THE

ENTOMOLOGIST'S MONTHLY MAGAZINE:

CONDUCTED BY

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VOL. I.

"J'engage donc tous à éviter dans leurs écrits toute personnalité, toute allusion dépassant les limites de la discussion la plus sincère et la plus courtoise."—*Laboulbène.*

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PREFACE.

The first Volume of *The Entomologist's Monthly Magazine* being concluded, its Editors take the opportunity of saying the following few words on their reasons for bringing it forward.

They felt that the Entomologists of this country had no periodical, exclusively devoted to their science and procurable at a moderate price, which could be used as a medium for publishing discoveries or observations.

With that feeling, and at the request of numerous friends, they instituted this Magazine; resolving at the outset that, although of a sufficiently scientific character to contain descriptions of new species, and memoirs of similarly high interest,—it should also act as a chronicle wherein any observer could register note-worthy captures, or observations on the transformations, habits, &c., of insects; such records being of great value as a source from which writers of monographs or papers on geographical distribution, &c., may draw much information.

Feeling assured that the majority of those in Great Britain who follow the study of Entomology cannot find time to attend to the productions of other countries than their own, the Editors determined that the proposed Magazine should especially be devoted to recording observations upon, and additions to, our Insect Fauna: still, they will always be glad to receive papers on European and Exotic Entomology; and congratulate themselves on having been enabled to publish several such of considerable importance.

At first, it seemed problematical whether a Magazine of the above nature could be sustained at such a price as to be within the reach of all; thanks, however, to their supporters, the Editors have great satisfaction in stating that this publication is no longer an experiment; nevertheless, as it must be evident, that the very essence of a periodical like this is its amateur character (for what hired work is equal to a labour of love?), it is hoped that the present supporters will exert themselves to further its circulation, and so place the Editors in a position to increase the number of pages (whereby they will be spared much of their present labour and anxiety in selecting), and to give more wood-cuts, or even an occasional plate.

1, Paternoster Row, London, E.C.

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Byblitea Deyrollei, *Baly*.
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Chthoneis apicicornis, *Baly*.
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NEUROPTERA.

NEW GENERA.

Ecnomus, *McLachlan*.
Neureclipsis, *McLachlan*.

NEW SPECIES.

Cyrnus flavidus, *McLachlan*.

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COLEOPTERA.

GENUS.

Borboropora, *Kraatz*

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Agriotes pilosus
Aphodius obliteratus
Aphthona nigriceps
Borborepora Saulcyi
Brachinus explodens
var. glabratus
Carpophilus sexpustulatus
Ceuthorhynchideus Poweri
Cryphalus tiliæ
Epuræa oblonga
Gonioctena affinis
Hyphydrus variegatus
Liodes castanea
Oligota pygmæa
Oxypoda glabriventris
Oxytelus speculifrons
Ptenidium turgidum
Sitones cinerascens
Stenolophus brunnipes
Stenus longitarsis
Tachinus pallipes
Trychopteryx ambigua
bovina
brevis
dispar
fucicola
Kirbii
lata
picicornis

HYMENOPTERA.

Cryptocampus angustus
Pteromalus liparæ

LEPIDOPTERA.

Depressaria olerella
Eupithecia campanulata
lariciata
Nonagria brevilinea

NEUROPTERA.

Cyrnus flavidus

ERRATA.

Page 9, line 31—for "sature" read "suture."
,, 14 ,, 8— ,, "larvæ" ,, "larva."
,, 14 ,, 3 of Mr. Wollaston's paper, alter full stop to comma.
,, 16 ,, 31—for "place" read "plane."
,, 20 ,, 6— ,, "laying" ,, "lying."
,, 23 ,, 12—between "closely" and "species" insert "allied."
,, 72 ,, 26—for "Dinsby" read "Dursley."
,, 149 ,, 7— ,, "quadratum" read "gradatim."
,, 148 ,, 19— ,, "Krensleri" read "Kreusleræ."
,, 149 ,, 9— ,, "basi" read "basim."
,, 188 ,, 12—dele "not."
,, 209 ,, 35—for "Auceryx" read "Anceryx."
,, 210 ,, 18 and 30—for "Fir" read "F. w."
,, 250 ,, 9— ,, "*sericeus*" read "*sericans*."

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Articerus Duboulayi 149
Caddis-worm Cases from Ceylon 125
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THE

Entomologist's Monthly Magazine

NEW SPECIES OF BUTTERFLIES FROM GUATEMALA AND PANAMA, COLLECTED BY OSBERT SALVIN AND F. DU CANE GODMAN, ESQS.

BY HENRY WALTER BATES, F.Z.S.

During their recent tour in Central America, Messrs. Salvin and Godman obtained, without giving especial attention to Entomology (their enquiries being directed chiefly to Ornithology, Erpetology, and Ichthyology), no less than 425 species of *Diurnal Lepidoptera*. A large proportion of these are new to science, and it has been thought advisable to make them known at once, leaving for another occasion the publication of a detailed account of the whole, with notes on habits, geographical ranges, and variation. The collection, which forms a fine illustration of the Lepidopterous fauna of these countries, now remains in the hands of Mr. Salvin, who has kindly presented me with the first set of duplicates, and entrusted to me the task of drawing up the following descriptions.

1.—PAPILIO BELESIS.

Expans. 3″ 6‴. Costa of fore-wing strongly arched, apex obtusely rounded, outer margin slightly incurved. Black, sinuses edged with white, hind wing with a sub-marginal row of six *quadrate* crimson spots. Beneath, hind-wing with four basal spots and a streak along the abdominal edge crimson, fore wing spotless.

Central Valleys of Guatemala. Belongs to the *Ilus* group, and differs from *P. Branchus* (Doubleday) only in the spotless fore-wings, and in the row of crimson spots of hind-wings being of a square shape and lying near the margin, instead of elongated and extending to the cell. The species stands in the British Museum under the M.S. name of *P. Belesis*, G. R. Gray, which I have adopted.

2.—PAPILIO CHRYSODAMAS.

♂. Expans. 3″ 11‴. Fore-wing shorter and costa more arched, and hind-wing outer margin more rounded than in the allied species (*P. Laodamas*, *P. Belus*, *etc.*) Green-bronzed fuscous. Fore-wing, above, with a row of three or four whitish lunules near the hind angle; sinuses near hind angle bordered with yellowish white. Hind-wing, above, dark

silky green, with a broad curved belt of six greenish-white spots, passing *outside* the cell and becoming gradually narrower from the costa to the abdominal edge near the hind angle. Beneath: fore-wing blackish, apical half paler, a distinct whitish streak crosses the lower discocellular nervule, hind-wing reddish brown, a row of six narrow well-defined red circumflexes close to outer margin, and a red spot near anal angle. Abdomen yellowish-white.

♀. Expans. 4″ 6‴. Fore-wing above bronzed fuscous; three pale lunules as in ♂, besides a long streak crossing lower discocellulars into the cell; sinuses as in ♂. Hind-wing above dark silky green; the macular belt differs from that of the ♂ in being narrowest on the costa, broader in the middle, and narrowing again towards anal angle; there is, besides, an indistinct sub-marginal row of narrow green circumflexes, of a lighter hue than the ground colour of the wing. Beneath, same as in the ♂.

Central Valleys of Guatemala. Belongs to the *Belus* group, and seems most nearly allied to *P. Laodamas* (Felder) of New Granada. The neatly-defined red circumflexes of under side of hind-wings, the position and shape of white macular belt of the same wings, and discal streak of fore-wings, amply distinguish it.

3.—PAPILIO NUMITOR, *Cramer*, Pap. exot. pl. 113, fig. B. (♂).

♀. Above: fore-wing dark bronzed fuscous, outer margin near hind angle with three pale spots; hind-wing dark silky green, outer margin with a sub-marginal row of lighter green circumflexes, a pale macular belt of six spots, commencing broadly on the costa, and ending in a small speck between the first and second median branch nervules. Beneath: fore-wing dusky, apex paler, three pale spots near hind angle, hind-wing reddish brown, a submarginal row of six quadrangular red spots, followed by a row of smaller whitish spots, placed opposite the intervals between the red spots.

The under-surfaces of the wings of the male are similarly marked to those of the female as above described.

Central Valleys of Guatemala. As Mr. Salvin brought home both sexes of the present species, as well as of *P. Chrysodamas*, I think there can be no doubt of the justice of distinguishing them both from each other, and from *P. Laodamas*, *P. Belus*, and allies.*

* *P. Belemus.* ♂. Expans. 4″ 6‴. Costa of fore-wing scarcely arched, apex sub-acute, outer margin not incurved. Above: fore-wings bronzed-fuscous spotless, outer margin without sinuses; hind-wing silky green, a row of seven whitish spots crossing close behind the cell, the costal spot elongated and clear in colour, the others small and sprinkled with greenish atoms, hind border dark green, with a sub-marginal row of lighter green circumflexes, sinuses very narrowly edged with white. Beneath: fore-wing spotless; hind-wing reddish brown, outer border blackish, and having a row of seven rather large and broad semi-lunar red spots.

Pará, Amazons.—This species, which I was formerly disinclined to consider as distinct from *P. Numitor*, although differing from Cramer's figure, must now receive a new name, since the Guatemala specimens agree with the figure and enable us to ascertain the markings of the underside not given by Cramer.

4.—PAPILIO ELECTRYON.

♂. Expans. 4″ 8‴. Costa of fore-wing moderately arched, apex obtuse, middle of outer margin slightly incurved and scalloped, with sinuses edged with whitish. Hind-wing outer margin scalloped, with a longish spatulate tail at third median branch, besides a smaller linear tail at end of second, and a broad short lobe at end of first median branch.

Above: deep black, fore-wing with a curved amber-coloured belt crossing the middle of the wing, and a straight belt of four amber spots towards the apex; hind-wing crossed about the middle by an amber belt, straight along its inner edge and dentate on its outer edge, passing over end of cell; behind this lies a row of blueish grey powdery spots. Beneath: fore-wings the same, except that the sub-apical belt is continued along the outer border to the hind angle, the apical space beyond it being brown; hind-wing basal half reddish brown, the outer margin of the yellow belt has a row of seven black lunules, the outer border is black, and there is a sub-marginal row of seven red lines, but the space between them and the black lunules is powdered with ochreous. Body and antennæ black.

Central Valleys of Guatemala. Allied to *P. Asclepius* of Hübner, but abundantly distinct.

5.—PAPILIO CALLISTE.

♂. Expans. 3″ 6‴. Fore-wing costa slightly arched towards the tip, apex moderately acute, outer border very slightly incurved, hind-wing with elongated linear tail. Above: deep blackish brown, a large triangular common spot of a clear yellow occupying the disk of both wings, this spot on the fore wing has a notch in the middle of its anterior margin, the dark costal border is crossed by three narrow belts of a clear yellow colour, besides the commencement of a fourth, and a curved yellow line towards the tip commences near the apex, touches the angle of the discal spot, and ends near the middle of the outer border; the hind-wing has a row of sub-marginal yellow lunules, double at the base of the tail, the sinuses and inner side of the tail are edged with yellow, and the anal angle has two red spots. Beneath: same as above, except that there is an undulated red line across the hind wing within the dark brown border, and that the space near the base of the tail is shining greyish white, with black lines bordering the yellow lunules. Antennæ black.

Guatemala, province of Vera Paz. Allied to *P. Dioxippus* (Hewits) of New Granada, but differing in smaller size, bright yellow colour of centre of the wings, yellow inner border of the tail, and many other features.

6.—PAPILIO LACANDONES.

♂. Expans. 3″ 8‴. Fore-wing costa slightly arched towards the tip, apex produced, outer margin slightly incurved. Hind-wing apex produced and acute, furnished with a long linear tail. Above: brown, disk of both wings occupied by a common triangular ochreous spot, the anterior side of which, parallel to costa, is irregular towards the apical angle, forming two obtuse lobes projecting into the cell, there are also three ochreous spots on the fore-wing costa, and a straight line near apex of wing; the hind-wing has a series of ochreous sub-marginal lines between apex and base of tail, followed from tail to apex by a row of grey circumflexes, the anal angle having an oblique red line; the tail brown, tipped with yellow. Beneath: the same, except that there is a broken red line crossing the hind-wing within the brown border. Antennæ black.

Guatemala, province of Vera Paz. Resembles *P. Leucaspis* (Godart) of New Granada, but is smaller, the discal triangular spot is of a clearer ochreous hue, and the hind-wing has a remarkably acute apical angle, besides having a row of yellow sub-marginal lines, absent from *P. Leucaspis*.

7.—PAPILIO GLAUCOLAUS.

Size and disposition of black markings same as *P. Protesilaus*, but differs in the greenish-white tint of the ground colour of the wings both above and beneath, in which it resembles *P. Autosilaus* (Bates), of the Upper Amazons, rather than the typical form and varieties of *P. Protesilaus*. The only other points of distinction from *P. Protesilaus* are the narrower transparent space between the black lines of apical border of fore-wings, and the straightness of the inner black outer border of the hind-wings enclosing the pale lunules.

Eastern side of Isthmus of Panamá. Numerous specimens of this form were obtained with an equal number of a fine large variety of *P. Protesilaus*,* in the same locality on the Isthmus of Panamá. As no intermediate form occurred, the conclusion is unavoidable that our *P. Glaucolaus* maintains itself here as a distinct species from its near relative *P. Protesilaus*.

8.—PAPILIO SALVINI.

♂. Expans. 3″ 10‴. Fore-wing costa arched, apex much produced and pointed, outer border incurved. Hind-wing apex obtuse, outer margin straight from apex to the tooth preceding the tail; tail

* *Vide* Proceedings Zoological Society, 1863, p. 211.

elongate, linear. Above: white with a greenish-grey tint, fore-wing with a narrow costal border, a broader outer border, a streak across the middle of the cell, and a belt from costa across end of cell to outer border, black; hind-wing with a moderately narrow black outer border, which, near the tail, has three white sub-lunular spots, followed by black lunules enclosing grey streaks, and preceded near anal angle by a crimson streak; tail black, edged on the inner side with white. Beneath: glossy or pearly white, outer black border of fore-wing narrow, hind wing crossed by a black line which passes one end of cell, touches the crimson anal streak, and remounts half-way up the abdominal border. Antennæ black, body greenish-white, with a dorsal and two lateral black stripes.

Guatemala, interior Valleys. This magnificent species is not closely-allied to any known species; it belongs to the *Protesilaus* group.

9.—LEPTALIS VIRGO.

♂. Expans. 2″ 8‴. Fore-wing elongate, its broadest part being across the middle, costa arched, apex obtuse, outer margin in middle moderately incurved. Hind-wing a little longer than broad, shorter than fore wing, apex rounded. Above: fore-wing black, a sub-triangular spot on hind margin, a broadish regular belt from costa across bases of discoidal nervures, reaching second median nervule, and two sub-apical spots, white; hind-wing dusky black, costal half glossy grey (except base), and a short discoidal streak covering the middle part of the course of the median nervure white. Beneath: fore-wing shiny grey, basal part of costa and a belt beyond the middle dusky; hind-wing greyish, irrorated with pale brownish, and having numerous large whitish spots, several of which join to form a stripe extending from near the apex to the middle of abdominal border. Antennæ and body, above, black.

♀. Fore-wing elongate, its broadest part being near its apex; costa arched and suddenly dipping just before the apex; the latter appears continuous with the outer margin, which forms a pointed lobe near its middle deceptively resembling the true apex, the outer margin is then slightly incurved to the hind angle. Hind-wing ovate, apex broadly rounded. Above: black, fore-wing with a belt crossing the basis of the discoidal nervures and indented on its inner edge, and three sub-apical spots, white; hind-wing with the costa and disk white, rest dusky black. Beneath: fore-wing same as above, except that the apex is white, irrorated with reddish brown, hind-wing pale reddish brown, irrorated with grey, and having a few shiny white spots, some of which form a short vitta near the middle.

Guatemala. Belongs to the *Critomedia* group.

10.—LEPTALIS ALBANIA.

♀. Fore-wing elongated, costa arched from middle to tip, apex produced, obtuse, outer margin slightly incurved. Above: pale greenish yellow, a black spot on the costa of fore-wing near apex of cell, extending into the cell, and the apex black, the black apical border extends along the outer margin to near the hind angle, and is much sinuated on its inner edge, and has two sub-apical yellowish spots; hind-wing rather shorter than fore wing, spotless, except a dusky marginal streak near the apex. Beneath: fore-wing whitish, border yellow, costal spot faint, a dusky streak near the apex, hind-wing clear yellow, with a few dusky marks and a dusky stripe running from near the middle of the abdominal border towards the apex.

Guatemala, Motagua Valley. Belongs to the *Psamathe* group, and appears closely allied to *L. Flavia* (Felder).

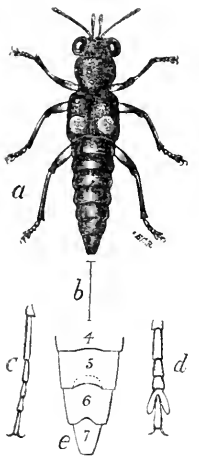
(To be continued.)

DESCRIPTIONS OF THE BRITISH SPECIES OF STENUS.

BY E. C. RYE.

It is often a subject of complaint with those who are commencing to study the *Coleoptera*, that we have no English work containing reliable descriptions of the species of that order found in this country; I propose, therefore, to select certain genera, or well-defined groups, and describe shortly the species therein comprised, adding distinctive characters, habits, and localities, as far as possible; and I hope, in the course of time, and with the assistance of others, to get together material enough to supply, in some degree, the wants of beginners. It is not my object to give synonymy or very long accounts, for which the standard continental works must be consulted.

Stenus, being generically well defined by nature, and containing many members, is an universal favourite with Coleopterists who begin to work at the *Brachelytra*, and will, therefore, afford a good subject for a commencement; but I must premise that circumstances attending the construction of the present, and all subsequent articles, prevent any regularity of order in the genera, &c., to be described.



a. Stenus Kiesenwetteri, Rosen.
b. Nat. length of do.
c. Hind tarsus of S. biguttatus.
d. Hind tarsus of S. cicindeloides.
e. Under-side of the terminal segments of the abdomen in the male of S. biguttatus.

The cylindrical shape, coarse punctuation, and prominent eyes of the *Steni*, give them a "family likeness" by which they can be somewhat easily separated from all the other *Staphylinidæ*; and, indeed, we have but one other genus at all similar, viz., *Dianöus*, which is distinguished generically from *Stenus* by its mentum being transverse and sub-quadrate instead of produced into a triangular shape in the middle; its paraglossæ also are smaller and not so free. The only species known has less prominent eyes, longer antennæ, and finer punctuation, than any *Stenus*, possessing also two anal setæ. In *Stenus* the ligula, paraglossæ, and labial palpi, are so slightly articulated to the mentum, that in the moment of death the gullet is sometimes protruded with these organs attached, forming a kind of proboscis; and old describers have been led to give the specific name *proboscideus* to more than one insect presenting this appearance.

The *Steni* (of which we have about sixty species) are distributed widely over England, seeming mostly fond of very wet situations, the banks of rivers, marshes, and even waterfalls, being their chief haunts; some, however, are found in vegetable refuse, and at the bottoms of hayricks, and others delight in dry mud, sandy or chalky districts.

As a rule, the members of the section with simple tarsi move faster than those with the tarsi bi-lobed, the latter being more frequently found on plants in wet places, though often taken by sweeping in comparatively dry localities. They are found, sometimes abundantly, in very wet places by sweeping at night, some species being gregarious in their habits, and are even occasionally to be seen in the water-net, when dragging for *Hydradephaga*.

The genus is usually divided into two sections, the first comprising species in which the last joint but one of the tarsi is simple, whilst in the second the corresponding joint is bi-lobed. A figure of the tarsus in the type of each of these sections is given in the cut. These sections are, like most others, artificial; since, under a high magnifying power, the penultimate joints of the tarsi in all appear more or less bi-lobed, owing to the insertion of the apical joint, but the second section exhibits the bi-lobed structure in so decided a manner, that but little mistake can arise on this point. Some species, however, at the end of the first

section (*e.g.*, *brunnipes*), have the tarsi almost as much bi-lobed as others in the second, but are otherwise readily capable of distinction; and one of the latter, *S. fuscicornis*, often seems to belong to the first, owing to the lobes being narrow, and in carded specimens frequently gummed to the terminal joint. Care should be taken in setting these insects to get the tarsi flat on the card, and not to clog the joints with too much gum. In Thomson's work, hereafter mentioned, the above difficulties are avoided by an altered system of arrangement, of a very original and ingenious character; but when it is seen that to tabulate fifty-seven species he makes twenty-nine divisions, occupying about forty lines of print, it can be easily understood that our space prevents its adoption.

Both the above-mentioned sections are divided into sub-sections, in which the abdomen is respectively margined and unmargined; in the former whereof a more or less conspicuous ridge runs along the sides, which is wanting in the latter, except on the first segment shewing after the elytra. There are, however, often faint indications of a margin to be seen, with a strong magnifier, on the sides of the abdomen, in species of the unmargined divisions; though under a low power they appear cylindrical.

These sub-sections are again separated into little groups, distinguished by the presence or absence of spots on the elytra, and also by the colour of the legs, which in some are entirely black, and in others more or less light. It must, however, be remarked that the latter distinction is not always an easy guide, since some few species, to which it is applied, have merely the base of the femora brownish, and many insects, in which the limbs are black, assume a lighter appearance when immature; but, as no system can be perfect, and these divisions have always been found of great service, I shall adopt them in the following descriptions.

The males of the different species often afford good specific characters in the under-side of the abdomen (of which an instance is given in the cut); these will be noticed as they occur. I would counsel beginners to mount specimens of each species showing the underside, and generally to look to structural peculiarities as well as, or rather in preference to, distinctions of colour. The relative length of the thorax and elytra, the form and sculpture of the head, general punctuation, and structure of the limbs, will be found of the greatest use as diagnostic characters, although the colouration of the palpi, &c., is also of great assistance. Some of the *Steni* are apterous, and others winged: in the former case the elytra (as in other beetles not winged) will be found to be shorter and especially narrower at the shoulders than the others.

I must refer those whose desire lengthened accounts to the following works, in which our species, with many others likely to occur in England, are described.

Erichson; Genera et Species Staphylinorum.

Kraatz; Naturgeschichte der Insecten Deutschlands, vol. ii.

Thomson; Skandinaviens Coleoptera, ii. Tom.

Fairmaire et Laboulbène; Faune Entomologique Française, vol. iii.

Whenever either of these names occur after a species it will be understood that a good description of that species is to be found in the author referred to, as above.

I Section, penultimate joint of tarsi simple.

A. Abdomen margined.

a. elytra spotted.

Biguttatus, *Linn., Erichson.* $2\frac{1}{3}$ lin. Black, with a slightly metallic tinge, clothed with delicate ashy pubescence.* Palpi black, the basal joint, and half of the second, testaceous. Head much hollowed in front, with a delicate longitudinal elevation. Thorax nearly cylindrical, very closely punctured, with a longitudinal dorsal channel, most distinct in the middle. Elytra closely and rugosely punctured, each with a small round fulvous spot a little below the middle. Abdomen narrowed towards the apex, delicately punctured, and rather shining. Legs black, long and slender, the trochanters pitchy-testaceous.

In the male the sixth segment of the abdomen beneath has its apical margin widely and rather deeply notched, the edges being rounded off, and the fifth has a wide shallow sinuation ending on each side in an obtuse point, the space immediately behind it being smooth and depressed. A very faint tendency to this structure is also to be traced in the fourth segment (*vide* cut). This species may be distinguished from the next, in company with which it is often found, by the light colour of the lower half of the second joint of the palpi, and by the spot on the elytra being smaller and rather nearer the suture: it is also smaller and not so robust, with the head rather wider and more deeply hollowed, the thorax narrower, and the legs more slender and longer in proportion.

Common in Northumberland, Durham, and Cumberland, near running water; also in Coprolite pits, Cambridge, and at Preston. Not rare in the London district, both in marshy and chalky districts, but more frequent in the latter, especially near Croydon.

* All the *Steni* are clothed, more or less, with grey hairs, but they are so scanty, short, and depressed as a general rule, that I shall omit referring to them unless they afford any decided differences.

Numerous localities for the different species will be found in the valuable paper on *Stenus*, published long ago by Messrs. Waterhouse and Janson, in the Entomological Society's Transactions; but those given herein are from the observations of myself and my friends Messrs. Bold, Graham, Hislop, Crotch, Sharp, Garneys, &c.

Bipunctatus, *Erichson*. $2\frac{1}{2}$ lin. Similar in colour and general appearance to the preceding, but larger and more robust. Palpi black, the basal joint only testaceous. Compared with *biguttatus* the head is somewhat narrower in proportion, more closely punctured, and less deeply hollowed; the thorax is broader in the middle; the elytra are broader, with the spots larger and a little further from the suture, the apical margin being also not so arched in the centre; the legs are stouter with the trochanters darker, and the meta-sternum is more delicately punctured.

In the male the sixth segment beneath has a deeper and more acute notch, and the fifth is rather more sinuated, with similar obtuse points; but the smooth impressed space reaches further backwards. Both in this and the preceding species the abdomen is clothed with silvery hairs very thickly along the inner sides of the lateral margin, and also in the transverse grooves of each segment.

Common in the London district, and at Cambridge, often in company with the preceding species, and generally distributed over England. Messrs. Bold and Hislop do not find it in Northumberland or Scotland.

Guttula, *Müller*, *Erichson*. 2 lin. Narrow, black, antennæ pitchy, palpi testaceous yellow, with the second joint sometimes a little darker at the upper extremity, and the apical joint either fuscous at the tip or entirely pitchy brown. Legs testaceous yellow, the femora with the apical half black, and the tibiæ more or less fuscous at the lower extremity; coxæ pitchy black. Thorax thickly and strongly punctured, the interstices having a tendency to form irregular elevated shining longitudinal ridges. Elytra with the shoulders and a ridge near the suture similarly elevated, rather more coarsely punctured, and with the fulvous spots (which are large and rather irregular) nearer the exterior margin than either of the preceding. Abdomen attenuate, closely and rather strongly punctured. The meta-sternum is very coarsely punctured.

In the male the sixth segment beneath is scarcely perceptibly sinuate, the sinuation in the fifth segment being more conspicuous; in the latter also there are two longitudinal rows of silvery hair, beginning at the middle and getting longer towards the apex, where they form a thin tuft on each side of the sinuation.

Found near running water in Northumberland, Durham, and Cumberland; also at Falkirk, Weston-Super-Mare, Preston, Cambridge, Repton, Bungay, Hastings, and Herne Bay. In the London district it occurs at Tottenham, Highgate, and Charlton.

Bimaculatus, *Gyll.*, *Erichson.* 2⅔ lin. Larger and much more robust than either of the preceding. Dull black, antennæ more or less pitchy; palpi testaceous yellow, with the apical joint fuscous, except at the base. Head and thorax punctured more coarsely, and not so closely as in the preceding species; the former not so much hollowed in front as impressed with two longitudinal grooves, leaving an interstitial elevation. The fulvous spot on the elytra not comparatively large. Abdomen stout, the punctuation getting faint towards the apex, and with a very decided short longitudinal keel in the middle of the transverse groove at the base of the first four segments. Legs testaceous, the femora having the apex of a pitchy colour, which is suffused, especially on the upper side; the extreme tips of the tibiæ and the entire tarsi are also pitchy. Beneath black, the coxæ pitchy black, and trochanters pitchy-testaceous, and with a pointed tuft of bright yellow hairs between the middle coxæ. The meta-sternum rather indistinctly and coarsely punctured.

In the male the sixth segment beneath is deeply notched, with an oblong tubercle near the middle of its base; the fifth is widely emarginate, with its middle surface depressed, smooth, and enclosed by two parallel ridges which get more elevated towards the posterior margin, and terminate on each side of the wide emargination in a prominent truncate tooth. In the middle of this enclosure is an oblong tubercle, and another, very minute, in the centre of the emargination. The fourth segment has an oblong tubercle in the middle, from each side of which the ridges so evident in the fifth segment seem to have their origin.

Common in Northumb., Dur., Cumb., Suffolk, and Derbyshire; also at Falkirk, in the fens, and at Preston. Abundant in London district.

(To be continued).

A FEW WORDS ON THE SPECIES OF *PTEROPHORUS* NOTICED BY LINNÉ.

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

In the *Fauna Suecica* we find, at pages 370 and 371, six species mentioned in the following numerical order: *Monodactyla*, *Didactyla*, *Tesseradactyla*, *Tetradactyla*, *Pterodactyla*, and *Pentadactyla;* and in the *Systema Naturæ* we find another added under the name of *Tridactyla*.

At the present day it is scarcely necessary to remark that these numerical names were fanciful, all the species having the anterior wings Di-dactyle, and the posterior wings Tri-dactyle, so that with the exception of *Pentadactyla*, all the others with numerical names were incorrectly designated.

Indeed, it would appear that Linné had lacked some of his usual critical acumen when treating of these insects, since of *Tesseradactyla* he says, "Alæ inferiores tetradactylæ;" and of *Pentadactyla* he writes, "Alæ inferiores quinquepartitæ."

Moreover, his *Tridactyla* of the *Systema Naturæ* has assigned to it the very description which, in the *Fauna Suecica*, belongs to *Tetradactyla*, and for the *Tetradactyla* of the *Systema Naturæ* a new description is formed, though reference is made to the *Tetradactyla* of the *Fauna Suecica* as a synonym.

To one species in the *Fauna Suecica* Linné assigns a food-plant, thus of *Didactyla* he says, "Habitat in *Geo rivali*."

Now his description of *Didactyla* is short, and the insect belongs to a group of numerous closely allied species.

DeGeer, in the first portion of the second volume of his memoirs, gives a long and detailed history of this *Didactyla*, of which the larvæ feed in May on, and in the flowers of the *Geum rivale*. Of the larvæ, mode of pupation and pupa, De Geer gives a long and very interesting history (see pages 261—266).

Zeller, in his monograph of the Pterophoridæ in the *Isis* of 1841, pointed out that the *Didactyla* of Linné was probably the species more generally known as the *Trichodactyla* of Hübner, but that before superseding the latter name it would be desirable, by the discovery of the larvæ on the *Geum rivale*, to prove, beyond all cavil or dispute, what was the veritable Linnæan *Didactyla*. And in the sixth volume of the *Linnæa Entomologica* (p. 353), published in 1852, he once more called attention to the importance of again finding the larvæ on the *Geum Rivale* which had been so carefully described by De Geer in 1771 *(more than eighty years previously!)*

This has now been accomplished, thanks to the perseverance of Dr. Schleich, of Stettin, and in the first part of the *Stettin Entomologische Zeitung* for the present year, we have at p. 96 the following note:

"On the earlier stages of *Pterophorus didactylus*, L. Ev. (trichodactylus, Hüb.) —By Dr. Schleich."

"Having taken the imago in great plenty in June and July 1862, in a small meadow between Grabow and Bredow, hardly a quarter of an hour's walk to the North of Stettin, I succeeded in May, 1863, in find-

ing, in the same locality, the larvæ in great plenty on the *Geum rivale*, and was able thereby to confirm the statements of Linné and DeGeer. The larva generally reposes by day on the flower-stalk, not far from the flower, and as it would appear, it only begins to feed towards evening, when it bores through the calyx of the flower, and eats into the latter, yet without penetrating further than its head, or at any rate, the anterior half of the body. It gnaws out in this way the entire flower, destroying not merely the calyx, but also the corolla and fructification. That it does not live concealed within the flower is shewn by the various sizes of the generally circular boring-holes around the flower which is attacked, these holes corresponding to the different sizes of the larva at the time of its boring into the flower.

"The full grown larva is about six lines long, and is attenuated at both ends. The wooden legs so peculiar to some of the *Pterophorus* larvæ are very characteristic. Its small head is glassy yellowish-green, marbled with irregular brownish spots. The ground colour of the body when young is pale whitish, but with increasing age it gradually becomes of a pale green. A narrow darker dorsal line, of which the colouring varies from green to brown and reddish-brown, runs from the head to the anal segment. On each side of it, parallel to it and of similar width, is a whitish longitudinal stripe. Each segment bears ten warts, which are scarcely perceptible on the three first and two last segments, but are very distinct on all the others, and are so placed that the two largest on each side of the darker dorsal line come exactly in the paler lines, which are parallel to it, and the others follow in regular gradation, smaller and smaller as they approach the prolegs. From each wart arise two long and thick, and several short and more feeble hairs, which being all of a white colour and diverging in direction, give to the entire body of the larva the appearance of a whitish and bristly clothing.

"Preparatory to its change to the pupa state the larva fastens itself by the anal extremity, as in some of the larvæ of Diurnal Lepidoptera; it turns to a pupa, of which the colour varies from green to dark brown, with a sharply defined darker dorsal line.

"The dark-bordered wing sheaths, with their shading, the darker dorsal line, and the regular position of the tufts of bristles give it a striped appearance. It is clothed quite similarly to the larva, with parallel rows of such tufts, of which the two nearest the dorsal line are the most distinct, the others are smaller and less conspicuous. In each tuft two short bristles protrude, which seem to correspond to the two long hairs which project from each tuft of the larva.

"The imago makes its appearance in from a fortnight to three weeks.

In our neighbourhood there is certainly only one brood in the year, but it keeps out a long time, at least from six to eight weeks, as the perfect insect may still be met with at the end of July and beginning of August."

Trichodactylus, or as we *must* now call it, *Didactylus*, Lin., has not yet been observed in England, but if the flowers of *Geum rivale* be searched (May should be the month, but probably it is not yet quite too late), and a *Pterophorus* larvæ be found thereon, we may be able in our next number to chronicle its occurrence.

Geum rivale is not a common plant, but in Babington's *Flora*, of Cambridgeshire, we find as localities, "Wood Ditton Park Wood—Wooded part of the Devil's Ditch and Gamlingay Wood." In Henslow's *Flora*, of Suffolk, we read, "Not unfrequent Link Woods, Rushbrooke, plentiful with *intermedium*. Bradfield, St. George, Hitcham, Bergholt, and elsewhere;" and in Preston's *Flora*, of Marlborough, the following localities are given, "Copses round the foot of Martinsell, Woods beyond Great Bedwin, Rabley Copse, Mildenhall Borders." In *Johnston's Natural History* of the Eastern Borders he says, "Sides of streamlets, burns and ditches, and in boggy woods and meadows, common."

ON THE STRUCTURE AND AFFINITIES OF THE LATRIDII.

BY T. VERNON WOLLASTON, M.A., F.L.S.

A CORRESPONDENT having lately called my attention to the *Latridius nodifer*,* Westw., and expressed his surprise that nobody has attempted hitherto to erect it into a distinct genus. I have dissected it with great care, in order to ascertain whether it possesses any structural peculiarities of sufficient importance to warrant its detachment from the remaining members of the group. The result has been that I can detect nothing in which it recedes from the normal *Latridii;* though its mere specific features are undoubtedly so well expressed, and remarkable, that we cannot wonder at the existence of a suspicion that some accompanying difference of positive structure might perhaps be brought to light by a careful examination of its oral organs.

The various details of structure which characterize *Latridius* are so unmistakeable that it is scarcely necessary to advert to them. But I may briefly add that, as regards the parts of the mouth, I should consider its extremely wide (though abbreviated) and corneous upper-lip,

* It is somewhat curious that this insect, although widely spread over England, and in some localities absolutely abundant, has but recently been discovered on the Continent. I have myself taken it in eight or nine English counties; and in a conservatory adjoining my house at Teignmouth I could capture almost any required number.

the obsoleteness of one of its maxillary lobes (whether the inner, or outer, is, I think, open for consideration), its enormously developed, curiously shaped, hexagonal mentum, and its short, incrassated labial palpi (in which the three joints, although present, are certainly not *easy* to be traced), as embodying, in conjunction with its trimerous feet, some of the main points by which the genus (and, *to a certain extent*, indeed, the whole of the small family of *Latridiidæ*) may be known. Now in the *L. nodifer* all these particulars (and many more, of a less primary signification) are hardly distinguishable from the corresponding ones in the *L. minutus*, and I therefore conclude that it is a typical representative of its group.

A few general remarks, however, on the affinities and structural features of the *Latridii*, which my recent observations have tended to corroborate, may perhaps be here ventured upon. Coleopterists seem to differ as to whether the maxillæ of the species are composed of two lobes, or only of one; but we may well make allowance for some apparent contradictions in the description of organs thus minute. Mannerheim states the inner lobe to be distinct, but small and narrow; an opinion which is adopted by M. Jacq. Duval. Westwood, by admitting the *Latridii* into his *Mycetophagidæ*, and defining the maxillæ of the latter to be always bilobed, implies a somewhat similar conclusion. Redtenbacher, on the contrary, affirms the maxillæ to have but a single lobe, a fact, however, which is queried by Lacordaire. For my own part, I think that neither of these views is absolutely wrong, though the rigid enunciation of either of them may amount to an inaccuracy; for if one of the lobes be obsolete, it follows of necessity that it is not actually absent. It appears to me that the outer one is so shortened, and soldered to the other, as to be hardly distinguishable from it; so that the entire process might be regarded, with almost equal truth (in a generic diagnosis), as either single, or bi-lobed. And after an accurate examination both of the *L. minutus* and *nodifer*, I am inclined to suspect that it is the outer lobe which is *principally* reduced; for I think I can just recognize a most minute spinule which marks the apex of the *inner* one, *behind* which the whole organ is pilose and *truncated*, as though to indicate a much abbreviated (though confluent) outer lobe.

The labial palpi I imagine to be, as in nearly the whole of the Coleoptera, undoubtedly triarticulate; and it seems to me that it is the *basal* joint, rather than the apical one, which it is *least* easy to detect. That it exists, however, there cannot be a question, for I am aware of no instance in which an enormously inflated articulation of the labial palpi is implanted *directly* into the ligula; it is always preceded by a

small basal one, however difficult such may be to perceive. And, indeed, the presence of this infinitesimal joint has never, in point of fact, been questioned, though Lacordaire rightly defines it as "à peine distinct." It is the *third* one on which a difference of opinion prevails. Mannerheim, though rightly pronouncing the labial palpi to be triarticulate, nevertheless (as has been pointed out by Redtenbacher), mistook the fascicle of hairs which terminate the *true* apical joint *for the joint itself*, and consequently regarded the second and third joints as a single one. Of all the diagnoses to which I have access, M. Duval's is the only one which properly describes this (so-called) "second joint;" for although, in deference to preceding writers, he records the organ (in his diagnosis) as biarticulate, he, nevertheless, adds in a foot-note: "Toutefois quoique les palpes labiaux n'offrent en apparence que deux articles, on doit, je crois, considérer le troisième comme se trouvant intimement soudé au second et se confondant avec lui; car, avec un peu d' attention, j'ai pu voir parfois une légère trace de suture transverse." Had he viewed the palpus in a globule of clear fluid by means of polarized light, he would have had no doubt as to the existence of this "transverse suture" which separates the real third joint from the inflated second one (of which it has been supposed hitherto to constitute but the conical, or mammiform, extremity).

