically to this insect and its curious habits.

NOTES ON *PHYCIS ABIETELLA* FROM MR. W. BUCKLER'S NOTE BOOKS.

On August 16th, 1874, I received from Mr. John H. Wood a spruce fir cone containing a larva, whose ravages were plainly perceptible by the extruded particles of light fawn coloured frass from some of the scales, which still adhered by a thread or two of silk to the cone. It was not till the 26th that I was able to secure this individual to figure and describe, although on two previous occasions I obtained a transient glimpse of it as it left one part of the cone and entered another part; but on this occasion I caught it on the calico cover of the glass vessel that contained the cone, and then took the following description:—

Larva, when stretched out, is just half an inch in length, rather slender in proportion, stoutest at the thoracic segments, the others a little less but tolerably uniform in width to the twelfth, whence it tapered a little to the extremity of the thirteenth, which was rounded; the head a little flattened, rather broad, but not so broad as the second segment, which is equal in length and breadth to the third and fourth, the transverse wrinkles on these being rather deep, while on the others, one moderately deep, followed by a fainter one, sub-divides each of them at about two-thirds from the beginning; anterior legs well developed, the ventral and anal ones moderately and much under the body.

The head is shining and of a pitchy blackness, above paler on the top of the lobes and brown beneath; a broad, black, shining, semicircular plate is on the second segment, the skin of the body is without gloss, and of a rich reddish- (rather chocolate-) brown colour above on the back and sides, becoming a little paler on the belly; on the sides at the segmental divisions the skin appears paler, of a greyish glistening tint, seen only when the larva is fully stretched out; the tubercular dots are small, black, and shining, each emitting a fine and longish hair; spiracles round,

* Mr. P. B. Mason has specimens of *splendidella* which are undoubtedly British, but of which the localities are not known. They were obtained from the collection of the late Mr. Edwin Brown, of Burton-on-Trent, and other reliable sources.

very minute, of ground colour, faintly outlined with black; a pale faint patch of ochreous is on the back of the twelfth segment, and on the thirteenth it is paler still, and has there a dark brown sub-dorsal stripe, and the surface is shining.

In the sub-dorsal regions of the 3rd and 12th segments is an ocellated spot of greyish or whitish-grey, with black centre, bearing a hair.

Another larva left its cone full fed on September 22nd. The length, when stretched out, three-quarters of an inch, its body one-eighth of an inch in diameter. Its colour on back and sides is rather a bronzy-brown, the belly and lower part of sides rather paler pinkish-brown; a very fine line or thread of ground colour divides the pitchy-blackish plate on second segment, which is margined in front by a portion of the brown skin next the head.

Mr. Wood having kindly given me the result of his careful experience with these larvæ, I here quote from his advice:—

“I think they do best when the cone is kept on its side, and not standing on end. I have found them so far not difficult to rear. The only time when they want a little management is just after they have shed the last skin, or the last but one; should they at that time be out of their burrow, it is useless then to put them on an ordinary cone, as they will not make any attempt to eat into it, but wander about and would ultimately die. The plan is to get a dry cone, and break off some of the scales, so as to leave a rough surface; as soon as the larva is put upon this, all tendency to wander vanishes; it soon sets about spinning a hiding place, making it very secure, and taking plenty of time over it, for it is sometimes as much as thirty-six hours before it runs out a little covered way to the fresh cone that has been placed by the side of the other.

“It seems to be very impatient of exposure, more particularly when left feeble from the process of moulting, for it has been only at this particular time this care has been required. At an earlier age it is able to creep under a scale, and a few threads will complete the concealment.”

I found the first larva when it left the cone wander about until it died, refusing to attack the fresh cone supplied to it. Mr. Wood then kindly sent me a cone containing two larvæ approaching maturity on the 12th of September, intimating that I might expect to see one of them out of the cone in about ten days' time in search of a place for spinning up. This was a most exact prognostication, for though I looked daily into the pot after it, and noted with satisfaction the increasing heap of brown frass that steadily accumulated at the bottom, yet no larva made its appearance till the afternoon of the 22nd, when I beheld it hanging down from the cone, apparently examining the smooth surface of the jam pot.

After taking the note of its size and appearance before recorded, and securing its portrait, I put it into a pot prepared with earth at the bottom, on which were placed a fresh cone and an old brown one, with some pieces of touch wood, and after it was placed on the old cone it examined the surface of the fresh one for a moment or two, and returning to the old one, descended to the peaty earth, over which it crept to the touch wood, amongst which it speedily disappeared.

The second inhabitant of the cone (now on the 28th) continued to feed, as evidenced by grains of frass continuing to accumulate at the bottom of the pot, beneath the hole by which its co-tenant had previously left it.