As regards the ligula, there is also a little discrepancy in the published diagnoses; and certainly its exact structure is not very evident. The large and rather narrowed anterior central region of the (hexagonal) mentum is straightly truncated in front, and has, at a slight distance below its anterior edge, a very distinct transverse line, or suture, which gives to the extreme apical portion all the *primâ facie* appearance of being a short corneous ligula, and as such, indeed, it has been actually described, both by Redtenbacher and Lacordaire; yet I think it is nevertheless evident, as M. Duval has shewn, that it cannot be a part of the true ligula, inasmuch as it is not only in the same place with the mentum, but is clearly *articulated on* to the front margin of the latter; whereas, the ligula must necessarily be situated *behind* the mentum, even though contiguous (and occasionally also soldered) to it: and, indeed, in this particular instance, the position of the palpi (which arise from *behind the middle* of the mentum) would imply as much, still further. Hence, M. Duval's figure, which represents the ligula as membranous, and just projecting beyond the anterior angles of this articulated front portion of the mentum, is probably correct; though at the same time I must confess that my microscope has failed (in *two* dissections, of different species) to bring out satisfactorily that exact

structure. If this view be correct, it would follow that Lacordaire confounded the two parts, when he speaks of the ligula as "cornée, avec une bordure membraneuse en avant." I may add, however, that the articulated front portion of the mentum just alluded to is further proved to have no connection with the ligula, from the fact of a similar line, or suture, being likewise traceable in *Paramecosoma*, *Ephistemus*, and *Cryptophagus*, in which instances it is quite unmistakeable; though it is there less straightened, and removed to a much greater distance from the anterior margin of the mentum.

The mandibles of *Latridius* are short, much incurved, and very acute at the tip (which, however, is minutely bifid); and they are furnished internally with a large, but extremely delicate, ciliated membrane.* The maxillary palpi have their second and third joints greatly inflated, but the terminal one narrower and cylindric.

With respect to the affinities of the *Latridiidæ*, their exact situation amongst the families to which they are manifestly allied is, I am well aware, open for consideration,—according to the precise views of particular systematists. Yet few have attempted to place them elsewhere than *towards* the end of the *Necrophaga*—either in juxta-position with the *Cryptophagidæ* and *Mycetophagidæ*, or else but slightly separated from them. Indeed, *between those two families* has always seemed to me to be their most natural location; and I cannot but believe that the notion of removing them far away, into sections of the Coleoptera entirely remote from the usual one, has arisen mainly from the tacit assumption that their general structure is anomalous. Yet, in reality, I think that it is merely the inaccuracy of published diagnoses which has favoured such an hypothesis; for certainly, if their labial palpi are to be regarded as "bi-articulate," and their maxillæ as necessarily (and rigidly) only "single-lobed," there would, when their trimerous feet are taken into account, be some foundation for the above idea. Yet when rightly understood, their oral organs are reduced to the very simplest and most commonplace type, scarcely differing, in anything essential, from those of *Atomaria*, *Ephistemus*, *Anthcrophagus*, *Paramecosoma*, and *Cryptophagus*. This may be easily tested by a comparison of the corresponding details of each, when it will be seen that, except in relative proportions, such as would properly constitute generic characters, there is really very little in which they recede from each other; in fact the peculiar (more or less hexagonal) form of the mentum, a most significant part,

* Lacordaire defines them as simple at the apex, and makes this fact one of the distinctions which separate *Latridius* from *Corticaria* (in which latter he says they are minutely bifid). But the mandibles now before me, of the *L. minutus* and *nodifer*, have their *extreme* point most undoubted cleft; though, as is often the case in this particular structure, it is not readily conspicuous *in profile*. Duval, with his usual precision, has described them correctly.

no less than the anteunæ, is *nearly* identical in them all, and in the shape of the maxillary palpi they have much in common, whilst in *Ephistemus* even the labial pair approach the *Latridius* type; and when we recollect that even the outward features of these various groups have in reality a vast deal that is similar, their relationship is rendered even more decided still. This latter fact becomes remarkably clear when we bear in mind that the affinities of *Latridius* are equally those of *Corticaria* (for the genera are but just separable, and, indeed, until lately have not been *universally* recognized as distinct at all); and the *Corticariæ*, at any rate, will readily be allowed to approach the *Atomariæ* most unmistakeably; whilst *Atomaria*, on the other hand, well nigh tacks on (through such species as the *A. ferruginea*) to *Cryptophagus*. Moreover, the *Corticariæ* have usually the edges of their prothorax crenulated, a fact which is again suggestive of a portion of the *Cryptophagidæ*. I conclude, therefore, that in their *trophi* and general *facies* (and, I think I may say, in their habits likewise), no forms can be more evidently related *inter se* than those which constitute the genera to which I am now calling attention; and that, consequently, the *families* which contain them must, *à fortiori*, be regarded as intimately allied.

There is, however, *one* structural feature, at all events, in which the *Latridiidæ* recede from these immediate groups, namely, their three-jointed tarsi; and perhaps it may be on this account, therefore, that the family has been placed, by some few naturalists, in juxta-position with the *Trimera*, and so made to terminate a systematic arrangement of the Coleoptera. But, here, the first suggestion which seems to offer itself is this—that the so-called "Trimera" are, after all, *not* trimerous as regards their feet; so that the only essential (supposed) affinity between them and the *Lathridiidæ* fails at the outset—vanishing, in fact, as soon as looked at! Westwood, long ago, proposed a more accurate term for the section to which Latreille gave the name of "Trimera," his title of *Pseudo*-trimera at once implying that the feet of the insects which constitute it are only *apparently* three-jointed. They have, in reality, *four* articulations; therefore, what, even on the mere *tarsal* system *(per se)*, can they possibly have to do with such groups as the *Latridiidæ*, in which the feet are absolutely and positively trimerous?

But if the two departments are thus removed from each other, *even in their tarsal structure* (which was their only supposed bond of union), and we are compelled, consequently, to dispute their relationship *in toto*, the next question which is suggested appears to be simply this—is the circumstance of their tarsi being triarticulate anything more, in point of fact, than the main (and almost only) feature which separates them

as a family from the forms to which they are otherwise akin? My own belief is that this fact is nothing more than *their essential family characteristic*, without which they might have been literally included in the *Cryptophagidæ;* and *even it* will become less remarkable when we take into account that both of the families to which I conceive them to be allied—namely, the *Cryptophagidæ*, in one direction, and the *Mycetophagidæ*, in the other—shew a departure from the normal number in the joints of their feet. Thus, in *Cryptophagus* proper, the males are heteromerous; whilst in the *Mycetophagidæ* all the tarsi are quadriarticulate, except the anterior pair in the male sex, *which have but three joints.* What then, under such circumstances, would seem more natural, *à priori*, than that a small family related to them both, and in which the general structure is very similar to that which prevails in *them*, should have for one of its distinctive peculiarities *triarticulated feet?* So that, from whatever point of view we regard the subject, for my own part I cannot but arrive at the same conclusion—that the *Latridiidæ* are rightly placed (where *most* Coleopterists, indeed, do actually put them) in the vicinity of the *Cryptophagidæ*, towards the end of the *Necrophaga*.

OBSERVATIONS ON THE ECONOMY AND MOULTING OF THE LARVA OF MICROPTERYX UNIMACULELLA.

BY CHARLES HEALY.

In May, 1861, when I first collected several of these larva, I was much struck by the suddenness with which the change from the spotted to the spotless state was effected, and sought eagerly in their mines for the presence of cast-off skins, but without finding any, although it was self-evident that they had moulted; however, to set the matter at rest, to my satisfaction, on the 26th of April, 1863, I collected a quantity of the larva and submitted them to a rigorous examination, and herewith annex my observations on the economy and moulting of one of the larvæ.

At the date of collection the larva was whitish, almost glassy, sides of head black, mouth brownish, the second segment with a broad black plate, a black spot on the underside of each of the second, third, fourth, fifth and sixth segments, diminishing in size, the larva at that time feeding very rapidly; on the 28th it ceased eating for some hours, and remained perfectly still in its mine until the old skin splitting at the commencement of the second segment, the larva pressed its head against the side of its mine, and then, by curving its body, and violently jerking itself up and down, drew its body out of the old skin, the operation of moulting not occupying five minutes. The larva then lay still, as if resting after its exertions, the dorsal vessel becoming visible in the

centre of the back of the larva, being at first darkish, but gradually turned to a faint red; after a brief interval, the markings of its head were thrown off from the front, and not permitted to recede down the body of the larva as the old skin had done. The body of the larva was then quite white and spotless, and the whole of the dorsal vessel slowly assumed a pale reddish tinge, the larva in the meantime laying motionless, the tip of its mouth gradually assuming a reddish brown tint, and down the centre of its head two pale brown parallel lines made their appearance; its head then became brown, and shortly afterwards a dark triangular patch appeared on each side thereof; at this stage of its economy the larva resumed its feeding, and then the dorsal vessel becoming green, imparted a greenish tint to its body; the larva continued feeding till the 3rd of May, when becoming full fed, its head was brown, body white, and the dorsal vessel became invisible; it then retired under the mould in the breeding cage and spun its cocoon—"Frass" sap green, afterwards turns black.

The observation of the appearance, disappearance, and re-appearance, either partial or wholly, and the change of colour in the dorsal vessel of this and other micro-lepidopterous larva have been to me a subject of most interesting study. In May, 1863, I discovered a larva belonging to this genus feeding in the leaves of *Castanea vulgáris* (Spanish chesnut), the dorsal vessel of which larva when full fed had a most remarkable appearance, being at one time faint green anteriorly, pale orange in the centre, and dark green posteriorly. I have repeatedly noticed that the larvæ of this genus exhibit signs of great uneasiness if held before a lighted lamp or candle, when they lash and wriggle their bodies about all over their mines, and endeavour by every means in their power to escape from the object that causes them so much terror.

When the time has arrived for the imago to make its appearance, it issues forth from one end of its cocoon, and lying on its back (this I have found to be invariably the case), the pupa skin cracks at the back of the head, from whence the imago gently slides out about a third of its length, its abdomen is then very soft, and has a slight hyaline appearance, after an interval of several minutes it slides out a little further, its abdomen then becomes slightly darker, it again takes another short rest, when presently a slight quivering of the palpi is observable, this is directly followed by a corresponding movement of one of the legs (sometimes these movements of palpi and legs take place a second time), when almost immediately afterwards it stretches out its legs and antennæ, and springing over on to its feet, hurries up the side of the breeding cage, and curving in its body, stretches out its wings to dry. Its pupa skin is left projecting from the cocoon, and if the same be drawn gently out, the skin that the larva threw off just previous to entering the pupa state will be found slightly adhering to it.

New British Oxytelus. OXYTELUS SPECULIFRONS, Kraatz, Ins. Deutschl. ii., 862 (note).

IN April, 1862, I captured, on the Thames Bank, near Hammersmith, a female example of a small *Oxytelus*, which accorded with the description of the insect above named, and I am now enabled to bring it forward with some certainty as that species, Mr. G. R. Crotch having kindly lent me foreign types of *O. speculifrons* from the collection of M. Aubé, with which also my specimen agrees.

It is about the size of *O. depressus*, Grav., and of similar appearance in build, but differs from that species as follows:—the basal joints of the antennæ are stouter; the head is not so dull, and has two polished elevations at the base of the antennæ, the space between which, including the clypeus, is more or less polished; there is also a small longitudinal fovea at the base of the vertex. The thorax is not quite so deep, with a more decided dorsal channel, the elevated lines on each side of which are bright, as also are the outer parallel lines, and the depressions on the sides are more conspicuous. The elytra are lighter in colour, and not so dull, being very delicately and closely strigose longitudinally, in fact, almost alutaceous, with a few scattered and faint punctures; they are, moreover, pitchy-brown, with the sutural space somewhat broadly rufo-testaceous and shining. The abdomen is shining black, finely alutaceous. The legs are entirely pale testaceous.

From *O. nitidulus*, Grav., which it resembles considerably in colour, it differs in being smaller, with the head and thorax duller and longitudinally strigose, instead of coarsely punctured; the punctuations on the elytra, moreover, in *O. nitidulus* are only sub-strigose.

The male seems to be rather brighter than the female, with the antennæ, and especially the apical joint, stouter; the sixth abdominal segment also beneath is produced in the middle of the hinder margin into a slight triangular point, behind which is a semi-circular ridge, the two points whereof, nearest the apical margin, are slightly reflexed.—E. C. RYE, 284, King's Road, Chelsea, S.W.

Note on Water-fall Insects.—When driving through the Via Gellia, near Matlock, a few days since, I saw a water rill that reminded me much of those in North Wales, where I last year took *Stenus Guynemeri* and *Quedius auricomus*. I immediately set to work and found these two insects.—W. GARNEYS, Repton, near Burton-on-Trent.

Orgyia Gonostigma.—Some larvæ of this species, which were sent to me at the end of last September, ate very little after that date, and before long fixed themselves in the position they meant to keep through the winter. Long after other hybernating species had begun to feed again they remained quite motionless, until I half feared that what I was watching was only their empty fur; however, on May 5th, I perceived that one of them had moved an inch or two from his winter quarters, and taking this as a hint that their appetite was returning, I ventured to move them all off to a little oak, and soon had the pleasure of seeing they had not forgotten how to use their jaws during their six months' fast.—Rev. J. HELLINS, Exeter.—*May 9th.*

Notodonta Chaonia.—A young collector of this town took a very fair specimen of this moth as it was flying round a gas-lamp on the evening of April 25th.—*Id.*

Dasycampa rubiginea.—The same collector was also lucky enough to get a male of this species, which was caught by a baker who lived next door; the man saw it flying round the gas-light, and managed to secure it in his felt hat, and brought it to him, saying, "Here's a miller's thumb for you!" This capture was made just at the end of March. I may remark, that all thick-bodied moths are called miller's thumbs here (not by bakers only), and are all supposed to eat woollen garments, &c.; of course, the bigger the moth the more damage he is supposed to do.—Rev. J. HELLINS, Exeter.—*May 9th.*

Pericallia Syringaria.—During the first two weeks of April, we took, in this neighbourhood, about a score of small larvæ, as they were hanging at night from their food plant, which, in this case, was the wild honeysuckle (Lonicera Periclymenum); and, I confess, I was surprised to find them feeding upon it. They are perplexing fellows, more than half of those I took have disappeared, how I know not, unless they have squeezed themselves through the threads of the leno, which covers their cage.—*Id.*

Capture of Butalis incongruella at West Wickham.—On the 8th of April I captured a very fresh specimen of this northern species in the heath-field at West Wickham. This, I believe, is only the second known instance of its occurrence in the south of England.—R. M'LACHLAN.

A suggestion as to the probable food of the larvæ of Micropteryx mansuetella.—Early in May, 1861, I observed a number of this species flying round and settling on some plants of *Mercurialis perennis*. To test their attachment to this plant I several times drove them away with my hand, but they quickly returned. May not the affection shewn by the imagos to the plant point it out as the food of the larvæ?—CHAS. HEALY, 74, Napier Street, Hoxton, N.

Hermaphrodite Insects.—It is very desirable that all instances of hermaphroditism in insects should be catalogued. This has been partially done by Dr. Hagen in the *Stettiner Entomologische Zeitung* for 1861 and 1863, but a large number exist in various cabinets in this country that are not noticed in these catalogues, and the greater part of which have, perhaps, never been recorded. I shall feel greatly obliged, therefore, if any gentleman in possession of these abnormitics, or who is acquainted with any example in the collections of friends, will kindly send me particulars thereof, specifying name, the sides that are respectively male and female, and any other peculiarities that the specimens may possess; together with their history as far as practicable; in whose cabinet they now exist, and by whom captured or bred, and when. When a sufficient number of instances have been collected they will form the subject of a paper, and be published in this magazine.—R. M'LACHLAN, 1, Park Road Terrace, Forest Hill, S.E.—2nd May, 1864.

Hybrid Insects.—I also wish, if possible, to catalogue all instances of hybridity in insects. This subject has a peculiar bearing on the great question of the day in natural science, the origin of species. It is, perhaps, principally among the Lepidoptera that hybridism occurs, but there are well authenticated instances in other orders. It is requisite that the name of the male and female be correctly given, and the peculiarities possessed by the hybrid progeny minutely noted.—*Id.*

Entomological Society of London, *May 2nd*, 1864.—F. P. Pascoe, Esq., F.L.S., President, in the Chair,

The Secretary exhibited, on behalf of Mr. Schofield, who was present as a visitor, a male specimen of *Hydrilla palustris*, which had been taken in Quy Fen, Cambridgeshire, on the 29th of May, 1862.

Captain Cox exhibited some drawings of insects, and a classified table of Lepidopterous larvæ to facilitate the naming of any individual larva.

Mr. Wallace exhibited a series of Butterflies, from Celebes and the adjoining islands, as an instance of "variation as specially influenced by locality." The peculiarity in the specimens exhibited from Celebes consisted in the peculiar curve of the costa, and tendency to a falcate apex of the anterior wings, distinguishing them very evidently from the most closely species from Java, Borneo, and Sumatra.

The Butterflies exhibited were as follows:—

Papilio Androcles. „ Antiphates.	Papilio Macedon. „ Peranthus.	P. Telephus. „ Jason.	Eronia Tritea. „ Valeria.
P. Gigon. „ Demolion.	Pieris Zerinda. „ Nero.	P. Agamemnon. „ Agamemnon var.	

The first species in each pair being from Celebes, and that bracketed with it the most nearly allied species from the other islands.

Mr. Wallace observed that, of the seventeen Papilionidæ occurring in Celebes, all, except one species, differed in the more arched form of the costa from those of the neighbouring islands. The same difference prevailed in nearly all the Pieridæ, and in a few of the Nymphalidæ, but not in any other of the groups.

Mr. Wallace suggested that this modification of the form of the wing either by giving the insects a more powerful flight, or by enabling them to turn more suddenly, was a means of escape from insectivorous birds; and it was remarkable that this change had only taken place in those groups most liable to such persecution. Most of the Nymphalidæ, which had such powerful muscles and strong flight that they could have no difficulty in escaping from the pursuit of birds, were not so modified, and those few of the Nymphalidæ which shewed this change belonged to groups of species which were showy and rather weak in flight.

The Danaidæ, which were probably neglected by birds on account of their powerful odour, had not undergone a similar modification in the form of the wings and it was not a little remarkable that the only Papilio which retained in Celebes the same form as in the adjoining islands belongs to the *Polydorus* group, which must enjoy some special immunity from the attack of birds, being a group which was itself the subject of mimicry by other groups.

Professor Westwood exhibited nine species of *Charaxes*, three of which were unique; they had been collected at the Zambesi, by Mr. Rowley, of the Oxford and Cambridge Mission.

The Secretary then read a paper, by Captain Thos. Hutton, "on the reversion and restoration of the silk worm."

A wasp attacking and devouring larvæ.—Incidents, often pleasing, sometimes annoying, always interesting, constantly occur to those who minutely observe Nature's operations. Allow me to record one, shewing to what numerous enemies young

larvæ are exposed. A few days ago I was "meditating" (not like Isaac, "at eventide," it was during the heat of the day) in a small greenhouse where were several young birches; each plant had on it three or four groups of juvenile larvæ of *Endromis Versicolor* about half-an-inch in length; one batch occupied the apex of a plant, and consisted of sixteen or eighteen individuals. They were at rest, that is, not at the moment feeding but, as is their habit previous to the first moult, sitting with heads erect. One of the top lights of the room was open for ventilation, a queen wasp (wasps, by-the-bye, are very abundant this year) entered, and after making the circuit of the place, pounced on this group, and before I could interfere, at one "grab," seized about half-a-dozen, and instantly gobbled them down. You may be sure I did not allow her the opportunity of enjoying a second *bonne bouche*, nor did the larvæ themselves, they seemed in a terrible fright and marched off down the stem with an alacrity of which, judging from their ordinary habits, I had not thought them capable. Seizing the first baton on which I could lay my hand, I struck her from the twig, but sufficiently gently not to injure the larvæ, then pursued the gourmand round the greenhouse. In her headlong course she not only omitted to escape "by the way she came," but plunged into the web of a large spider, which being fixed in a corner had escaped notice. A determined contest now ensued, the spider using every stratagem to disable and pinion his powerful prisoner, yet not daring to close with her, one grasp of those powerful mandibles on the soft body of the spider would have been destruction, as indeed it had been to my pets. I watched the contest, ready to assist the spider in need. The wasp was gradually breaking loose, so I applied the end of my baton, getting her between it and the woodwork, and thus (as Mr. Newman would express it), "interfered with her structure," *alias* "broke every bone in her skin," and her skin too. I now turned to see what was going on among the dispersed larvæ; they had ascended a lateral branch, and were comfortably congregated at the tip. Turning to the defunct wasp, I found the spider, who of course retreated on my late interferance, had returned to the charge, and not meeting with opposition had dragged the wasp into his retreat, and was luxuriating on an ample repast. I well knew that this dark gentleman, had he the opportunity, would enjoy the juices of half-a-dozen of my larvæ with quite as much gusto as did the wasp, and so considering his *will* equal to the other's *deed* (perhaps not sound law) I applied a like pressure to him, and thus removed all danger so far as these two gourmands were concerned.

When we consider the numerous enemies to which larvæ are exposed, birds, wasps, spiders, wood-lice, earwigs, beetles, man, we need not be surprised that many species are so scarce, but rather that any come to maturity.—George Gascoyne.

Xylina conspicillaris.—Having dug 1465 pupæ of various species during the last autumn and winter, I was lucky enough to breed one fine specimen of *X. conspicillaris* out of this number on the 19th April. It emerged in the forenoon at the same time as the *Tæniocampæ*. When at rest the wings are closely pressed to the sides as in *X. putris;* the breadth across the thorax, viewed from above, being greater than across the other extremity, wings included.—Rev. E. Horton, Lower Wick, Worcester, *May*, 1864.

ON THE TRICHOPTEROUS GENUS *POLYCENTROPUS*, AND THE ALLIED GENERA.

BY R. M'LACHLAN, F.L.S.

In the present paper it is my intention to offer a few remarks on those insects belonging to the family *Hydropsychidæ*, which agree in possessing *three spurs on the anterior tibiæ*. Curtis was the first to notice the generic value of this character in the 12th volume of his *British Entomology* and he was followed by Stephens in the 6th volume of the *Mandibulata* in his Illustrations, where, in addition to Curtis' genus *Polycentropus*, two other genera are also described possessing this character, viz.: *Plectrocnemia* and *Cyrnus*, though in this latter genus he has grouped together some species belonging to widely different genera. In 1857, Brauer, in his useful little work *Neuroptera Austriaca*, adopts *Plectrocnemia*. In the Synopsis of the *British Phryganidæ*, published in the *Entomologist's Annuals*, Dr. Hagen forms only two genera with this character, viz.: *Plectrocnemia* and *Polycentropus*, into which last genus he merges *Cyrnus;* but, for reasons given hereafter, I think it advisable to keep these genera separate; nevertheless, from the confusion that exists in the types in Stephens' collection, it is evident that that author had no very clear idea of the characters laid down in his generic descriptions. In my investigations of these insects I have been much struck with the characters afforded by the neuration, and feel satisfied, that with all propriety, we may give five British genera of *Hydropsychidæ* with tricalcarate anterior tibiæ. I would remark here that the neuration is not well visible until the hairy clothing on the wings be removed by a camel-hair brush, and that a strong magnifying power is requisite to bring out the transverse veins. I must reserve detailed descriptions of these genera for my work on the British *Trichoptera*, as they would occupy too much space here; but have attempted, by short characters, to make my meaning clear. Almost the whole of these insects are of small size, and often very similar in general appearance, many of them having the wings sprinkled with numerous golden yellow spots. They are very active, and some of them run with facility on the surface of the water. The larvæ, according to my experience, frequent both standing and running waters. Pictet remarks, that the pupa of his *Hydropsyche senex* (*Pletrocnemia conspersa* Curtis) possesses external respiratory filaments, whereas they are wanting in the larva. The case is a heap of small stones loosely put together, and fixed on to some larger stone; these cases are frequently changed. When the larva is about to change to the pupa state, it constructs a more solid retreat.

The following attempt at a tabular arrangement of the genera, according to my views, may be useful.

A.—With a transverse vein towards the middle of the costal margin of the anterior wings, uniting the *costa* and *sub-costa*.

a.—Anterior branch of the *ramus discoidalis* (first-apical sector) in anterior wings, forming a forked cell on the apical margin.

b.—Posterior wings broad; the anal portion well developed; costal margin slightly concave.

c.—Intermediate legs of the female not dilated.—*Plectrocnemia.*

cc.—Intermediate legs of the female dilated.—*Polycentropus.*

bb.—Posterior wings narrow, especially at the base; costal margin with a slight elevation near the middle.—*Ecnomus.*

aa.—Anterior branch of the *ramus discoidalis* in anterior wings, simple, not forked.—*Cyrnus.*

AA.—Without a transverse vein uniting the *costa* and *sub-costa* near the middle.—*Neureclipsis.*

PLECTROCNEMIA—Stephens.

The single described species of this genus has great analogies with *Polycentropus*, and differs chiefly in the undilated intermediate legs of the female. It is also a larger and more robust insect than any species of *Polycentropus*, but the neuration is almost identical with that of some species of that genus. In the posterior wings the anterior branch of the *ramus discoidalis* forms a forked cell at the apex, and the discoidal cell is closed.

The synonymy of the single species is as follows:—

Plectrocnemia conspersa—Curtis.

Philopotamus conspersus, Curt. Phil. Mag. 1834, p. 213, 5; *Plectrocnemia conspersa*, Hag. Ent. Ann. 1861, p. 2, 87; *Hydropsyche senex*, Pict. Recherch, p. 219, 28, pl. 19, fig. 1 (1834); *Plectrocnemia senex*, Steph. Ill., p. 168, 1; Brauer Neurop. Aust., p. 39.

A widely distributed insect, probably not very common anywhere.

N.B.—*Plectrocnemia atomaria* (Schranck), Kol. gen. et spec. Trichop. pt. 2, p. 212, 1, has certainly no right to the synonyms there given, at any rate as far as regards the names of Curtis, Pictet, Stephens, and Brauer. Kolenati's species is a *Polycentropus* (vide *P. multiguttatus*).

POLYCENTROPUS—Curtis.

This genus, as restricted by me, may be yet further divided according to the neuration. I can speak with certainty of only four British species.

a.—In the posterior wings the anterior branch of *ramus discoidalis* forms a forked cell at the apex, and the discoidal cell is open. —*P. flavomaculatus* and *P. multiguttatus.*

b.—Anterior branch of *ramus discoidalis* in posterior wings simple, the discoidal cell closed.—*P. subnebulosus* and *P. picicornis.*

Polycentropus flavomaculatus—Pictet.

Hydropsyche flavomaculatus, Pict. Recherch, p. 220, 29, pl. 19, fig. 2 (1834); *Polycentropus irroratus*, Curt. Brit. Ent. pl. 554 (1835); Steph. Ill. p. 178, 7; Hag. Ent. Ann. 1861, p. 3, 88; *P. pyrrhoceras*, Steph. Ill. p. 177, 3 (1836), not of Hagen; *P. fuliginosus*, Steph. Ill. p. 177, 4 (1836); *P. concinnus*, Steph. Ill. p. 178, 5, (1836) not of Hagen; *P. trimaculatus*, Steph. Ill. p. 178, 6, not of Curtis or Hagen; *P. subpunctatus*, Steph. Ill. p. 177, 1 (1836), partim.

This is the most common species of the genus, according to my experience, and seems to be generally distributed, preferring running waters, but also sometimes frequenting canals, &c. This and the next may be readily distinguished by the open discoidal cell of the hind wings, and also by another very constant character in the neuration, viz.: that the two first of the simple veins traversing the anal portion of the wing (termed *costulæ* by Kolenati) are connected at about the middle by a small transverse vein. These, I think, are the only instances in the British *Trichoptera* in which these two veins are united in that manner. The anal appendices are well developed. In *P. flavomaculatus*, from the middle of the upper margin of the last abdominal segment, there proceeds a broad membranous lobe, capable of considerable lateral extension by the living insect, but which is very liable to change form in drying; from under this lobe proceed the appendices intermed., which are strongly divergent and somewhat curved; app. sup. rather large, flat, obtusely rounded; app. inf. similar in form to the app. sup., lying close together on the ventral surface.

Polycentropus multiguttatus—(Curtis) Hag.

Polycentropus multiguttatus, Curt. Brit. Ent. p. 544 (1835)?; Hag. Ent. Ann. 1861 p. 4, 89; *Plectrocnemia atomaria*, Kol. gen. et. spec. Trichop, pt. 2, p. 212, pl. 1, fig. 10—11 (1859).

This species is so very similar in general appearance to the last that I might probably have overlooked it had not Dr. Hagen assured me that I had sent it to him long ago. I have found three or four examples among some old duplicates, but only one of these bears any indication of locality; that one is from Haslemere. In the male the lobe from the last segment is apparently more pointed than in *flavomaculatus* (but I have only noticed dry specimens), and the app. intermed. more claw-shaped and curved. The app. sup. present the most certain characters; they are long and pointed, with the apices incurved rather suddenly; the app. inf. are larger, but otherwise similar in form.

The synonymy of this species is a little doubtful. Unfortunately, at the time when Curtis' collection was sent away, I was not sufficiently acquainted with these insects. I noted that his *P. multiguttatus* and *trimaculatus* were identical, but may have been mistaken. The citation of Kolenati's species is given from a comparison made by Dr. Hagen, with a typical specimen in his collection.

Polycentropus subnebulosus—Stephens' Catalogue.

Polycentropus subnebulosus, Steph. Cat. p. 317, 3,598 (1829); *P. multiguttatus*, Steph. Ill. p. 178, 8, partim (1836), not of Curtis; *P. pyrrhoceras*, Hag. Ent. Ann. 1861, p. 4, 90, not of Stephens.

Either a much overlooked or very local species. Mr. Barrett has found it abundantly near Haslemere, and I have also a single specimen from the Norfolk fens. The usual golden or yellow spots are very indistinct in this species, and only visible in specimens in good condition. It may at once be recognized by the form of the app. intermed. in the male. These are formed of two narrow tongue-like pieces placed closely together and bent under like a haustellum; between them is a long narrow lobe.

As a rule, I consider that mere catalogue names have no claim to the right of priority. I have adopted the name here given to avoid giving a new one. The types in Stephen's collection are two, one of which is this species with his small catalogue label "*subnebulosus*," the other is a female of *P. flavomaculatus*.

Polycentropus picicornis—Stephens.

Polycentropus picicornis, Steph. Ill. p. 177, 2 (1836); *P. pulchellus*, Hag. Ent. Ann. 1861, p. 5, 92.

A common species frequenting canals, and other still waters; very active and frequently running on the surface. It may be recognized by the first apical sector, or anterior branch of the *ramus discoidalis* in the

posterior wings, not ending in a forked cell. It is a pretty, sharply marked insect. Perhaps *Plectrocnemia liturata*, of Kolenati, belongs here. *Polycentropus picicornis*, of Hagen, is different.

CYRNUS—Stephens.

Although this genus was merged into the preceding, it seems to me advisable to restore it for the reception of those species in which the first apical sector (anterior branch of the *ramus discoidalis*) in the anterior wings is simple, and thus, as is truly remarked by Stephens, there are only four apical forks. Besides, the posterior wings are much narrower, the anal portion not dilated, and the anterior branch of the *ramus discoidalis* in these wings is not clearly separable from the *radius*, except, perhaps, at the extremity. I distinguish two British species, of which one is apparently undescribed.

Cyrnus trimaculatus—Curtis.

Philopotamus trimaculatus, Curtis Phil. Mag. 1834, p. 213; *Polycentropus trimaculatus*, Hag. Ent. Ann. 1861, p. 4, 91; *Cyrnus pulchellus*, Steph. Ill. p. 175, 2 (1836); *C. unipunctatus*, Steph. Ill. p. 175, 1 (1836), worn.

A common species about some of the canals and slowly flowing rivers near London, and probably widely distributed. The upper edge of the discoidal cell in anterior wings is sharply angulated at the point where a transverse vein connects it with the radius. The anterior wings are pale fuscous, thickly sprinkled with pale yellow spots, some of which, on the dorsal margin, are larger than the others. In the male the app. sup. are very small and rounded; app. intermed. rather long, pointed, straight; app. inf. large, almost truncated at the extremity.

In Stephens' collection under *C. pulchellus* are four of this species and one of *Polycentropus picicornis*.

Cyrnus flavidus—new species.

The only locality that I know with certainty to produce this species is the remnant of the Croydon canal at Forest Hill, Kent, where it is not very uncommon in May and June. The anterior wings are longer than in the last species, and the discoidal cell is not sensibly angulated at the point where the transverse vein uniting it to the radius is placed. The wings are very pale yellow, reticulated with grey. The app. intermed. are apparently wanting; the app. inf. are more rounded than in the last species. I reserve a detailed description for another opportunity.*

* This is closely allied to *Philopotamus urbanus*, Rambur, but after a careful comparison with the type, Dr. Hagen considers them distinct, and gives numerous reasons for arriving at that conclusion. Want of space prevents me from going into details here.

Cyrnus urbanus, Stephens, belongs to *Anticyra* (*Psychomia*), as does also probably *C. unicolor*, of which there is no type.

ECNOMUS—new genus.

I propose this generic term for the single species that I am at present acquainted with, in which the first apical sector in the anterior wings ends in a forked cell, but with the following characters presented in the posterior wings. These wings are very narrow at the base and scarcely folded; the costal margin is slightly elevated in the middle; the *ramus discoidalis* runs close to the costal margin, the upper branch simple, the lower forked, but no closed discoidal cell. The intermediate tibiæ and tarsi in the female are only slightly dilated.

Ecnomus tenellus—Rambur.

Philopotamus tenellus, Ramb. Hist. Nat. Nèvrop. p. 503, 4 (1842); *Polycentropus concinnus*, Hag. Ent. Ann. 1861, p. 5. 93, not of Stephens.

Of this I possess several specimens, taken in the fens of Norfolk by Mr. Winter. Mr. Wormald has found it in Hyde Park in June. It is wanting in Curtis' and Stephens' collections. In the male the inferior appendices are long, and at the apex are furnished internally with numerous little teeth or spines.

Dr. Hagen has, I believe, seen Rambur's type, and informs me that there is no doubt as to the identity of the insects.

NEURECLIPSIS—new genus.

This genus is formed for the reception of the species that is considered as the *Phryganea bimaculata*, of Linnæus. This existed in Curtis' collection as *Polycentropus memorabilis*, but this name was never published. Dr. Hagen likewise places it in the genus *Polycentropus*, but it appears more advisable to transfer it to a separate genus in consequence of the very considerable differences in the neuration.

One striking character that I consider of primary importance is the absence of the transverse nervule, placed between the *costa* and *sub-costa*, towards the middle of the costal margin. This is present in all the other genera of *Hydropsychidæ*, with tricalcarate anterior tibiæ, and also in *Philopotamus*, and an allied genus. In other respects the neuration of the anterior wings is similar to *Polycentropus*, as here restricted, the first apical sector ending in a forked cell. The posterior wings are also similar in form to those of *Polycentropus;* the first

apical sector forked and the discoidal cell closed, but there is an additional apical forked cell, formed by the furcation of the anterior branch of the *ramus sub-discoidalis;* a similar structure is seen in *Tinodes*, *Hydropsyche*, and *Aphelocheira.*

Neureclipsis bimaculata—Linné.

Phryganea bimaculata, Linn. Faun. Suec. ed. 2, 1487 (1761) and his other works; *Polycentropus bimaculatus*, Hag. Ent. Ann. 1861, p. 6, 95; Kol. gen. et spec. Trichop. pt. 2. p. 215, 1, pl. 1, fig. 6; *Phryganea Tigurinensis*, Fab. Ent. Syst. Suppl. p. 201, 18-19 (1798); *Anticyra robusta*, Walker, Brit. Mus. Cat. Neurop. pt. 1 p. 122, 5.

Probably a generally distributed insect, by canals and marshy dykes In this species the usual irrorated character of the markings is departed from, and the anterior wings are dull fuscous, with two conspicuous yellowish spots near the middle of the wing; the female is much paler and considerably larger.

NEW SPECIES OF BUTTERFLIES FROM GUATEMALA AND PANAMÁ.

BY HENRY WALTER BATES, F.Z.S.

(Continued from page 6.)

11.—EUTERPE OCHRACEA.

♂. Expans. 2″ 6‴. Fore-wing rather narrow; costa, from the middle to the tip, waved; apex obtuse; outer margin in the middle sharply incurved. Above: all wings brownish black, basal halves palish ochreous, with costa and veins (especially those at apex of cell of fore-wings) bordered with brownish black; the broad brownish black outer borders have a continuous row of ochreous spots distant from the margin; margin of hind-wings with small ochreous spots in the intervals between the nervules. Beneath: paler than above; base of the wings dusky; the fore-wing has on the outer margin a row of yellow linear spots, and the hind-wing, besides these marginal spots, has also two rows of yellow spots crossing the disk, and three spots near the base; the extreme base of the wing has two large red spots. Body and antennæ above, black.

Table lands, Guatemala. Closely allied to *Eu. Nimbice* (Boisd.) Differs in the shape of the fore-wing, and in the pale ochreous colour, which, above, extends to the base of the wings.

12.—HESPEROCHARIS GRAPHITES.

♂. Expans. 2″ 5‴. Fore-wing sub-triangular; hind-wing, with the outer margin, at end of first and second median branches, produced into two prominent teeth. Above: pale sulphur yellow; fore-wing with two black spots near the end of the cell (one on the costa and one on the lower disecocellular nervule); outer border with ends of nervules blackish, and marked with dusky patches, besides having a sub-marginal row of dusky lunules; hind-wing with the ends of the nervures black. Beneath: ochreous; fore-wing with the cell filled with an orange spot, and with black markings similar to those of the upper side; hind-wing variegated throughout with black markings, the basal half has a number of black spots (about twenty); towards the outer margin the wing is crossed by a fine and extremely flexuous black line, the margin itself having an interrupted black edging, besides black tips to the nervules. Antennæ black, club with an ochreous streak.

Central Valleys of Guatemala. One example only.

13.—TERIAS LONGICAUDA.

♂. Expans. 2″ 2‴. Fore-wing costa strongly arched, apex sub-falcate, outer margin from the middle curved outwards; hind-wing with outer margin between second and third medium branches produced into a longish pointed lobe. Above: rich orange; fore-wing with a broad black costal stripe, and with the ends of the nervules towards outer margin streaked with black; hind-wing with the outer border near the tail edged with dusky, end of sub-costal nervules streaked with black. Beneath: paler orange than above, destitute of black stripes and markings; costal and apical borders of fore-wing irrorated with reddish; hind-wing beautifully and minutely sprinkled and streaked with reddish, and crossed besides by a few short brownish streaks.

Guatemala, interior. Allied to *T. Proterpia* and *T. Gundlachia* (Poey).

14.—DANAIS STRIGOSA.

Same size and shape as *D. Berenice*, of North America; general colour a little duller; disposition of white spots and markings of the underside the same as in specimens from the United States. Differs in the nervures of the disk of the hind-wing being margined with gray.

This can be considered only as a local form of *Danais Berenice*, but it seems almost wholly to take the place of the type in Guatemala,

both in the interior valleys and on the Pacific Coast, and for convenience requires a separate name and mention.*

15.—MECHANITIS LYCIDICE.

Same size and shape as the typical form of *Mech. Polymnia*, of which this is a local form or race. Its distinguishing characters are three yellow belts (the first broken into two spots) which cross the black apical half of the fore-wing. The basal part of the fore-wing is orange tawny, and there is always a distinct and large orange tawny spot near the hind angle. The black discal stripe of the hind-wing is always distinct, the disk itself has a more or less distinct yellow streak. The white marginal spots are always present on the undersurface of the wings.

This seems to be the prevailing form of *Mechanitis* in Guatemala; it also occurs in *Nicaragua*.

16.—MECHANITIS DORYSSUS.

Another local form of *M. Polymnia*. It differs from *M. Lycidice* in wanting the *inner* yellow belt of the fore-wing, which is of the same orange tawny colour as the basal part. The orange tawny portion extends without break nearly to the hind angle, so that the basal two-thirds of the fore-wing are of this hue, varied only by the usual costal and posterior black stripes, and by the two black spots, one in the cell and one between the first and the second median branches. Hind-wing with the black discal stripe distinct; disk itself not streaked with yellow.

This form exists in company with *M. Lycidice* in Guatemala. Amongst the large number of examples brought home by Messrs. Salvin and Godman, I have not found any connecting links between the two.†

17.—ITHOMIA (CERATINIA) CLEIS.

♀. Same size, shape, and general colour as *Ith. Ninonia*. Neuration of hind-wing (♀) nearly the same, the small recurrent nervule being emitted rather nearer the middle of the middle discocellular than

* *Danais Jamaicensis*. ♂ ♀. Expans. 3." Much smaller than the average of *D. Berenice*; spots and markings the same both above and beneath; the borders, however, are brown instead of black. Ground colour pale pinkish tawny; nervures of hind-wing bordered with grey as in *D. Strigosa*.

This is another local form of *D. Berenice*. It was brought home in great numbers from Jamaica by Messrs. Salvin and Godman; all the specimens agree in the colour and markings as here described.

† *Mechanitis Chimborazona*. A distinct local form of *M. Polymnia*. Smaller than the type or any other of the numerous races of this species: ♂. 2" 8"': ♀. 2" 10"'. Its distinguishing features are (1) the constant presence of a large broad yellow spot in the middle of the fore-wing, the spot possessing a narrow lobe which extends between the second and third median branches towards the outer margin: (2) a short yellow belt near the apex of the fore-wing; (3) the sexual difference in the black discal stripe of the hind-wing, which in the male is always broad and distinct, and in the female invariably obsolete. In other respects this form does not differ from *M. Polymnia* type.

Western foot of Chimborazo, at an altitude of 3—4,000 feet. Sent home in great numbers by Mr. Spruce, the distinguished Botanical Traveller. All the specimens agree in the distinguishing features as here described, and no other form of *Mechanitis Polymnia* accompanied them.

it is in *Ith. Ninonia*. Fore-wing, above, with basal third orange tawny, rest black; the basal part has a large black spot in centre of the cell connected with a short black costal stripe; the black apical part has a large quadrate yellow spot within the end of the cell, a very flexuous row of yellow spots halfway between the cell and apex, and a closer sub-marginal row of similarly-coloured oval spots along the outer margin; the hind-wing has its basal half orange tawny, its apical half black, the black part being very broad near the apex, and extending as a lobe towards the disk of the wing. Beneath: same as above, except that the hind-wing has a sub-marginal row of small yellow spots.

Panamá.

18.—ITHOMIA PSYCHE.

♂. Same size, shape, and colours as *Ith. Victorina* (Hewits' Ex. Butt. Ithom. f. 75), and *Ith. Cotytto* (Hewits. Ex. Butt. f. 76). Differs from both in the neuration of the hind-wing (♂); the lower discocellular being angulated near its middle, and the middle discocellular being long and strongly curved towards the apex of the wing. The colour and markings of the fore-wing are almost the same as in *Ith. Victorina* (Hewits. l. c. f. 75), the only difference being that both the second and third median branches are both thickened with black. Hind-wing with the narrowish outer border rusty red, edged with black, and showing a clear white speck near the apex. Beneath: the black borders are all reddish, and the hind-wing has a series of short white streaks on the margin; the costa of the same wing is pale yellow near the base. Collar reddish, antennæ black.

Guatemala, Pacific slope; many examples.

19.—ITHOMIA SALVINIA.

♀. Shape and neuration same as *Ith. Sylvo*, but a little larger in size. The dark narrow borders and the nervures are light fulvous brown instead of blackish brown, and the pale spot of fore-wings is chalky white instead of yellow; the spot is nearly square in form, and covers part of the bases of both the radial nervules as well as the subcostal; the dark streak from the costa over the discocellulars is narrow as in *Ith. Sylvo*, and none of the nervures are thickened with dark edgings. The narrow fulvous outer border of fore-wing is thickened at the end of the nervures; the space between the median nervure and hind margin is fulvous brown and opake. Beneath: same as above, but paler; two chalky spots at tip of hind-wings. Body black, thorax marked with white, antennæ black, stoutish.

Guatemala.

20.—ITHOMIA CASSOTIS.

♂ ♀. Neuration same as in *Ith. Cymo* (Hübn). Fore-wing broad towards the apex, especially in the male, owing to its being produced near the hind angle; the hind margin is for the same reason strongly incurved towards the hind angle. Glassy with a bluish tinge; borders and a wedge-shaped spot over end of fore-wing cell black. The black border is widened at apex of fore-wing, and is there broken by two semi-hyaline spots; the outer border is much thickened at the ends of the nervures; the space between the median nervure and the hind margin is black. The hyaline space between the end of the cell and the black apex is crossed by a white belt, which is chalky towards the costa, and milky towards the outer border, the latter hue is continued in isolated spots between the third and second, and second and first median branches. Hind-wing with a simple narrowish black border. Beneath: same as above, except that the black parts are fulvous. Body black, thorax marked with white, antennæ black.

Guatemala; Motagua Valley.

21.—ITHOMIA DORILLA.

♂. In shape, neuration, and colours, closely resembling *Ith. Azara* (Hewits. Ex. Butt. Ith. f. 23). Wings transparent glossy; basal half orange tawny; apical half dusky. The basal orange tawny part of the fore-wing has a large dusky spot extending from the sub-costal nervure obliquely to the bases of the second and third median branches, and a second dusky spot in the middle of the cell, besides having the costa and hind margin streaked with dusky. The dark apical part has a broad yellow belt crossing over and beyond the end of the cell, and joining a yellow spot between the first and second median branches, a second isolated yellow spot between the second and third median branches, and a row of four yellow marginal spots near the apex, the apical one being large. Hind-wing has a broadish faint dusky border, and a spot of same colour towards the disk. Beneath: same as above, except that all wings have a marginal row of white triangular spots. Body black, thorax marked with yellow; antennæ wanting.

Panamá.

(*To be continued.*)

DESCRIPTIONS OF THE BRITISH SPECIES OF STENUS.

BY E. C. RYE.

(*Continued from page* 11).

b. elytra unspotted.

i. legs black.

JUNO, *Fab.*, *Erichson*. 2½ lin. Black, rather opaque. Palpi testaceous yellow, the apical joint entirely, and the apex of the second, pitchy. Head with two grooves. Thorax rather strongly and closely punctured, with an obsolete dorsal channel. Elytra more strongly punctured, the interstices presenting an irregular and rough "engine-turned" appearance. Abdomen with the short middle keels as in the last species. In the male the femora, especially the hinder pair, are very broad and slightly curved; the tibiæ also are slightly curved and terminate in a short spur. Beneath there is a thick tuft of yellow hair between the middle coxæ, and sparse yellow pubescence on the metasternum, the middle of which is depressed, closely and delicately punctured.

In the male the sixth segment beneath is deeply and rather narrowly notched, the part of the segment behind the notch being depressed and shining; the fifth exhibits from its middle to its posterior margin a somewhat square area, depressed, sloped, and shining, on each side whereof is an elevated broadly truncate ridge, reflected at the posterior margin, in the centre of which is a deep semi-circular notch. The base of this enclosed area has in its middle an oblong tubercle.

The fourth segment has a slight depression, with a thinner oblong tubercle in the middle, and the remaining segments also exhibit traces (gradually diminishing) of a similar nature.

Most abundant. North., Dur., and Cumb., Falkirk, fen district, Boston, Brighton, Preston, Bungay, Repton, and London district.

ASPHALTINUS, *Erichsoñ*. 2⅓ lin. Smaller than *Juno*, and more like *ater* in size and build, but more coarsely and strongly punctured than either, and with shorter elytra. Black, shining; basal joint of palpi, and sometimes base of the second joint, testaceous; apical half of mandibles pitchy red. Thorax and elytra coarsely and deeply, but not very closely punctured, the interstices rugose and shining; the former with a short groove in the middle. The abdomen does not exhibit the short keel in the middle of the transverse grooves noticed above.

In the male the sixth segment beneath is widely but shallowly notched at the hinder margin, and the fifth is depressed in the middle, and very slightly sinuate.

Very local; occasionally not rare in chalk and sand pits in Kent, especially at Charlton and Erith.

Ater, *Mann.*, *Erichson*. $2\frac{1}{3}$—$2\frac{1}{2}$ lin. Smaller and more slender than *Juno*, and rather more opaque, with the legs and tarsi thinner. Palpi, black; the basal joint and lower third of the second joint, testaceous. Thorax rather more cylindrical, with a narrow and more decided dorsal channel, and, with the elytra, not so irregularly or coarsely punctured. Beneath, no tuft of hair between the middle coxæ, and the meta-sternum not depressed, strongly and more remotely punctured.

In the male the femora are slightly curved and thickened, and the hinder tibiæ have a slight tooth-like elevation on their inner side, about a third of their length from the apex. In this sex also the sixth segment beneath has a polished longitudinal space, with two small tubercles in the middle, and a blunt triangular notch in the hinder margin. The fifth segment has a longitudinal, broad, polished depression, enclosed between two elevated ridges (clothed with long yellow hairs), which terminate in two flatly truncated teeth; the hinder margin also is gently and widely sinuate. The fourth segment has a broad central depression (not polished), between two faint ridges, each terminating in a minute tubercle, and clothed with long yellow hairs; a faint indication of this structure exists also on the third and second segments.

Not found in Northumberland or Scotland apparently; occurs sparingly at Deal, Brighton, Mickleham, and Darenth, and in the London district, generally more common on the chalk.

Longitarsis, *Thomson*, *Skand. Col.* II., 213, 214.

This species (new to our lists,) is closely allied to the preceding, from which it differs as follows. It is smaller; the largest specimen I have seen being rather smaller than any *S. ater*, the smallest being scarcely larger than *S. buphthalmus*. The head is narrower and more deeply excavated; the palpi having the first joint, and extreme base only of the second joint, light in colour. The thorax is shorter; the elytra are longer and more convex (especially behind), and with the interstices rather more shining.

In the male the hinder tibiæ do not possess the tooth-like elevation on the inner side, and the sixth segment of the abdomen beneath is not polished, the tubercles being wanting; the depression on the fifth segment is not nearly so broad, deep, or polished, the elevated ridges at the apex being much less developed; the depression on the fourth segment is narrower (especially behind), but more defined and polished, and there are no long yellow hairs on the ridges of this or the fifth

segment; there is also only a very small smooth depression in the middle of the margin of the third segment. The meta-sternum is depressed, more closely and finely punctured.

I took this insect some years ago in a wet marshy place on Wimbledon Common, not near any chalk, and unaccompanied by *S. ater*; it has since been taken in the same neighbourhood by Mr. E. Shepherd, Mr. Sharp, and Dr. Power, also by Mr. Sharp at Bishop's Wood, Hampstead. I must have brought forward this species with some doubt (my specimen being a female), had not the latter gentleman taken a male, which he kindly lent me.

Buphthalmus, *Grav.*, *Erichson.* 1⅔—2 lin. Black, opaque. Palpi black, with the basal joint clear testaceous yellow. Head a little wider than the thorax, closely and deeply punctured, with two shallow longitudinal grooves, the insterstice slightly convex. Thorax a trifle longer than broad, slightly narrowed behind, closely and deeply punctured, with a narrow, almost obsolete dorsal groove, and an obscure depression on each side behind the middle, best seen with a glass of low power. Elytra short; scarcely, if at all, longer than the thorax; strongly and deeply punctured, the interstices rugulose and dull. Abdomen more finely punctured, the four first segments having four short keels in the basal transverse grooves. Legs short; the femora, especially in the male, stout. The male has a very slight triangular notch in the margin of the 6th segment beneath.*

This most abundant species assumes at times a very puzzling aspect, but may generally be known by its robust build, opaque appearance, short elytra, stout legs, and the depression on the sides and back of the thorax.

Common all over England, usually most abundant.

Morio, *Erichson.* 1½ lin. Ashy-black, slightly shining. Palpi black, the basal joint testaceous. Head decidedly wider than the thorax, gently hollowed in front, with mere traces of grooves, and the interstice scarcely elevated. Thorax nearly cylindrical, with no channel or depressions. Elytra decidedly longer than the thorax, slightly convex, thickly and deeply punctured, the interstices level. Abdomen narrowed at the apex, shining, closely and delicately punctured. The broader head, concave forehead, ampler elytra, and more closely punctured abdomen, distinguish this species from *melanarius*; and the absence of

* As the species get smaller this emargination, or notch, in the male becomes so diminished, or undeveloped, as to afford little help, and indeed sometimes is scarcely visible. I shall therefore omit referring to it, unless it is sufficiently large to afford assistance in determining species.

a thoracic channel, the less thickly punctured thorax and elytra (the former also narrower), and the concave forehead, also separate it from *canaliculatus*. The last mentioned character, indeed, is enough to remove it from all its allies.

Two specimens have been taken by Mr. E. W. Janson, on different occasions, in a watercourse near Highgate, both of which have been submitted by that gentleman to Dr. Kraatz, who returned them as *S. morio* without any qualification.

Atratulus, *Erichson*. $1\frac{1}{4}$—$1\frac{1}{3}$ lin. Somewhat resembling the two preceding species, but smaller, comparatively stouter, and more coarsely punctured. Black, rather shining. Antennæ short and black. According to Erichson, the palpi should be black, with basal joint testaceous, and Mr. Bold's specimens exhibit this appearance, whilst those taken by me near London have the basal joint rufo-piceous, though in all other respects identical. Head not hollowed, with two shallow grooves, the interstice convex and shining on the vertex. Thorax as broad as its length, rounded in front and more decidedly narrow behind, strongly and closely punctured, with an obsolete dorsal channel. Elytra wider and considerably longer than the thorax, strongly and closely punctured, the interstices rather flat, and with a slight elevation at the base between the suture and shoulders, which latter are also somewhat elevated. The abdomen, which is thick in the female, is strongly and rather coarsely punctured, with the four little keels in the transverse basal grooves of the first four segments very conspicuous. The male is smaller, with a more attenuate abdomen.

This species bears a considerable superficial resemblance to small examples of *S. nigritulus*, from which its margined abdomen at once distinguishes it. In recent examples the silvery pubescence is very distinct.

Taken by Mr. T. J. Bold rarely, in Northumberland on the coast; also by Mr. Crotch very rarely at Wicken Fen, Cambridge, and by myself in Battersea Park, sparingly.

Melanarius, *(Kirby, M.S.S.)* Stephens' Illust. Brit. Ent., Mand. 1832, vol. v. 299, 54; Waterhouse and Janson, Trans, Ent. Soc. Lond. vol. iii. (N.S.), Pt. v. 1855.
cinerascens, *Erichson*.

As this species is the first in the genus wherein priority is given to a Kirbyan or Stephensian name, I append my reasons for so doing. It is intelligibly described by Stephens (loc. cit.), the description being from Kirby's M.S.S., p. 271, vol. iii. (now in the Zool. Dep., Brit.

Mus.), wherein the species is mentioned as being in Kirby's own collection, and in those of Drs. Spence and Hooker. In the M.S.S. Catalogue accompanying Kirby's Collection *melanarius* is referred to as No. 7 in the section with margined abdomen and black legs; and the identical specimen labelled No. 7, and named *melanarius*, is to be seen among Kirby's *Staphylinidæ*, also in the British Museum, to which Institution they were presented by the Entom. Society of London. This insect agrees well with the description, and there can be scarcely any doubt as to its identity with the subsequently described *cinerascens* of Erichson, as it accords with the latter's description, with type sent by Dr. Kraatz to the Brit. Mus., and with my own examples, which are identical with a specimen belonging to Mr. E. Shepherd, also named *cinerascens*, by Dr. Kraatz.

Of similar colour and appearance to *morio*, 1½ lin. Palpi black, the first joint pitchy-testaceous. Head rather wider than the thorax, the grooves not deeply impressed, with the interstice moderately convex. Thorax decidedly longer than broad, rather narrowed behind, with no trace of a dorsal channel, but very slightly depressed behind the middle; thickly punctured, the interstices narrow and scarcely rugulose. Elytra a trifle longer, and less closely punctured, than the thorax; the interstices nearly flat (but not so level as in *S. morio*); depressed at the suture. Abdomen shining, with fine and rather scattered punctures.

The differences between this species and *morio* are pointed out above; from *canaliculatus* it may be known by its more slender structure, and the absence of a thoracic channel; and from *buphthalmus* by its narrower thorax, less strongly punctured elytra (the interstices of which are scarcely, if at all, rugulose), and by the finer and more remote punctuation of its abdomen; it is also altogether more slender.

Besides the above-mentioned examples this species has been taken by myself in the London district, and by Mr. D. Sharp at Wimbledon; it is also in Dr. Power's collection, from the Fen district.

Incrassatus, *Erichson*. 1⅔ lin. About the size of *buphthalmus*, from which it may be known by its narrower head, more ample elytra, and thicker abdomen. Rather dull black; palpi black with basal joint testaceous. Head very narrow; scarcely, if at all, wider than the thorax. Thorax scarcely longer than broad, very closely and strongly punctured, the interstices almost rugulose, and with a slight depression behind. Elytra considerably wider and a little longer than the thorax; strongly and closely punctured, the interstices somewhat coarsely "engine-turned," and with a large scutellar depression. Abdomen (especially in the female) stout, shining, with the keels at the base of the segments as in *buphthalmus*.

In the male the fifth and sixth segments beneath are slightly depressed in the middle, the latter having a wide shallow notch.

Bungay, Boston, Brighton, Wicken Fen, &c. London district; formerly common at Hammersmith Marshes.

MELANOPUS, *Marsham* (1802); Waterhouse and Janson.

nitidus, (Boisd. et Lac. 1835) *Erichson* (nec Stephens).

1½ lin. Deep black, very shining; palpi black, with the basal joint testaceous. Head with two well-defined grooves meeting in front; the enclosed space elevated and shining. Thorax very slightly longer than broad, strongly rounded in front and contracted behind; strongly but not closely punctured, the interstices being flat, and with a deep, well-defined, dorsal channel not reaching much beyond the middle. Elytra a little longer than the thorax, strongly but rather remotely punctured, the interstices flat, and with a slight elevation between the suture and shoulders. Abdomen with the keels in the grooves at the base of the segments not so distinct as in *incrassatus*. In the male the sixth segment beneath is slightly and widely notched. Common at Falkirk, Newcastle, Weston, and Gravesend; also in the Cambridge and Norfolk Fens, and London district, and generally distributed all over England. This species runs quickly over wet muddy banks, and in the winter may be often found in hay-stack rubbish.

ÆMULUS, *Erichson*.

? nitens, (*Kirby*) *Stephens*.

Usually about two lines long, but sometimes considerably smaller. Slender; shining black; easily separated from *canaliculatus* by its more elongate form and shining appearance. Antennæ and palpi black and slender, the latter with the basal joint, and base of the second, testaceous. Head broad and depressed, thick and strongly punctured, with a thin elevated shining middle longitudinal line. Thorax elongate, slightly rounded in front and gently narrowed behind; thickly and strongly punctured, with a thin well-defined dorsal channel for its entire length. Elytra scarcely longer than the thorax, very strongly punctured, the interstices flat. Abdomen shining, less deeply punctured, the four little keels very conspicuous in the basal groove of the first segment. Legs slender. In the male the sixth segment beneath is slightly but widely emarginate, and the fifth is also very slightly sinuate, the surface of the segment being depressed. The meta-sternum is coarsely and rather closely punctured.

Wicken and Horning Fens.

Canaliculatus, *Gyll.*, *Erichs.* 1⅔ lin. About the size of *buphthalmus*, but more pubescent, with larger elytra, and the thoracic channel more strongly defined. Rather dull black; palpi black, with the basal joint, and extreme base of the second joint, testaceous, the apical joint stout. Head rather depressed, with scarcely any perceptible grooves or middle elevation; thorax of the same shape and punctuation as in *buphthalmus*, but with scarcely any depression behind, and a delicate but distinct dorsal channel for its entire length. Elytra decidedly longer than the thorax, not so irregularly punctured as in *buphthalmus*, the interstices flat, and with scarcely any depressions. In the male the fifth segment of abdomen beneath has a wide and shallow emargination, the sixth being more deeply notched.

Northumb. and Cumb. (not common), Falkirk, Weston, Fen district, Bungay, Boston, Brighton, and London district (common).

Debilis, *Dietrichsen* (in litt. ?)
opacus, *Waterh. Cat.* (nec *Erichson*).

Mr. E. W. Janson informs me that a specimen of the insect taken by Messrs. Crotch and Matthews, and referred by them to *S. opacus*, has been returned to him by Dr. Kraatz with the following remarks—"*Steno debili, Dietr. (in litt. ?), proximus; verisimiliter eadem species*," also that Dr. Kraatz seemed doubtful whether a description had been published.

This insect somewhat resembles *S. buphthalmus*, but may be distinguished from that species by its flat, dull appearance and very closely punctured abdomen.

1⅔ lin. Dull black and rather flat. Antennæ and palpi short and pitchy black, the latter with the basal joint, and base of the second, testaceous. Head wide and flat, with two wide shallow grooves, the interstice gently convex. Thorax scarcely longer than its greatest breadth, rounded considerably in front and narrowed behind; closely, but not very strongly punctured, the punctures thickest at the base, seeming almost granulate, and with an obsolete transverse depression behind the middle. Elytra scarcely longer than the thorax, depressed, slightly narrowed at the shoulders, and with the hinder margin sloping upwards from the outer angle to the suture, closely punctured, the punctures rather stronger than on the thorax, the interstices almost rugulose at the apex. Abdomen slightly shining, very closely punctured; the basal foveæ of the first four segments obsoletely keeled, the most evident keel being in the middle of each. Legs pitchy black, the tarsi short, and with the penultimate joint obcordate, or almost bi-lobed.

In the male the femora are slightly thickened, and the sixth segment beneath is rather strongly notched, the fifth being depressed in the middle and sinuate at the hinder margin. The abdomen beneath is clothed with yellowish grey hairs.

The above description (which certainly accords very closely with Erichson's *opacus*) is from specimens taken at Horning Fen, Norfolk, where this insect has been found by Messrs. Crotch, Matthews, Brewer, and Sharp. It has also been taken at Wicken Fen, Cambridge by Mr. Crotch, and near Burton-on-Trent by Dr. Hewgill. The two specimens in Mr. Waterhouse's cabinet, supposed to come from Northumberland, on which the species *opacus* was introduced as British, only differ from the fen examples in having the legs and antennæ inclined to pitchy-brown, and the elytra a trifle more contracted at the shoulders.

The position of the present species in the genus is certainly difficult to define; the *almost* bi-lobed tarsi and tendency to pitchiness in the limbs not agreeing with the others in which the abdomen is margined.

Pusillus, (*Kirby*) *Stephens* (1832); *Erichson*. 1—1⅓ lin. Black, rather glossy, and somewhat flattened. Antennæ short and stout; palpi black, with basal joint testaceous. Head with two grooves meeting in a point in front, the interstice elevated and rather shining. Thorax rather wider than long, the sides strongly rounded and contracted at the base; rather strongly punctured, with two lateral depressions behind the middle, united by an obsolete transverse depression near the base. Elytra decidedly longer than the thorax, rather flat, strongly punctured, the interstices shining and nearly rugulose; slightly depressed in the scutellar region. Abdomen short, rather suddenly attenuate at the apex; shining, finely punctured, with the rudiments of keels in the basal grooves of segments. Tarsi short.

Northumberland, Durham, and Cumberland; Boston, Falkirk, Bungay, Repton, Preston, Fen district, and near London. Common.

Exiguus, *Erichson*. 1—1¼ lin. Very like *pusillus*, but the thorax not so flat, rather more glossy and less closely punctured, and not exhibiting the depressions behind so strongly. The elytra shorter (scarcely longer than the thorax), not quite so flat, a little more strongly and not quite so closely punctured, and more contracted at the shoulders.

Holme Bush, near Brighton; Lincolnshire and Cork.

(*To be continued.*)

LEPIDOPTERA AT RANNOCH IN JULY.

Early in July, 1861, I spent a few days in company with Mr. Birchall and several other friends at Rannoch. Fortunately we had some fine hot weather, though we did not escape a few of the heavy storms of rain so frequent in the Highlands. Insects in that neighbourhood evidently know how to appreciate fine weather, for when the sun shone they made the best of it, appearing in great abundance. Among our captures were the following:—

Geometra Papilionaria.—This species, in company with swarms of *Metrocampa margaritaria*, flew in the evening round our sugared trees. They were rather suspected of taking a sip on the sly. A specimen that I beat from a young birch in the day time made no attempt to fly, but fell to the ground.

Dasydia obfuscata.—On the heaths at the foot of Craig Cross. When disturbed they dashed away with such rapidity that pursuit was useless. I managed however to secure a specimen as it rose.

Psodos trepidaria.—We mounted Craig Cross one day expressly for this species, but could only find one specimen. It was flitting about the sheltered hollows near the top of the hill, and settling now and then on the herbage, something in the style of *Syricthus alveolus*, but much more gently.

Acidalia fumata.—Common among the long heath in the fir woods, settling low down among the stems, but easily disturbed, when it would flit a short distance and settle again in some hollow.

Fidonia pinetaria.—Very abundant in the same woods, but more local, sometimes swarming over a spot of a few yards in extent; indeed, I have had half-a-dozen specimens in my net at once. The males are very lively in the sunshine, though their flight is not powerful, and they generally flutter quietly about the very tallest heath. The females are not nearly so common as the other sex, and much quieter in their habits, usually remaining settled on the tall heath when undisturbed.

Emmelesia ericetata.—Also very local, but on the open heaths; I do not recollect that we saw it in the woods. Its flight is slow and graceful, the delicate markings on the fore wings being visible as it flies.

Coremia munitata.—Common on the hill sides among scattered trees, especially in the ravines or water courses. Particularly fond of settling on the under side of a fallen tree, or one which leaned across a ravine. The female was not at all common.

Xylophasia polyodon.—The black form of this insect, which also occurs in the west of Ireland, came occasionally to sugar.

Noctua conflua. (*?*)—Of this species or variety we took half-a-dozen specimens at sugar, but among the scores of *festiva* we took were many varieties so intermediate that I confess I was unable to decide which were *conflua*, and was obliged to leave it to Mr. Birchall.

Aplecta occulta.—Many splendid specimens of the black form came to sugar, and one occurred almost as pale as the southern specimens. This species, though not so restless on the sugar or in the box as *A. tincta*, will not remain quiet in a pill box many minutes, but requires to be pinned as soon as possible.

Aplecta tincta.—Also rather common, but as usual very shy. I caught a female late at night flying very slowly among *Myrica Gale*, apparently depositing eggs. This species was also much darker and handsomer than specimens taken in the South of England.

Hadena contigua.—Not very common at sugar. Contrary to the usual rule, rather smaller and considerably lighter and brighter in colour than Southern specimens.

Plusia interrogationis.—Mr. Birchall took one specimen flying over the heath in the day-time, and another occurred at rest on a stone wall.

Scopula alpinalis.—Common on the sides of Craig Cross at rest among the grass and short herbage, but easily disturbed, when it would dart up suddenly and fly quickly to some distance, generally up the side of the hill, a procedure which made the ascent pretty easy, though coming down was rather a difficult matter.

Crambus inquinatellus.—I found this species common among alder bushes near Kinloch, but did not meet with any on the heaths, which it usually frequents here in the South.

Crambus ericellus.—Not uncommon among the heath, but rather worn when we were there.

Tortrix adjunctana.—Smaller and much darker than Southern specimens.

Amphisa Gerningiana.—I only found this species high up on Craig Cross. In the valleys probably it was over.

Sericoris Daleana.—Not uncommon in damp sheltered places on the borders of woods.

Coccyx ustomaculana.—Abundant, flying in the sunshine, about the hollows and sides of banks in the fir woods among long heath and *Vaccinium*.

Mixodia palustrana.—In company with the last named, and almost as common. Both are exceedingly active, and not very easy to secure in the sushine, but it is possible to distinguish them when on the wing, as *palustrana* flies more straightly forward than *ustomaculana* which rather spins about, that is if my memory serves me.

Mixodia Schulziana.—It may be worth remarking that this species was quite common, though rather worn, on the top of Craig Cross when there was not a specimen to be seen in the valleys.

Orthotænia antiquana.—Common in a small grass field, where we used to find it flying just before dusk. Some specimens were remarkably dark and strongly marked.

Tinea ochraceella.—It seemed a curious thing to examine ants' nests in the morning in order to find these moths; yet there they were, pretty commonly perched on the grass blades and bits of rubbish on the tops of the nests.

Prays Curtisella.—The only specimen that I took had the fore wings entirely dark brown, the blotch being but little darker than the ground colour.

Gelechia galbanella.—Not uncommon on the trunks of the fir trees, and easily disturbed.

Œcophora stipella.—Among firs, but seems to prefer hiding among the heath.

Œcophora flavifrontella.—At rest on the fir trunks.

Incurvaria Öehlmanniella.— I was rather surprised at meeting with this species on the summit of Craig Cross, it seemed rather out of place there.

Pleurota bicostella. — Pretty common among the heath and at least double the size of ordinary English specimens, besides being more strongly marked.

Lithocolletis vacciniella. — Pretty common on Craig Cross among *Vaccinium Vitis-idæa.* I did not see any in the valleys although its food plant was common.

I believe we picked up some decently good beetles in the course of the trip, but do not know much about them. When putting the sugar on the trees for Noctuæ we found numbers of *Cetonia ænea* paying their respects to what remained from the night before. The handsome *Trichius fasciatus* occurred occasionally, with head plunged deep into into a thistle blossom, or flying about the orchids, &c.

CHARLES G. BARRETT, Haslemere.

Cryptocampus angustus (Willow-gall Sawfly).—In October of last year, one of my young friends brought me some galls, which were produced on *Salix vitellina*. The structure of the galls differing considerably from those formed by a gall-gnat (*Cecidomyia*), I duly consigned them to a glass-topped box, to see whether the following spring would reveal the name of the occupants. Previously to doing so, I cut open one of the galls, and found three or four smoke-coloured larvæ with black heads, and tails that bore evidence of their relationship to *Tenthredo*. Later still I opened another of the galls, and found that a further change had taken place. The pupæ were enclosed in a white, cottony, somewhat transparent, cocoon; the pupæ themselves were white, with brown patches where the eyes were to appear, and three brown dots triangularly placed between them. I now anxiously watched for the imago-state of the tenant. On the 24th of April, the sawflies began to emerge, and before the close of the month, all had made their exit from the galls. I have to thank Mr. Smith, of the British Museum, for kindly naming the insect. It is the *Cryptocampus angustus* of Hartig. He further remarks that he believes it is the first time that it has been noticed in this country. Hartig says that it occurs on the Continent on *Salix viminalis*; and it might do considerable damage in osier grounds if allowed materially to increase. The willow on which it has occurred in Yorkshire is undoubtedly *vitellina*, with its glandular-serrate leaves. In size the fly is a little larger than the gooseberry sawfly; black, with testaceous feet, and darker coxæ. The body is somewhat flattened. The galls themselves evidence the mode of growth, woody matter having gradually formed over the groove, so as to secure food and shelter for the sawfly during the earlier stages of its development.—Peter Inchbald, Storthes Hall, *May 6th*, 1864.

Note on Sericostoma Spencii.—During the last few weeks I have examined specimens of this insect in order to ascertain the range of variation. In both sexes the fore-wings, the vertex, and the prothorax are frequently clothed with black instead of golden brown pubescence. One female which had the vertex, prothorax, and mesothorax covered with golden brown pubescence and the fore-wings dark, had the antennæ annulated throughout with ochreous. The fore-wings of each variety are sometimes spotted at the junction of the apical veins with the hind (apical) margin, and in some instances irregular discal lines are present near the anastomosis. The comparison of numerous male specimens has verified Mr. Mc Lachlan's supposition that the relative lengths of the prongs of the penis sheaths is variable. In some specimens the lower prong is shorter, in others it is equal in length to the upper, or even a little longer. In all that I have yet examined the app. intermed. and inf. are constant in form.—A. E. Eaton, Little Bridy, Dorset.—*May 31st*, 1864.

[Mr. Eaton's remarks quite accord with my own ideas, that the comparative lengths of the sheath-prongs alone are not enough to give specific value. I am aware that my friend Dr. Hagen is disposed to think otherwise, and considering his high authority in these matters, I am still open to conviction that I am wrong, in which case the insects with equal sheath-prongs should be *S. multiguttatus*, Pictet. Hagen.—R. Mc L.]

Oxytelus speculifrons.—Since writing my notice of this insect in last No. I have taken five specimens at Shirley, where it has also been found by Mr. Sharp. Dr. Power has also taken it at Mickleham.—E. C. Rye.

Occurrence of Stenolophus brunnipes, Sturm, in Britain.—I have recently taken a species of *Stenolophus*, which answers very well to the descriptions I have seen of *S. brunnipes*, Sturm; it also agrees with specimens of that insect in collection of the British Museum sent by Herr Dohrn. *S. brunnipes* is about the size of *S. dorsalis;* black, with the basal joint of the antennæ, the legs, and the reflexed margin of the elytra, testaceous. The thorax is broader in proportion to the width of the elytra, not so much narrowed behind, the posterior angles more rounded, and the basal foveæ more punctured than in *S. dorsalis;* the elytra also are rather longer in *S. brunnipes*. *S. derelictus*, Dawson (a species I am not acquainted with), is also closely allied to this insect, but the differences are pointed out in Geod. Brit. I took a single specimen at the beginning of the present month in the neighbourhood of London.—D. Sharp, 13, Loudoun Road, N.W., *May 11th*.

New British Epuræa. Epurea oblonga, Herbst; Erichson, Nat. der Ins. Deutsch. iii, 153, 17.—I have recently taken eight examples of this insect under fir bark at Shirley. It resembles *E. pusilla* in build, but is rather smaller and flatter, more delicately and closely punctured, with the front of the thorax very slightly hollowed (in fact almost straight), and the apex of the elytra truncate. It differs from *E. longula* in its flattened surface and finer punctuation. It is yellowish brown (almost straw coloured when alive), with the usual deceptive triangular scutellar patch and sub-apical spots on the elytra, caused by the folding of the wings; rather closely and very finely punctured. The club of the antennæ is dusky at the tip, the apical joint being smaller than the two preceding. The head has two slight depressions in front, between the eyes, united by an almost obsolete line. The thorax is about a third shorter than broad, very gently hollowed in front, rounded at the sides, and with the margins flat, especially behind. The elytra are very long, more than twice the length of the thorax, the margins narrowly depressed, and the apex truncate, but rounded at the angles. In the male, the middle tibiæ are dilated at the apex on the inner side, and slightly sinuate.—E. C. Rye.

Note on the larva of Leucania littoralis.—On the 13th May I found full-fed larvæ of *L. littoralis* at roots of *Ammophila arundinacea;* I have met with these larvæ for some years, having first, accidently, in 1861, captured a small one, which, after feeding up and being duly figured, was reared; when very young their colour is glaucous green, with longitudinal stripes, assimilating closely to the underside of the almost cylindrical blades of their food-plant; after April they leave their hiding places, and burrow beneath the sand, having, by this time, considerably increased in size, and having, also, become much paler in tint, some individuals being almost whitish green, others of a pale flesh colour.—Wm. Buckler, Lumley House, Emsworth.

Descriptions of six Larvæ of the Genus Lithosia, by William Buckler.

Lithosia pygmæola.—On the 7th June, 1862, I had this larva kindly sent me by Mr. Doubleday. It was said to feed on lichens growing amongst moss, but lived only a few days, as I could not find any such lichen as the small portion of food which accompanied it, and which had a very pungent saline odour; it refused all other kinds of lichen, and so starved.

It was short and rather thick, tapering a little posteriorly; brown on the back, with a thick black dorsal line, the sub-dorsal lines dark brown, and the sides rather paler brown, with a dirty white line along the spiracles; the tubercles with short brown hairs, and the head black.

L. Caniola.—A larva, feeding on olive-green house-top lichens, with a taste for clover, was secured to me for figuring by the kindness of Dr. Knaggs, on May 30th, 1862. Its head was dark brown, the body tapered a little at either extremity, the ground colour brown, a thin blackish dorsal line slightly widening in the middle of each segment; the sub-dorsal lines composed of cuneiform orange-red marks pointing backwards, and bordered laterally with similar marks of black, a whitish spot almost touching the point of each wedge; the sides rather paler than the back, with a dusky lateral line; the tubercles studded with brown hairs.

L. Complanula.—Said to feed on lichens, though I have not found this the case with the few I have reared; the first I had, fed on oak; others were taken on buckthorn and dogwood, and this season one on clematis. This larva is of nearly uniform thickness; its colour above is a very dark bluish grey, the head, plate on the second segment, broad dorsal line, and sub-dorsal, black; the body furnished with black tubercles and hairs, excepting an orange lateral stripe, beginning at the fifth and ending on the twelfth segments, which encloses the spiracles and extends to the pro-legs; the tubercles and hairs on the latter segments being also orange colour.

L. Complana.—I have also been indebted to Mr. Doubleday for a specimen of this larva, which throve well on lichens off fir trees, and was nearly full fed June 9th, 1862; the perfect insect appeared the end of July following. Its colour was brown, with a very dark brown head and dorsal line. The sub-dorsal markings consisted of oblong, somewhat reniform, dull orange-red marks, one on the anterior of each segment, followed by an interval of the ground colour, and succeeded by a whitish spot; the usual tubercles and hairs dark brown.