Mr. Wood tells me “that several larvæ will often agree together in a single

cone, when probably they take care not to encroach on each other. I had no less than six in one cone; for some reason or other they had preferred it to others that were alongside. They will, however, fight sometimes. A full-fed fellow emerged one day, and as it was smaller than any of the others had been, I thought it might not have done feeding, and introduced it into an opening that was apparently tenantless; the animal went in readily enough to half its length, and then began to back out, which I tried to prevent, but it would not do, and the next moment the larva wriggled out and lay for an appreciable time twisting on the cone, held bull-dog fashion by the neck by another larva. Blood was drawn."

Fig. 23, 1877. In 1877, on September 7th, I received from Dr. Wood a spruce fir cone containing a much finer larva than either I had seen previously; it measured rather more than seven-eighths of an inch long, of rather stout figure, uniform in size, except that it tapered slightly from the third segment forward to the head the smallest, the 13th segment very slightly tapering.

In colour the head black-brown, plate on the second segment also with wide dorsal division of the same colour as the back of the larva, a rather reddish-brown, beneath the spiracles this colour is abruptly separated from the rather paler colour of the belly, most defined posteriorly; the dorsal line is rather darker brown, but on the 13th segment becomes obliterated by a broad pale stripe, relieved by a dark blackish-brown stripe on either side; on the back the tubercular dots are black, reddish-brown on the belly; ocellated spot of whitish, with black centres, on side of 3rd and 12th segments, with extra long hair and a fine brown hair from each dot.

This larva was observed out of the cone on September 14th, when I figured it, it was afterwards placed with the cone in a jam pot containing small fragments of rotten wood, and the moth emerged on June 14th, 1878.

On looking afterwards for the empty cocoon I found it at just the distance of one-fourth from the bottom, just inside the scales, at a part where they had been much ravaged or broken away; it was oval in form, five-eighths of an inch long, composed of whitish silk, but all (except the part attached to the cone) was entirely covered with brown frass. The pupa skin (damaged by extraction) seemed to have been about from a quarter to three-eighths of an inch in length, and of light reddish-brown shining colour.

On October 8th, 1879, I received an infested cone of spruce fir from Dr. Wood, drawing my attention to a singular feature in the economy of this species. Pinned to the cone I found a round flattish cocoon of white silk, partly covered with frass, containing a living larva of last year (1878) lying curled in a ring. This cocoon he tells me is a false or temporary cocoon, or hibernaculum, constructed simply for hibernation; and that when the larva intends to pupate, it will come out and form another, the true cocoon, of the usual oval shape. Dr. Wood affirms it to be the ordinary habit of this larva to form these two kinds of cocoons, although occasionally an individual is met with that dispenses with the round temporary one, and acts like the one I had in 1877, which produced the moth in June, 1878.

Last autumn (1878) Dr. Wood found an infested cone; it was put in a tin. On opening this in May, 1879, a larva was disturbed whilst making its pupating cocoon, and though this contretemps happened twice, it would not be balked of its intention, and in good time produced the moth. On October 7th, when cleaning out this tin for something else, Dr. Wood found in one of the corners under a few

loose scales three of the round flattish cocoons ; one was empty, and had previously contained the larva whose history had just been given ; another held a dead larva ; and the third Dr. Wood kindly enclosed to me, which I received (together with an infested cone) October 8th, 1879.

This round, flattish case, containing a larva, I figured on October 23rd, and kept apart with a bit of an old cone quite dry of the year 1877.

The infested cone that came with it I also kept separate. In writing to Dr. Wood I expressed an opinion I had held for some time, that the small larvæ I had received from him late in autumn in former years could not be full grown, as they did not produce a moth, though I had kept them over two years ; but that when a larva came from him to me much larger than any I had before seen, more than double the size of the others, that larva produced the moth. A fact which seemed to point to the larval life extending over two seasons.

To this Dr. Wood replied as follows :—

“ It seems to me the question you have raised as to the length of the larval life of *abietella* is a very difficult matter. I told you all the larvæ do not form the round cocoons, and I think it is more especially the earlier and better fed ones that do not. This is in favour of your views, but against it is the unquestionable fact that the *full-fed* larvæ construct them. Then again, the insect I bred this summer occupied just such another cocoon ; it deserted it in May, showed no desire to eat, but at once began to construct an ordinary shaped one in which to pupate.

“ The impression conveyed to my mind by these facts has been, that at a comparatively recent time in the history of this insect it was a two years' feeder, making use of these round cocoons in the first year as hibernacula, but that, although it has now become one year feeder, the memory of the old habit is not altogether lost, and is called into action perhaps by the lateness of the season or want of nutritiousness in the food, causing the larva to be somewhat imperfectly fed. But it is an intricate question.”—*October 11th, 1879.*

A NEW SPECIES OF *CRAMBUS* FROM COLORADO.

BY T. D. A. COCKERELL.

Mr. Henry Edwards, of New York, has been kind enough to examine a box of moths collected by me last year, and, among several other species of interest, is a *Crambus* to which he appends the note “ not described,” and which I therefore characterize as follows :—

CRAMBUS ULÆ, *n. sp.*

Length, $9\frac{1}{2}$ mill. ; alar exp., 24 mm. Primaries warm yellowish-brown, suffused with a dark shade (inclining somewhat to reddish-brown) on costa, extending over about one-third of the wing. There is a slightly paler patch (1 mm. long) on the costal margin near the apex. Of the area below the dark shade, the inner three-eighths is pale yellowish-brown, sprinkled with blackish and with pale scales ; beyond this there is an indistinct but rather broad oblique band, composed of an inner pale and an outer dark portion. External to this is another band, similar in proportions,

but having the inner portion yellowish-brown and the outer pale. Then comes a pale greyish area, and then a third band, the zigzag band seen in other members of the genus; this is yellowish-brown, bordered with whitish internally, and having a broader but somewhat indistinct grey external border. Between this and the outer margin is a greyish-brown area. On the outer margin are eight dark grey spots, the first three being enclosed in the dark area of the upper part of the wing, and the last two being almost obsolete. Fringe pale greyish-brown.

Secondaries plumbeous-grey, slightly lutescent. Eyes grey. Palpi, head and thorax yellowish-grey. Abdomen grey, with the lower border of each segment pale yellowish-brown.

Under-side of wings pale grey, with a brownish tinge on the costal margin of primaries. Legs pale yellowish-grey.

Hab. : near Ula, Custer Co., Colorado, U. S. A., 1887.

Among the other Lepidopterous captures of the past year are a probably new *Alucita*, and undetermined species of *Agrotis*, *Cidaria*, and *Eupithecia*, as well as several interesting known forms. On August 4th I took *Nomophila noctuella* in Cottonwood Gulch, Saguache Co., adding another locality for this cosmopolitan insect.

The Chrysomelid beetle mentioned in connection with a case of mimicry on p. 214, has been submitted to Prof. C. V. Riley, and proves to be *Disonycha punctigera*, Le Conte.

West Cliff, Colorado :

March 15th, 1888.

Cecidomyia nigra, Meigen.—For some years past my Marie Louise pears have been much infested by Dipterous larvæ, which destroyed a great portion of the crop soon after the pears had set. On sending some of the little infested pears to Mr. E. Fitch, he informed me that they were inhabited by the larvæ of *C. nigra*, Mg., but that they had not been reared of late years, and that it was not known to which division of the genus *Cecidomyia* the insect belonged. The next year, 1886, I sent a supply of the pears to Mr. P. Inghald, of Fulwith Grange, who is usually very successful in rearing Cecids and other Dipterous parasites. These infested pears are mentioned by him, Ent., Feb., 1887, p. 35, but he did not rear a single specimen the following spring. I therefore, last June, sent specimens to Mr. Inghald, Dr. Meade, Mr. E. Fitch, and Miss Ormerod, hoping that one or more would be able to rear them. We had been much perplexed by Mr. Inghald having reared a number of a species of *Sciara* and no *Cecidomyia*, and began to think that the larvæ must be a *Sciara*. But Miss Ormerod, on seeing the little larvæ, at once gave her opinion that they were undoubtedly the larvæ of a *Cecidomyia*. Seeing Mr. Inghald's notice in the Entomologist, Professor Riley wrote to him from Washington and expressed a great interest in the subject, since a pear orchard in America had been suffering from what he had every reason to believe was the same insect. He also sent the "Report of the Entomologist for 1885," in which the insect is carefully described and figured in the larva, pupa and imago states. I therefore sent some of the pears infested with these larvæ to America, which the Professor found agreed most closely with those

which he had described as *C. (Diplosis) nigra*, Mg., or *C. pyrivora*, Riley, if it was thought to be different from Meigen's species. No authentic specimens are in existence, while the description is somewhat vague. This spring, both Mr. Incbald and Dr. Meade have reared the insect, the former in considerable numbers, and Dr. Meade has undertaken carefully to describe it. The habits of the insect are well given by several authors, but I have no books at hand to refer to. One of the earliest accounts in English will, I believe, be found in "A Treatise on Insects, by Vincent Kollar, translated by J. & M. Loudon, with notes by Westwood, London, 1840, pp. 292—295." Schmidberger's account is there given in full, and Professor Riley gives a long extract in his paper. I will, however, quote briefly from Professor Riley's own account, merely premising that in every particular it agrees with our insect so far as I have been able to observe. "The eggs are laid in the flower-end of the fruit even before it sets, the fruit grows and soon assumes a somewhat distorted appearance, occasionally seeming abnormally round," and, I may add, generally swells much faster than the uninjured fruit. "If one of these young pears be cut open, there will be found from ten to thirty little yellowish-white maggots, usually attaining their full growth before the interior of the pear has been entirely consumed. When full-grown they leave the fruit and drop to the ground. They burrow to a greater or less depth, depending on the porosity of the soil, but rarely exceed an inch. The larvæ progress by a series of skips and jumps by which they fling themselves an inch or more." For further particulars I would refer to the papers above-mentioned, and to Dr. Meade's forthcoming notice. Although the insect seems to prefer the Marie Louise pears it occurs also in other pears. It would be of interest to learn whether this Pear Midge is of general distribution in Britain.—E. N. BLOOMFIELD, Guestling: *April 17th*, 1888.