L. Stramineola.—This insect, as previously recorded in the *Zoologist*, M. Guenée has pronounced to be a variety of *L. Griseola*, after comparing a figure of the larva with preserved skins of *Griseola* in his possession. The larva was depicted June 24th, and the imago appeared July 30th following.

The larva was brown, the head a darker brown, the back of the second, third, and anal segments orange-red, as though the sub-dorsal marks had become confluent; a similar red mark of an irregular trapezoid figure formed the sub-dorsal line on the anterior two-thirds of each segment, a thin blackish line bordering them externally; a thin dark brown dorsal line, interrupted on the second and third, and terminating on the twelfth segment. Tubercles and hairs brown.

L. Rubricollis.—A tolerably abundant larva in beech woods during September and October, feeding on the tree lichens. I also found it once swarming on a lichen covered park paling, and reared a large number of the perfect insects, which appeared during the month of May. The larva is rather elongate, tapering posteriorly; head blackish, body greyish and freckled with yellow; a fine thread of whitish, bordered with grey, forms the dorsal line, which is white on the second segment; the sub-dorsal is a black line on the second, third, and fourth segments, and on the remainder becomes an elongated black trapezoidal mark on the anterior two-thirds of each, and terminates on the twelfth. The ground colour of the back on each side of the dorsal line of the seventh, eighth, ninth, and tenth segments is whitish; the sides mottled with greenish yellow and grey; tubercles hairy.

Larva of Xylophasia Scolopacina.—I am indebted to Mr. Batty for two healthy larvæ of this species. They feed on coarse grasses, and a species of wood rush. Their bodies are uniformly cylindrical and slender. The head, and plate on the second segment, are of a translucent greenish tint, and there is a black mark on each side of the mouth. Ground colour of the body olive green above; on the back a fine thread-like line of yellowish or pale greyish, enclosed by two others of dark grey, which form the dorsal line and run through a series of elliptic marks of slate colour. The sub-dorsal is a narrow line of slate colour, beginning at the third, and after the fifth segment, merging into a broad lateral stripe (which commences on the second segment) of dark slaty grey, most intense at its lower edge; just above which, on each segment, is a large blackish shining tubercle, furnished with a bristle; the ordinary dorsal tubercular spots small, with minute hairs. The spiracular region bright sulphur-yellow, and the belly greenish.—W. Buckler, *June 3rd.*

Xylina conspicillaris.—I bred two of this rare species in April last, one a remarkably fine specimen, the other with very small and undeveloped wings. This is but a poor reward, though, for upwards of fifty days spent in pupa digging during the last season, and the insect may truly be accounted rare.—Abraham Edmunds, The Tything, Worcester, *May*, 1864.

Agrotis cinerea bred.—Whilst searching on the "Gluseigs," near Llangollen, for the larvæ of *A. Ashworthii* on 25th April last, I took a larva quite unknown to me, which turned to pupa before I had an opportunity of noting its description. The pupa was short and stout, light coloured, with very conspicuous spiracles. In 24 days a fine lead-coloured female of *A. cinerea* appeared, reminding me of a bred specimen of *A. lucernea*, though of course much smaller than that species. The "Gluseigs" (spelt as pronounced by the natives), or "Great rocks," are limestone knolls encircling the mountain of Castle Dinas Bran, with a gigantic "vandyked" edge, terrace over terrace; and it was upon the top of one of the highest ledges of the fourth knoll, counting from the east, that I found the above mentioned larva.—C. S. Gregson, Spring Hill, Stanley.—*19th May*, 1864.

Eupithecia Lariciata, Frey.—I am enabled to name two distinct localities for this species. On Friday, May the 20th, I captured a pair on Ashdown Forest, in a pine plantation near the little hamlet of Wych-Cross; and on Saturday, the 4th of June, on Leith Hill, in the same spot where last year I had secured six, I obtained several more. By these dates it may be concluded that the best time to be on the watch for this species will be the last week in May.

It bears considerable resemblance to *Eup. Castigata*, but the wings are longer and the colour less brown in tint; a white spot behind the thorax also presents a good character.—Edward Hopley, 14, South Bank, Regent's Park.

Eupithecia Fraxinata and Cymatophora fluctuosa.—On the 19th of May two specimens of *E. Fraxinata* appeared in my breeding cage; the larvæ from which they were bred were beaten from ash trees last August. During the past three weeks I have also bred eight specimens of *C. fluctuosa* from larvæ beaten from birch last autumn at West Wickham and Darenth Woods.—Edward Meek, 5, King Street, Old Ford Road, N.E.—*June 2nd.*

Pœdisca oppressana, Tr.—Two years ago I observed this hitherto rare species, of which, at the time, only two specimens had been recorded, in considerable numbers on the trunks of poplars at Edmonton; owing, however, to delay in identifying the specimens which I then captured, I failed to obtain a good supply. Last year the insect was scarce, and I was able to secure only a single specimen, but, at the time I write this, the insect has again made its appearance, though more sparingly than when I first had the pleasure of making its acquaintance. The larva, no doubt, feeds in the bark of poplar, and I have found the empty pupa-case sticking out from the bark, much after the style of that of *S. Wæberana* on apple and pear trees. When the weather is at all cool, or the wind blowing with any force, the moth is sluggish, hiding itself in the crevices of the bark, which it cannot readily be induced to leave; but when the day is calm and the sun's rays powerful, it has a peculiar jumping flight, jerking itself from the tree to the collector's coat or to the adjacent herbage, and as suddenly returning after a short interval to the tree-trunk. It bears considerable resemblance, at first sight, to grey specimens of the common *Gr. Nisana*, for which it has probably often been overlooked; Entomologists residing near any locality where large poplars occur, will do well to look out for this species in the month of June. I have placed my captures of this species in the hands of my friend, Dr. Knaggs, who has undertaken to set and distribute them; any Entomologist wishing for a pair will, therefore, please send *a box, with return postage*, to 72, Kentish Town Road, N.W.—Bernard Piffard, *June 13th.*

Curious fact about Dicranura Vinula.—Last summer two of my cocoons of this species did not give forth their imagos; I did not, however, throw them away. Recently I opened one of them and found the imago dead; I then, more carelessly, opened the other, and discovered that the pupa case was cracked and contained a live imago, which began to protrude its antennæ and legs through the slits in the pupa case; I rendered assistance with the point of a pin by removing the partially detached pieces of case, and a fine female came out. Although placed under favourable circumstances her wings did not expand, but remained as two little lappets of about a quarter of an inch in length; next day she continued in the same state, but on the afternoon of the *second* day the wings attained their full size, making her one of my finest and best developed specimens—I expect that I brought her to the light of day before all was prepared for the process of wing-forming.—William Horn, 106, High Street, Portsmouth.

Entomological Society of London, *June 6th*, 1864.—H. T. Stainton, Esq., F.L.S., Vice-President, in the Chair.

The Secretary exhibited, on behalf of Mr. Morris, who was present as a visitor, some leaves of sugar cane from Mauritius, which were much infested with *Coccus:* this insect being the cause of considerable injury to the sugar crop in that island.

Mr. F. Smith exhibited a female *Bombus*, which he was unable to refer to any known species; it had been captured by his son on the sand hills at Deal.

Mr. McLachlan exhibited a case-bearing larva, which had been found by Mr. Douglas on Box Hill amongst thyme; it was of so singular an aspect that he felt quite uncertain to what order it should be referred. Professor Westwood pronounced it to be *Coleopterous*, of the genus *Clythra*, one of the *Chrysomelidæ*.

Mr. F. Smith exhibited an extensive series of illustrations of wasp architecture, which he had received from Mr. Stone, of Brightampton; these had all been erected in square wooden boxes with glazed fronts, some in an almost incredibly short space of time; six, five, or even three days having sufficed for the completion of some of the most curious. The whole series had been constructed in the months of September and October, 1862, by a colony of *Vespa Germanica*.

Major Parry had sent for exhibition a Lucanoid insect, *Odontolabis Stevensii*, with a singular monstrosity in both of the antennæ; the right antenna had the last joint bifid, and the left antenna had the penultimate joint trifid.

Professor Westwood exhibited some microscopically small specimens of an *Acarus*, which had been found by Mr. Chapman, of Glasgow, in the unexpanded buds of the black currant; viewed with an ordinary lens, they only looked like so much dust, but under a good microscope they clearly appeared to be very minute *Acari*; but instead of having eight legs (the normal number), these had only four.

Mr. Bates read a notice from Mr. Roland Trimen on the imitative habits of a spider at the Cape of Good Hope. Mr. Trimen's attention had been first drawn to it on his approaching a composite plant with yellow flowers, a species of *Senecio*, on which several specimens of a *Satyrus* were reposing; two of these did not fly away, but remained fixed to the plant, and on a closer examination he found that each was firmly held in the grasp of a yellow spider. On releasing them from their position the spider remained quiet for some moments, but soon recovering its activity and courage, it fixed itself in the position in which it awaited its prey. Holding the stem of the plant with its hind legs, it expanded its six anterior legs, so that the body of the spider represented the disk of the flower, the six legs simulating the ray-florets, and in this position it was hardly distinguishable from the genuine flowers of the plant.

Professor Westwood exhibited a new butterfly from Singapore, which he proposed to describe under the name of *Liphyra Brassolis*.

Mr. Stainton exhibited the angulated and naked pupa of *Anchinia verrucella*, which is so analogous in its mode of attachment to the pupæ of some of the *Pieridæ*.

Dr. Wallace exhibited some specimens of silk of the *Bombyx Cynthia*, the larva of which feeds on the *Ailanthus glandulosus*; one of the specimens exhibited had been successfully reeled off from the cocoon in a continuous thread, a process which has previously appeared almost impracticable.

Mr. Tegetmeier stated a circumstance in connection with bee-instincts, which he thought might prove interesting to some of the members of the Society. Expecting a hive to swarm in May last, he placed in the immediate vicinity of it an empty hive, in which was some comb, thinking that probably when the swarm took place the bees would quietly take possession of it; and he found that the bees not only set to work to clean out this hive, but that without any swarm having taken place, new wax had been made in the empty hive, as though the intended tenants purposed putting their future residence in complete repair beforehand. Mr. Tegetmeier remarked that the swarm had not yet taken place in consequence of the supervening cold weather.

Mr. F. Walker communicated a paper on undescribed *Chlucidites*.

VARIETIES OF *LEPIDOPTERA*, AND THEIR CAUSES.

BY ROBERT C. R. JORDAN, M.D.

In the Autumn of 1862, a curious variety of the larva of *Smerinthus Populi* was brought to me, so light as almost to be called white rather than green, although not a perfect albino. In June, 1863, the moth appeared, and the same variation that occurred in the larva was reproduced in the perfect insect. This is worthy of note, as tending to throw some doubt upon the validity of the test of a species afforded by slight differences in the larva; indeed, it must be confessed, that *a priori* reasoning would lead us to expect, in local varieties, that there would be a corresponding difference in the previous states. Our experience, however, (though the subject has been little worked at) as yet points to a contrary conclusion. The following classification of varieties may at all events tend to place the different groups in some order for study:

VARIETIES OF LARVÆ.

1. Sexual.—As in the case of the common vapourer moth (*Orgyia Antiqua*), the sexual difference in larvæ, according to my experience, is rarely as strongly marked as in perfect insects.
2. Varieties of constant occurrence not apparently connected with sex.—The commonest example, perhaps, is given by *Hadena oleracea*, in which, as is well known, two frequent varieties—one brownish, the other green—occur. *Heliothis Marginata* and *Dasychira pudibunda* are other instances.
3. Varieties in intensity of colour.—Intermediate shades occurring, as in *Cheimatobia Brumata*, &c.
4. Variations depending on the nature of food.—The simplest proof of this occurs in *Mamestra Brassicæ*, which may often be met with feeding on the flowers of the dahlia, and somewhat assuming the hue of its red petals. This is, however, a cause of variation worthy of study. It has seemed to me that the red spiracular line was much more deeply marked in larvæ of *Cidaria russata* found feeding on dock, than in those eating the *Geum*: but the character of a red or rose-coloured spiracular line is often inconstant, as in the case of *C. russata*, and again in *Chrysophanus Phlæas*, in both of which it is sometimes entirely absent, at other times well marked.
5. Variations of the period of life in the larva state.—The most remarkable example of this is in *Lasiocampa Callunæ*, but

lesser alterations are frequent: for example, in parts, at least, of the northern districts of England, the common brimstone moth is single-brooded; indeed, cases of this kind are far from uncommon.

VARIETIES IN THE PERFECT STATE.

A.—NORMAL VARIATIONS.

1. Sexual.—Almost all insects vary somewhat in the two sexes, but some, as *Hypogymna Dispar*, vary so extremely that they might well be taken for different genera. Secondary subjects of interest arise from a consideration of these sexual differences: for example, the more pectinated antennæ in the male seem to point to these organs as connected with the function of smell; again, the apterous condition of some female moths is worthy of note, as also the fact that this wingless state is so very prevalent amongst our winter insects.

2. Local varieties.—

   a. With regard to size alone.

   b. With regard to colour or markings.

Many insects are decidedly smaller in the northern parts of our island than in the south. *Himera pennaria* affords one example. Of changes in colour many proofs also may be found without resorting to the more doubtful ones, such as *Cœnonympha Typhon* and *Polyommatus Artaxerxes; Xylophasia lithoxylea*, *X. polyodon*, and *Grapholita ulicetana* give examples admitting of no cavil.

3. Spring and Autumnal varieties.—As in the genus *Pieris*, the true thorn-moths, &c. Here it must be noted that some insects appear twice in the year, but that the autumnal brood is not parent to the brood of the following spring, such, according to my experience, is the case in the genus *Lasiommata*. These three classes of varieties seem to be more or less constant, and may be termed natural varieties; the remainder obey no law, and we shall therefore call them abnormal.

B.—ABNORMAL VARIATIONS.

1. Varieties of frequent occurrence, but not apparently depending on local causes—Abundant examples of this group may be found, as in *Apamea oculea*, *Peronea*, &c. The much greater tendency of some species to vary is remarkable.

2. Varieties confined to one sex. — For example, *Colias Edusa* var *Helice*.

3. Varieties of accidental or solitary occurrence.

4. Albinos and black varieties. These are, perhaps, monstrosities rather than varieties; the albino depending on a deficiency, the black variety on an excess of pigmentary matter. Examples of the former are frequent and of the latter occur in *Hypercampa dominula, Cidaria impluviata, Prays Curtisellus*, &c.

5. Varieties in the time of appearance occur in the imago as in the larva state.

This sketch would be yet incomplete without noticing two groups of distinct species, which seem as it were, to mimic varieties. An example of the first group is given by *Acronycta Psi* and *A. Tridens;* in these, as is well known, the perfect insects are exactly similar, while the larvæ are widely different. Of the second group, *Cidaria russata*, and *C. immanata* may be taken as examples; here we have the typical forms of the imago very different. But both species are liable to variations, and these varieties are in some cases indistinguishable the one from the other, seeming to run together.

Though, doubtless, many omissions are made in this list, yet enough has been said to show that, in these varieties, a large field for thought and observation exists, much of which has never been worked at as its interest demands.

Spring Grove Terrace, Edgbaston.
May 18*th*, 1864.

NEW SPECIES OF BUTTERFLIES FROM GUATEMALA AND PANAMÁ,

BY HENRY WALTER BATES, F.Z.S.

(*Continued from page* 35).

22.—MELINÆA IMITATA.

Same size and shape as *Melinæa Messatis* (Mechanitis id. Hewits. Ex. Butt. Mech. f. 4): in colours and markings almost identical with *Heliconius Telchinia* (Doubled. & Hewits. Gen. Diurnal Lepid. pl. 14, f. 4). Fore-wing black, with a very broad and oblique sub-basal orange-tawny belt, commencing on the costa (of which it occupies the basal portion), becoming narrower posteriorly, and terminating very near the

hind angle. An oblique black stripe traverses the middle of this orange-tawny belt from the base of the costa to near the middle of the wing. Apical portion of the wing crossed by two yellow macular belts. Hind-wing orange-tawny, with a discal and marginal stripe black. Beneath: nearly the same as above, except that there is a sub-marginal row of silvery-white spots. Thorax black, striped with yellow; collar orange. Antennæ yellow, except at the base, where they are black.

Guatemala, interior.

23.—TITHOREA DUENNA.

♀. Expans. 3″ 10‴. Deep brownish-black. Fore-wing with a short basal longitudinal stripe reddish orange-tawny; apical half of the wing with twelve smallish and equal-sized pale yellow spots, placed irregularly. Hind-wing reddish orange-tawny, costa and outer border to the anal angle, and a short discal stripe from the apex towards the abdominal edge, deep brownish black. Beneath: the same, but paler; the wings having a sub-marginal row of white spots. The sinuses of the wings are edged with white. Abdomen dark orange-tawny. Thorax brown; tippets each with a round yellow spot; collar red. Antennæ black.

This fine species was found only on the elevated table land of Guatemala, near Duenas.

24.—HELICONIUS JUCUNDUS.

Same size and shape as *H. Eucoma* (Hübn. Zutr. 577) and its relatives; colours the same as *H. Ismenius* (Latr. in Humboldt's Zool. pl. 41, f. 5, 6). Outer margin of hind-wing slightly festooned as in most examples of *H. Eucoma*. Fore-wing black, basal third (excluding costa) orange-tawny; the apical portion is crossed by four white macular belts, the third and fourth near together and rather distant from the apex; this distinguishes the species at once from *A. Ismenius*, in which the fourth macular belt is distant from the third, and close to the apical margin of the wing. Hind-wing orange-tawny, a discal stripe (varying in length in different examples,) and the outer border black; the costa also has two black stripes, and the apex has a white spot. Beneath: the same, except that the hind-wing has a marginal row of elongated white spots. Body and antennæ same as in *H. Eucoma*.

Panamá, many examples. One specimen in Mr. Salvin's collection wants the third white macular belt of fore-wing, and approximates *H. Ismenius*.

25.—HELICONIUS XANTHICUS.

Agrees with *H. Jucundus* in every respect, except that the macular belts of fore-wing above and beneath, and the apical spot of the hind-wing above, are yellow instead of white; and that the costa of hind-wing has a sub-marginal black stripe.

Several examples in company with *H. Jucundus*, Panamá. This form, whose distinctness from *H. Jucundus* must at present remain a matter of doubt, connects *H. Jucundus* with *H. Zuleika* (Hewits), an inhabitant of the same countries.

26.—HELICONIUS MAGDALENA.

Same in size and colour as *H. Rhea* (Cramer, 54, c.d.). Differs constantly in both the yellow belts being linear and narrow instead of oblong and broad. The inner belt consists of the same number of spots, but it is only one-half the breadth of the same belt in *H. Rhea*, and terminates in a point on the first median branch nervure. The apical belt is narrow, and extends nearly across the wing to the outer border. Another point of distinction from *H. Rhea* is a narrow white edging or fringe to the hind-wing, always very conspicuous in *H. Magdalena*, but scarcely visible in *H. Rhea*. Beneath: the same, except that the posterior line of red spots in hind-wing is seldom present in *H. Magdalena*.

This form takes the place of the Guiano-Amazonian *H. Rhea* in the valley of the Magdalena and neighbouring regions in New Granada. It seems to be common on the Isthmus of Panamá.

27.—HELICONIUS VERÆPACIS.

Closely allied to *H. Rhea* and *H. Magdalena;* differs in the shape and colour of the pale belts. In colour they are much paler, the apical one especially being nearly white. The basal belt is as broad as it is in *H. Rhea*, but it consists of four distinct spots, and commences in a square form near the costa, terminating in a point on the first median branch nervure. The apical belt is very short, narrow, and interrupted.

This form was found only in the province of Verapaz, interior of Guatemala. All the examples taken agree perfectly in their points of difference from allied forms.*

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* *Heliconius Sprucei.* Similar to *H. Rhea* and *H. Magdalena*, but smaller, 2″ 5‴. The white fringe of the hind-wing is very conspicuous, owing to the edge of the wing itself being also white, and the outer border of the fore-wing is edged with white. Yellow belts of the fore-wing the same in breadth, position, and colour as in *H. Magdalena*.

Western side of Chimborazo, at an altitude of 3-4000 feet. Taken in great numbers by Mr. Spruce. All the examples agree perfectly in their distinctive characters.

28.—HELICONIUS LEUCE.

This is figured in Hübner's "Exotische Schmetterlinge" as *H. Sappho* of Drury, the latter being quite a different species. I have adopted the M.S. name given to it by Dr. Boisduval.

Taken, in some numbers, in the interior provinces of Guatemala.

29.—HELICONIUS GALANTHUS.

Similar in size, shape, and colour to *H. Leuce;* namely, the ground colour is glossy slaty blue, with the extreme borders of the wings black. The fore-wing has in the middle a very large slightly transparent clear white spot, occupying nearly the half of the wing; its outer edge is only a little incurved near the hind border, and has not a prolonged lobe as in *H. Leuce;* a black spot lies on the upper discocellular nervules, which is connected with the black costal border extending to the base. The hind-wing has a series of gray marginal spots increasing in size from the anal angle to the apex. Beneath: fore-wing same as above; hind-wing dark brown; a costal streak, a short discal stripe, and a curved streak parallel to, but distant from, the hind margin, dark reddish; the outer border near the apex has a row of three white spots. Body and antennæ black.

Interior and eastern parts of Guatemala.

30.—HELICONIUS CHIONEUS.

Closely allied to *Hel. Cydno* (Doubled. & Hewits. Gen. Diurn. Lep. pl. 15, f. 3). Ground colour glossy blue-black, becoming gray near the edges of the pale belts. The fore-wing has a large belt of the same shape as in *H. Cydno,* but instead of yellow it is pure white. The hind-wing has a broad sub-marginal white stripe similar to that of *H. Cydno;* it is crossed by nervures, and is so near to the hind margin, that it leaves but a *very narrow* dusky outer border. Beneath: same as above, except that the fore edge of hind-wings is broadly ochreous, and that there are two broad tawny-coloured vittæ across the disk.

Panamá, one example only.

31.—ACRÆA GUATEMALENA.

Expans. 3″ 4‴. Allied to *A. Thalia.* Blackish-brown. Fore-wing with five spots or streaks near the base (between the branches of the median nervure and in the cell), and a belt of four spots, distant from the apex, pale ochreous. Hind-wing with a broad blackish-brown outer border emitting short thick streaks between the nervures; the rest of

the wing pale ochreous, with dark nervures and a dark streak in the middle of the cell. Beneath: the same, but the black borders have all pale ochreous streaks running between the nervures to the margin. Body and antennæ black.

Guatemala.*

32.—ACRÆA LEUCOMELAS.

Expans. 3″ 5‴. Glossy slaty-black. Fore-wing with three large pale ochreous spots in the middle, situated in the end of the cell and in the spaces before and behind the first median branch nervule. Beneath: pale ochreous, nervures and streaks between them dusky. Fore-wing with a very large central ochreous space clear of dusky streaks, base of the wing black; outer edge of the central ochreous space bordered with black. Body and antennæ black.

Guatemala; many examples.

33.—ACRÆA NOX.

Expans. 3″ 5‴. Glossy greenish or bluish-black. Beneath: black; fore-wing with a large triangular sub-basal spot, pale ochreous; a smaller spot of same hue near the base of the hind-wing.

Guatemala; many examples.

DESCRIPTIONS OF THE BRITISH SPECIES OF STENUS.

BY E. C. RYE.

(*Continued from page* 43.)

(Abdomen margined; elytra unspotted.)

ii. legs more or less light in colour, never entirely black.

SPECULATOR, *Boisduval et Lac., Erichson.* 2½ lin. Dull black, winged. Palpi clear testaceous; sometimes darker at the tip, through the internal fluids collecting at the apex in drying. Antennæ fuscous, with the two basal joints shining black. Head gently hollowed. Thorax obsoletely channelled. Elytra robust; as long as, if not longer

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* *Acræa equatoria.* Expans. 1″ 8‴—2″ 0‴. Pale dusky-brown. Fore-wing with a large triangular sub-basal spot (divided by the dusky nervures and a dark spot across the middle of the cell), and a broadish belt, distant from the apex, pale ochreous, semi-transparent. Hind-wing with a broad dusky brown border, emitting long thin streaks between the nervures; rest of the wing pale ochreous, semi-transparent, nervures dusky, a short streak within the cell, and a zigzag line across the disk (sometimes obsolete) dusky. Beneath: the same, except that all the borders are pale ochreous, and have black streaks between the nervures.

Western side of Chimborazo; altitude of 3-4000 feet. Taken by Mr. Spruce. It is curious that nearly every species found in these remarkable elevated valleys are dwarfed in size compared with the same or closely allied species of other regions of Tropical America.

than, the thorax; strongly and closely punctured, slightly rugulose near the scutellum. Abdomen rather shining, closely and much more delicately punctured. Legs testaceous, the femora and tibiæ slightly suffused with pitchy-black at each end; the tarsi pitchy-black. Coxæ black, trochanters pitchy. A thick tuft of grey hairs between the middle coxæ, and thin grey pubescence on the metasternum, the middle of which is depressed, closely and delicately punctured. In the male the hinder femora are thickened: the sixth segment has a deep triangular notch, and the fifth is widely depressed for its entire length, the depression narrowing and becoming more shallow behind, and being polished close to the outer margin, where it terminates in a wide gently rounded emargination; the slightly elevated ridges of this depression end on each side of the emargination in a blunt tooth, and exhibit scanty short yellow hairs. The remaining segments are depressed in the middle, but in a scarcely perceptible degree.

Extremely abundant in marshy places, &c., all over England.

Rogeri, *Kraatz, Ins. Deut.*

providus, *Wat. Cat.* (nec *Erichson*).

Generally rather smaller than *speculator*, from which it differs as follows. It is shining, more coarsely and not quite so closely punctured, and has only rudimentary wings. The palpi are darker at the apex. The head is more deeply and suddenly hollowed. The antennæ are pitchy-black. The thorax is narrower in the middle, with the dorsal channel much more distinct. The elytra are decidedly shorter, straighter at the sides, more strongly but not quite so closely punctured, with the interstices shining. The abdomen is more shining. The legs are more broadly suffused with black. The coxæ are pitchy, and the trochanters fusco-testaceous. The tuft of hair between the middle coxæ is thinner. In the male the notches are much the same as in *speculator*, but the sixth segment is polished in the middle longitudinally; the fifth is more strongly depressed, and polished in the middle for its entire length, with the lateral teeth more prominent; each of the remaining segments exhibits a diminishing longitudinal central depression, with a small polished space on its hinder margin; and, finally, the first, second, third, fourth, and fifth segments have on each side of their central depressions a thin ridge of yellow hairs pointing backwards, gradually getting longer, and forming curls turned inwards.

Not uncommon in the London district, being generally found in wet moss. It also occurs at Cambridge, near Brighton, and in Derbyshire.

I am not aware of the existence, as British, of the true *S. providus*, Er., and the insects I have seen, sent as types of that species by continental Coleopterists, are always *S. Rogeri*, Ktz. The true *S. providus* appears from Erichson's description, to be a dull insect, with the elytra as long as in *speculator*, from which it differs in having the head less hollowed, the thorax more distinctly channelled, the antennæ black, the apical joint of the palpi and the legs darker, and the coxæ and trochanters black. In the male, also, the abdominal characters appear to be much the same as in *S. Rogeri*.

SCRUTATOR, *Erichson, Gen. et Spec. Staph.*, 708, 33. $2\frac{1}{4}$ lin. Closely allied to *speculator*, but rather smaller, the palpi with the second and third joints pitchy, except at the base, the legs pitchy, the femora pitchy-testaceous from the base to beyond the middle, the coxæ black, and the elytra longer, being one-third longer than the thorax. The metasternum is not hairy, and in the male the sixth segment is notched, the fifth having in the middle a wide polished depression, terminating in a wide emargination, on each side of which is an elevated ridge, ending in a somewhat prominent tooth. The fourth segment is slightly depressed in the middle.

Two specimens taken in Richmond Park, Surrey, in May, 1857, by Mr. E. Shepherd, named by Mr. E. W. Janson, and confirmed by Dr. Kraatz, are the only English exponents of this species, as far as I am aware.

SYLVESTER, *Erichson, loc. cit.* 34. 2 lin. Also closely allied to *speculator*, but much smaller, the last joint of the palpi fuscous, and the legs pitchy-testaceous, with the tips of the femora and the tarsi pitchy. In the male the sixth segment has a triangular notch; the fifth exhibits a wide, central, very polished depression, on each side of which is an elevated ridge, ending behind in a prominent tooth, the hinder margin being also widely emarginated, and the fourth, third, and second segments have each also a triangular polished depression, gradually getting obsolete.

A single specimen "from Northumberland" named by Mr. E. W. Janson, and confirmed by Dr. Kraatz, is in the collection of the former gentleman.

LUSTRATOR, *Erichson*. $2\frac{1}{4}$ lin. Allied to *speculator*, but mostly a little smaller, somewhat shining, of a leaden black colour, the palpi pitchy-black, with the first joint and base of the second clear testaceous, the legs more slender and more suffused with pitchy, the eyes more prominent, the punctuation coarser and not so close, and the elytra

a little longer and more convex, with the suture itself broader. The metasternum is more remotely punctured, and but little depressed. In the male the middle tibiæ have at the apex, on the inner side, a very minute spur; the sixth segment has a slight triangular notch; the fifth has a wide triangular emargination, and is polished in the middle longitudinally, but very slightly depressed, having on each side an acute, abruptly elevated keel, not reaching to the hinder margin, and also a slight central tubercle; the remaining segments are slightly depressed in the middle, with long yellow hairs forming curls, as in *S. Rogeri*.

Wicken Fen; also sparingly in the London district from moss, at Wimbledon, Richmond, Shirley, and Croydon. I have a male from Wimbledon in which the ciliation is entirely absent.

GUYNEMERI, *Jacq. Duval, Fairm. et Lab.* 2½ lin. Deep shining black, surface very unequal, in parts "warty"; the basal joint of the palpi, and base of the femora abruptly, bright yellow, the middle of the tibiæ pitchy-testaceous, and the clava of the antennæ fuscous. Head with a shining middle keel, and two interrupted side elevations. Thorax somewhat suddenly contracted behind the middle, with a coarse, shining, interrupted, dorsal channel rather behind the middle, and a wide and deep transverse depression in front. Elytra very coarsely and closely punctured, roughly and irregularly "engine-turned," the interstices shining, confluent, and elevated unevenly. Abdomen broadly margined, rather coarsely punctured at the base and sides of the segments, the keels obsolete, and the transverse depressions hairy. The metasternum is scarcely, if at all, depressed; shining, strongly and rather remotely punctured. In the male the sixth and fifth segments are very shallowly (scarcely perceptibly) emarginated. The abdomen is clothed with scanty long pubescence, which gets thicker towards the apex. Judging from the upper side one is led to expect a corresponding increase of development in the sexual characters of this species; there is, however, scarcely any difference between the male and female in that respect.

Under stones in and near waterfalls (often with Dianöus); at Paisley, Buxton, Matlock, and North Wales.

PRODITOR, *Erichson*. 1⅔ lin. Dull leaden black, rather cylindrical; basal joint, and base of the second joint of palpi, testaceous; the legs pitchy-black or dark pitchy-red, lightest at the base of the femora; eyes very large and prominent. This species most resembles *S. argus*, from which it differs as follows. It is darker in colour and not so much

clothed with grey pubescence; the head is more deeply hollowed in front, with a distinct middle elevation; the elytra are much shorter, not so convex, with the interstices not so flat or wide; the abdomen is more distinctly margined, with the middle keels more distinct. The metasternum is depressed in the middle. In the male the sixth segment has a triangular notch, and the fifth has a middle depression, widest, and polished, towards the hinder margin, which is widely and rather deeply emarginated in a somewhat semi-circular form; on each side of the emargination is an obsolete tubercular elevation.

This species cannot be confounded with small examples of *S. æmulus*, with which it is sometimes found, on account of its dull appearance, shorter elytra, and want of a dorsal channel to the thorax.

First taken by Mr. E. W. Janson at Finchley; subsequently by Messrs. Crotch, Matthews, Power, Brewer, and Sharp, at Wicken and Horning Fens. Both this and the next species are not satisfactorily placed in this section, owing to their dark legs.

ARGUS, *Gravenhorst, Erichson.* $1\frac{1}{2}$—$1\frac{2}{3}$ lin. Leaden black, rather shining, with thick short grey hairs. Basal joint of palpi testaceous, legs pitchy, or pitchy-red, lightest in the male. In this and the preceding species the males are smaller than the females, with broader heads, and narrower, more pointed, abdomens. Head with scarcely any middle elevation. Thorax even. Elytra longer than the thorax, evenly and strongly punctured, rather convex. Abdomen sub-cylindrical, not widely margined, the margins getting fainter towards the apex.

Northumberland, London district, Horning Fen.

SUBMARGINATUS, (*Kirby, M.S.S. and Coll.*) *Stephens.*

vafellus, *Erichson.*

$1\frac{1}{3}$ lin. Leaden black, with short grey pubescence, rather shining; legs pitchy-red, often clear reddish-brown. Head not hollowed, but with two wide furrows, the middle space tolerably elevated. Elytra decidedly longer than the thorax, flatter than in *S. argus*, with the humeral angles more decided; the abdomen also is flatter, more decidedy margined, with the margins distinct at the apex.

Horning Fen, Weybridge and Lincolnshire.

FUSCIPES, *Gravenhorst, Erichson.* $1\frac{1}{3}$ lin. Black, rather shining, the legs varying from dark to light reddish-brown, the knees darkest; more coarsely and not so closely punctured as in *submarginatus*, the elytra more convex and much shorter, and the abdomen more delicately margined. In the male the abdomen is much narrower and more pointed than in the female.

This species is sometimes confounded with *fuscicornis*, in the bi-lobed section, from which it may be known by the short basal joint of its hinder tarsi.

London district, Cambridge and Norfolk Fens, Falkirk.

CIRCULARIS, *Gravenhorst*, *Erichson*. 1—1¼ lin. Dull black, flattened, the two basal joints of antennæ and the palpi testaceous; the legs rufo-testaceous, with the knees darker. Head with a shallow furrow on each side, the interstice wide, scarcely elevated, except a little in the front. Thorax broader than long, the sides strongly rounded, very closely and strongly punctured, the interstices rough. Elytra considerably longer than the thorax, not so closely punctured, with a slight elevation between the scutellum and shoulder. Abdomen flattened, strongly margined and contracted to the apex, the transverse grooves and the keels very distinct.

Eltham, Mickleham, Norwood and Wimbledon. "Once (rather plentifully) in a flood at Bungay, Suffolk" (Mr. Garneys).

NANUS, *Stephens*, *Ill. Mand. V.* 301, 59, 1832 (*and Coll.*)
declaratus, *Erichson*, *Col. Mar. vol.* 1, *pt.* 2, 1839.

1¼ lin. Black, depressed, very slightly shining; the legs dark pitchy-red, though sometimes a little lighter; palpi black, with the basal joint testaceous. Similar in shape and size to *circularis*, but differing from that species in the following points (besides the colour of legs, palpi, and antennæ). The head has two deep furrows, with a sharp, decided, shining, middle elevation. The thorax is flatter, broader, more contracted behind, and with an indistinct broad transverse depression between the middle and the hinder margin. The elytra are flatter, a little longer, and rather more even. The abdomen is not quite so distinctly margined, and the transverse grooves and keels are not so evident.

Abundant all over the kingdom.

PUMILIO, *Erichson*. This species is avowedly included in Mr. G. R. Crotch's "Catalogue of British Coleoptera" on the authority of the "Entomologist's Annual" for 1855, p. 125, 86, where a reference is given to "A. R. Hogan, Zool., p. 4340 (1854)." I find that the Rev. Mr. Hogan records it (loc. cit.) simply as "Stenus pumilio, Er.; common," in a list of Coleoptera captured near Dublin. Dr. E. Perceval Wright has kindly examined for me (with Erichson) the eight or nine specimens representing this species in the Royal Dublin Society's Museum, from Mr. Hogan's collection, and finds that none of

them answer the description of *S. pumilio, Er.* I have also communicated with Mr. Hogan on the point, but that gentleman is unable to find any of his specimens of "pumilio," and believes he must have inserted the species in the Dublin List on the authority of Mr. A. H. Haliday. I therefore append a short notice of the insect in question, which can be accepted or rejected as British according to fancy.

$\frac{5}{6}$ lin. Allied to *circularis* and *nanus, St.*, but much smaller than, and not so flat as, either of them. It may be known from *circularis* by its darker legs, antennæ and palpi, and from *nanus* by the shallow excavation and *slightly* convex interstice of its head, and also by its want of ashy pubescence.

(To be continued.)

NOTES ON COLLECTING, MANAGEMENT, &c. (*LEPIDOPTERA*),

BY H. GUARD KNAGGS, M.D.

The following "Notes," which do not pretend to be perfect, or altogether free from mistakes, are put forth as an endeavour to lead the young Entomologist, whether his tendencies lean towards mere collecting or to instructive observation, to reason for himself as occasion may suggest or require.

No originality is claimed for them, the facts and suggestions contained being already generally known and looked upon as a kind of public property, on which account references have been avoided as giving useless trouble and unnecessarily occupying space.

The writer cannot terminate these few prefatory words without expressing his deep indebtedness to Messrs. C. G. Barrett, Frederick Bond, Henry Doubleday, the Reverend J. Hellins, and other friends, for their kind assistance during the progress of these papers.

THE EGG STATE.

"Ev'ry insect of each different kind,
In its own egg checr'd by the solar rays,
Organs involv'd, and latent life displays."

COLLECTING.

There are two chief ways in which the eggs of *Lepidoptera* may be procured: the first, which has been termed egg hunting, is by finding them after they have been deposited naturally; the second is by allowing or inducing females to lay in captivity.

Egg hunting is a pursuit which from difficulties due to the small size of the objects, and the consummate skill with which they are frequently concealed, has hitherto scarcely met with that amount of attention which the subject deserves; while confessing on the one hand that the eggs of insects certainly *are* comparatively

difficult to find, not only for the above reasons, but also from the facts that obviously they leave no tracks as larvæ do, and that being generally firmly attached they are not to be shaken or beaten from their positions; yet on the other hand I cannot but think that continued and careful observation as to the situations in which eggs are deposited, the time during which the different species remain in the egg state, together with their appearances, disposition, and mode of concealment, would furnish results valuable alike to the collector, the observer of Nature's works, and to Science itself; and it must be admitted that the egg-hunter would sometimes stumble upon batches of such numbers as he could never hope to meet with in the other stages of insect existence, and that too of living embryo individuals hardly ever affected by parasites* unlikely to sicken from change of food and air, and not liable to droop and die from having received an unfortunate knock with the beating stick or unlucky dig with the trowel; besides, the fact that eggs *do* exist in almost infinitely greater numbers than larvæ, pupæ, or imagos, ought to stimulate us to overcome the difficulty.

The **situations** in which eggs are deposited are naturally either upon or in the neighbourhood of the food of the future larvæ, and almost always in such localities as are adapted to the well-being of the species.† A known or likely locality‡ must therefore first be selected as a spot for commencing operations. The more common positions of eggs are upon the surface and in the chinks of bark (frequently, unfortunately, high up on the trunk and branches), on twigs, buds, leaves, flowers, and seeds, of various trees and plants; sometimes on neighbouring objects, as palings, walls, rocks, stones, sods; at others among refuse vegetable and animal matters; now and then loosely scattered upon the ground, or even fixed to aquatic plants beneath the surface of the water; while in some special cases the nests of ants, wasps, and bees, are the situations chosen by the parent female.

A knowledge of the **time** during which the different species remain in the egg state would very materially assist the collector, but little on this question has been chronicled; however, I think that, with few exceptions, the following may be adopted as rules:

Eggs deposited in early spring may be expected to hatch at about the time when the buds of the respective food-plants are ready to burst forth into leaf; but it not unfrequently occurs, even in Nature, that circumstances, which do not affect the eggs, retard the development of the food-plant, and the young larvæ are excluded before food is ready for them, in which case they generally pierce and feed within buds, catkins, &c., until such time as the leaves have become expanded, when, after feeding up in a variable time, they change to chrysalides, in which state the winter is passed.

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* The eggs of *Lepidoptera* are rarely affected with parasites; perhaps those of *Orgyia Antiqua*, and *Pudibunda*, are most subject to the attacks of such species as *Microgaster ovulorum*.

† Occasionally, however, as in the instance of females attracted to light, which have been known to deposit on the bars of the lamp, eggs are deposited in such situations as cannot possibly afford a chance to the future larva.

‡ By a "likely locality," I mean one which, having the required food, has a similar soil, altitude, temperature, amount of moisture or dryness, shelter or openness, to one which the insect looked for is known to inhabit; thus, the collector will rarely stand a chance of finding upon a gravelly soil a species which is attached to the chalk or limestone, or a mountain species in the valleys, or a heat-loving species in a bleak locality, a fen-insect on high and dry ground, or an inhabitant of a dense wood upon the open moors, &c.

Eggs laid in spring and early summer usually hatch in a fortnight or three weeks, the species also feeding up and passing the winter in the chrysalis state.

Eggs deposited late in the summer and early autumn months in two or three weeks produce larvæ which feed up more or less slowly and frequently hybernate.

While *eggs deposited in the latter months of the year* do not usually hatch until the following spring.

It may here be well to mention a few special cases, namely, *double-brooded species*, of which there are two groups, "spring and summer brooded," and "summer and autumn brooded;" the eggs of both broods of the former group hatch quickly (in 10 days or so), the larvæ feeding up and changing to pupæ, in which state the winter is passed; the eggs of first batch of second group do likewise, but those of the last batch either do not hatch till spring, or hatching the larvæ hybernate. Some eggs laid in summer, as for instance those of *Cidaria dotata*, do not hatch until the following spring; with other eggs there is sometimes the peculiarity of hatching at intervals, thus those of *Ennomos fuscantaria* seem to hatch at intervals of two or three days from the end of May to the end of June. Another exceptional case is that of *insects which hybernate in the perfect state;* these do not generally lay, or even pair, until the following spring.

Of course it stands to reason that eggs are laid during some period of the lifetime of the parent female, and that, therefore, when a species has been on the wing for some time, or more surely, if it be getting over, it is time to begin to look for the eggs; but, whereas some species deposit even directly after copulation, others do not lay until a variable, sometimes very considerable, time afterwards.

The **appearance,** disposition, and mode of concealment of the eggs of the *Lepidoptera* are highly interesting points, not only to the egg-hunter, but to every thoughtful observer; that the eye should become familiarised with the general aspect of these objects as they appear in Nature is of the utmost importance to him who would successfully follow the pursuit of egg-hunting. Probably most of us are acquainted with the appearances of the eggs of many species, as for instance, the conical ridged egg of *Pieris Brassicæ*, the fluted barrel-shaped eggs of *Vanessa Urticæ*, the pointed egg of *Gonepteryx Rhamni* placed singly upon the terminal shoots of buckthorn, the large oval green egg of *Smerinthus Populi* deposited singly upon poplar leaves, the masses deposited by *Zygæna* and *Zeuzera*, the latter in the chinks of bark, the fast-blackening globules of the female *Hepialus Humuli* as she sows them broadcast, the pearly beads of the *Lithosidæ* and *Chelonidæ* neatly placed in batches, the beautiful egg of *A. Villica* being iridescent like mother-of-pearl, the ringed egg of the Drinker Moth deposited on blades of grass, the batches of *C. Neustria* and *E. Lanestris* arranged spirally round twigs and coated over with protecting varnish, the colour-changing eggs of *Endromis* placed in small batches upon the twigs of birch, and of *Saturnia* on heather bramble and other plants, the somewhat cup-like-looking eggs of *Orgyia* coating the old cocoon of the nearly apterous female, the brown hemispherical eggs of *Dicranura Vinula*, and the black drops of its smaller congeners *Bifida* and *Furcula* firmly fixed by their bases in groups of twos and threes upon the upper sides of the leaves of willow and poplar, the pale drop-like eggs of the *Notodontidæ* sparsely scattered upon the leaves of their special food-plants, the ragged egg of *D. Cæruleocephala*, the neatly placed brick-shaped eggs of

the genus *Ennomos*, the green imbricated patches of small eggs of *Biston*, and those of *Boarmia* disposed of by the female in suitable chinks and crevices, the oval pearly eggs of *Melanthia* and *Cidaria* often so amazingly large when compared with the size of the parent moth, the scale-like egg of the *Tortrix*, and many others, which, when we come to know them well, will lead us to deduce analogies of the utmost assistance in previously forming an opinion as to where and what-like will be the egg of any particular species of which we may be desirous of going in quest.

And an examination of the anal segment of a female specimen would also afford us a means of making a fair guess at the situation and mode of concealment of its eggs. Thus—should she be provided with a longish protruded ovipositor, as *Zeuzera*, *Cossus*, *Boarmia*, *Euperia*, the inference would be that the eggs would be found deposited deeply in the chinks of bark; should the abdomen be pointed with concealed or only slightly projecting ovipostor, as in some of the *Cosmidæ*, *Dianthæcidæ*, *Hibernidæ*, *Eupithecidæ*, and other geometers, the probability would be that the species would deposit its eggs in flowers, or in axils of leaves, buds, &c.; should the abdomen be blunt, the eggs may be expected upon leaves, twigs, &c.; while, if the anal segment be tufted, the eggs will be found in patches, felted over with downy fur, and generally upon the surface of bark and twigs.

In **searching** upon trees, bushes, &c., it is advisable to carefully scrutinise each leaf, foot stalk, and twig, from different aspects, which may be done by turning the branch under examination about in such a manner as to get successive views of the upper and under sides of leaves, and the circumference of the twigs; it is also a good plan to look at the branch against a rather strong light. Of course, whenever any unusual speck, spot, or patch arrests the attention, the collector must satisfy himself as to the cause of it. He will generally find that the under sides of the leaves are the most favoured positions, but some species, as the *Dicranuridæ*, select the upper surface; eggs are most frequently placed near the midrib and towards the apex of the leaf; the eggs of some moths are deposited in autumn upon the axils of leaves, and remain there through the winter, as for example those of *O. Lota* and *Tethea Retusa*, and from this cause thousands of these species are destroyed by the basket makers, who cut down the "witheys" in winter; the eggs of other species are placed in the buds, especially of the terminal shoots, as in the case of *G. Rhamni*. The species which subsist on flowers and seeds, as most of the *Eupithecidæ*, *Dianthæcidæ*, *Xanthidæ*, and *Erastria Venustula*, probably deposit at the base of the petals or soft ovary, or on the flower stalks of Umbelliferæ, &c., as the case may be; the eggs of internal grass feeders will usually be deposited in or about the axil of the sheath around the stem, while those of wood and bark feeding species will generally be placed in chinks of bark, though *Sesia Bembeciformis* certainly deposits naturally upon the leaves; the eggs of low plant feeders may be most likely detected on the under sides of the leaves of their food-plant, on adjacent stems of grasses, or on other plants or objects in the neighbourhood.

A consideration of the foregoing remarks would seem to indicate that, while for real instructive observation the eggs of all species should be carefully sought, and when found made note of, so far as the mere desire to possess is concerned but a partial success may be expected, for assuredly of most species the eggs will be far more easily obtainable by the following plan:

Allowing or inducing Lepidopterous females to lay in captivity is a process well worth attention, and since it has been adopted by energetic breeders has well repaid the almost daily care which necessarily attend and follow it. Some species deposit freely enough, even when shut up in a pill box or impaled with a pin, requiring no inducement to the act; but many, unless properly managed, are apt to disappoint the collector's hopes in this respect. Among those which will be found to lay freely I may mention the *Smerinthi*, the *Hepialidæ*, *Lithosidæ*, *Chelonidæ*, *Liparidæ*, *Bombycidæ*, (indeed, most of the true *Bombyces*,) *Coremia*, *Hibernia*, *Cidaria*, and many other *Geometræ*, *Dicranura*, *Clostera*, and several *Notodontidæ*, *Acronycta*, *Xylophasia*, some of the *Tæniocampas* and *Xanthias*, the genus *Pyralis*, *Hydrocampa*, *Pterophorus*, &c.; others, on the contrary, require such inducements as space, admission of the sun's rays, nutriment, presence of food-plant, suitable cracks and surfaces in which and on which to deposit, and other conditions which may from time to time suggest themselves to the observant Entomologist.

Butterflies, as a rule, require space, admission of sun's rays, presence of food-plant (especially of the flowers), air, &c., as incentives to laying, but some species, as *A. Galathea*, *Argynnis Euphrosyne*, *Paphia*, *Satyrus Ægeria*, *Hyperanthus*, *Chortobius Pamphilus*, &c., will generally lay freely enough if only the three latter conditions be complied with; again, the day-flying sphinges, as *Macroglossa* and *Sesia* will of course require the sun's rays and space,* while some of the autumn species, as *S. Convolvuli*,† *A. Atropos*, and *C. Celerio*, would probably not deposit naturally until after hybernation, when they also would require space.

The **Bombyces** generally lay pretty freely; when shut up in a pill box it is advisable to leave the lid a little open on one side so that the enclosed insect may not be stifled, or the top of the lid may be knocked out and gauze substituted for it, and kept in place by the rim of it. The tongued *Bombyces*, as the *Lithosidæ* and the Hook-tips, should be allowed to sip from a sponge moistened with honey and water; and to the species whose females naturally deposit eggs in bright sunshine, as the day-flying Hook-tips, the sun's rays should of course have free admission.

Many **Geometræ** require nourishment, as afforded by the damp sweetened sponge, and some seem particular as to the surface upon which they deposit, one seeming to like deep chinks in rough bark or slits in a chip box, as *Nyssia*, *Biston*, *Boarmia*; another, as *Epione*, preferring a corner, such as that formed when the chip of the circumference of a willow box overlaps, a third, as *Cidaria*, depositing at the tips of any little projections from the surface, while a fourth is not satisfied unless she lays her eggs among some loose texture, as the folds of muslin, and so on.

The **Noctuæ** more than all require the stimulus of the sweetened sponge, as they are a class of insects which are apt to delay oviposition until sometimes a very long period after impregnation, it not unfrequently happening that they die without depositing their ova. In their case, as with the Geometers, we must first place the females in a suitable chamber, such as a child's toy box *loosely* lined with paper

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* *M. Stellatarum* deposits its eggs while on the wing as it hovers, curling its abdomen forwards and upwards so as to place the egg upon the under surface of the leaf of its food-plant the bedstraw. *Fuciformis* probably does the same upon the leaves of the honeysuckle.

† Mr. D'Orville once squeezed an egg from the body of a female *S. Convolvuli* which *hatched* late in September!!!

(for facility of the subsequent removal of the eggs), and having a piece of gauze or leno substituted for the wooden top of the lid. The sweetened sponge may be pinned to the side of her cage, from which she will generally be found to sip freely; in order, however, to make sure of her having a taste, place the sponge in front of her palpi and then very gently blow towards her, when she will immediately unfold her tongue and partake of the nectar.

It must be borne in mind that the males of some species, as *Bombyx*, *Saturnia*, *Endromis*, fly by day in quest of their respective females, but that the females do not generally fly or deposit their eggs until the evening has set in. As a rule the food-plant should be introduced to laying females, it can never do harm, and may sometimes be the means of procuring eggs otherwise unobtainable; and I may just note here that the introduction of a gas or lamp light to an apartment in which a female is depositing will, in most cases, stop the process, though in others this very means may be adopted as an incentive to lay; and it is sometimes noticed that a female with which every inducement had failed, has laid freely enough after having been treated with oxalic acid; and even the plan of actually squeezing out eggs from the body of a refractory female appears to have met with, at any rate, partial success in more cases than one.

(*To be continued.*)

Captures of Phytometra ænea and Eupithecia lariciata.—I took *Phytometra ænea* somewhat plentifully on April 29th in St. Leonard's Forest. Most of the specimens were poor, and had evidently been out some time. Mr. Stainton's Manual gives the date of its appearance as June and July.

I have been also taking rather freely the new pug *Eupithecia lariciata*, and shall be glad to distribute it as far as my supply goes. The specimens are not first-rate, having been taken rather too late.—Dr. Battershell Gill, 5, Cambridge Place, Regent's Park, N.W.

Description of the larva of Tethea subtusa.—The eggs of this species are probably laid at the end of July and throughout August on the young twigs of poplar. The larva hatches in the following spring, as soon as the young buds burst into leaf; it immediately spins two leaves together, and continues this practice during the whole of the larval state. Like some other species, it effects the various changes of skin in the same situation. In confinement it appears to feed only at night. The following is a description of the full-grown larva, which is not at all variable either in colour or markings:—pale yellowish-green, rather glossy, not unlike *dictæa*. The dorsal stripe broad, pale yellow, much more so than the ground colour. Spiracular line the same; along this latter is a row of black rings, somewhat oval, having a pale yellow centre. There is one such ring in the second and ten following segments. Just midway between the dorsal and spiracular lines is another slender, clear yellow stripe, slightly interrupted by the segmental divisions. Head chrome yellow, bordered with black. Mouth and prolegs black, slightly mottled with yellow. The larva lies curled up between two leaves spun together, and in this position, when in a state of nature, may easily be detected by looking up at the leaves. Pupa

subterranean ; pupa case weak. The larva is full grown about the end of May, and the perfect insect appears throughout July. It appears widely distributed, and not uncommon.—Rev. J. Greene, Cubley Rectory, Doveridge, Derby, *July 12th*, 1864.

Description of the larva of Thera coniferata.—At the beginning of the present year a few eggs was sent to me by a friend. Six hatched, of these only *one*, I am sorry to say, came to maturity. When full grown it was short and stumpy, extremely like the larvæ of some of the *Eupithecie*. Head pale brown. Ground colour grass green. Dorsal line broad, pure bluish white ; this is bordered on each side by a slender stripe of the same colour. Spiracular line the same. These stripes are all very clear and well defined. Segmental divisions yellow. Prolegs pink. There are no dots or marks. It is one of the most sluggish creatures I ever saw, lying, for hours—even days, in the same place, just stretching itself to get at the food within reach. It remained a long time in the larval state, as it was hatched the third week in March and did not spin up till June 6th. It effected this change between moss and the sprig of juniper, on which it was feeding, so unwilling was it even then to move. The pupa is dark grass green, abdominal segments lighter. The perfect insect appears in three weeks.—*Id.*

Xylina conspicillaris.—In the first number of the *Entomologist's Monthly Magazine* is a notice from the Rev. E. Horton to the effect, that he had bred one fine specimen of this very rare species. I think it only due to Mr. Horton to state (what his own modesty withheld) that, owing to his generosity, the specimen is now in my collection.

In No. 2 is a communication about *Eupithecia lariciata*. Will your correspondent kindly give a few more particulars, as I know nothing about this species?—*Id.*

Cidaria sagittata bred.—My friend, Mr. Buckler, has lately bred the moths from larvæ received from Mr. Alfred Fryer, of Chatterns, both in 1862 and 1863, thus for ever putting an end to all doubts as to the true history of this species.—Rev. J. Hellins, Exeter, *July*, 1864.

Habits and description of the larva of Lozogramma petraria.—A captured moth laid me some eggs on the 10th May of this summer. These at first were pale straw coloured, soon turned bright red, and afterwards became dingy. The larvæ hatched on 28th May, and fed throughout most freely on common fern (*Pteris aquilina*) ; they rested at full length, but when disturbed twisted into knots and jumped about angrily ; they went to earth during the last week in June.

The larvæ assimilate well in appearance to their food-plant, and must be hard to detect ; when full fed their length is rather over an inch, shape cylindrical, and of uniform size throughout, except that the segmental folds look contracted, and the head is rather flattened. The ground colour olive green, belly paler, more olive-grey ; some individuals had a slight reddish tint. At first sight the whole larva seems to be covered with very slender chocolate-brown longitudinal lines—I could count at least 24 all round the body, but on examination it is seen that these are arranged in pairs ; thus, there is a double dorsal, and three double sub-dorsal lines, the lowest being darkest and thickest. The spiracles black, below them a creamy white line ; and the belly is striped somewhat like the back, only that the lines are more diffuse and not so numerous ; the segmental folds are red.—*Id.*

Habits and description of the larva of Acidalia immutata.—I received eggs of this species from Dr. Knaggs on 18th July, 1863, and the larvæ hatched on July 22nd. They chose for their food *Polygonum aviculare*, but did not attain any great size before hybernation; through the winter they rested on the withered stems of their food-plant, and did not begin to feed again in spring till the young seedlings of the *Polygonum* had put out their second pair of leaves, when they seemed to find out that it was time to commence to eat again. They attained their full growth during the last week in May and first week in June of the present summer, and spun themselves up in silken cocoons under some short moss which had grown upon the surface of the earth in their flower-pot. The first moth emerged on July 2nd.

When full grown the larva is about 1¼ inch long. In shape cylindrical, slightly puffed at the spiracles, tapering evenly towards the head, which is small and round; the whole skin is ribbed in rings which go quite round the body. The ground colour is a warm stone-coloured tint, and there is a dusky dorsal line forming two small dots at each segmental division; above the spiracles an irregular double dusky line; spiracles black, placed in a stripe rather paler than the ground colour, below which comes another dusky line, darkest on its upper edge and fading off below.

The larva described above, in structure and colouring resembles those of *Acidalia fumata*, *promutata*, and *imitaria*, except that the two last are longer; and it is altogether different from the type furnished by the shorter, stiff, and flattish larvæ of *A. subsericeata*, *incanata*, *aversata*, *inornata*, and *osseata*.—Rev. J. Hellins, Exeter.

Acidalia promutata.—Three or four seasons following I have reared one or two of the larvæ of this species upon yarrow and mugwort to nearly full growth, when without any apparent reason they have all sickened and died. I should much like to hear from any one who has been more successful.—*Id.*

Captures on the Cotswolds.—When at Dinsby, on the 19th of May, in a three hours' recreative ramble on the north hill-side and summit of Stinchcombe, one of the most prominent of the Cotswold range, I was happy to meet with *Argynnis Euphrosyne, Melitæa Artemis, and Nemeobius Lucina.*—W. Farren White, The Vicarage, Stonehouse, Gloucester.

Captures in the neighbourhood of Wandsworth.—Up to the end of May I have met with the following species at Coombe Wood:—*Argynnis Euphrosyne* (flying in the open parts); *T. punctulata*, *Ephyra porata*, *punctata*, and *pendularia* (by beating); *Eupisteria heparata* (very local, I only found it in one particular glade); *Numeria pulveraria* (by beating); *Ypsipetes impluviata* (by beating amongst alders); *Platypteryx Falcula* (from birch). Whilst mothing in my garden I have also met with *Coremia unidentaria*, (*ferrugata* does not appear to be common here), *Scotosia certata* and *Xylocampa lithorhiza*. And on Wimbledon Common I collected eighteen larvæ of *Orgyia Gonostigma*.—G. B. Longstaff, South-fields, Wandsworth.

Stauropus Fagi, near Aylesbury.—While searching for examples of *Cidaria silaceata*, in Drayton Wood, yesterday, I was fortunate enough to find a fine male of *Stauropus Fagi* at rest on a small fir tree, it looked as fresh as if it had just emerged from its pupa. I may also mention that I took a female specimen of *Notodonta Cucullina* last May in the same locality.—W. E. Parsons, New Road, Aylesbury, Bucks.—*June 14th*, 1864.

Charocampa Porcellus, in Gloucestershire.—I took two specimens of *C. Porcellus* in good condition, hovering over honeysuckle *just between daylight and dusk*; one on June 1st, and the other on June 9th. I cannot find this locality given; I did not observe any larvæ last season.—Rev. E. Hallet Todd, Windrush, Burford (the eastern extremity of the Cotswold).

An instance of parasitism in which a chrysalis of Chelonia Caja produced a living moth and larvæ of a Hymenopterous insect at the same time.—It is well known that the parasites on larvæ usually kill them before the transformation into pupæ, or at any rate, do not allow them to assume the perfect state. M. Künckel has communicated to me a somewhat rare case, in which parasitism has permitted of the appearance of the imago. It occurred to a female of *Chelonia Caja*, which made its appearance alive, but with the wings crippled, at the same time that the parasitic larvæ came out of the chrysalis. Do facts of this kind perhaps explain certain abortions in the imagines of *Lepidoptera* in the natural state? The parasites belonged here to the *Hymenoptera*, for the larva showed traces of punctures, and the little cocoons were found in the cocoon spun by the larva. Robineau-Desvoidy cites an analagous instance among the *Diptera* (Essai sur les *Myodaires*, t. 2, 1830, p. 28.) M. Carcel, he writes, has seen *Phryxe* emerge from the imago of *Sphinx Ligustri*. (M. Maurice Girard in the "Annales de la Société Entomologique de France," 4me série, 4me tome, 1864, premier trimestre.)

Eupithecia tripunctata.—I bred this insect on the 20th April from eggs obtained from a captured specimen in the month of August, 1863. By keeping the sexes together and feeding them with honey, I succeeded in getting some eggs, and the larvæ hatched on the 9th May. They were placed on the umbels of *Anthriscus sylvestris*, then the only umbelliferous plant in flower, and so rapid was their growth that, to my great surprise, one larva was full grown and went into pupa on the 22nd May. By the 26th May all the remaining larvæ had assumed the pupa state. In all my experience of insect breeding this is certainly the most remarkable case that has occurred. It may probably, in some degree, be attributed to the unusually high temperature that prevailed in the month of May. The perfect insects began to emerge on the 5th inst., and a finer specimen than the first (a female) I never saw.

The question now arises, is this insect double brooded? In confinement I have proved it to be so; but I cannot satisfy myself that it is so in the natural state.

At the time I had the larvæ feeding I examined and beat hundreds of plants, in different localities, of *Anthriscus sylvestris*, and could find no trace of *Eupithecia* larvæ, nothing but larvæ of *Depressariæ*, nor have I ever captured a specimen of the insect earlier than the end of July.—H. D'Orville, Alphington, near Exeter, *July 7th*.

Habits of Madopa salicalis, Eupœcilia ambiguana, &c.—On the 25th May last I was collecting in the woods in company with a gentleman visiting here, who, although not himself an Entomologist, was amusing himself by catching insects for a friend in London. I had just walked up a grassy path and secured two or three *Nemeobius Lucina*, when my companion came to me to know whether a moth that he had just boxed was worth keeping or not. I peeped, and saw—*Madopa salicalis*. My state of excitement may be imagined, and it was not lessened when my friend,

two or three minutes afterwards, started another out of the grass and caught it. We both worked hard the rest of the afternoon, but did not see more. However, by repeated visits to the place on subsequent days I managed to secure a few specimens.

The habits of this species appear to be modified according to the season. Two years ago, when the ground was very wet, my specimens all occurred in low bushes of beech or oak, while those I took this year, when the weather was hot and the ground pretty dry, were all hiding among the long grass and rushes in the wood-paths, apparently seeking the coolest places. They were generally very quiet in their habits, starting up before my feet and settling again in the grass at the distance of a few yards; but one specimen flew quite wildly over the bushes, and gave me a pretty chase, and two or three others I think I lost that way.

Its flight closely resembles that of *Crambus pratellus*, which of course abounds at the same place, but *M. salicalis* shows the dark grey colour of the fore-wings even when flying. It is, however, very hard to distinguish them from specimens of *Botys fuscalis*, which only look a little smaller. I met with one specimen about 10 o'clock in the morning, but all the rest occurred between 2 and 6 p.m., and one which I captured about the latter hour seemed to be taking its evening flight.

It must, however, also fly after dark, as I took one some years ago at a gas lamp at night. It cannot at any time be very active, since I have never taken a worn specimen, the last captured on June 9th being as fine as the first. The fore-wings, however, appear to be very brittle, and liable to have little bits broken out of the hind margin.

A few specimens of *Lobophora sexalata* occur here every June. In the earlier part of the day they rest, I believe, on the trunks of trees or large bushes, but towards 4 or 5 o'clock p.m. they seem to mount to the upper parts of the sallow bushes, and on a hot afternoon will fly off directly one comes near, and flit about in a rather excited manner. I have known them dart off when I have been several yards away, and not looking for them. On cooler afternoons they may be easily beaten out of the bushes. They fly in the very early dusk, rather before most other *Geometræ*, and their flight is then very gentle. This species seems to frequent almost exclusively sallow hedges; I have hardly ever taken it in woods.

Eupœcilia ambiguana has again occurred among *Rhamnus Frangula*, and among that alone. It is easily beaten out of the bushes in the afternoon, and looks very distinct on the wing, as, from its steady flight, the broad dark bar across the wings is rather conspicuous. Its time of flight is about sunset.

The place where I take it every year is just within the border of Sussex, but this year I beat a specimen from a buckthorn bush in a wood in Surrey, probably its first occurrence in this county.—Chas. G. Barrett, Haslemere, 11*th July*, 1864.

On the re-appearance of some Lepidoptera unnoticed since the year 1860.—The following observations apply exclusively to the Midland Counties of England, and especially to the valley of the Trent, which suffered more severely than most other parts of the country, both in its fauna and flora, during the wet and sunless summer and intensely severe winter of 1860; from that time many of our commoner Lepidopterous insects became rare, and various larvæ, which one

used to meet with in every rural and suburban walk during their respective seasons of existence, disappeared. It is now interesting to mark how nature is gradually resuming her normal state. *Trachea piniperda*, which we took freely in the imago state at sallows, and in the larval state on its food-plant (*Pinus sylvestris*), had, since 1860, almost disappeared, but is now yearly increasing in number. The plump larva of *Diloba cæruleocephala*, which formerly met the eye as it lay extended along the tender shoots of the hawthorn and crabtree, was not seen for several years, but it is again abundant in the particular part of this parish which is its chosen locality. *Porthesia auriflua*, whose larvæ, juveniles with entomological proclivities, delight in gathering, cramming them by the score into purloined lucifer-match boxes, or other available but unsanitary receptacles, and whose almost spotless white-winged imago attracts the attention of the most unobservant as it sits conspicuous on the hedge, or sails heavily across his path at twilight, was last year, for the first time since 1860, tolerably common, and this summer the larva is in profusion. *Smerinthus ocellatus* and *Odonestis potatoria*, both of which disappeared, are again showing themselves sparingly. One "old familiar face" has so far failed to re-appear, I allude to *Sphinx Ligustri*, whose delicate pulpy larva was unable to reach maturity during the wet summer alluded to, and to the present time, although diligently sought for year by year in its former haunts, not a single individual has been taken. On the other hand, *Sm. Populi* and *C. vinula* suffered little, and have appeared regularly; the latter is now abundant. This list might be greatly extended, but the above is sufficient to show that there are ups and downs even in insect life, and no doubt have been through all time past.—George Gascoyne, *June*, 1864.

Coleoptera near Lowestoft.—In the end of June, 1861, I had a few days' collecting in the neighbourhood of Lowestoft; the weather was very hot, and insects were very plentiful. Amongst my captures the following are the more remarkable:

Inland I took the following species:—*Harpalus luteicornis*, Dufts.; I took a female of this very rare insect at the roots of grass, near Carlton Church. *Falagria thoracica*, Steph.; in dung near Kirkly, a village about a mile west of Lowestoft. *Ocypus ater*, Grav.; one specimen under a stone on the margin of a pond at Mutford. *Ischnomera melanura*, Lin.; one specimen on a door-step.

On the sea shore the following occurred:—*Tarus axillaris*, Fabr.; one specimen found by my father under a piece of dry dung, on the denes north of Lowestoft, a curious locality for it, as it generally occurs on chalky soils, whereas the above locality is on the sand. *Dyschirius politus*, Dej.; one specimen under a stone. *Calathus flavipes*, Fourc.; abundant near Yarmouth, at the roots of grass. *Anchomenus gracilipes*, Dufts.; one specimen at the roots of grass near Kessingland, a village about three miles south of Lowestoft; another was found by my father under a stone about a mile north of Lowestoft. *Amara consularis*, Dufts.; one specimen under a stone, near Kessingland. *Amara fulva*, Dej.; common near Lowestoft, under stones and rejectamenta. *Quedius semiobscurus*, Marsh; under rejectamenta. *Lathrobium pallidum*, Nordm.; four specimens running on the sands just above high water mark, between Lowestoft and Pakefield. *Achenium depressum*, Grav.; under rejectamenta. *Notoxus monoceros*, Lin.; common at the roots of grass, running into numberless varieties, some quite black.—E. Saunders, Hillfield, Reigate.

Nemosoma elongata.—In 1860 I found a pair of this rare insect under the bark of an old paling, on the bank of the Avon, near Bath.—V. C. de Rivaz, 4, Shrewsbury Road, W.

Occurrence of Cordulia arctica in Ireland.—I have in my cabinet a male of *Cordulia arctica*, Zetterstedt, taken at Killarney, in 1862, by Mr. Birchall, and presented to me by that gentleman. This dragon-fly had hitherto only been found in one British locality, Rannoch, Perthshire. Being undoubtedly a northern species, one would scarcely have suspected its occurrence in the south-west of Ireland, but Mr. Birchall remarks that he has found *Cœnonympha davus* and *Hadena rectilinea* at the same place, neither of which occurs in the southern parts of England. De Selys-Longchamps mentions that it has been taken on an elevated heath near Arlon in Belgium, a locality still further south. The figure of the appendices in the "Revue des Odonates" is very characteristic.—Robert McLachlan, Forest Hill, 15*th July*, 1864.

Entomological Society of London, *July 4th*, 1864.—A. R. Wallace, Esq., F.Z.S., Vice-President, in the Chair.

Professor Westwood called the attention of the members present to a valuable paper in the Transactions of the Russian Entomological Society, by Kolenati, on the *Nycteribidæ*, a tribe of flies parasitic on bats, in which several new genera were founded.

Mr. Wallace stated, that during his travels he had found a few of these insects on bats, but that they were not nearly so abundant as the allied parasitic insects on birds.

Mr. Tegetmeier exhibited the piece of comb which he had mentioned at the June meeting, showing clearly the line of new wax by which the bees had fastened it to the frame, without any swarm having taken place, and when the workers were of course unaccompanied by the queen. His attention had been first called to it by observing some scales of new wax which had been dropped on the floor of the hive.

Mr. Tegetmeier also exhibited some pieces of comb containing cells of various sizes and forms, some of which were circular, some hemispherical, some pentagonal, and others hexagonal, and observed, that according to his views, the bees commenced by excavating hemispherical depressions, which as they became larger and came into contact, *of necessity assumed* the hexagonal form.

Mr. Smith read a short notice by Mr. Stone of the mode by which he had contrived to make the wasps erect the singular structures which had been exhibited at the June meeting.

Mr. Stainton exhibited some specimens of a *Gelechia*, which had been bred by Mr. Thomas Brown, of Cambridge, from larvæ collected last autumn in the fens on *Lathyrus palustris*. The insect had hitherto been supposed identical with the Continental *nigricostella*, which it closely resembled, but a comparison of bred specimens of the two insects showed that they were distinct, and Mr. Stainton proposed for the species bred from the *Lathyrus palustris* the name of *Gelechia Lathyri*.

Professor Westwood stated, that from the larvæ exhibited by Captain Cox at the May meeting of the Society, and which had been found amongst bran, he had reared some beautiful specimens of *Pyralis farinalis*.

A paper by Mr. Roland Trimen, on New South African Butterflies, in which fifteen new species were described, was then read by the Secretary.

DESCRIPTIONS OF TWO NEW SPECIES OF *GELECHIA*, AND A NEW SPECIES OF *COLEOPHORA*; WITH REMARKS ON *COLEOPHORA OLIVACEELLA* AND *C. SOLITARIELLA*.

BY G. G. MÜHLIG, FRANKFORT-ON-THE-MAIN.

Translated from the "Stettiner Entomologische Zeitung," Nos. 1-3, 1864, *pp.* 101-103,

BY ALICE A. DOUGLAS.

GELECHIA TRIATOMEA, *Mühlig.*

Alis anticis cinereis, atomis tribus nigris vix conspicuis, fascia clara in margine exteriori et interiori conspicua, medio obsoleta; palpis obscuris; antennis griseis, albido annulatis; capite, thorace, corpore griseis.

Fore-wings dark ash coloured, with three black, scarcely perceptible atoms, one in the middle, and two perpendicularly-placed towards the apex; the pale fascia is distinct on the costa and inner margin, in the middle it is almost obsolete. Palpi blackish; antennæ two-thirds the length of the wings, annulated with grey and white. Head, thorax, and the abdomen (which is not flatly depressed), also grey; on the former, behind the base of the antennæ, stand two brownish tufts of hair. Marginal line and cilia of the fore-wings dark grey, the margin of the under-wings yellowish, towards the apex subsiding into grey; the cilia grey. Legs blackish, ringed with white.

In habit and colour the moth resembles *Gelechia Populella*, L., but it scarcely attains the size of *G. tenebrosella*, Zel.

The first time of its appearance was in the beginning of August, 1862. Unfortunately the larva escaped my observation; the insect appeared in a cage, where I fed known species with different plants. I strongly suspect that it was brought in with *Cratægus oxyacantha.*

GELECHIA MOROSA (*Frey. in litt.*), *Mühlig.*

Alis anticis obscure cinereo-griseis, fere nigris, apice alarum squamis nonnullis canis adspersa, margine et ciliis obscure griseis. Palpis antennisque nigris, his canis annulatis. Capite, thorace, corpore, obscure griseis.

Fore-wings dark ash-coloured, almost black; towards the coarsely scaled apex here and there a few pale grey scales stand forth. Palpi and antennæ black, the latter with scarcely perceptibly paler annulations. Head smooth, thorax and abdomen dark grey, marginal line and cilia of both pairs of wings dark grey, the legs paler.

In size the same as the preceding species, but the wings are much narrower and more pointed.

The first time of appearance was in the middle of July, 1858.

The larva I found in the beginning of May the same year, in the fresh terminal shoots of *Lysimachia vulgaris*.

Coleophora musculella, *Mühlig*.

Alis anticis luteo-fuscis, margine anteriori albido. Medio alarum lineis duabus albidis, quarum prima e basi nata ad angulum analem, altera ad apicem alarum pertinet. Margine interiori aliquantum albido limbato, alis posterioribus et ciliis griseis. Palpis antennisque albidis, his nigro-annulatis; capite brunneo hirsuto; thoracis lateribus albidis, medio brunneo, corpore pedibusque obscurioribus.

Fore-wings dark luteous, the costa white. In the middle of the wing two white lines, one springing out of the base ending at the anal angle, the second extending from about the end of the first to the apex of the wing. Inner margin narrowly white, under-wings and cilia grey, palpi and antennæ white, ringed with black. Head covered with brown hairs; thorax laterally white, in the middle brown; abdomen and legs darker.

The first time of appearance was in the middle of July, 1860.

Next to *Col. juncicolella*, this is the smallest species of *Coleophora*. In habit and colour it is somewhat near to *saponariella*, Heeg.

The case granulated with grey, longitudinally angulated, the hollows dark (not black, as in *saponariella*); mouth slightly curved; the hinder end three-cornered, tapering to a point.

The larva lives through the winter, from September till the beginning of May, when it is full fed, on *Dianthus superbus* and *Dianthus Carthusianorum*. It betrays itself by the spots mined by it in the leaves, which appear almost snow white.

FROM MY NOTES.

Coleophora olivaceella and *C. solitariella*.

The assertion has been repeatedly made that *Coleophora olivaceella*, St., and *C. solitariella*, Zell., are only one species, indeed, that one is the female of the other.

Though it is not to be denied that it is difficult for the most experienced author himself to determine instantly, with certainty, a single specimen of these species, yet, even if we should assume that the manner of life, and the history of the transformation of both, are one and the same (although it is not known to me that *solitariella* likes other food than *Stellaria holostea*, whereas *olivaceella* is found on *Cerastium vulgatum* and *Stellaria holostea*), we may yet see the difference of

the cases. The case of *solitariella* is whitish grey, the under-side darker, the mouth a little bent; while that of *olivaceella* on the underside is almost dark brown, above somewhat lighter, the mouth much more bent; consequently there is an essential difference, not to be mistaken. Further, a glance at 20 or 30 examples set in rows, and placed close together, will show unequivocal distinctive characters; glancing obliquely over the moths in daylight it will be seen that the fore-wings in *olivaceella* are olive coloured, glistening with metallic lustre, but in *solitariella* they are dull luteous: and thus the doubts of sceptics will vanish.

REMINISCENCES OF AN ENTOMOLOGICAL EXCURSION UP THE DEMERARA RIVER.

BY BERNARD PIFFARD.

A FEW years ago, having a desire to see what the country around Demerara would produce in the way of insects, I equipped myself for a tour in those parts and started for George Town, at which place I arrived late in March. Before proceeding into the interior, I collected for a few weeks in the immediate neighbourhood of the town; in fine weather the sport was good, and even when wet there was no occasion to abandon it, for the houses literally swarmed with various species of ants, one of which particularly attracted my attention on account of the extreme celerity of its movements. This interesting little insect darted about upon the floors with such inconceivable speed, that during its progress it was impossible for the eye to follow it, being visible only at the moment of preparing for each spring, the length of which averaged six or seven inches.

Many species of *Lepidoptera* abounded on the grassy banks of roads, canals, &c., and these were to be seen on the wing chiefly from sunrise till noon, generally re-appearing late in the afternoon. Among these I may mention the active *Pamphila bucephala*, as well as other skippers which settled upon the short grass; the strong-flighted *Anartia Jatrophæ*, which was tolerably abundant; *Callidryas Eubule*, a species interesting from the great dissimilarity of its sexes; and on one occasion, in the evening, I captured a *Thecla*, remarkable for the beauty of its under-surface, which was of a lovely pale metallic green, fringed with chocolate coloured markings, and traversed by a silvery band: whilst on the opposite bank of the river, in like situations, I met with *Junonia Lavinia*. I frequently visited some half-drained land skirting the town; this, though teeming with insect life, was not altogether the locality

adapted for the chase, the bushy and broken nature of the ground rendering the pursuit somewhat difficult. Amongst my more noticeable captures on this hunting ground were the pigmy "Blues," *Lycæna Hanno*, and *Cassius*, with a very pretty *Deiopeia*, considerably resembling our own *D. pulchella*, which was readily disturbed from the low herbage; towards sunset several species of *Thecla*, whose names I have hitherto been unable to ascertain, danced over the taller bushes.