Ephestia semirufa in Devon forty years ago.—It must be quite forty years ago that I used to take *Phycita semirufa* (as it was then termed). At that time my father and mother lived in a house in Old Market Street, Teignmouth: there were then, and are still, a row of houses with their backs to the street, and with the gardens belonging to them sloping down to the river Teign; the walls of our garden were thickly covered with ivy, evidently of many years' growth; from this we could always, in July and August, by beating, obtain one or more specimens of the *Phycita*, which was named for us by the kindness of the late J. C. Dale, *semirufa*, whether rightly or wrongly according to Haworth is doubtful. As the insect was much wanted by those with whom we corresponded, and to whose help we owed all our little stock of knowledge, many specimens were taken and distributed, but all, without doubt, bad, and set after the fashion of school boys. It varied much, but the ground colour was always more or less pale ochreous, or ochreous-grey. There was no food for it, such as an *Ephestia* would eat, save the rubbish on the wall under the ivy, or the birds' nests in it, but, in common with many other insects, notably *Triphæna janthina*, *interjecta*, *orbona (comes)*, and *pronuba*, it used the ivy as a shelter. Once, I believe, we reared it in a store box of other *Lepidoptera*, where the larva was an unbidden guest, but this may possibly have been some other *Ephestia*. If the walls of the old gardens are still crumbling and grown over with ivy, no doubt the insect is as common as ever, but if they have been cleaned, swept, and garnished, with equal certainty *semirufa* exists there no longer. The only fruits which the larva could

have used as a pabulum, save those of ordinary flowers, were the feathered achenia of a clematis which grew over the front of the house; *Lavatera arborea* and *Lycium barbarum* also grew more freely than is usual in gardens.—R. C. R. JORDAN, Harborne Road, Edgbaston: *April*, 1888.

Papilio bicolor, W. F. Kirby, = *P. Lesches*, Godman and Salvin.—The 4th part of Mr. H. Grose Smith's "Rhopalocera Exotica" (April, 1888), contains a figure of the *Papilio* recently described by Mr. W. F. Kirby as *P. bicolor*. This insect now proves to be the same as *P. Lesches* described by Mr. Godman and myself in 1880. Its synonymy stands thus:—

Papilio Lesches, Godm. and Salv., P.Z.S. (1880), p. 614.

P. bicolor, W. F. Kirby, Ann. and Mag. N.H. (5), xix, p. 361 (1887); Smith and Kirby, Rhop. Exot., Pap. iii, fig. 3, 4 (1888).

Our specimens were taken about thirty miles from Port Moresby, S.E. New Guinea, by Mr. Andrew Goldie.—O. SALVIN, London: *April 1st*, 1888.

Distribution, time of appearance, habits, size, &c., of the genus Selenia.—For Mr. Merrifield's information I may state that *illunaria* occurs commonly here, emerging in April and May, being large well-marked specimens, expanding from 1" 6" to 1" 8". Several years ago I bred two specimens of the small summer variety in August from larvæ beaten in June, and which I now have in my collection, expanse 1" 1"; whether the larva would have undergone its transformations, and the imago emerged during the summer in a state of nature, is doubtful, as I have never taken nor heard of the summer form being taken in this neighbourhood. *Illustraria* does not occur with us, but *lunaria* occurs sparingly. I, this year, collected two pupæ of this species, which I kept in a warm room, and two fine males emerged nearly a month ago—the usual time of appearance out of doors is, however, early in June. I would not like to speak with certainty, but my recollection of the position of the wings when at rest is that they met over the back like *illunaria*. I will, however, endeavour to find another pupa, and will note particularly their position, should I be fortunate in my quest and the insect emerge. Ours are all fine dark coloured specimens, approximating to *illustraria* in hue, and expanding 1" 8", much darker than my specimens from the South.—J. GARDNER, 8, Friar Terrace, Hartlepool: *March 20th*, 1888.

Quedius longicornis, Kr.—I am glad to supplement the Rev. Canon Fowler's capture of a specimen of this rare beetle with that of other three specimens taken on our sandhills during last summer. I have recently had them returned from my friend Mr. Blatch, who has kindly named them for me, so that there is no doubt whatever as to their correct determination. This species is a valuable addition to the Northumberland and Durham list, not being recorded in Bold's *Coleoptera* of the two counties.—ID.

The specific characters of Aëpus marinus and Robinii.—The following observations of differences in the forms of the elytra of *Aëpus marinus* and *Aëpus Robinii*, noted by the writer of this paragraph, and confirmed by the Rev. Canon Fowler, will probably be found useful for the more easy determination

of specimens of the *Coleoptera* in question, as a definite character is suggested for each insect.

- i. Apex of elytra truncate, apical sutural angle rather more than a right angle MARINUS.
- ii. Apices of elytra separately produced lobe-like, gaping; apical sutural angle obliterated ROBINII.