A neighbouring abandoned coffee plantation, however, proved to be by far the most productive; and it was here that I met with the handsome *Papilio Panthonus*, and the sombre *Pavonia Ilioneus*; the former, evidently at head-quarters, flew feebly about, displaying its black velvety wings, upon which the crimson spots shone boldly forth; the latter fluttered along the pathway at dusk, rarely moving during the day except when disturbed, and then quickly settling, with wings erect, about a foot from the ground on the stems of coffee bushes. Here, too, the yellow-banded *Gynecia Dirce*, with several species of *Hipparchia*, occurred, and from a bush I captured a brown *Geometra*, somewhat resembling our *O. sambucata* in shape and markings. This wood was also frequented by several species of bats, perroquets, humming birds, iguanas, and snakes.

With regard to the town I may add that it possesses scarcely anything to interest the traveller, as there is no rising ground from which views of the surrounding country may be obtained; to the Commissioners of Sewers or the Board of Health, however, a survey of it might prove a caution.

I now proceed to an account of one of my excursions up the Demerara river. In a boat, partially thatched over with palm leaves to keep out the rain, which is here at times so heavy as to be comparable only to that which usually falls on a flower-show day, I started with a fair wind, a flood tide, and a bush-nigger as companion: and as the pestilential town became lost to sight—and smell, and the bends of the river were passed, the country presented a truly beautiful appearance; numberless butterflies flitted about, one, *Helicopis Cupido*, remarkable for its sluggish flight as well as for its great beauty, haunted the tangled weeds along the margin of the stream, and the gay butterfly-like *Urania Leilus* floated swiftly along, frequently dipping down to the surface of the water, and myriads of *Diptera* filled the air with ceaseless hum, disturbing a silence seldom otherwise broken during the mid-day heat by either beast or bird, while the canoe of the Indian, as it occasionally glided past upon the glassy surface of the stream to disappear amongst the dense foliage, helped to enliven the scene.

As evening came on the tide began to turn, and I found that it would be impossible to reach that part of the river which experience had taught me was uninhabited by mosquitos, so having hauled in along shore and landed what few things were necessary for the night, I lighted my pipe and resigned myself to circumstances; and as I lay thinking upon the prospects of the journey, and meditating on

> "a thousand insect forms,
> "These hatched, and those resuscitated worms,
> "New life ordain'd, and brighter scenes to share,
> "Once prone on earth, now buoyant upon air,
> "Whose shape would make them, had they bulk and size,
> "More hideous foes than fancy can devise;"

I fell asleep.

(*To be concluded in our next.*)

NEW SPECIES OF BUTTERFLIES FROM GUATEMALA AND PANAMÁ.

BY HENRY WALTER BATES, F.Z.S.

(*Continued from page* 59.)

34. — MELITÆA PTOLYCA.

♂. Expans. 1″ 2‴, 1″ 4‴. Wings of the same shape as Melitæa (Eresia) Ardys, (Hewits. Exot. Butt. Eres. f. 35-6): the outer margin of the fore-wing having a deep, nearly semi-circular emargination near the middle, followed, towards the hind angle, by a small dentiform lobe. Dark brown as in *M. Ardys*, but the spots are all of a tawny hue instead of white, and larger in size; they are, however, the same in position and in number, except that there are a few additional small spots placed transversely near the base of both wings. The discal stripe of the hind-wing is broader and less macular than in *M. Ardys*, and the two sub-marginal lines are formed of a number of very fine lunules; but these are indistinct and almost obliterated in some examples. The under-side is almost identical with that of *M. Ardys* as figured No. 35 in the place quoted. The fringe of the wings is speckled with white in some specimens; wholly brown in others.

Central Valleys of Guatemala.

35.—MELITÆA LELEX.

♂ ♀. 1″ 5‴, 1″ 7.‴ Closely allied to *M. Ardys* and *M. Ptolyca*. The outer margin of the fore-wing is however not deeply emarginated, but has only a broad shallow sinuation, followed by a dentiform prominence at the end nearest the anal angle. Dark brown, spots ochreous or tawny ochreous, and much larger than in *M. Ptolyca*. The base of the hind wing has, besides, a number of transverse orange-tawny spots.

The discal stripe of the hind-wing is continuous and not macular, and the two sub-marginal lines are fine and moderately waved. The under-surface of the fore-wing does not differ from that of *M. Ardys* (Hewits. Exot. Butt. Eres. f. 35), except in the spots near the apex being ochreous instead of white. The under-surface of the hind-wings is more uniform and ochreous in tint, and there is an outer sub-marginal row of rusty-ochreous lunules.

Panamá.

36.—MELITÆA ALETHES.

♂. Expans. 1″ 4‴. Closely allied to *M. Ardys* and the two preceding species. The outer margin of the fore-wing is moderately emarginated, but the hinder angle of the sinuation is not distinctly produced. Dark brown, the spots moderately large and tawny in hue. The base of the hind-wing has a few transverse reddish markings; the discal stripe is moderately broad; the two sub-marginal lines are fine and tolerably continuous. The under-side of the hind-wing differs from that of *M. Lelex* (to which *M. Alethes* is otherwise most closely allied) in being dusty-brown with distinct reddish-brown patches, two of which form a nearly continuous broad stripe across the disk; there are no distinct sub-marginal lunules.

Central Valleys of Guatemala. Found also by Mr. Spruce in Ecuador.

37.—MELITÆA TULCIS.

♂. Expans. 1″ 2‴. Also closely allied to *M. Ardys* and the preceding species. Outer margin of the fore-wing with a shallow but distinct sinuation, its hinder angle obtuse. Dark brown, the spots pallid ochreous; discal stripe of hind-wing continuous, outer sub-marginal line interrupted, inner short or indistinct. Beneath: pale ochreous, with most of the usual marks indistinct or obliterated, three of the black spots in the centre of the outer limb of the hind-wing remaining very distinct, followed by a row of whitish sub-marginal lunules.

Guatemala, interior.

38.—MELITÆA STESILEA.

♀. Expans. 1″ 7‴. Closely resembling the preceding in shape of wings and in colours of the upper surface. It might be considered the female of the same species, but its size is very much greater and the under-surface is widely different in colour and markings. This is especially the case in the hind-wing, which is of a rusty-tawny hue, with darker waved transverse lines; the base has a broad ashy belt, and there is a fine, waved sub-marginal dusky line along the outer border.

Guatemala, interior.

MICROTIA (new genus).

Species of small size. Wings elongated, margins perfectly entire and rounded; apex of fore-wing obtuse; abdominal margin of hind-wing not forming a gutter to receive the abdomen, which latter extends beyond the extremity of the wings. Fore-wing costal nervure terminating on the costa a little beyond the middle of the wing; sub-costal nervure emitting its first branch a long way before, its second a still longer way after, the end of the cell; second, third, and fourth branches emitted at nearly equal distances from each other; upper radial nervure joining the sub-costal immediately after the end of the cell, the upper discocellular nervule is consequently wanting; the middle discocellular is moderately short and angular in the middle, the lower discocellular extends obliquely outwards and joins the median (which forms an angle to receive it) a considerable distance beyond its terminal fork: the lower discocellular is tubular only towards the median, becoming atrophied towards its junction with the middle discocellular. Hind-wing sub-costal nervure widely distant from the costal, upper discocellular short and oblique, middle discocellular also short, curving and continuous with the lower radial; lower discocellular quite obliterated. Head moderately broad, eyes naked; palpi clothed in front with long hair-scales. Antennæ stout, not pale ringed; club abrupt, thick, obtuse, slightly curved. Thorax weak and small. Legs strongly spined beneath; front legs of the female with terminal rudimentary joints rather elongated, and their spines wide apart. Colours simple, entirely destitute of wavy lines above and beneath, and of sub-marginal spots, lunules, or lines.

39.—MICROTIA ELVA.

♂ ♀. Expans. 1″ 3‴ Wings elongate, narrow, obtuse, and entire. Dark blackish brown; fore-wing with an oblique sub-apical belt curved a little outwards, and a large sub-triangular spot in the middle of the hind border orange-tawny. Hind-wing with a broad discal orange-tawny stripe across the disc (a little nearer the base), and widest on the abdominal border. Beneath: the same, but a little paler: outer end of the sub-apical belt of fore-wing, and the whole of the discal stripe of the hind-wing (except near the abdominal edge), pallid. Base of palpi and of costa of fore-wing orange-tawny. Body and antennæ black.

Guatemala, interior; also Nicaragua.

40.—SYNCHLOE GAUDIALIS.

♂. Expans. 2″ 3‴. Wings of the same shape as in the well-known *Synchloe Bonplandii* (Latr.), but not quite so much elongated. Deep black. Fore-wing with a sub-median and strongly curved row of clear white rounded spots, six in number, much more curved and nearer the middle than the similar row in *S. Bonplandii*. Near the base of the wing is a large vermillion spot, divided into three by the median nervure and the base of its first branch. Hind-wing with a sub-basal irregular belt of bright clear yellow, divided by the black nervures, and becoming whitish on the abdominal border. Between the belt and the extremity of the wing is a row of minute white specks. Fringe of wings spotted with white. Beneath: same as above, except that the fore-wing, in addition, has a triangular yellow spot in the middle of the costal border, and a sub-apical row of five or six yellow spots, and that the hind-wing has a sub-marginal outer row of seven yellow semicircles, diminishing in size, from the apex to the anal angle. Body and antennæ black.

This richly coloured species was found in the central valleys of Guatemala.

41.—SYNCHLOE ERODYLE.

♂. Expans. 2″. Wings not elongated, fore-wing very slightly produced at apex, outer margin a little incurved in the middle. Deep black. Fore-wing with seven white spots of various sizes arranged in a rude circle on the disc, and a curved row of six similar but more uniform spots between them and the outer margin. Hind-wing with a sub-basal yellow patch, divided by the black nervures, and by two small black spots entering within the cell; a large bright red spot near the anal angle. Beneath: same as above, except that there are five or six additional white spots on the discal part of the fore-wing, a vermillion streak at base of fore-wing costa, and an interrupted sub-marginal row of large vermillion spots on hind-wing. The yellow spot at base of hind-wing is also larger and more divided by black spots. The fringe of the wings is spotted with white. Body and antennæ black; legs and palpi streaked with whitish.

Guatemala, interior.

42.—SYNCHLOE TELLIAS.

♂ ♀. Expans. 1″ 8‴ Wings not elongated; fore-wing slightly produced and very obtuse at apex; outer margin slightly incurved

Dark brown. Fore-wing with two waved rows of white spots across the apical half of the wing; the spots of the inner row larger than those of the outer, and the two posterior ones sometimes accompanied by orange-tawny spots. Hind-wing with the discal field crossed by a very broad dark orange-tawny belt. Beneath: the same, except that the base of fore-wing costa has an orange tawny streak, and that the belt of hind-wing is narrow and ochreous instead of broad and orange-tawny; there is also an orange-tawny spot near the anal angle, and a row of small white spots between the discal belt and the outer border. Fringe of wings spotted with white. Legs tawny coloured. Body and antennæ black.

Guatemala.

43.—SYNCHLOE MELANARGE.

♂. Expans. 1″ 9‴. Wings not elongated, apex not produced, nor outer margin incurved. Deep black. Fore-wing crossed, a little beyond the middle, with a belt of six oblong yellowish-white spots. Hind-wing with a small red spot near anal angle, sometimes indistinct. Beneath: the same, except that the fore-wing costa is red at the base, and that the hind-wing has a sub-apical row of yellow spots, and an interrupted row of large red spots. Legs, antennæ, and body black.

Guatemala, interior.

44.—EUREMA GODMANII.

♂. Expans. 2″ 5‴. Fore-wing sub-triangular, outer margin very slightly incurved in the middle, faintly festooned throughout. Hind-wing of the same shape as in *Eu. Lethe*. Fore-wing with the basal half bright tawny, deepest near the base; apical half rich deep black, crossed by a row of four white spots near the apex. Hind-wing rich tawny, with two sub-marginal black lines partly lunulated, and, nearer the disc, an interrupted row of small rounded black spots. Beneath: fore-wing nearly the same as in *Eu. Lethe*. Hind-wing also very similar to that of *Eu. Lethe*, but much more richly coloured; the waved streaks on the basal half being rich reddish-brown, and the lighter spots enclosed by them clearer and whiter. The row of ocelli is distinct, and the inner three ocelli have bluish pupils.

Guatemala, interior.

(*To be continued.*)

DESCRIPTIONS OF THE BRITISH SPECIES OF STENUS.

BY E. C. RYE.

(*Continued from page* 65.)*

(*penultimate joint of tarsi simple.*)

B. Abdomen unmargined.

CRASSUS, (*Kirby*) *Stephens, Ill. Man. v.*, 287. 18 (1832), *and coll.*

crassiventris, *Thomson* (1857).

nigritulus, *Erichson* (*nec Gyll.*)

$1\frac{1}{4}$—$1\frac{2}{3}$ lin. Black, rather shining, distinctly clothed with grey hairs; the legs pitchy-black, sometimes pitchy, and the basal joint of palpi testaceous. Head almost level in front, with a shining middle line Thorax rounded in front and narrowed behind; strongly, evenly, and not very closely punctured, with no dorsal channel. Elytra longer than the thorax, and more remotely punctured; the interstices flat. Abdomen stout, narrowed towards the apex. The entire insect has a somewhat inflated appearance. The male is smaller than the female, with the elytra apparently stouter and more convex, owing to the abdomen being smaller and more attenuate; small examples of this sex are superficially not unlike *S. fornicatus*.

Generally found in comparatively dry places. Not uncommon at Boston, Repton, Bungay, Weston, and Brighton, and in the London district. Rare in Northumberland.

LITTORALIS, *Thomson, Skand. Col.* ii., 226, 30.

This insect (introduced originally as British by Mr. G. R. Crotch) appears from Thomson's description (*loc. cit.*) to be very like the preceding, but smaller, with the legs pitchy, and the punctuation closer on the elytra, and thicker and stronger on the abdomen. It also seems to be found in wet localities. Erichson notices the variation in size, and in the colour of the legs of his *nigritulus*, with which species I have no doubt that Thomson's insect is identical, having seen examples (both large and small) of the former, wherein the punctuation differs in strength and closeness, and the legs are pitchy, or almost pitchy-red; these variations existing apart from each other. I find it also impossible to separate the smallest *crassus* from the largest (so called) *littoralis*; of which, by the way, I have not yet seen a female example.

In wet places in the London district, at Weston, and elsewhere.

* Since publication of last number I have seen one of Mr. E. Shepherd's examples of *S. scrutator*, which may be briefly described as very like *S. lustrator*, only with longer elytra.

NIGRITULUS, *Gyllenhall, Ins. Suec. iv.*, 502, 10—11 (*nec Erichson*).
unicolor, (*Kirby*) *Stephens, Wat. Cat.*
campestris, *Erichson.*

2 lin. Dull black; the legs inclined to pitchy, and the palpi with the basal joint testaceous, and the second and third pitchy testaceous, more or less suffused with black. Head rather flat. Thorax gently, but decidedly, narrowed behind. Elytra slightly longer than the thorax. The entire insect is strongly and very closely punctured, with the interstices almost rugulose; the punctuation of the abdomen being rather coarser, and not so close as in the other parts. The abdomen is cylindrical, very little contracted behind, and with only faint indications of the middle keels in the transverse grooves. In the male the sixth segment beneath has a wide and shallow triangular notch.

Northumb., Cumb., not common. "In burrows of *Bledius arenarius*," Mr. T. J. Bold. Wicken and Horning Fens, Bungay, Repton, Holme Bush, Charlton, Hammersmith Marshes.

BRUNNIPES, (*Kirby*) *Stephens, Wat. Cat.*
unicolor, *Erichson*, (*nec. Stephens*).

$1\frac{1}{2}$—$1\frac{2}{3}$ lin. Rather smaller than the preceding species; more shining, with the elytra shorter, the legs pitchy-red and blackish at the knees, and the antennæ pitchy, with the two basal joints darker. Rather closely, and very strongly punctured throughout, with the interstices shining and almost smooth.

Most abundant, from Northumberland to Brighton.

OPTICUS, *Gravenhorst, Erichson.*

$1\frac{1}{3}$—$1\frac{1}{3}$ lin. Rather dull black, legs dark pitchy-red, antennæ and palpi pitchy, the latter with the basal joint testaceous. Head wide, eyes prominent. Thorax rounded from the middle almost equally, but a little more contracted behind than in front; very closely, but not very strongly punctured. Elytra but little longer than the thorax, slightly sloped at the shoulders, rather evenly punctured, with the punctuation not quite so close as on the thorax, but stronger, and the interstices somewhat rugulose. The suture shining. Abdomen narrow, attenuate at the apex, very delicately punctured.

The only insect with which this species could be confounded, is a very small specimen of *crassus*, from which its closer punctuation, dull appearance, and more prominent eyes at once distinguish it.

Horning Fen, Norfolk. Originally taken by the late H. Squire, subsequently by Messrs. Crotch, Matthews, Brewer, and Sharp.

2.—SECTION, PENULTIMATE JOINT OF TARSI BILOBED.

A. Abdomen margined.

BINOTATUS, *Ljungh*, *Erichson*. 2½ lin. Elongate, flattish, dull black, very thickly clothed with short silvery pubescence. Antennæ short, pitchy-red, the basal joint and club pitchy. Palpi pitchy, with the basal joint testaceous. Head narrow, and flat in front. Thorax nearly cylindrical, contracted behind, closely and moderately strongly punctured, with a broad oblique depression on each side behind the middle. Elytra a third longer than the thorax, rather more strongly punctured, the interstices flat, with an obsolete broad depression on each side, strongest near the hinder margin. Each segment of the abdomen is slightly contracted near the base, and the transverse grooves are represented by a slight ridge, the keels being obsolete.

In the male the sixth segment beneath has a deep triangular notch, and the second, third, and fourth segments are slightly depressed in the middle of the hinder margin.

Northumb., Durham, Cumb., Falkirk, Boston, Wicken and Horning Fens, Brighton, Bungay, Repton, and London district. Common.

PUBESCENS, (*Kirby*) *Stephens*.
subimpressus, *Erichson*.

Similar to the preceding, but larger, more robust, and with the legs stouter, the antennæ longer and lighter, the palpi rather more testaceous at the base of the joints, the head and thorax wider, the elytra longer, and the punctuation finer and not so close.

In the male the sixth segment has a broad, deep, somewhat semicircular notch, the inner apex of which is slightly elevated, and the second, third, and fourth segments are depressed in the middle of the hinder margin, the third and fourth segments having also on each side of the extremity of the depression a very minute elevation.

Falkirk, Northumb., Dur., Cumb., Wicken and Horning Fens, Preston, Repton, Southend, Weston, and London district. Not uncommon.

PLANTARIS, *Erichson*. Of the same size and appearance as *binotatus*, from which it may be readily distinguished by its rufotestaceous tarsi, palpi, and antennæ (in which the club is pitchy, and the joints are more robust). In punctuation it resembles *pubescens*, from which the above characters also separate it. It is, besides, rather more shining and depressed than either of these species, and its abdomen is more attenuate at the apex.

In the male the sixth segment has a very deep notch, in the shape of a triangle rounded at the apex, and the second, third, and fourth segments are very slightly depressed in the middle of the hinder margin.

Very rare in Northumberland; not uncommon at Horning Fen, also found at Weybridge, Brighton and Bungay.

BIFOVEOLATUS, *Gyllenhall, Ins. Suec. iv.*, 500, 9-10. (*nec. Erichs.*)
nitidus, *(Kirby) Stephens, Wat. Cat.*
planeus, *Erichson.*

2 lin. Nearly cylindrical; deep black, shining. Antennæ rufo-testaceous, with the basal joint black, and club brownish. Palpi testaceous, the second and third joints more or less suffused with brown. Legs more or less pitchy. Head rather wide, with a somewhat broad interstitial elevation. Thorax with a very obsolete oblique impression on each side behind the middle, and an irregular smooth dorsal space in the middle. Elytra scarcely longer than the thorax, rather narrowed at the shoulders, strongly but not very closely punctured, with the interstices smooth. In the abdomen the keels of the transverse grooves are very distinct.

In the male, the sixth segment has a wide triangular notch, and the fourth and fifth segments are somewhat longitudinally depressed in the middle, the depression being most conspicuous in the fifth segment.

Not uncommon, and generally distributed all over the kingdom.

BREVICOLLIS, *Thomson, Ofv. af Vet. Ac. Förh.* 1857, 231, 40; *id. Skan. Col.*
foveicollis, *Kraatz, Ins. Deutsch.* 1858.
bifoveolatus, *Erichson, Wat. Cat.* (not of Gyll.)

Rather smaller than *bifoveolatus, Gyll.*, from which it may be known by its shorter thorax, finer punctuation, and much lighter legs. From *picipes*, which it also somewhat resembles, it may be known by its shorter and narrower elytra, and lighter legs. Ashy-black, scarcely shining; legs rufo-testaceous, the knees pitchy; antennæ and palpi rufo-testaceous, both slightly suffused with pitchy at the apex. Head broad, rather depressed, with a broad, slightly convex, middle elevation. Thorax nearly as broad as long, rounded in front, but more contracted behind; evenly, closely, and rather delicately punctured, the interstices flat, with a slight depression on each side behind the middle. Elytra

very little (if at all) longer than, and as wide as, the thorax; a little more strongly and not quite so closely punctured, the interstices flat. Abdomen rather strongly and closely punctured, rather suddenly attenuated at the apex.

The only British specimens of this insect (as far as I know) are in the cabinets of Mr. Waterhouse and Dr. Power, and in the Kirbyan collection. One of Mr. Waterhouse's two examples was, I believe, taken at Brockenhurst.

PICIPES, (*Kirby*) *Stephens.*

rusticus, *Erichson.*

2 lin. Flat and rather broad; leaden-black, very little shining, legs pitchy-red, the knees and tibæ more or less pitchy-black. Antennæ and palpi rufo-testaceous, more or less brownish at the apex. Closely and rather strongly punctured. Thorax with an exceedingly slight depression on each side behind the middle. Elytra a third longer and considerably broader than the thorax. Abdomen somewhat suddenly attenuated at the apex.

Apparently common all over the kingdom, being especially fond of cut grass, dry ditches, &c. I have a specimen from Mr. Bishop, of Glasgow, which is blue-black in colour.

PICIPENNIS, *Erichson.* 2 lin. Deep black, shining. Antennæ clear testaceous (including the basal joint,) with the club brownish. Palpi testaceous. Legs testaceous, the knees suffused with pitchy. Head wide, with a strong middle elevation. Thorax not longer than its greatest width, contracted behind, strongly but not very closely punctured, with a strong oblique depression on each side behind the middle. Elytra slightly longer than the thorax, strongly punctured, the interstices smooth, but with slight irregular depressions. Abdomen short, stout, contracted at the apex, and with the hinder margins of the first four segments smooth and rather broadly elevated.

Southend, Preston, and London district. Not rare in reedy places on Wimbledon Common.

NITIDIUSCULUS, (*Kirby*) *Stephens.*

tempestivus, *Erichson.*

Like the preceding insect, but larger, more depressed, with a slight brassy tinge, the legs rather lighter, the basal joint of the antennæ black, the punctuation much finer, the thorax not so wide, the elytra shorter and contracted at the shoulders (being an apterous species), and more irregularly and deeply depressed. The abdomen also has no elevated hinder margin to its segments.

Falkirk, Northumb., Cumb., Durh., Weston, Preston, Repton, and London district. Exceedingly abundant on the Thames Bank near Hammersmith.

GONYMELAS, (*Kirby*) *Stephens.*

subæneus, *Erichson.*

2 lin. Black, with a slight brassy tinge, shining. Antennæ pitchy testaceous, with the two basal joints black, and the club pitchy. Palpi with the apical joint pitchy, the second pitchy-testaceous, and the basal joint testaceous. Legs rufo-testaceous, considerably suffused with pitchy at the knees. Head wide, with a broad middle elevation, smooth on the disc. Thorax closely, irregularly, and rather coarsely punctured, with an ill-defined smooth dorsal channel, and two slight depressions behind the middle. Elytra a third longer than the thorax, rather flat, with a few obsolete irregular depressions, and the punctuation rather coarser than in the thorax, but not quite so close; the interstices nearly rugulose. Abdomen narrow, especially in the male, and attenuate towards the apex; the punctuation (as usual) getting finer towards the extremity.

Falkirk, Northumberland, Weston, Preston, and London district. Not common.

OSSIUM, (*Kirby*) *Stephens.* Very like the preceding, but duller, and generally a little (sometimes considerably) smaller; with the basal joint of the antennæ and two apical joints of the palpi pitchy, the elytra shorter, and the punctuation altogether considerably finer, especially on the abdomen, where it is also closer.

Common. Northumb., Cumb., Durham, Weston, Fen district, Bungay, Repton, and London district.

IMPRESSUS, *Germar, Erichson.* About the size of *ossium*, bronze-black, shining. Legs and palpi clear testaceous yellow. Antennæ testaceous (including the basal joint), with the apex slightly pitchy. Head with a wide, smooth, middle elevation. Thorax but little longer than its extreme breadth, rather strongly and closely punctured, the interstices irregular, with an obsolete smooth shallow dorsal channel, and two irregular depressions on each side of the middle. Elytra scarcely (if at all) longer than the thorax, not quite so closely punctured, and rather uneven. Abdomen shining, attenuated, and more delicately punctured towards the apex.

Exceedingly common all over the kingdom; in moss, leaves, &c.

There is an insect closely allied to this species, not uncommon in the London district, which I am unable to determine satisfactorily, and

indeed, suspect to be undescribed. It is somewhat larger than *impressus*, with the elytra longer and more irregular, the knees pitchy (the hinder femora having often a broad black band at the apex), the attennæ longer, the punctuation not quite so close, and the thorax with a more decided impression in the middle.

GENICULATUS, *Gravenhorst, Erichson.* About the size of *ossium*. Narrow, elongate; dull black, legs rufo-testaceous, with the knees pitchy-brown; the palpi testaceous, with the apical joint more or less pitchy; and the antennæ testaceous, with the first joint pitchy and the club brownish. Head nearly flat, with a slender polished middle line. Thorax very closely and rather strongly punctured, with a faint trace of a smooth dorsal line. Elytra not longer than the thorax, narrow, strongly punctured, the interstices almost rugulose. Abdomen elongate, strongly and closely punctured.

Wickham, Shirley, and Weybridge; in moss near heath. Once found by Mr. E. Shepherd on Shirley Common, by sweeping heath at night.

(*To be concluded in our next.*)

Coremia Ferrugata and Unidentaria.—At page 19 in the June number (just lent to me) of the *Entomologist*, conducted by Mr. Edward Newman, the larva of *C. unidentaria* is described at great length, and the food-plant stated to be *Galium verum* and *Asperula odorata*, and the egg to be laid on *Galium verum*.

As far back as the year 1860, I began to rear the larvæ of both these insects from eggs obtained from captured specimens; and I followed it up for three years with always the same result, viz., *Unidentaria* producing invariably its like—*Ferrugata* producing its like, never running the one into the other, but always remaining true to the parent.

The food-plant, however, to which they *here* give the preference is *Glechoma hederacea*, or ground-ivy, and not *Galium verum*, or we should not have the insects so common as they are with us, since *Galium verum* does not grow within 7 or 8 miles. The insect, confined in a box with *Galium verum*, is very likely to lay her eggs upon that plant, but that does not prove it to be *the plant* upon which we are to search for the eggs in the natural state. I always reared the larvæ upon growing plants, in pots, of ground-ivy—the food *selected* by the larva itself, and I am disposed to believe that to be its food *par preference*.

Both the insects are double brooded, appearing in the spring and late in the summer.

Guenée says of *Unidentaria* "It is so constant that one would be tempted to make it a distinct species, but that Sepp has figured it as having obtained it from the same larva as *Ferrugata*." Sepp, very possibly, bred the two insects from larvæ he found, and the larvæ are so similar, that I think there is scarcely any mark by which they can be distinguished; but I very much doubt that Sepp ever bred the the two insects from the egg.

If they both then produce their like, and one is still to be considered a variety of the other, which is the type and which the variety?

In the case of *A. aversata* and its riband variety, I have satisfactorily proved them, by breeding both from the eggs of either, to be one and the same species. I cannot, however, say the same of *Ferrugata* and *Unidentaria*.—HENRY D'ORVILLE, Alphington, near Exeter, *August*, 1864.

THATCH.

Fortunately for me, the country round Haslemere is not of that dreadfully civilised kind in which every high hedge and strip of copse is improved off the face of the earth; indeed, it is no uncommon thing here to see even such a primitive object as an old thatch to the roof of a barn or cart shed, and about these thatches and the insects to which they afford shelter I have a few remarks to make.

Besides the ordinary straw thatch, there are two other kinds, both of which are deserving of attention. One is composed of "hoop-chips," or the chips sliced off in making rough hoops, the other of faggots or rough bushes, and this last appears to be a favourite hiding place for *Coriscium Brongniardellum* and *cuculipennellum*; and *Depressariæ*, &c., sometimes resort to it as well as an occasional *Geometra*.

Out of the chip thatches I have obtained many specimens of *Laverna decorella*, *Depressaria ciliella*, *chærophylli*, *albipunctella*, and many others, besides *Gelechia humeralis*, *Gracilaria stigmatella*, *Coriscium Brongniardellum*, &c., indeed, I am not sure but this is the best kind of thatch for collecting from, as the perfect shelter, with larger spaces for creeping into, seems to suit the moths. Still, straw thatch is by no means to be despised, for in a good locality it furnishes plenty of sport, and I have taken all the above-named species from it. Sometimes many specimens may be obtained from the sheltered sides of ricks, but not all in the thatch, as many hide in the side, but I do not find ricks nearly so productive as regular thatches. I have found the commoner *Depressariæ* in some numbers in stacks of dried heath piled up for the broom makers.

I hardly need say that the way to work thatch is to beat the edge with a stick, when the moths will fall out, and if the weather is cool they will probably drop to the ground, if hot and at all windy they show great activity in getting away. Perhaps the easiest plan of collecting is to catch the moths as they fly away or flutter down; but certainly the most profitable way is to hold the net close under the place beaten, so as to catch everything that falls. The net, of course, soon contains a large collection of dirt, moss, straw, or chips, and other rubbish, with sundry spiders, beetles, *Diptera*, &c., among which, by careful scrutiny, in all probability many moths may be found lurking, though some of the *Depressariæ* do not wait to be looked for but come running up the side of the net. Fortunately the commonest species appear to have this habit. *Applana* for instance, in the autumn would come running up the net in abundance, leaving all the better things at the bottom, and in the spring *arenella* as well as *ciliella* have the same habit. By shaking the rubbish, however, the other things may generally be induced to show themselves and can then be boxed, and any others, which will not move for *that*, can be disturbed by blowing sharply amongst the rubbish, a sort of treatment that many *Tineina*, and especially the *Gelechidæ*, cannot endure. Shall I be laughed at when I say that if a thatch is inconveniently high it may be beaten from horseback? I have done so repeatedly with success. It is, however, advisable to have a steady horse, and one that is not afraid of a net.

As in every other kind of collecting, much depends on the weather; wind, provided it comes from a mild quarter, is no disadvantage, indeed, it helps to drive everything into the net, except the dust which it usually contrives to deposit pretty

liberally in one's face and neck. I must confess, however, that taking insects out of the net in windy weather is no easy task when the bottom is full of rubbish. In cold weather, however, with north or east wind, hardly a moth can be obtained, either they creep further in, or hide in more protected places; while, on the other hand, a very hot sun makes the thatch too hot to hold them. Cloudy, moderately warm, and even stormy weather is favourable.

Several species of *Depressaria*, which are plentiful in thatch in the autumn' appear to desert it in the early spring. Such is the case with *applana*, *Alstrœmeriana*, and *nervosa*, all of which are common before hybernation, but hardly occur afterwards. *Applana*, we know, hides among its food-plant. I have only found *carduella* and *subpropinquella* in autumn; but, as they were scarce then, it may not be the rule. On the other hand *arenella* and *propinquella*, which were scarce before the winter have been very common since, and the two species of *Coriscium*, *Gracilaria stigmatella*, and *Laverna decorella*, are decidedly commoner in the spring. The same appears to be the case with *Dep. heracliana*, but singularly enough it is very scarce here. *D. ciliella*, *chœrophylli*, and *albipunctella* are equally common in autumn and spring, and so is *purpurea*, but it has a habit of flying briskly along hedges and the sides of woods all day long in sunny weather in April, and consequently is not always to be found at home.

I have never obtained either *D. ocellana* or *umbellana* from thatch, though the former hides among the herbage and grass roots overhanging rivulets, and the latter may be disturbed from among ivy and dead leaves on hedge banks as well as from furze.

The number of species of other families to be obtained from thatch appears very inconsiderable, but I captured last spring, in that way, several specimens of *Anticlea badiata*, as well as *A. derivata*, *Cidaria miata*, and *psittacata*, *Xylina petrificata*, and *Xylocampa lithoriza*, with plenty of *Alucita polydactyla*.

Whether beating thatch during the summer months is profitable or not I have yet to learn, as I have never tried it; but I think something might be done in that way.—Charles G. Barrett, Haslemere.

Eupithecia lariciata, Freyer.—As Mr. Hopley has made some remarks on this species in the *Entomologist's Monthly Magazine* for the present month (July), I send a short notice of its discovery in this country.

In the autumn of 1862, Mr. Thomas Eedle, of Hackney, brought me a number of *Eupitheciæ* which he had taken in the course of the summer, and I detected among them five or six specimens of this species. I had very little doubt about its being the true *lariciata* of Freyer, but I was desirous of seeing the larva before I published any account of it. I requested Mr. Eedle to obtain eggs for me last year, but he was unable to do so. Mr. Hopley discovered the insect in another locality, and kindly sent me some eggs a few weeks since, from which I have reared larvæ corresponding exactly with Mr. Freyer's figures; doubt on the subject is therefore removed, and *Eupithecia lariciata* must be added to the British lists. I will just add that I have received from Dr. Staudinger another pine-feeding species, under the manuscript name of *pseudo-lariciata*, which is very likely to occur in this country; it is closely allied to *pusillata*.—Henry Doubleday, Epping.

Notes on the larva, pupa, and food-plant of Eupithecia pulchellata.—This interesting and hitherto unknown and undescribed larva has turned up in some numbers during the present summer, and now that its habits and food-plant are known, will probably prove to be one of our commonest and most generally dispersed insects. The merit of its discovery is due to my excellent and indefatigable friend Mr. Hellins, of Exeter. Last year, both he and I had several batches of fertile eggs of *Eup. pulchellata*, which were kindly sent us by Mr. Hodgkinson, of Preston; the young larvæ hatched out well, but though we supplied them with every likely flower we could think of, they refused everything, and perished miserably of starvation. This summer Mr. Hellins again received fertile eggs from Mr. Hodgkinson, and, at Mr. Doubleday's suggestion, supplied the newly-hatched larvæ with flowers of the common foxglove (*Digitalis purpurea*); finding that they fed freely, grew, and prospered, he at once communicated the interesting fact to his Entomological friends, and the result is that the larva has been discovered in some numbers in several different localities; I took about 40 in a wood about a mile from my house in less than an hour; some relatives of mine have found it in profusion at Warstow, near Leek, Staffordshire; Mr. Batty has met with it near Sheffield, and Mr. Baker has taken it freely in the neighbourhood of Derby. It feeds on the stamens and unripe seed capsule of the common foxglove, spinning the lip of the flower together, and is, from this circumstance, not difficult to detect; it is rather a variable larva; I append descriptions of those varieties which have lately come under my notice.

VAR. I.

Ground colour dull yellowish green; central dorsal line broad, continuous, dull, dingy purple; sub-dorsal lines ditto, narrow, interrupted on the anal segments; spiracular line narrow, broken, dingy purple; head brownish, marked with lines of a dingy shade; on the collar a blackish spot; belly whitish green, with a whitish central line; whole body thickly strewed with whitish hairs, and occasionally suffused with dull dingy purple.

VAR. II.

Ground colour dull yellowish and whitish green; central dorsal line dusky green; sub-dorsal lines ditto; segmental divisions yellowish; spiracular line dull green, very narrow and faint; belly whitish green, without markings.

VAR. III.

Ground colour pale primrose, slightly suffused with green; central dorsal line dull faint green, almost invisible on the posterior segments; sub-dorsal lines ditto, much broken, having more the appearance of detached spots; spiracular line very faint, pale yellow; belly whitish.

VAR. IV.

Ground colour bright yellowish green; central dorsal line broad, pale olive; sub-dorsal lines ditto, narrow; spaces between central dorsal and sub-dorsal lines bright yellow; spiracular line faint, broken, dusky green; belly sea-green.

Pupa enclosed in a slight earthern cocoon; thorax and wing cases yellowish green; abdomen reddish yellow; abdominal divisions and tip deep red.—H. HARPUR-CREWE, The Rectory, Drayton-Beauchamp, Tring, *August*, 1864.

Notes on the habits of Toxocampa craccæ. — During a fortnight's trip to the north-coast of Devon, (July 18th—August 3rd), I again had the good fortune to take *Toxocampa craccæ* in the same locality where I first met with it three years ago. Some account of this species will be interesting to your readers. For the description of the larva I must refer them to the *Zoologist*, p. 8179; and the figure in the *Annual* will give a good notion of the imago.

The eggs are globular, flattened at one pole, and ribbed from pole to pole as with raised meridians; at first white, then dirty white. They are probably dropped by the female loose among the herbage; for a female, confined in a roomy box, scattered them broadcast about the bottom, although a sprig of the food-plant *(Vicia sylvatica)* was kept fresh in a bottle for her use. I found an egg on a leaf, but it was not attached to it, and fell off on moving the box.

The moth, when disturbed in the day time, flies rapidly for a short distance, and buries itself among the grass and low plants: the best time to take it is in the evening, from 8.30 to 9.30, when it flies slowly and steadily, and spends most of its time in sucking the sweets, or bitters, of the Wild Sage, (its great favourite), the Hemp Agrimony, and other flowers. I once took three at one sweep on a tuft of Wild Sage: when captured it is quiet in the net, and does not knock itself about in a pill-box. A female which I kept to lay was still a good specimen a week after her capture. Another recommendation to an Entomologist is, that it is not subject to grease. In short, its character as a moth is excellent as far as my experience goes, and I have had repeated opportunities of observing it. I have never seen it many yards from its food-plant, and, as its habits are rather sluggish, and the plant is not common, it is no wonder that the insect is scarce and local.

I am anxious to discover whether, in inland parts where this vetch grows, the moth is also to be found, or whether the neighbourhood of the sea is a necessary condition to its existence. I know of two or three localities for the plant in Worcestershire, which I hope to reach another season, and I would advise Entomologists who visit the Lake District to be on the look-out, for, according to Withering, the plant is abundant there. I hope to be able shortly to forward a single specimen each of *T. craccæ* to some of my old correspondents.—Rev. E. Horton.

Capture of Acidalia rubricata, &c.—On the 28th of last month (July), in a stubble field near Brandon, Suffolk, I captured nine specimens of *A. rubricata*. The habits of this insect remind me very much of those of *Hyria aurororaria*. I also took two remarkably fine *Spilodes sticticalis*, and a good variety of *C. Phlæas*.—Fred. Bond.

Description of the larva of Zenzera Æsculi.—On the 10th of June a full-grown larva of *Z. Æsculi* was brought me. As it differs considerably from Ochsenheimer's description, given in Stainton's Manual, I have ventured to re-describe it. Larva about two inches long, skin glabrous and semi-transparent, colour greenish grey and the intersections lighter. Head, second and anal segments, dark brown, shining. On each of the 3rd and 4th segments are two interrupted transverse lines, and, between them, eight black spots. The other segments are marked with twelve spots, forming ten longitudinal rows. From each spot arises one short hair. The under surface of the 2nd, 3rd, 4th, 5th, 10th, 11th, and 12th segments are marked by a transverse row of four black spots.—George J. Hearder, Powick, near Worcester.

NOTES ON COLLECTING (LEPIDOPTERA). *THE EGG STATE.*

(*Continued from page* 70.)

MANAGEMENT.

Eggs should never be touched; when, however, for convenience it is necessary to remove them, as when found in Nature, or deposited in awkward or insecure positions in our breeding or other cages and boxes, the operation must be conducted with great care, and it must be remembered that the eggs of several species, as *H. croceago*, *A. prodromaria*, and others, are very soft when first laid, and that if the substance to which they are attached be even twisted or disturbed at this stage they will perish, but after a little time the shells harden, and they may then with caution be removed by carefully cutting out the substance to which they are fixed; as a precautionary measure it has already been suggested to line the laying boxes loosely with paper, and the cages into which the perfect insects emerge should also be lined with leno or gauze, not only for the purpose of cutting out the bits upon which eggs may be deposited, but also that the insects as they emerge may at once crawl to a position suitable for drying their wings.

On removal the eggs should be placed in glass-topped boxes, which serve to secure the future larva from escape, and yet allow the owner to watch progress without opening or even moving the box. Beyond keeping them thus at ordinary atmospheric temperatures, as in an outhouse sheltered from the rain and sun, and daily watching them until such time as they hatch, no attention is necessary, unless in some rare instances it be advisable to damp them from time to time: with eggs which pass through the winter the chief precaution is, not to forget them in the spring.

Should it be desirable to get three broods of a double-brooded species, the Entomologist may, as soon as the food-plant is coming into leaf, either "force" the imagos by bringing the pupæ into a warm room, and so get eggs before the natural time, or he may hasten the hatching of eggs by a similar increase of temperature.

A few remarks on the signs of **fertility** and **infertility** may not be out of place. Observation and experience will be the best guides, but the following may assist the egg possessor to a decision:—If an egg, from having been yellow or orange, change colour to any of the tints of pink, rose, or red, from having been of reddish colour to any hue of lavender, lilac, purple, from white, drab, or cream-coloured to any shade of brown or lead-colour, from green to red or lurid purplish, or if an egg become black or uniformly darker, or if it get symmetrically marked, spotted, banded, or ringed, flatten or change form without shrivelling, the chances are that it is fertile, and that the natural changes are going on in the enclosed larva; but if, on the other hand, the egg should show transparency at one point and opacity at another for any length of time, or should go over its proper time of hatching, or should curl or collapse, it may almost certainly be considered either that the egg is unfertilised or that the contents have perished; for though the soft eggs of some species do shrivel to a certain extent, even though perfectly impregnated, it is certainly, as a rule, a bad omen; of course the above tests are inapplicable to eggs which, like those of the Puss-moth, have rigid, opaque, and coloured shells, but even here an adept will detect a difference between a fertile and infertile ovum.

It will, however, be best for the collector to keep his eggs until he is quite sure about them, one way or other; remembering that the ova of the saem species at one time may hatch in the autumn, at another may lie over until spring. Sometimes black specks make their appearance on the surface of eggs, especially upon the opaque white eggs of the *Prominents*, and are due to the enclosed larva having bitten through the shell so that the mandibles have become apparent. When this happens, the larva may be expected speedily to come forth; but it has often been noticed that, from some cause, the larvæ are exceedingly apt to die at this stage, probably from not having sufficient power to escape; damping with warm water and placing in a warmer temperature, as a hot-bed, may be worth trial, but I am perfectly satisfied that the usual plan of placing the eggs upon the food-plant at this stage is often a fatal proceeding; on the whole, it is, perhaps, best to leave them under the same circumstances in which they have been all along.

For **transmitting eggs by post** two simple plans are generally adopted: the first is to punch or cut out a hole through a piece of cork, wood, millboard, or other suitable substance, to fix a piece of card to one of the surfaces, thus forming a cavity or cell into which the eggs may be placed, and to cover over with another piece of card, which may be kept in position by a few turns of thread; this package may then be transmitted through the post in safety. The other plan is to procure quills (the penny or threepenny bundles of toothpicks sold at bazaars answer admirably), and, having pared them off straightly at each extremity, to accurately fit both ends with wooden stoppers, one of which being removed, the eggs may be inserted, the stopper replaced, and the thing is done, and the little package may be sent off in a letter; if several of these quills are required to be sent at once, they should be enclosed in a brass pen-box, a dozen of which may be purchased at a cheap rate (about 1s. 6d. or 1s. 9d.) of most stationers. Note—the advantage of using the wooden stoppers instead of wool, which is more generally employed for the purpose, is twofold; the wood better resisting the stamp of the post office and not being liable to entangle the tiny claspers of the larvæ should the eggs hatch in transitu.

OBSERVATION.

The observation of the eggs of insects is a subject of far greater importance than Entomologists have yet seemed willing to accord to it. In this vast field there is ample room to philosophise; these objects, representing, as they do, one stage in the existence of creatures which, in their perfect state, we term and know as species, are necessarily as specifically distinct as are the various moths themselves from one another. It is, moreover, that stage of life in which, throughout all animated nature, the closest analogy exists; and bearing forcibly not only on that question of questions, the origin of species, but also upon the all-wise arrangements planned for their well-being and perpetuation, cannot fail to deeply interest every student of the laws of Natnre.

The systematist might here find, sometimes at any rate, a help towards the classification of families and genera, by which, in course of time, we might hope for groups as natural as, for example, those of *Smerinthus*, *Hepialus*, *Lithosia*, *Arctia*, *Ennomos*, *Eupithecia*, *Tortrix*, and many others, the correctness of which is borne out by a reference to their respective eggs.

The nomenclator, too, might often form a diagnosis by aid of a comparison of the eggs of closely allied species; the Entomologist would have the pleasure and satisfaction of being able to recognize his species in the egg state; and even in a mercantile point of view, the architect and the artistic designer might profit, both in mind and pocket, by a study of their forms and exquisitely sculptured surfaces.

In **carrying out observations** upon the egg state, the student should note

How the egg is laid: whether unattached or attached, or if so, by what means, and also by what part of its surface; the position of the female (and of her abdomen) at the time of laying—whether hovering, at rest, or in what other act; whether the eggs are laid singly or in batches, and if the latter, the number, and whether unarranged or how arranged; also the total number deposited, and whether nude or covered, and in the latter case how covered or protected, together with any exceptions, individual, special, natural, or abnormal.

When laid: at what date or dates, at what time or times of day or night, at what intervals, how long after copulation, and how long after emergence of the female, noting also exceptions.

Where laid: if not on the food plant, where; if on the food, the exact position, as well as any exceptional instances which may come under notice.

The *duration* of the egg state, in species and in individual cases; *influences* of temperature, soil, locality, altitude, time of year, &c., which promote, retard, or modify the natural changes.

The *appearance* of the egg itself, as form, colour or colours, markings, elevations, depressions, and sculpture on the surface, together with changes, normal or irregular, from the time of exclusion to that of hatching.

The *mode of exit of the larva* should be exactly observed, and any other remarks or experiments which may present themselves to the student should, if possible, be followed up; such as, for instance, those of proving how long the egg state may continue (*i.e.*, the ovum retain its vitality), with a view to throwing light upon the at present hidden causes of the disappearance and periodical appearance of certain species; and of discovering if there be any sexual arrangement of the eggs, as laid, to account for the consecutive emergence of a preponderance of one sex at one time, the other at another, from the same batch of eggs.

In **describing,** the best order will be to give the names of the parent species, and then, by the assistance of microscopic examination, the measurements, form, sculpture, colour, markings, and changes, arrangement of the eggs, time, situation, &c.: after which a diagnosis from the eggs of allied species may be added, as well as any further remarks which may suggest themselves.

PRESERVATION.

In the Preservation of eggs, we must recollect that they are composed of an external membrane or shell of greater or less transparency or opacity, enclosing (when fertilised) a larva with appendages, and that the colour and markings are in very many cases principally due to the fact that the contained animal is visible through the shell, for which reason these objects, when simply placed in collec-

tions without preparation, change colour or shrivel, owing to changes which take place in their contents.

From the time of Swammerdam upwards numerous attempts have been made to ensure a permanence of the natural aspect of these interesting objects, but I am not aware that anything like success has been achieved. Swammerdam's plan was the following:—Having first squeezed out the contents through a small punctured aperture in the shell, to inflate and re-fill, by means of a *very* fine glass blowpipe, with oil of spike, in which resin had been previously dissolved. Of course if the blowpipe were heated, or the operation conducted in a hot atmosphere, coloured wax, tallow, or cocoa-butter, would answer the same purpose; but, inasmuch, as opaque objects are not so readily examinable under the microscope, and as, moreover, the form, structure, and sculpture of the shell hold the chief places in the examination of these objects, it has been considered best that the shell alone should be mounted for the purpose; a mode of preparation which can be carried out with great facility, as follows:—Take a piece of leather, or other suitable substance, and having punched out a hole in it, fix it to the surface of a piece of glass; into the cell thus formed place the shell, and having covered it over with a disc of thin Venetian glass, ticket, and the mount is ready for the microscope.

END OF "EGG STATE."

Entomological Society of London, *August* 1*st*, 1864.—Rev. Hamlet Clark, M.A., F.L.S., Vice-President, in the Chair.

Mr. Stainton exhibited, on behalf of Mr. Bond, some specimens of a new British *Gelechia*, *G. pinguinella*, which had been taken near London on the trunks of poplars. Mr. Stainton observed that the species was very common in various localities on the continent, and that he had often felt surprised that it should not have occurred in this country.

Professor Westwood called attention to a specimen of the larva of *Zenzera Æsculi* which had been beautifully preserved by Mr. Baker of Cambridge. The Chairman remarked that Professor Westwood spoke of the insect as *Zenzera*, whereas he had generally heard it called *Zeuzera*; on which Professor Westwood stated that *Zenzera* was the name first used by Latreille, and was not only the etymologically correct word, but also the oldest designation, *Zeuzera* being a misprint for *Zenzera*.

Mr. McLachlan exhibited a specimen of *Libellula Striolata*, which at a first glance appeared beautifully spotted with red, owing to a number of red acari having attached themselves to the nervures near the base of the wings, both on the upper and lower surfaces; the specimen exhibited was from the neighbourhood of Montpelier.

Mr. Bond exhibited a specimen of the rare knot-horn, *Nyctegretis Achatinella*, which had been taken at Yarmouth by Mr. Thomas Brown.

Mr. Weir exhibited an albino variety of *Eusebia bipunctaria*, taken near Lewes.

The following papers were then read:—

Descriptions of *Phytophaga*, by J. S. Baly;

Descriptions of four new butterflies by W. C. Hewitson; and

Notes on the genus *Hydaticus*, of Leach, with descriptions of some new species, by the Rev. Hamlet Clark.

NOTES ON THE DIURNAL LEPIDOPTERA OF NORTH-WESTERN INDIA.

BY CAPTAIN A. M. LANG.

(With descriptions of new species by F. Moore.)

Of the genus *Ornithoptera* I have seen but a single example of one species, *O. Pompeius*, which was captured in a garden at Lucknow, in Sept., 1860.

Papilio Diphilus.—Occurs in Oudh; rare at Umballa, but not observed in the Himalaya.

P. Pammon and Polytes.—Common in Oudh, more rarely in the Himalaya, and at low elevations.

P. Paris.—Abundant about springs, rivulets, and on the damp sandy margins of larger streams, in all parts of the N.W. Himalaya, at least, as far as the crossing of the Sutlej at Wangtoo; but as we approach bleaker Thibetan uplands, it disappears.

P. Erithonius.—This is constant to the *Aurantiaceæ;* mountains and plains.

P. Machaon.—Pretty abundant in the Himalaya, on grassy downs and slopes, from 6,000 to 10,000 ft. altitude.

P. Sarpedon.—Seen but in few places, and never more than one at a time. It is bold and rapid in flight, and not easily captured.

P. Cloanthus.—Equally rare with *Sarpedon*, (affecting the same localities,) and can hardly be distinguished from it when on the wing. I have taken both these species sitting with closed wings by the moist margins of a trickling rill; altitude, 5,000 to 7,000 ft. N.W. Himalaya.

P. Protenor.—I have seen a considerable number of these together, floating and flapping their wings lazily, and then settling on the blossoms, in waste marshy ground, overgrown with *Compositæ* (thistles). I have also seen a number congregated with *P. Paris*, on the damp sandy margins of streams in the hills. On these occasions, if disturbed, they disperse only to collect in groups again. Elevation, 4,000 to 7,000 ft. N.W. Himalaya.

*P. Govindra.**—Appears rare, as I have only taken two specimens, both in identically the same spot, in April, at Kussowlie, on the first range of the Himalaya, 6,000 ft. altitude. Each of these individuals affected a high spray of bramble, from whence it dashed off, for a rapid soar for a short distance, returning to its post.

* *Papilio Govindra*, Moore, n sp.—Allied to *Pap. Agestor*, and figured as such by Kollar, in Hugels 'Kaschmir,' (pl. 3, f. 1, 2), but differs in being somewhat smaller, and in having the apex of hind-wing rounded, whereas in *P. Agestor* the costal margin of the hind-wing extends considerably beyond the posterior angle of the fore-wing, and terminates abruptly, thus making a complete trigonal hind-wing. The markings are somewhat similar in both species, but in *P. Govindra* the exterior half of the hind-wing is thickish, with three well-defined series of pale spots.

Habit, N.W. Himalaya. [Masuri, (Hugel), Kussowlie, (Lang.)]

P. Agestor.—Figured in Gray's Lep. Ins. of Nepal, t. 4, f. 2, and Westw. Arc. Ent., pl. 16, f. 2, inhabits the S.E. Himalaya (Darjeeling, Sikkim). Another allied species is *Pap. Epycides*, recently described, and figured by Mr. Hewitson, in Exot. Butt., which I have also received from the S.E. Himalaya.

P. dissimilis.—The only place in which I have seen this species is Subbathoo; altitude 4,000 ft., in June, frequenting a grassy undulating down, flying rapidly in long circuits, pitching occasionally on grassy knolls, and generally returning by the same route to the same spot, after a flight.

Parnassius Hardwickii.—Tolerably abundant on the Makâsoo ridge, near Simla, on bare grassy hill-tops, just clear of oak-woods: grassy, open downs it certainly affects, and at a high elevation—8,000 ft. It appears very local, and has a slow flight, somewhat like that of *Pieris*, although it has a strong as well as slow flight. It flies low over the turf and rocks which crop up amidst the grass. There appear to be two broods—early spring and late autumn. The red and blue spots vary much in different specimens, being quite obsolete in some.

Pontia Nina.—I have seen this but in one place, a forest in the interior of Oudh, in the month of October. Under the bushes which formed the low underwood on the skirts of the forest this delicate-winged insect flapped with weak flight, seeming to shun publicity, and to be afraid to fly boldly from the shelter of the bushes.

Pieris Eucharis.—Taken in Oudh and at Umballa.

Aporia Agathon.—This is a Himalayan insect, frequenting forests and shady glens; at Simla I saw it in considerable numbers in June. The flight much resembles that of *Danais chrysippus*, and it is of easy capture. It appears local, I having seen it only at Simla, and in some richly wooded glens, upwards of 100 miles in the interior of the Himalaya.

A. Soracta.—In some abundance in forests, at altitudes of 6,000 to 8,000 ft. Essentially a forest insect, not affecting gardens or grassy slopes.

P. Sanaca.—Also a Himalayan species, obtained only once, in a richly wooded glen, far in the interior. Its flight was very strong and fast.

P. Coronis.—Abundant in Oudh and at Umballa. I have seen none in the Hills.

P. Mesentina.—Abundant in Oudh and at Umballa; also obtained at Kussowlie. Elevation, 6,000 ft.

P. Brassicæ, var *Nipalensis*.—Abundant at Umballa, in the plains, and up to 10,000 ft. altitude everywhere in the N.W. Himalaya. I never saw it in Oudh.

P. Gliciria.—Abundant in exactly the same localities as the last. Both are on the wing in January.

P. Namouna.—Appears rare: only two taken at Umballa in November.

Idmais Physadia.—One individual only taken; caught flying low in a field at Lucknow, in February.

Anthocharis Etrida.—Captured at Lucknow.

Thestias Ænippe.—This is subject to considerable variation, and the varieties seem constant to localities. The larvæ feed on *Capparis*. I observe a constant difference in the Himalayan and Plains varieties, apparently co-existent with, and dependent on, the species of *Capparis* growing in their separate habitats. The Himalayan specimens from the Sutlej valley are much greyer and finer insects than those from the Plains; and the luxuriantly-growing, large-leaved, and finely-coloured lilac-flowered *Capparis* (sp.?) which covers like ivy the bold cliffs over the Sutlej, and affords pabulum to the Hill larvæ, is a handsomer plant than the coarse, straggling, thorny bush of the *Capparis sepiaria* of the dry plains, with its small white flower. Female specimens from Wangtoo have the upper surface of the anterior wing dark black, with an interrupted white transverse fascia; the posterior wing dull black, with a dusky-white disc; whereas in female specimens from Umballa the whole upper surface is clean white, the anterior wing only having the outer margin and apex black, with a short series of marginal black spots, and a short black streak from the middle of the costa. The males are similarly, though not to so great an extent, unlike; some females have the apical half of the anterior wings pale yellow.

T. Mariannæ.—Abundant in Oudh, Umballa, and in the Himalaya. The females vary a good deal in this species.

Eronia Valeria.—Oudh and Umballa, but not abundantly.

Callidryas Philippina and C. Pyranthe.—Caught in Himalaya and Plains. Larva reared on *Cassia tora*.

C. Alcmeone and C. Hilaria.—Frequent the *Cathartocarpus fistula*, which is an introduced plant in gardens in the plains of N. India; but indigenous to the lower slopes of the outer Himalayan ranges, 2,000 to 5,000 ft.

Gonepteryx Nipalensis.—Abundant in the Himalaya, 3,000 to 10,000 ft.

G. Wallichii.—Local, I only having seen it in the rich dark forests about Kotgurh and Narkunda, fifty miles from Simla.

Colias Edusa.—Abundant in the Himalaya; may be caught also in the winter in Oudh and at Umballa.

C. Hyale.—Tolerably abundant in the Himalaya, 5,000 to 10,000 ft.

C. Neriene.—Ditto.

Terias Hecabe.—Has a wide range: plains of India and Himalaya.

T. Sari.—Same habitat as last. Larva reared on *Mimosa* (sp.?)

T. Læta.—Never seen at Oudh, but at Umballa it seems to occur nearly all the year round. Obtained it also at Kussowlie, in the Himalaya. It has a very weak flight, amongst low herbage, on the skirts of woods and gardens.

Euplœa Core.—Abundant in Oudh and at Umballa. Seen also, but not common, in the Himalaya. Larva reared on *Nerium odorum.*

E. Midamus.—Obtained only two specimens, one at Seetapore, in Oudh, the other in a valley in the Himalaya. It seems rare in these regions.

(*To be continued.*)

REMINISCENCES OF AN ENTOMOLOGICAL EXCURSION UP THE DEMERARA RIVER.

BY BERNARD PIFFARD.

(*Concluded from page* 81.)

The following day was unmarked by any occurrence worthy of note; the general aspect of the river was unchanged; but on the third day as the sun rose, and the mist, which, during the night, had overhung the river, cleared away, the floating islands appeared in sight; at first one by one, and then in groups, these "Emerald Isles," covered with the richest verdure and reeking with dew, floated slowly past, never, however, destined to reach the sea, but to be carried back by the returning tide. They were said, by my negro, to be infested with snakes, on which account he was very anxious to give them a wide berth. Near this spot I was much struck with the appearance of a day-flying moth, of vivid green colour, the hind wings shading off into a pure white, which passed in considerable numbers over the river, and occasionally, also, over the adjacent bushes, but of which, unfortunately, owing to the swiftness of its flight, I failed to secure a single specimen.

Shortly afterwards we reached the sand-hills, which, rising up from the river's edge, are covered with a short and stunted undergrowth, with here and there a clump of bushes and forest trees, and to this spot I

would recommend the attention of future travellers, from the abundance and variety of insect life with which it teems, and the facility afforded by the fine open space at the summit for making excursions and explorations. These hills are frequented by the lovely *Trochilus auratus*, a bird with snowy throat and breast, and grass-green wings and back, which sucks the honey from flowers much after the manner of a humming bird. On the trunks of the larger trees various species of hymenoptera built their nests, which not unfrequently covered one-third of the circumference. High up, on the opposite side of the river, in the narrow ride of a thick, damp wood, I captured a pair of the rare *Callithea Batesii*, in copulâ.*

After passing the sand-hills, creeks were to be seen running in all directions, from the dank and shady jungles, tunnelled over with huge forest trees, interlaced with twining plants and bush-rope, and pouring into the river their cool, refreshing streamlets, whilst here and there along the banks were small inlets, deeply embedded in the forest, upon whose warm and motionless waters were thickly strewn strange berries and seed pods, drifted, by the passing current, from remote and unexplored regions. As far up as I proceeded, the water was discoloured with sediment, that in the creeks alone being fit to drink; in most places the river-banks were too thickly wooded to admit of collecting, or even landing; but occasional small clearings, used as encamping grounds by the Indians, well repaid the trouble of working them. At one of these openings I met with a beetle, which, when touched, exhibited the singular power of discharging, with a hissing sound, jets of vapour from the sides of its abdomen, which, coming in contact with my fingers, left a mark resembling that produced by lunar-caustic, so that before attempting its capture, it seemed advisable to excite the creature, by repeatedly irritating it with a stick, to exhaust itself by successive discharges. On my return voyage, owing to my negro having been attacked with ague, I spent a short time at the mouth of a large creek, where I made the acquaintance of an Indian lad, who took great interest in my pursuit, and rendered me all the assistance in his power.

One evening he returned from hunting with several lantern flies, a strange misshapen insect, said to emit light from the hollow protuberance which forms part of its head, and well answering to a description which I learnt when a school-boy—"*monstrum horrendum informe ingens*," and also, as far as my experience went, "*cui lumen ademptum*." In this neighbourhood I was frequently delighted at meeting with a splendid

* The ♀ (new to Science) will, at a future time, form the subject of a separate paper in this Magazine, by Mr. H. W. Bates, whose name the species bears.—Eds.

butterfly, conspicuous, at a great distance, from the flashes of blue light reflected from its wings, and apparently closely allied to the magnificent *Morpho Menelaus*. Amongst a plantation of sweet potato, not far from where I was stopping, I met with a profusion of two *Cassidæ*, (*Mesomphalia bipustulata*, and an undescribed species of *Pœcilaspis*,) of which the males of one were often seen in copulâ with the females of the other. Here, too, a species of that truly anomalous genus, *Ascalaphus*, swarmed over a bush which overhung the river; and I also captured, in a shady wood, a pretty *Tortrix*, of about the size and shape of *Carpocapsa pomonana*, having the fore-wings black, with fine yellow pencillings, and the hind ones orange, fringed with black.

Shortly afterwards, on account of a return of the negro's illness, I was again compelled to seek a fixed abode for a few days. In this I soon succeeded, by selecting a large clearing on which stood a deserted hut; the surrounding ground which had, at no very distant period, been under cultivation, afforded me an abundance of such fruits as plantains, limes, papäos, pine apples, and melons. From over a bed of cassava I took several specimens of an *Eunomia*, of which the following is an attempt at description:—antennæ black, surmounted by a velvetty crest at the middle where they are thickest, the tips pointed; head and eyes black; thorax black, with two very conspicuous circular white spots placed between the petagiæ and the base of the upper wing; tegulæ posterior to the white spots, and produced beyond the post-thorax; abdomen bright orange, broadly banded with black; wings hyaline, transparent, and margined with black; pterostigmata black; legs also black. exp. alar. 2″ 2‴ long: corp. 9‴.

From amongst long grass at the back of our hut, a curious-looking *Noctua* turned up, a rough description of which may not be out of place:—body and thorax rather slender; of the wings, which are angulated, the prevailing colour is ashy-grey, marked by a rich brown shade, which commences faintly below the costa, and, increasing in intensity, terminates abruptly at a straight line drawn from the outer angle of the fore- to the anal angle of the hind-wing, behind which the original grey colour is resumed; there are also four transverse dentated bands and shades, and the renal stigma which is alone visible is faintly yellow. exp. alar. 1″ 8‴.

A week having now elapsed since landing, and my man having sufficiently recovered, we packed up, weighed anchor, and started homewards, halting only when obliged to do so by adverse tide. On one of these occasions, I regret to say, I discovered that a dipterous

larva had committed such ravages upon my captures as to render worthless nearly the whole of them, otherwise your correspondent would have derived more satisfaction from his raid, and this paper might have possessed more interest for your readers.

A NEW NONAGRIA.

BY C. FENN.

I have much pleasure in recording the capture of a species of *Nonagria*, new to this country, and apparently undescribed by any continental author. It was taken by myself, at Ranworth, in Norfolk, on the 4th of August, flying at dusk amongst *Typha latifolia*. The following is a description:—

NONAGRIA BREVILINEA.

Alis anticis brunneo-ochraceis, basi medio lineâ longitudinali brevi nigrâ, punctis pone medium in serie transversâ nigris, margine apicali immaculatâ; posticis griseis, punctis transversis vix obsoletis nigris.—Exp. alar. 1″ 4‴.

Fore-wings rather sharply angulated at the junction of the costal and hind (apical) margins; brownish ochreous, with numerous scattered black scales; a sharply defined short black dash from the middle of the base; a curved row of small black dots reaches from the costa to the inner margin beyond the middle; apical veins conspicuously paler than the ground colour, apical margin unspotted; hind-wings grey, paler towards the base, a very indistinct transverse row of black dots rather beyond the middle, uniform with those in the fore-wings.

This insect belongs to the same group as *N. neurica*, to which it is closely allied. It differs, however, in the following particulars:—the size is somewhat larger, the short black basal dash in the fore-wing (which does not reach one-fourth the length of the wing), is represented in *N. neurica* by an ill-defined, dark, greyish streak, extending to the middle of the wing, and in the latter species there are several conspicuous black dots near the base, towards the costa, of which there is no trace in *N. brevilinea*; in *N. neurica* the apical margin in all the wings is plainly spotted with black; in the species under consideration this margin is perfectly immaculate, and, as an important character, I may mention that the apical margin in *N. neurica* is more rounded. In the hind-wings an indistinct lunule, present in *N. neurica*, is not found in *N. brevilinea*. The antennæ are darker, and the apex of the abdomen in the male is provided with larger, curved appendages.

DESCRIPTIONS OF THE BRITISH SPECIES OF STENUS.

BY E. C. RYE.

(*Concluded from page* 92.)

(*penultimate joint of tarsi bilobed.*)

(*abdomen margined.*)

ERICHSONI. *Janson, M.S.S.**

flavipes, *Erichson, nec Stephens.*

1⅔ lin. Shining black, rather depressed, strongly but not closely punctured; legs, palpi, and antennæ testaceous yellow, the latter with the club brownish. Head considerably wider than the thorax; the eyes very large. Thorax rounded at the sides, strongly contracted behind, with an obsolete dorsal channel. Elytra scarcely, if at all, longer than the thorax, *with the shoulders much contracted.* Abdomen broad, but considerably narrowed at the apex, and broadly margined.

Cumb. (rare); Falkirk, Bungay, Repton. In moss near Croydon.

FUSCICORNIS, *Erichson.* Usually about 1⅔ lin., but varying somewhat in size. Black, rather shining; legs pitchy-red, with the apex of the femora and the tibiæ more or less pitchy-black. Antennæ and palpi pitchy-brown, the latter with the basal joint testaceous. More cylindrical than *S. Erichsoni*, and presenting a great resemblance in size, punctuation, and general facies to *S. fuscipes* in the first section, from which it may be known by the elongate joints of its tarsi, (especially by the basal joint of the hinder pair.) The tarsi of this species must be gummed down very flat and evenly, and with little gum, in order to see the bilobed structure.

Hammersmith, Combe Wood, Dulwich, Purley Downs, and Charlton. Usually in moss or leaves in woods.

PALUSTRIS, *Erichson.* Somewhat similar to *S. Erichsoni* in size, punctuation, and build, (though generally a little larger), but narrower and duller, not so flat; the legs stouter, dark testaceous, with the apex of the femora broadly pitchy-brown, and the tibiæ suffused with pitchy; the antennæ pitchy-red, with the club pitchy, and the palpi testaceous, with the apical joint pitchy. The elytra, also, although quite as short, are not so contracted at the shoulders. The fourth joint of the tarsi is strongly bilobed.

Most abundant in Wicken Fen; also found at Horning.

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* Mr. Janson has made this change in accordance with the recognized laws of nomenclature, solely in consequence of the name *flavipes* having been used in the genus before the date of Erichson's work. I need scarcely add that its publication by me must not be construed as an admission, by Mr. Janson, of the stability of the species to which that name was originally applied, or of any other of the Stephensian species.

PALLIPES, *Gravenhorst, Erichson.* Also of the size and general appearance of *Erichsoni*, but considerably duller, more pubescent, with the elytra wider, not contracted at the shoulders, not quite so strongly but rather more irregularly punctured, the interstices distinctly alutaceous; the abdomen narrower; the legs, antennæ, and palpi darker testaceous, and slightly suffused with pitchy.

Northumb., very rare: Bungay, Repton, Holme Bush, and Eltham. Common at Hammersmith Marshes.

FLAVIPES, (*Kirby*) *Stephens, Ill. Mand. v.* 289. 24 (1832), *and coll.* (*nec Erichson*).

filum, *Erichson* 1840.

About the size of *Erichsoni*. Linear, rather depressed; black, slightly shining; the legs, palpi, and antennæ yellow, the latter with the basal joint black, and the two apical joints brownish. Rather strongly, but sparingly, punctured. Head depressed, with the vertex wide and smooth. Thorax, with the disc, smooth. Elytra slightly longer than the thorax, a little contracted at the shoulders. Abdomen elongate, linear, and rather widely margined.

Common, Northumb., Cumb., Preston, Fens, Repton, Brighton, Bungay, and London district.

B. Abdomen unmargined.

a. elytra spotted.

KIESENWETTERI, *Rosenh.; Kraatz, Ins. Deutschl.*

2½ lin. Somewhat similar in size and appearance to *cicindeloides* (in the next division), but differing from that species as follows—apart from its spotted elytra. It is more convex; the head is wider; the thorax wider in the middle, and more contracted behind, with the punctuation not quite so close; the elytra are smaller, and not so closely punctured, and the transverse furrows of the abdomen are not so closely punctured. Black, (when alive almost blue-black), very shining, and coarsely punctured; the elytra each with a large round orange spot; the femora with a broad orange-yellow band in the middle, the tibiæ pitchy, with the apex and the tarsi dull testaceous.

We are indebted to Mr. D. Sharp, a gentleman of the greatest energy and discernment, for this splendid addition to our lists. It was discovered by him, in the early part of this year, in a ravine on Wimbledon Common, the bottom of which was very wet, and overgrown with *Sphagnum;* and has been subsequently taken, at the same place, by myself, Messrs. F. and C. Waterhouse, Dr. Power, Mr. Smith, and Mr. Janson, &c. I believe upwards of sixty specimens have been taken in all.

b. elytra unspotted.

TARSALIS, *Ljungh; Erichson.* Average size 2 lines. Somewhat of the build of *bifoveolatus*, but larger, not so bright, with longer elytra, and unmargined abdomen. Greyish-black, very slightly shining, tarsi pitchy-testaceous; antennæ rufo-testaceous, with the basal joint black, and club pitchy; palpi rufo-testaceous, slightly suffused with pitchy. Head rather depressed, closely punctured, with a wide middle elevation. Thorax closely and rather strongly punctured, with a faint oblique impression on each side, behind the middle. Elytra decidedly longer than the thorax; more strongly, but not so closely, punctured; rather flat, the interstices level, but with a slight elevation between the shoulders and suture. Abdomen strongly punctured.

Most abundant in the Midland and Southern parts of the kingdom. Mr. Bold does not seem to find it in Northumberland, nor Mr. Hislop at Falkirk.

OCULATUS, *Gravenhorst; Erichson.* $2\frac{1}{2}$ lin. Grey-black, very slightly shining; legs yellow, the extreme apex of the femora, base of the tibiæ, and apex of the three first joints of the tarsi on the upper side, pitchy-black. This black part gradually increases in extent from the anterior to the posterior legs; but, even in the latter, barely extends to a quarter of the length of either the femora or tibiæ. Palpi and antennæ testaceous-yellow, the latter with the basal joint black; both sometimes suffused with pitchy at the apex. Head with a wide, very slightly elevated, but well defined, longitudinal convexity. Thorax almost cylindrical, but narrowed behind; closely punctured, with a very faint impression on each side, behind the middle. Elytra decidedly longer than the thorax, more strongly and less closely punctured, the interstices level, rather flat, but slightly elevated on each side near the suture. Abdomen strongly punctured. Coxæ black. Metasternum coarsely and strongly punctured.

In the male the sixth segment beneath is deeply emarginate, and the fourth is slightly depressed, and sinuate in the middle of its hinder margin, the sinuation having a minute, somewhat obtuse, toothlet on each side. In the female the sixth segment is rather prominently and suddenly acuminate in the middle of its hinder margin.

Very abundant all over the kingdom.

SOLUTUS, *Erichson.* Of the same size and appearance as *oculatus*, but darker and more shining, the legs stouter, the anterior femora pitchy on the upper side, just before the apex; the middle and posterior

femora pitchy-black for the entire apical half, and the corresponding tibiæ suffused with pitchy-black for more than half their length; the coxæ pitchy-red, the metasternum rather coarsely, but somewhat obsoletely, punctured; the antennæ, with the basal joint, testaceous, the thorax not so closely punctured, the elytra not so strongly punctured, and rather more uneven, and the abdomen very finely and closely punctured.

In the male the sixth segment beneath has a deep triangular notch, and the fourth is slightly depressed in the middle, with a faint semicircular emargination in its hinder edge; the second and third segments are also depressed in a less degree. In the female the sixth segment has its posterior margin very slightly produced in the middle.

Horning Fen, and Lee-pit, near Blackheath.

CICINDELOIDES, *Gravenh.*; *Erichson.* 2⅔ lin. Deep-black, shining, robust, very coarsely and deeply punctured; legs testaceous yellow, the base of the femora slightly, and the apex widely, pitchy-black; tibiæ pitchy, with the apex more or less testaceous yellow; tarsi pitchy-testaceous. Palpi and antennæ dull testaceous, the latter with the club brownish. Thorax, with the interstices, rugulose. Elytra scarcely longer than the thorax, and not so closely punctured.

In the male the sixth segment of the abdomen has a somewhat acute triangular notch.

Does not seem to be found in Scotland or Northumberland district. Common at Boston, Preston, Fens, Weston, Bungay, Repton, and London district.

FULVICORNIS, (*Kirby*) *Stephens.*

paganus, *Erichson.*

1⅔ lin. Somewhat of the appearance of *tarsalis*, but smaller, rather narrower, the legs lighter, the antennæ shorter, with the two basal joints pitchy, and the punctuation comparatively coarser. Also considerably like *brunnipes*, but easily distinguished from that insect by its longer elytra, lighter antennæ, and strongly bilobed tarsi. Leaden-black, slightly shining, antennæ short, the two basal joints pitchy, and the club brownish; palpi testaceous, with the apical joint brownish. Legs reddish-brown, pitchy at the knees. Tarsi rufo-testaceous. Closely and strongly punctured throughout; the elytra longer than the thorax.

Rare in Northumberland, but apparently common elsewhere, from Boston to Brighton.

LATIFRONS, *Erichson.* About the size of *fulvicornis*, from which it differs in being more linear, with much shorter elytra, rather duller, the legs, antennæ, and palpi darker, and the punctuation not so strong. It also much resembles *brunnipes*, from which it may be known by its strongly bilobed tarsi, more linear shape, and less defined frontal elevation. Black, rather dull; legs pitchy-red, often nearly black. Antennæ and palpi pitchy, the latter with the basal joint and base of the second testaceous. The antennæ are sometimes almost entirely testaceous. Head wide, depressed, with a wide, very slightly elevated, interstitial space. Thorax very closely punctured. Elytra more coarsely punctured, about the same length as the thorax. Abdomen cylindrical, elongate, linear, closely and rather strongly punctured.

Northumb., Cumb., and Falkirk, rare. Not uncommon in the Fens, at Boston, Preston, Brighton, Weston, and London district.

FORNICATUS, (*Kirby*) *Stephens.*
contractus, *Erichson.*

1 lin. Deep black, shining. Antennæ pitchy, sometimes pitchy-brown, especially lighter at the base; palpi with the basal joint testaceous; tibiæ with the base white. Head small, thickly and deeply punctured, with a very small, smooth, middle elevation. Thorax as wide as long; coarsely, deeply, and closely punctured, the interstices rugulose. Elytra inflated, much wider than the head and thorax, very coarsely and deeply punctured, but not so closely as on the thorax, the interstices almost rugulose. Abdomen considerably narrower than the elytra, short and attenuate.

Horning Fen, Weston, and Colney Hatch. Once found at Hammersmith Marshes by Mr. Waterhouse.

Having now completed the descriptions of our species in this genus, in all sixty-two, (of which two are, to say the least, doubtful), it remains for me to beg a lenient opinion for the necessarily clumsy way in which I have discharged my unaccustomed task of describing; I hope to do better on future occasions, as I intend to continue the work thus commenced.

I shall be glad to receive local lists of captures in the *Brachelytra* from any provincial Coleopterists.

E. C. RYE.

284, King's Road, Chelsea, S.W.
10*th Sept.*, 1864.