It may be furthermore remarked, that whilst the eyes of *marinus* are "small, sunk into the head," those of *Robinii* are moderately prominent, granulate.—J. KEYS, Plymouth: *April 7th*, 1888.

The Worm (?) that devoureth.—The accompanying article, which appeared under the above heading in "The Pharmaceutical Journal" of December 10th, 1887, has been sent to me as likely to prove interesting to readers of the Ent. Mo. Mag.; the study, as the Editor, in another place, allows is not superficially attractive, but it evidently may have its uses, and, in fact, is said to have been already utilized in judicial inquiries.

"An investigation that is going on in France as to the sanitary relations of cemeteries, which recently involved the exhumation of a number of bodies in the burial place at Ivry, has contributed some further information on the subject, that has been recently communicated to the Academy of Sciences by M. Mégnin.* The bodies exhumed, which had been buried for known periods ranging between two and three years, yielded a rich harvest of larvæ, pupæ, moultings, and even perfect insects of various species. Scientific identification of these has shown—as might be expected—that although the larvæ which fed on buried corpses are innumerable as individuals, the species are much fewer than of those which attack dead bodies exposed to the open air. Several species are common to both conditions, but some of them are evidently peculiar to the grave, and two of them were previously unknown. It has also become evident that the larvæ of the *Diptera* and *Coleoptera* play a most active part in the disintegration of bodies buried under ground, as they do in those exposed above ground, and that, as has been hinted before, the different species make their appearance in regular succession, not simultaneously. In the corpses that were exhumed after being in the earth two years, it was obvious that the rôle of the larvæ of certain Dipterous flies (*Calliphora vomitoria* and *Curtoneura stabulans*) had been long played out, it having commenced probably at the time of burial, if not before. These had been succeeded by the larvæ of another Dipterous species (*Anthomyia* sp.); whilst the larvæ of still another member of the same order (*Phora aterrima*) had been carrying on the work so recently that myriads of the insects were found still in the pupal stage, not having yet reached the perfect form. As to the *Coleoptera*, the larvæ of one species (*Rhizophagus parallelocolis*) were still in full activity. It is very curious to learn in respect to this insect that Entomologists had no knowledge previously of it in its larval form. The perfect beetle was known to be met with exclusively in the grass of cemeteries, but how little its true business there was suspected seems to be indicated by the generic name of "root eater" conferred upon it. Another curious observation that applies to the last-mentioned two insects is, that whilst the *Phora* larvæ were found feeding exclusively on lean corpses, the *Rhizophagus* larvæ seemed to be just as exclusive in their preference for putrescent adipose matter.

* Comptes rendus de l'Académie des Sciences, T. cv, No. 20, 14, Nov., 1887.

The question naturally arises as to the manner in which these insects gain access to bodies, the majority of which are buried in sound coffins at a depth of more than six feet underground. There can be little doubt that even before burial the eggs of certain Dipterous flies are deposited in such parts as the nose and mouth and are buried with the body. This finds confirmation in the fact that bodies buried in the summer months afforded evidence of having fostered an abundance of the larvæ of flies that inevitably occur in the sick-room during warm weather, whilst bodies buried in the winter were free from any sign of them. As to access after burial, it was found that under the strain of the weight of the superincumbent soil, assisted by the influence of damp, the strongest and best made coffins soon gape sufficiently at their seams to afford ample room for an insect inroad. It is conjectured that in many cases, such, for instance, as that of the beetle already specially referred to, the perfect insect deposits its eggs near the surface of the soil, at a spot under which a marvellous instinct tells it the food required for its offspring will be found at the proper moment in a suitable condition. When the larvæ are hatched, they—probably also directed by the sense of smell—are supposed to make their way down through the earth to their food, after the manner that larvæ with other tastes find their way underground to truffles.”

The author of this article is not correct in saying that *R. parallelocollis* is met with exclusively in the grass of cemeteries, as it has occurred in the London district in trees infested by *Cossus ligniperda*, and also in Sherwood and Dean Forests: at the same time it is a curious coincidence that a large number of specimens were once taken by Archdeacon Hey in fungi in York Cemetery in company with *Atomaria fimetarii*, and that Mr. Bold records it as not rare in the Northumberland and Durham districts on the walls and tombstones of graveyards; were it not for the positive statement that the larvæ were found actually in the corpses, I should be inclined to think that it was the wood of the coffins that formed the attraction, as wood buried at some distance in the ground will often be found to contain certain species, such as *Anommatus* and others; there are about thirty species of *Rhizophagus* known, and not one only, as the writer of the article seems to imply. I am not aware of any description of the larva of *R. parallelocollis*, but those of several other species are well known: they are mostly found under bark, and are said to devour the excrement of the larvæ of certain wood-feeding beetles with which they live, although they are to a certain extent carnivorous, and feed on the larvæ themselves. Some of them appear to bury themselves in the ground before undergoing their transformations, and this may be the case with all; the natural habitat of the perfect beetle is, however, certainly above ground. It seems curious that *R. parallelocollis* should be the only beetle referred to as infesting the coffins.—W. W. FOWLER, Lincoln: *January 10th, 1888.*

Obituary.

Henry James Stovin Pryer, C.M.Z.S., died prematurely at Yokohama, Japan, on February 17th, 1888, after a very short illness from bronchial pneumonia. By his death, Entomology has lost one of the best and most observant of its resident votaries in Japan. He was the youngest son of Mr. Thomas Pryer, F.S.A., a London

solicitor, and was born near Finsbury Square on June 10th, 1850. His father died before the subject of this notice was one year old, and it is reported that the youngest son was for many years of an extremely delicate constitution. H. Pryer's taste for Natural History developed early, and before he was eighteen he had formed a very considerable collection of British *Lepidoptera*. His brother, Mr. W. B. Pryer (now of British North Borneo), who is equally known as a naturalist, left England for China in 1865, and was followed by him in 1871; but H. Pryer's stay in China was short. He was offered a position in Japan, which became his home, for he never revisited Europe, but intended to do so this or next year. With the exception of a short time, during which he held an official position at the University of Tokio, Mr. Pryer was engaged in mercantile pursuits, and at the time of his death he was in partnership with Mr. James Bisset, F.L.S., also a naturalist, but more especially attached to Botany.

During his long residence in Japan, Mr. Pryer travelled over the greater part of the islands, and visited the Asiatic mainland. He also made an excursion to Borneo to meet his brother. And quite recently he explored the Loo-Choo (or Ryu-Kyu) islands, and engaged a Japanese collector to supplement his own researches. He did good work in all departments of Japanese Entomology, but especially so in *Lepidoptera*, upon which he published many notes both in Japan and here, sometimes marred by a slight absence of method. His biological observations on Japanese Butterflies are of the greatest importance. Quite recently he projected a Monograph of the Butterflies, under the title "*Rhopalocera Nihonica*," a work unique of its kind, executed entirely in Japan, with the text in the vernacular and in English. One part has appeared, and we understand the second (of the three proposed) was in the press at the time of his death.

Mr. Pryer apparently discovered the method of making himself popular both with the Japanese and the European residents. Many Englishmen have done (and will no doubt yet do) much towards the investigation of the Natural History of Japan; Mr. Pryer will not be forgotten at the reckoning. He joined the Entomological Society of London in 1867. In 1878 he was elected a Corresponding Member of the Zoological Society, in recognition of the services he had rendered by forwarding living Japanese animals to the gardens.

For some particulars as to his early life we have to thank his brother-in-law, Mr. P. C. Wormald.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY :
March 22nd, 1888.—T. R. BILLUPS, Esq., 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 Phlæas*, L., with ocellus on under-surface of left 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, 1881, and the *Papilio* by Mr. Leech's collector in China, 1887. Mr. Tutt,

specimens of *Leucania impudens*, Hb., taken by Mr. W. Farren, of Cambridge, one closely resembling Hübner's grey type, one the var. *striata* of Staudinger, one resembling Hübner's figure of *puerina*, 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 purposes 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 *Euchlōë cardamines*, L., 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 Hampshire. 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, 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 was constant, our *E. cardamines* was an insular variety easily separable from Continental specimens. Mr. Tutt read a paper, "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 *Bombyx* from Zulu Land, which he said approached nearest to *B. oubie*, taken by M. Guerin in South Abyssinia, and might be a local variety of that species, if not, it was a new species. Mr. John Lea, varieties of *Teniocampa munda*, Esp., light specimens without the twin black spots. Mr. Henderson, forms of *Satyrus Semele*, L., *Cucullia verbasci*, L., from various localities, with a view of illustrating the local variation of the species. Mr. R. Adkin, bred specimens of *Pygæa anachoreta*, Fb., from the neighbourhood of Saltwood Castle. Mr. J. T. Carrington thought that the species was no doubt introduced to this country with the Balsam poplar. Mr. Tugwell, grey and black forms of both sexes of *Nyssia hispidaria*, Fb., which he stated were all bred from one batch of eggs, there was, however, very little variation in the larvæ. Mr. Jenner Weir exhibited specimens of *Pieris brassicæ*, L., from St. Petersburg, lat. 60°, Lewes and Blackheath, between lat. 50° and 52°, Hyères, 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*, Riley.—H. W. BARKER, *Hon. Sec.*

ENTOMOLOGICAL SOCIETY OF LONDON: *April 4th*, 1888.—Dr. D. SHARP, F.Z.S., President, in the Chair.

The Rev. J. H. Hodson, B.A., of Torquay, Devon; Mr. A. J. Croker, of New Cross, S.E.; Mr. G. C. Griffith, of Cotham, Bristol; and Mr. Albert H. Jones, of Eltham, Kent, 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 species of *Coleoptera*, *Lepidoptera*, *Hemiptera*, *Diptera*, *Hymenoptera*, and *Orthoptera*. The *Lepidoptera*, included twenty species of butterflies belonging to the genera *Calliplæa*, *Chanapa*, *Hamadryas*, *Melanitis*, *Mycalasis*, *Hypocysta*, *Tenaris*, *Hypolimnas*, *Cyrestis*, *Neptis*, *Acræa*, *Danis*, *Pithicops*, *Appias*, *Ornithoptera*, *Eurycus*, &c.

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 ephemeraformis*, Haworth, collected near Charlestown, 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 Dragon-flies lately received from Mr. Roland Trimen, F.R.S., of Cape Town, Mr. Kirby said the collection included some new species.

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 *Valezina* of the female of *Argynnis Paphia* did not occur in Devonshire. Mr. Bignell said that the var. *Valezina* was included in Mr. Reading's "Catalogue of Devonshire *Lepidoptera*;" and that he had himself taken specimens of it 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.

Mr. 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. McLachlan, F.R.S., Dr. Sharp, Mr. Waterhouse, Mr. Jacoby, and Mr. Distant took part.—H. Goss, *Hon. Secretary*.

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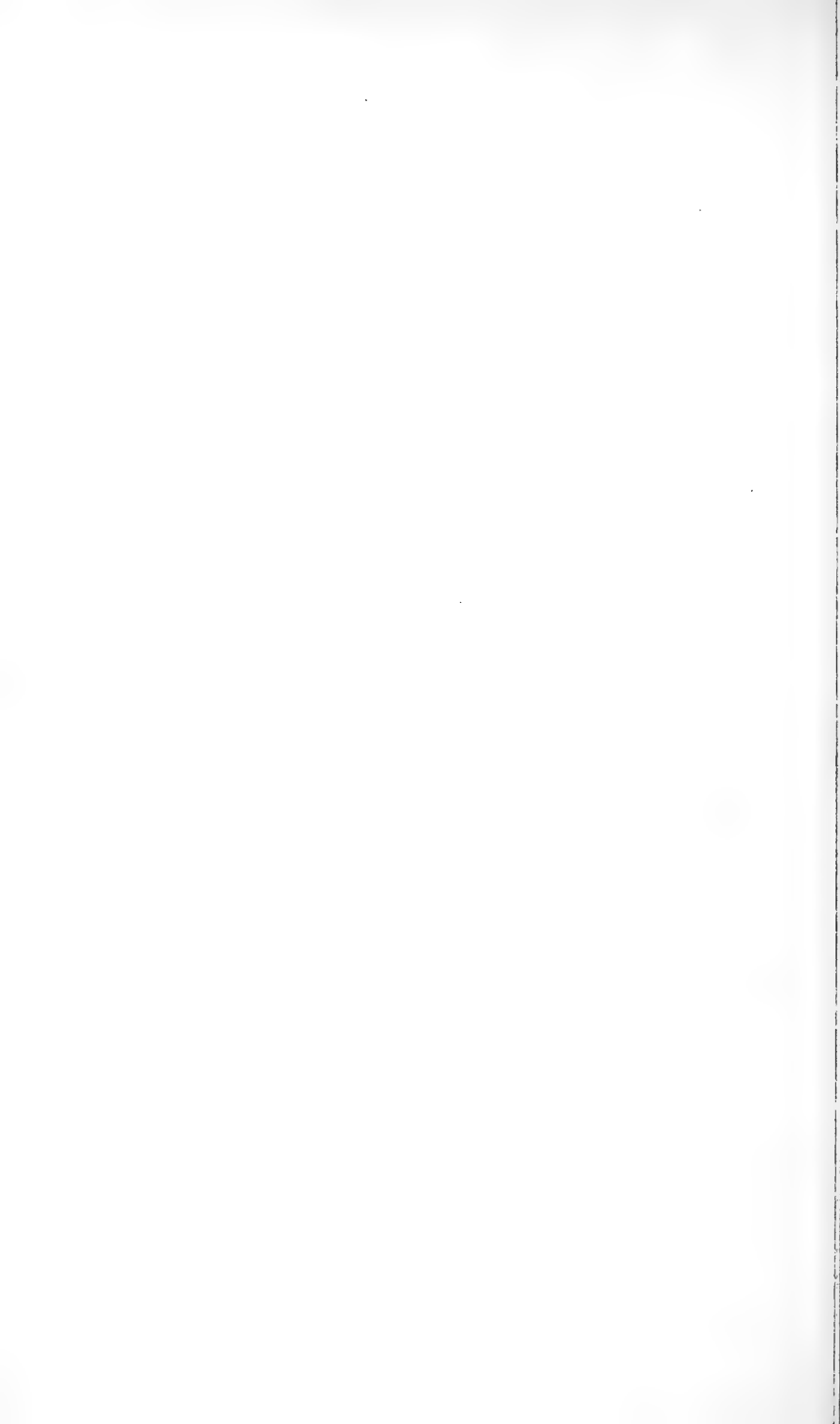
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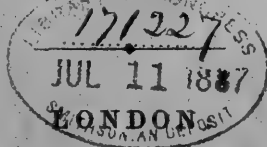
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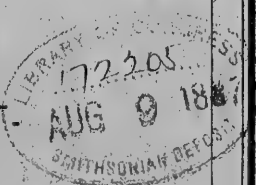
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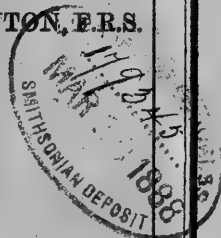
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Vol. XXIV ends with the present Number. Subscriptions for Vol. XXV are now due.

The Editors have decided to commence a NEW SERIES after the conclusion of Vol. XXV. Some inconvenience has occurred in consequence of the Vols. commencing in June (instead of January). Therefore Vol. XXV will consist of 19 Nos. (JUNE, 1888, to DECEMBER, 1889), and the Subscription price will be 9/6 (post free).

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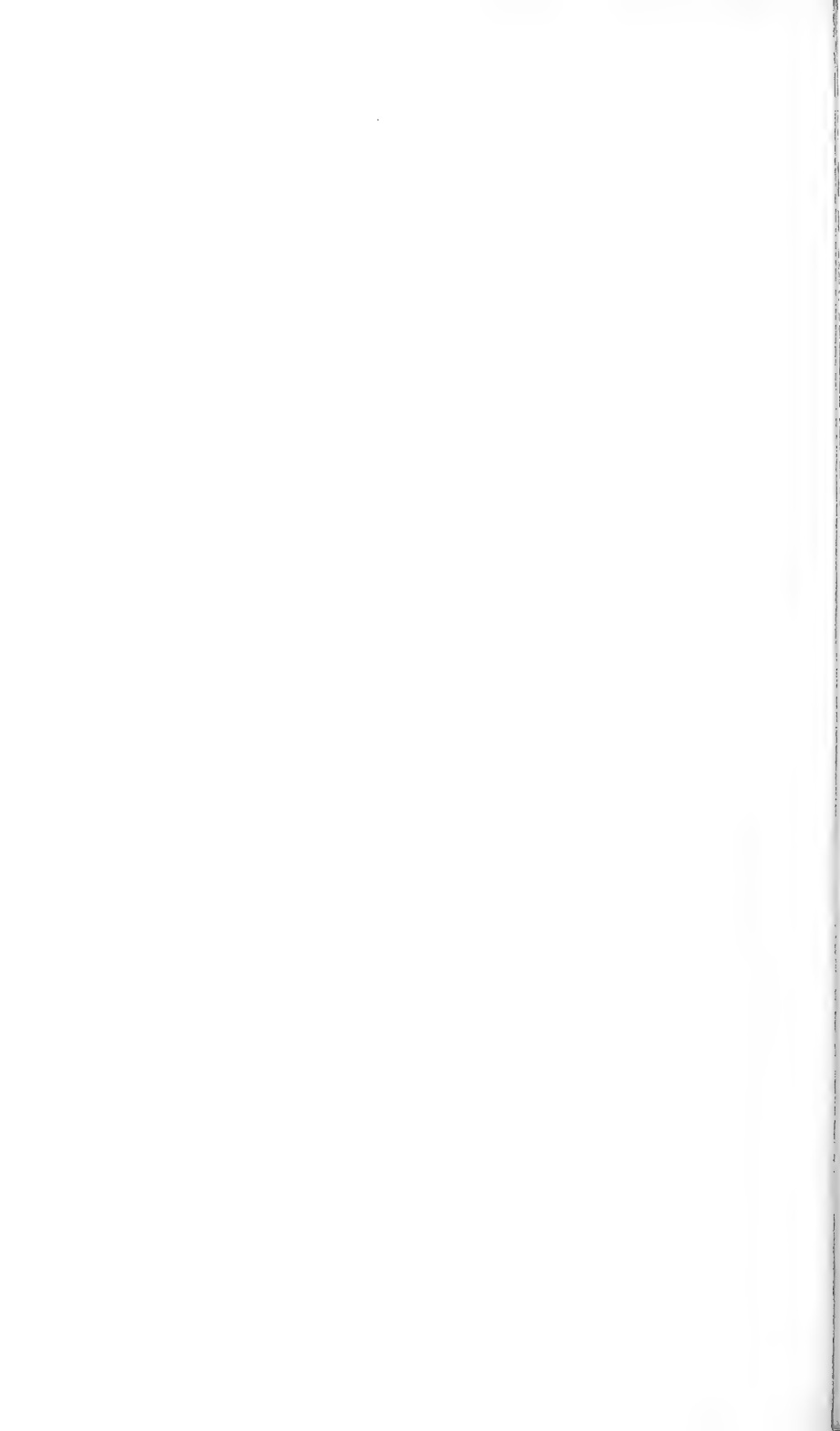
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