NEW SPECIES OF BUTTERFLIES FROM GUATEMALA AND PANAMÁ.

BY HENRY WALTER BATES, F.Z.S.

(Continued from page 85.)

45.—EUNICA MODESTA.

Expans. 1″ 10‴. Closely allied to *Eu. pusilla*, (Bates, Journal of Entomology, vol. ii. pl. 9, f. 5, 5*a*), but a little larger, and the fore-wing a little more produced at the apex. The male is dark brown, with a purple gloss; but the fore-wing, instead of being spotless, as in *Eu. pusilla*, has two macular belts towards the apex, each consisting of three spots, the centre one of which is white, the others dusky white. Hind-wing spotless. Beneath: very similar to *Eu. pusilla;* fore-wing brown, paler towards the base; a small round, blackish spot on the middle of the cell, followed by a slender dusky circumflex, and a dark streak over the lower disco-cellular nervule. The first macular belt consists of three white spots, the second of a single spot; the apex of the wing grey, with a dark brown sub-marginal line. Hind-wing brown, washed with grey, crossed by two slender, flexuous, brown lines, enclosing two double ocelli, the apical one having distinct greyish-white pupils, encircled with blackish, the anal one forming almost two distinct ocelli, and having very minute blackish pupils.

Female: pale brown, macular belts of fore-wing consisting of clearer white spots.

Guatemala.

46.—EPIPHILE PLUTONIA.

♂. Wings of the same shape as in *E. Epicaste*, (Hewits. Exot. Butt. Ep. f. 4), but the fore-wing a little more falcate. Rich dark brown; hind-wing nearly black. Fore-wing with a tawny-orange belt across the middle, precisely as in *E. Epicaste*, and with a white sub-apical spot. The basal part, instead of a belt, has a small transverse orange spot across the middle of the cell. Hind-wing with the disc occupied by a rich, glossy, dark blue patch. Beneath: the same as *E. Epicaste*, (Hewits. l. c. f. 3), except that the belt of the fore-wing is of an ochreous-tawny hue, and that the basal spot extends very little beyond the cell.

Guatemala, interior.

47.—TEMENIS SYLPHIS.

♂. Expans. 1″ 11‴. Outer margins of the wings distinctly scalloped: fore-wing costa arched; apex not falcate, but with a broad dentiform lobe on the outer margin, just below the apex; the rest of

the outer margin being slightly arched outwardly. Fore-wing, with the outer half blackish brown, crossed by two tawny-ochreous belts, the first deeply indented in the middle, the second narrow and sub-apical: basal portion of the wing, together with the whole of the hind-wing (except its outer limb), dark reddish-tawny, with a large basal patch of a glossy, tender mauve-blue colour: outer limb of hind-wing tawny brown, with a sub-marginal lunated streak brownish-black. Beneath: fore-wing, with the basal half, tawny yellow, the apical half brownish-black, apex and outer margin brownish-tawny; the first belt of same form and colour as on the upper surface, the second blended with the pale hue of the apex. A little beyond the apex of the cell is a broad and short streak of metallic blue; preceding the pale apex is a thinner streak, and along the outer border a sub-marginal line of the same hue. Hind-wing reddish-brown, minutely dusted throughout with greyish and dark brown; across the middle of the wing run two thin and crooked dark brown lines, margined with a paler line; the outer one of these is accompanied by a thin, shining, lead-coloured streak, and the outer margin has a sub-marginal line of the same colour, between which and the median streak is a row of minute black ocelli, margined outwardly with shining leaden spots: in the middle of the costa is a pale triangular spot, similar to that which is so distinguishing a character of the species of *Epiphile*. Palpi long and thick, terminal joint somewhat drooping. Antennæ with elongate club, shaft ringed with whitish; bases of the costal and median nervures of the fore-wing swollen. Eyes naked.

Guatemala. This handsome insect partakes of the characters of many genera. The swollen bases of the fore-wing nervures connect it with *Eunica;* the style of coloration with *Epiphile;* the colours of the hinder surface of the hind-wing are those of certain species of *Epicalia* (*E. Ethusa* and *E. cyaniris*); the leaden lines showing, however, a resemblance to *Nica*. Its neuration is that of *Temenis*, but it will, probably, form the type of a distinct genus.

48.—AGERONIA GLAUCONOME.

♂. Expans. 3″. Closely allied to *Ageronia ferentina*. General colour of the upper surface of the wings, pale, dusty, greenish-grey. There are no whitish spots in the cell, or between the bases of the median branches of the fore-wing, but the outer half of the wing is occupied by a large chalky-white patch, varied by the row of ocelli, (the fourth from the costa alone being encircled with black, the rest consisting of pale grey rings), and the gray outer border which has

three lines of dusky streaks; the black markings of the base of the wing are similar in form to those of *A. ferentina*, but they are much more slender. The hind-wing above is wholly free from paler patches; the black markings are similar in form and position to those of *A. ferentina*, and the row of ocelli does not differ in number or colours from this species; the ocelli, however, have the various concentric rings much less clearly defined. Beneath: the same as in *A. ferentina*.

Guatemala, interior.

49.—AGERONIA GUATEMALENA.

♂. Expans. 3″. Allied to *A. Feronia*, but differing from this and the allied species in the apex of the fore-wing being rather broadly rounded, and the outer margin not at all curved inwards: the costa of the same wing (♂) is scarcely indented in the middle. Colours the same as in *A. Feronia*, but the darker spots and streaks nearly the same in number, shape, and position: the differences are chiefly in the belt of dingy-white spots of fore-wing, which consists of much more elongate spots, giving a different aspect to the insect. The sub-marginal ocelli are very different from those of *A. Feronia*. In the fore-wing they have much larger round pupils (of a dingy-gray instead of white colour) and narrower black irides: in the hind-wing they have also large, sub-oval, dingy pupils, encircled by three concentric rings, two narrow and grey, the third (intermediate) broad and black. Beneath: almost the only difference from *A. Feronia* is the pale saffron-ochreous hue of the hind-wing.

Guatemala, central valleys.

50.—AGERONIA ATLANTIS.

♀. Expans. 3″ 2‴. Not closely allied to any other described species of this genus. Costa of fore-wing very slightly arched (♀), apex obtuse, outer margin markedly incurved in the middle. All the usual black and dusky waved streaks and marks are of nearly a uniform dusky tint, and broader than in any of the allied species, having dark grey spots and marks of diminished size, and in the hind-wing isolated from each other, and mostly in the form of distinct spots. Cell of fore-wing free from pale spot or rufous streak; a small white spot lies on the costa, a little beyond the cell; and there is a broad, short, sub-apical belt also white. The ocelli of the fore-wing are all indistinct, except the one between the upper and lower radials, which is deep black, with a small blue pupil. The ocelli of the hind-wing are very large, circular, and distinct, the five middle ones having large dusky-

brown centres, (black in the middle, with a greenish curved line), and three narrow, concentric rings, two of them greenish-grey, the third (intermediate) dusky-brown. Beneath: pale gray; the fore-wing apical belt whitish, with the black ocellus well marked: the cell of the same wing crossed by four black lines. Beyond the cell are two curved transverse black streaks, enclosing six pale spots; apex black, with four whitish spots; hind-wing with two slender transverse dusky lines near the base, and beyond the middle a broken dusky line across the wing. The outer border is brown, and encloses seven transverse gray spots; the ocelli are black, with shining bluish pupils.

Guatemala, central valleys.

51.—AGERONIA IPHTHIME.

♂. Expans. 2″ 10‴. Same shape as *A. Feronia*, the fore-wing (♂) having the costa strongly arched beyond the end of the cell, with the apex acute, and the outer margin slightly incurved. General colour, pale bluish grey, with the dusky streaks much slenderer in the fore-wing than in *A. Feronia*. The central portion of the fore-wing is dingy-white; there is a rufous streak and large dingy-white spot within the cell, and the ocelli of the same wing are almost obsolete, with the exception of the three between the radial nervures, two of which are large and black, with dingy-white pupils, and the third or apical one is in the form of a small dusky ring. The ocelli of the hind-wing are four in number, (the two outer ones being indistinct), and have large dingy-white pupils, (the two anal ones lunate, the two apical ones circular), with four concentric rings, the first broad and black, the second and fourth narrow and grey, and the third moderately narrow and dusky-brown. Beneath: very similar to *A. Feronia*, the chief differences being the absence of ocelli from the fore-wing, and the form of the inner zig-zag brown streak of the hind-wing, which consists of a number of straight connected lines, instead of detached lunules, as in *A. Feronia*.

Guatemala; also, New Granada.

(*To be continued.*)

Thecla betulæ, near Cork.—On the 5th inst., at Blarney Castle, in the neighbourhood of Cork, I observed *Thecla betulæ* flying over some low brushwood. This is, I believe, a new locality for the species. The country in the immediate vicinity of Blarney appeared to be very likely ground for Entomologizing; however, my visit was of short duration, and for a very different purpose, that of risking my neck in kissing the far-famed "stone," and of walking through the beautiful groves; so my captures were of a very limited nature.—G. F. Mathews, H.M.S. "Warrior."

Occurrence of an Aphthona new to Britain.

APHTHONA NIGRICEPS.

Haltica nigriceps, *Wilh. Redtenbacher, quæd. Gen. et Spec. Col. Aust.*, p. 27. 25.
Longitarsus nigriceps, *Ludw. Redtenbacher, Faun. Aust.*, 940. (1067) 5.
Aphtona sicula, *Foudras, Alt.* 365.
Aphtona nigriceps, *Allard, Gal. Anis.* (*Alt.*) 1861, 395. 116.

Ovata, convexiuscula, subtilissimè punctulata; nigra, thorace rufo-testaceo, elytris testaceis, suturâ fuscâ, medio plus minusve latè nigro-piceâ; antennis fusco-piceis, articulis quatuor primis testaceis; pedibus testaceis, tarsis apice fuscescentibus, femoribus posticis fusco-testaceis. Long. corp. $\frac{5}{6}$ *lin.*

A few examples of this insect, taken by Mr. Harris, of Burton, by sweeping the Cranesbill (*Geranium pratense*) at Egginton, on the banks of the Trent, near Burton, were lately brought before my notice by my friend Mr. Garneys, of Repton; in company with whom, and Mr. Harris, I captured about 300 specimens, in every degree of maturity, in a very short space of time, on the 20th August last, at the same place, and under similar conditions.

As Allard (*loc. cit.*) states, in his diagnosis, that the hinder femora are black, and, in his detailed description, that the legs are entirely testaceous, whilst Redtenbacher only mentions that they are frequently pitchy, I have given above a fresh diagnosis of this species. Out of the large number taken, I found that the hinder femora were never more than brownish-testaceous, and chiefly darkest on the upper surface. Both Redtenbacher and Allard state the antennæ to be brownish at the apex, but I find the antennæ in all my examples to have always the four basal joints testaceous, the fifth pitchy-testaceous, darkest at the apex, and all the remainder pitchy-brown.

These differences, however, are so small, that they would not warrant the elevation of our British specimens into the rank of a separate species; especially as in all other respects the latter agree very exactly with the published descriptions. It appears to be a rare insect on the Continent. When alive, the thorax has a decidedly reddish tinge, which, however, soon fades.

The only variation between individual specimens appears to be in the sutural marking, which in some examples is scarcely, if at all, visible, and in others expands into a pitchy-black broad stain, common to both elytra, commencing about a quarter of the length of the suture from the scutellum, and ending at the same distance from the apex.

The only insects at all resembling this species are *Aphthona lutescens* and *Thyamis atricapilla*; from both of which its much smaller size will at once serve to separate it. From the latter, which it most resembles in form and colour, it may be known also by the shorter and broader basal joint of its hinder tarsi, the transverse groove forming two smooth but slight elevations between the eyes, and its shorter hind legs. From the former it differs in being not so flat, and of a shorter oval form; also in having a black head and scutellum, but no black patch on the hinder femora, and the antennæ not so stout or deep black.—E. C. RYE.

Occurrence of a Liodes new to Britain.

Liodes castanea, *Herbst* (Tetratoma); *Erichson, Ins. Deutsch.*, 1. *Abt.*, 3 Bd. 91. 5.

I have detected this fine species among some unexamined Coleoptera recently taken at Rannoch, in Perthshire, by Mr. D. Sharp. It is 1½ lin. in length, ovate, rather flattish, shining; black on the upper side, the thorax and elytra margined with pitchy-red; the legs and under side reddish-brown, and the antennæ reddish-brown, with the seventh and three apical joints pitchy. The thorax is very delicately and almost obsoletely punctured, and the elytra have the striæ composed of coarse and somewhat irregular double rows of punctures, with the interstices more finely (but still *strongly*) punctured. There is also a deeply impressed single stria on each side of the suture, narrowest at the apex, but gradually widening as it approaches the scutellar region, where it becomes obsolete.

The longer oval, and flattish form of this insect, added to its thin legs, and the coarse and numerous punctures on the elytra, at once distinguish it from our other species.

It occurs to me that it may be as well to give the diagnostic characters between *L. axillaris*, Gyll., and *L. humeralis*, Fab., (both of which have a red shoulder spot), as the former is included by Mr. G. R. Crotch in his "Catalogue of British Coleoptera." *L. axillaris* is rather smaller than the latter species, somewhat longer, and more ovate. Its elytra are not clothed with the short pubescence so evident in *humeralis*, and the punctuation is more distinct in the striæ, and not so close in the interstices. In the male, also, the anterior tarsi are not so widened at the base, and the hinder tibiæ are not widened inwards, or toothed at the apex. It must be remembered, however, that in the female of *humeralis* the anterior tarsi and hinder tibiæ are simple; and that in the male of that species the elytra are shining, with the striæ more coarsely punctured, and the interstices much more strongly and widely punctured, than in the female.—E. C. Rye.

Discovery of the larva and pupa of Rhipiphorus paradoxus.—On opening a cell contained in a nest of *Vespa vulgaris* on Saturday morning last, I fortunately discovered a larva of the above parasite sticking like a leech to the spun-up larva of the wasp, which, in the course of the following forty-eight hours, it entirely consumed, with the exception of the skin and mandibles, although it had made comparatively little progress in the work of destruction at the time I opened the cell. From other cells in the same nest I obtained pupæ of the parasite, as well as specimens of the perfect insect.—S. Stone, Brighthampton, Witney, *Aug.* 23*rd*, 1864.

A Lepidopterous imago and ichneumons bred out of one larva.—Having read the note in the August number of this Magazine, respecting the development of an imago after the escape of parasites, I thought it might not be amiss if I confirmed the possibility of such an event by relating a similar instance which has occurred within my own experience. At one time I was breeding *Acronycta psi* from the larva; some little time before the transformation of one of the caterpillars into the pupa state, two larvæ of a small *Ichneumon*, apparently the same as that infesting *Pieris brassicæ*, came out of it, spun their little cocoons, and afterwards appeared in

the perfect state. Subsequently an imago of *Psi* was produced from the same pupa; this wanted one of the hind-wings, but was otherwise perfect.—A. G. Butler, 26, Brompton Square, 19*th August*, 1864.

[Dr. Laboulbène has called my attention to an analagous instance recorded by M. Millière in the bulletin of the "Annales de la Société Entomologique de France" for 1852, p. 16. In this case several larvæ of an *Ichneumon* emerged *from an imago of Deilephila vespertilio*.—R. McLachlan.]

CAPTURES OF *LEPIDOPTERA*.

As far as *Lepidoptera* go, the present season seems to have been rather unproductive. The butterflies are, in many instances, particularly scarce. Two exceptions there certainly are (besides the whites, which I think are common, almost every year, to an equal degree), *H. Janira* and *V. Urticæ*.

Sugaring is so poor a method of collecting that it ought soon to become unfashionable. In the neighbourhood of Windermere, where I sugared a good deal, during the month of June, I met with *T. batis* and *A. rumicis*; and I think nothing else, except our old friends *X. polyodon* and *T. pronuba*. However, sugaring in the Lake District is not to be despised, even when nothing comes to the sugar, and the moon is up.

At Sutton, my success has not been much superior. Although there is plenty of well-wooded country about, I believe that the sugared trees have never yielded anything better than *O. upsilon*, *N. umbrosa*, and *C. affinis* and *diffinis*. The latter species is a marvel of shyness, as well as of beauty. One specimen I found the other night, sipping daintily, but having somewhat the appearance, to compare small things with great, of a horse with its ears pricked. The colours being unusually fresh, I tried a pill-box, and had the satisfaction of seeing *diffinis* drop gently among the brushwood. In about half-an-hour I visited the tree again, with precisely the same result. After ten o'clock I went round for the last time, and *diffinis*, which was getting greedy with success, dropped into a pill-box. As I pocketed it I felt inclined to say, with Titania—

> "Out of this wood do not desire to go!
> Thou shalt remain here, whether thou wilt or no;"

and there it remained till I lulled it to sleep with chloroform.

At flowers, especially blackberry flowers, I have met with a good many species, *Lithosia complanula* and *griseola*, *Triphæna interjecta*, *Leucania conigera*, and *Eupithæcia subfulvata*, being among the number. I never remember to have seen the *Lithosiæ* at flowers before, and I was very much surprised at the occurrence.

H. serena has been tolerably common on palings, where I have also met with *C. blanda*, *E. centaureata*, etc. *A. coloncella* occurs freely along the Sutton hedges at night; and I have met with *P. tersata* and *P. ochrodactylus* in the same situations.

While in the neighbourhood of Lostock Gralam, in Cheshire, I had some collecting with my friend, Mr. Stanley Leigh. Our captures included *P. lucertinaria*, a number of fine examples of *A. siculana*, one specimen of *E. ochreella*, and *T. semifulvella*, with a number of other species, such as *M. albicillata*, *F. piniaria*, and *R. pinivorana*.

Among the *Micro-Lepidoptera* I have met with many species at Sutton. I may enumerate *X. hamana* and *zoegana* flying over flowers at dusk, together with *L. Francillana*; *E. lunaris* abundantly on one row of palings, and its congener, *unitella*, sparingly in the same situation; *A. Lundana*, very darkly marked; *Cerostoma vittella*, and some few specimens of *N. aurella* on palings; *H. padellus* and *evonymellus* also on palings; *D. arenella* and *angelicella* flying in the evening; *Catoptria Scopoliana* on flowers; and *T. cloacella* in the garden at rest.

At Box Hill, and in the "Hilly Field," I met with numerous species; in fact, I found the *Lepidoptera* better represented there than elsewhere. *A. gilvaria* was out in considerable numbers, and was, as usual, very wild in the net; *Polyommatus Agestis* occurred on the top of one of the slopes, and *P. comma* was so abundant that two or three specimens might be seen hovering over one flower. *Linea*, on the contrary, was very scarce. *G. Rhamni*, of which a fine specimen, settled on a flower, is scarcely to be resisted, was common. I chased a good many of these splendid fellows, and captured *one* as the result of a good many rapid charges. My friend, Mr. E. M. Geldart, who was with me at the time, was no more proof against bright yellow wings than I. Once, indeed, he did so "furiously charge and mightily revolve" that I, who was in among the preserves, hearing the rushing of his downward course, concluded that a keeper was pressing him sore; and, like Adam, hid myself in the bushes. After *Rhamni* we met with *ornata* in very beautiful condition. The pretty little *P. aspersana* was rather common among the short grass; and, up on Mickleham Downs, we fell in with *D. unguicula*.

Of various other captures I may note *P. lithodactylus* in very fine condition at Epsom; *H. velleda* rather commonly on walls about Ambleside; *E. bipunctaria* in various chalky localities; *Eudorea cembræ* about Sutton.

In the earlier part of the year I had a very pleasant excursion into savage parts of Essex with my friend, Dr. Battershell Gill, the presence of *Aleucis pictaria* compensating, in some measure, for the wildness of the inhabitants, who appear to resist civilization manfully. One barbarian, whom we engaged to drive us across four or five miles of rough country at ten o'clock on a dark night, I never heard equalled for droll sayings. Unfortunately his high spirits and run of playful humour were attributable to a lengthened visit at the village inn; and he, persisting in the necessity of charging along at full gallop, held us in bodily fear by terrible joltings.

The great heat and absence of rain appear to have operated unfavourably on the *Lepidoptera* of this district. I have already noticed a great scarcity of many species.—J. B. Blackburn.

Notes on Orgyia gonostigma.—Some larvæ taken at Wimbledon, August 29th, 1863, passed the winter under the cover and protection of a loose web on the under side of the leaves of their food-plant (oak). On the 11th April, 1864, they began to move out of winter quarters, and were supplied with forward sprigs of oak, the buds of which they consumed. The larvæ were full fed and all in cocoon by May 20th. The first imago, a ♂, appeared June 6th; on the 7th, a pair were *in copulâ*, and soon after the deposition of the eggs began; these hatched on 25th June, and the young larvæ were supplied with *Sallow*, which they readily took to;

twelve of the larvæ commenced cocoon-spinning July 27th, and on the 8th of August the imagos, both ♂ and ♀, emerged; and eggs, obtained from them, hatched on September 2nd.

The specimens bred from the hybernating larvæ, as also the hybernating larvæ themselves, were both larger and far more vigorous than those of the succeeding summer brood, as shown by the following dimensions:—Full fed larva, hybernated, 1″ ♂, 1″ 6‴ ♀; imagos (♂) from ditto, 1″ 3‴—1″ 5‴; full fed larvæ of the second brood, 10‴ ♂, 1″ 2‴ ♀; imagos (♂) from ditto, 1″—1″ 2‴.

Having larvæ in excess, I shall be happy to supply those who may feel interested in rearing this species.—Geo. Gibson, 55, Chalk Farm Road, *September 3rd.*

New locality for Gastropacha ilicifolia, with description of larva.—The following is a description of a larva taken on the 3rd of August, near Lynton, North Devon, in a wood abounding with bilberry.

A bombyx larva, apparently full fed, length 1″ 9‴. Head and body hairy. Cream-coloured, dusted with black. Hairs on back dark, short; on sides in long white fascicles (a few darker interspersed) curving downwards. Head pale drab, the black atoms on it in longitudinal bands. On the second segment, a reddish blotch bordered with black atoms; a series of markings something like the ace of clubs down the centre of the back, embracing the dorsal line, formed of thicker black atoms, blackest on the fourth segment, into which run lateral stripes of black atoms, from each black spiracle directed backwards. An indistinct spiracular line of black atoms. Legs reddish with black spots; claspers the colour of the body, with a black stripe on the upper surface, orange underneath. Along the ventral line a chain of black spots, very large and conspicuous, from commencement of the claspers to the anal segment, gradually smaller towards the head.

The larva was sickly when taken, and is still in a bad way, probably ichneumoned. The above description agrees in the main with that of *G. ilicifolia* given in Stainton's Manual. Its resemblance to a *Gastropacha* larva makes me think it must belong to that species.—E. Horton.

P.S.—I have just received a note from Mr. Buckler, in which, referring to the above, he says, "The larva-skin which I return to you is undoubtedly that of *G. ilicifolia*."—E. H.

Captures in the South.—I spent the last week of July in an entomological excursion to the coast of Dorsetshire and Hampshire, and during that period met with the following *Lepidoptera*, as well as other species of more general distribution:

Argynnis Paphia.—Several *seen* on the road from Christchurch to Bournemouth. *Arge Galathea.*—Not very common, at Weymouth. It usually abonnds there.

Satyrus Semele.—I met with this in the greatest profusion at Bournemouth, flying over the heath which clothes the sandy cliffs there.

Hesperia Actæon.—This species seems to be irregular in the time of its appearance. I took it in abundance, in very fine condition, in 1858, at the end of July, both at Lulworth Cove and at the Burning Cliff; whereas, the few specimens that I met with in the corresponding week *this* year, at the latter locality, were in a very wasted state, and had, apparently, been on the wing for some time. I met

a member of the Entomological Society on the Cliff, who had walked there from Lulworth, where he had taken a few specimens in no better plight than mine.

Gnophos obscurata.—This species seems to be tolerably common at Bournemouth. I also met with the pale variety (*pullata*) at Portland.

Pseudopterpna cytisaria.—Common in some of the chines on the road from Weymouth to the Burning Cliff, and abundant among heath at Bournemouth.

Acidalia rusticata.—I took this delicate little "wave" pretty freely among red dead nettle and *Iris fœtidissima* growing at the foot of a cliff at Portland. It seems to be an excessively local insect, as the specimens that I captured (39 in all) were all taken within the area of about one hundred square yards, and I could not find the species in any other part of the island. Its food-plant, the whitethorn, was growing sparingly in the neighbourhood. It is a difficult insect to obtain in fine condition, as it has when disturbed a habit of diving to the bottom of the herbage, whence it is not an easy task to secure it undamaged.

Acidalia osseata.—A very abundant species at Portland, occurring among a variety of different plants; but at Weymouth, in places where the nature of the ground and the vegetation seemed to be identical with that of the island, I could not obtain a single specimen.

Acidalia promutata.—Two specimens on the underside of nettle leaves, Portland. *Acidalia imitaria.*—Common at Portland amongst *Rosa spinosissima.*

Acidalia degeneraria.—Of this scarce insect I was fortunate in securing twelve specimens at Portland; they were, however, for the most part much worn—I was not early enough to take them in fine condition. As I took them in different parts of the island, and on various shrubs and plants, I can form no conjecture as to the food-plant of the larva. The species is readily seen; it sits upon the upper side of the plant in which it is found, or on the face of the rocks. It is weak on the wing, seldom flying more than a few yards at a time. Portland is an excellent locality for the genus *Acidalia.* I have taken as many as *eight* different species there in a single day.

Pachycnemia hippocastanaria.—At Bournemouth. *Larentia olivata.*—Several specimens at Portland. *Emmelesia decolorata.*—One speciman at Portland. *Eupithecia centaureata.*—Two specimens at Portland. *Eupithecia nanata.*—I was rather surprised to meet with this species at Bournemouth so late in the season; I never remember to have taken it anywhere, before, later than the middle of June. This year, however, it has occurred at Wimbledon Common at the beginning of the present month (August), from which I infer that it is occasionally double-brooded.

Melanippe galiata.—Several at Portland. *Eubolia palumbaria.*—Abundant at Bournemouth. *Eubolia bipunctaria.*—Excessively abundant everywhere on the coast. *Agrotis porphyrea.*—Several, near Bournemouth. *Hypenodes costæstrigalis.*—One specimen at Bournemouth. *Cledeobia angustalis.*—Common at Portland, also at the Burning Cliff. *Pyrausta punicealis.*—One specimen at Portland. *Herbula cespitalis.*—Common on the turfy slopes opposite the landing pier at Portland.

Stenia punctalis.—Not uncommon at Portland, chiefly among *Iris fœtidissima.* *Hydrocampa stagnalis.*—Abundant at Bournemouth. *Botys asinalis.*—Two specimens at Portland in the crevices of rocks. *Ebulea crocealis.*—Common at the Burning Cliff and (less commonly) at Portland. *Scopula lutealis.*—Common at Osmington, Dorset. *Scoparia* ——— (?).—Two or three species at present in

Mr. Doubleday's hands for identification. *Phycis carbonariella*.—One worn specimen at Bournemouth. *Melia sociella*.—At Portland, and also at Bournemouth. *Mixodia Hawkerana* and *Cnephasia lepidana*.—Both common at Bournemouth. *Eupœcilia roseana*.—Abundant at the Burning Cliff.

The following species occurred at Portland:—*Ephippiphora Brunnichiana* (abundantly); *Catoptria Hohenworthiana* (ditto); *Eupœcilia hybridellana* (two specimens); *Chrosis tesserana* (abundantly); *Cochylis Francillana* (one specimen); *Pterophorus pilosellæ* (three specimens); and *Pterophorus bipunctidactylus* (common). *Pterophorus lithodactylus* turned up at the Burning Cliff.—Trovey Blackmore, The Hollies, Wandsworth, S.W., *August 13th*, 1864.

Spilosoma papyratia near Cambridge.—While searching for the larvæ of *Scsia bombyliformis* (of which I only found one), I met with a female of *Spilosoma papyratia*, at rest upon Sallow. This I secured on the 16th July, at Hornsey, near this town.—Charles Grinstead, Cambridge, *July 23rd*, 1864.

Eupœcilia sodaliana.—I took a fine specimen of *E. sodaliana* out of buckthorn while beating for the larva of *Scotosia dubitata* at Darenth, on the 29th June; another specimen has since been taken in the same locality: perhaps this hint may assist some of your readers.—Edward Meek, 5, King Street, Old Ford Road, *August 6th*, 1864.

Tapinostola Bondii.—This species was very common at Folkestone on the 10th, 11th, and 12th of last July, but on the 13th the wind changed to N.E., and I only got six specimens; the best mode of taking it is to search by means of a lantern after dark, upon the grass (*Festuca arundinacea*), where these conspicuously white moths may be seen sitting, and readily boxed; they do not appear to come to sugar. I think that it would turn up in other localities on the south coast if sought for.—*Id.*

Clostera anachoreta.—I secured two larvæ at Folkestone in one of the plantations along the lower Sandgate Road, the locality indicated to me by Dr. Knaggs as that in which he had first met with the species; they were feeding upon Ontario poplar.—*Id.*

Bombus Lapponicus at Keighley.—I have lately taken a few specimens (neuters) of this local bee, on the Moors, about three miles north of Keighley; they were on the flowers of the ling. I have as yet seen neither male nor female, but expect them daily. Mr. Smith kindly determined this species for me.—R. Tyrer, Bank House, Keighley, Yorkshire, *September*, 1864.

Migration of Aphides.—Whilst walking, this morning, along the beach from Bournemouth towards Poole, a strange mossy-looking green track, which varied in width from one to three or four inches, arrested my attention; this moss-like line, left at high water mark by the tide which was then just beginning to recede, extended, so far as my observation went, for a mile, though probably to a far greater length, and consisted of millions upon millions of aphides belonging to a species apparently closely resembling, if not identical with, those infesting the sycamore and other trees, producing honey-dew; they had evidently been but recently deposited, for, though agglutinated together in masses, very many of them still showed

signs of vitality. It is worthy of remark that yesterday after about noontide the weather was calm, scarcely a breath of air stirring towards evening, but that during the night and this morning it has been more or less windy, so that, although numbers of aphides reached our shores uninjured, the bulk of them were destroyed by immersion. The case seems to me the more interesting and extraordinary because, some time since, my friend, Mr. Hopley, narrated to me in graphic language the fact of his having met with myriads of the common lady-bird under *precisely similar circumstances* (a by no means unusual occurrence, I believe), and two conclusions naturally force themselves upon me, namely, that aphides migrate in such prodigious, quantities as to account for their vast periodical assemblage here in England in certain seasons, *and* that in all probability the instincts of their natural destroyers prompt them to follow.—H. G. Knaggs, Bournemouth, *July 14th.*

Entomological Society of London, *September 5th*, 1864.—F. P. Pascoe, Esq. F.L.S., President, in the Chair.

The Secretary exhibited some larvæ of *Agrotis exclamationis* (?), which had been sent to him from Yorkshire, where they were doing much damage to the turnips. Professor Westwood observed that he had suffered much this season from their ravages in his own garden, and as many as twenty-nine had been counted at one turnip.

Mr. E. W. Janson exhibited four new species of British *Coleoptera* which had not been hitherto recorded:—1st, *Euryusa sinuata* of Erichson, taken in Oxfordshire by the Rev. A. Matthews; 2nd, *Leptusa analis* of Gyllenhal, captured in August in the Black Forest, Perthshire, by Mr. D. Sharp; 3rd, *Aleochara spadicea* of Erichson, taken by Mr. Brewer in Cumberland in the autumn of 1863; and 4th, *Homalota notha* of Erichson taken by Mr. Brewer amongst rejectamenta on the Medway.

Mr. Stevens exhibited an extensive collection of *Coleoptera* and *Lepidoptera*, which had been made in Syria by Mr. Lowne, principally in the months of April and May. Among them was one *Chrysophanus* apparently new. Mr. Lowne remarked that in the summer months insects became very scarce in Syria.

Mr. Tegetmeier called attention to the numerous errors of observation which had appeared in the letters recently published in *The Times*, signed "A Bee Master," and mis-statements which showed that the writer had very little knowledge of the literature relating to bees. Professor Westwood said that the Members of the Society must all agree with him in feeling extremely obliged to Mr. Tegetmeier for the able and masterly way in which he had refuted the inaccuracies of the *Times* correspondent.

A paper by Mr. Hewitson was read, in which six new species of Butterflies were described.

A letter from Lieut. Beavan, of Barrackpore, was read, stating that he had forwarded insects from Maumtrom, for the collection of the Society, and a paper from him was then read, on the Tusseh silkworm.

Professor Westwood read a paper with descriptions of *Sagrides* and *Megalopides* of the Old World and Australia.

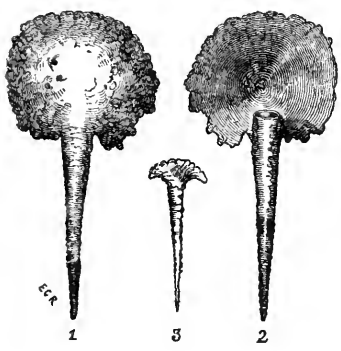
Rev. Hamlet Clark read a paper on *Schematiza*, a genus of *Galerucidæ*.

ON A SINGULAR CADDIS-WORM CASE FROM CEYLON.

BY R. M'LACHLAN, F.L.S.

In the extensive collection of the Cases of Caddis-worms, both British and exotic, in the Collection of the British Museum, I find two from Ceylon evidently belonging to the same species, of forms so singular, that I think a short notice of their peculiarities cannot fail to be interesting to Entomologists generally. Owing to the assiduous researches of Mr. Nietner we know more of the Trichopterous fauna of Ceylon than of any other tropical country, but it is of course impossible to say if these cases belong to any of the species brought over by him. There can be little doubt that they belong to some insect of the family *Leptoceridæ*, which family is represented by several species of *Setodes* in Mr. Nietner's collection.

The form of the largest of the cases is as follows. To the upper end of a straight cylindrical tube tapering gradually to a point, and with an even and nearly circular mouth, is affixed a large, nearly round shield, concave below and convex above; viewed from above the shield and tube are inseparable, but beneath the latter appears as a separate portion, its upper or mouth-end extending to near the middle of the shield. The case is constructed of fine grains of sand cemented together by, and coated over with, some peculiar substance, probably a secretion of the larva. The edges of the shield are a little irregular. The whole case has the form of a Torpedo in miniature. The length on the upper-side, from the extreme end to the anterior edge of the shield, is 10 lines; the breadth of the shield at its broadest part $4\frac{1}{2}$ lines; and the length of the tube, from the mouth to the apex, $6\frac{1}{2}$ lines.



In the smaller specimen (fig. 3) the shield is imperfectly developed and somewhat reniform. This may be the usual condition of the case in immature examples, or perhaps the form of the shield is liable to variation independent of age. This case has a minute opening at the small end, which is not visible in the larger one, being perhaps closed by the inhabitant, or by accidental pressure.

These structures form beautiful illustrations of the different modes in which the habits of insects are adapted to the conditions in which

they are placed. Even in our temperate climate the enemies of these larvæ are very numerous, and their number is probably greater in the waters of the eastern island in which the inhabitants of the cases under consideration have their home. It is probable that the creatures crawl along the bottom of shallow streams, so that when they protrude the head and anterior segments in search of food, they are protected from above by the projecting shield, and can only be seized from below, or by piercing the tube.

Among the European species, the only instance at all analogous is that of *Molanna angustata*, Curtis. The broad case of this species has projecting wing-like lateral margins, and the upper-surface projects considerably beyond the mouth of the tube, thus forming a protecting shield, but much more clumsily constructed than in the Ceylon cases. Another case, perhaps more like these, is described by Dr. Hagen in his elaborate paper on the cases of *Phryganidæ* ("*Ueber Phryganiden Gehäuse*"), published in the Stettiner Entomologische Zeitung for the present year, under the name of *Molanna triangularis* (l. c. p. 225), the imago being at present unknown. These come from the Cape of Good Hope, and are furnished with a projecting semi-circular shield in front; but both these and the European species differ from those from Ceylon, in that in *Molanna* the tube is not distinctly separable beneath, in consequence of the shield being only a continuation of the wing-like lateral processes and upper-surface.

Figure 1 represents the upper-side of the shield of the larger example; figure 2 the under-side of the same case; both twice the natural size. Figure 3 represents the upper-side of the smaller case, of the natural size.

NEW SPECIES OF BUTTERFLIES FROM GUATEMALA AND PANAMÁ.

BY HENRY WALTER BATES, F.Z.S.

(Continued from page 116.*)*

52.—PYRRHOGYRA OTOLAIS.

♂ ♀. Expans. 1″ 8‴ Similar in colours, both above and beneath, to *P. Edoela* (Dbldy. & Hewits. Gen. Diurn. Lep. pl. 32, f. 5), but much smaller, the fore-wing more arched on the costa and much less produced at the apex, and the hind-wing not prolonged at the anal angle. Brownish-black, the centre of both wings occupied by a very broad greenish-white spot, which extends to the median nervure on the fore-wing, and to the abdominal edge on the hind-wing. The

apical part of the fore-wing has a short greenish-white belt which touches the costa, and beyond this a small white spot: the outer border of the hind-wing is moderately narrow, and has, running through its middle part, a paler streak. Beneath: the costal part of the fore-wing has two parallel red streaks, joined at the end of the cell by an oblique transverse red streak; another curved streak of the same hue crosses the wing beyond the sub-apical pale fascia; the dusky outer margin is ashy, with a central brown line. The hind-wing, beneath, has a short red streak at the base, and a lunulated streak of the same colour towards the outer border, edged narrowly on the inner side with black, and on the outer with bluish-grey lunules and a narrow dusky line; between the latter and the margin the wing is whitish, with a fine sub-marginal and marginal brown line.

Guatemala; also found in Mexico.

53.—HETEROCHROA CELERIO.

♂ ♀. Expans. 2″ 5‴. Resembles in shape, and in the colours and pattern of the underside, *H. Serpa* (Boisduval, Spec. Gen. Lep. pl. 8, f. 4). Above: the pattern is also very similar to that of *H. Serpa*, but the central pale belt is of a greenish-white hue instead of pure white, and the sub-apical orange spot is crossed only by three nervures; the pale belt is also a little broader, but ends, on the fore-wing, like that of *H. Serpa*, at the third branch of the median nervure. The broad brown outer borders are traversed on the fore-wing by two, and on the hind-wing by three, blackish stripes. Beneath: the pattern is almost identical with that of *H. Serpa*, and the characteristic markings of the cell and the spaces on both sides of the base of the first median branch, are also the same: the central pale belt, however, differs in being greenish-white, and the rufous belts of the hind-wing are darker in colour, the outer one also being much nearer the outer border.

Guatemala; also on the Upper and Lower Amazons.

54.—HETEROCHROA PARŒCA.

♂. Expans. 2″ 5‴. Also very similar to *H. Serpa* (Boisd.), but the hind-wing is less produced at the anal angle, and the central belt, although the same in colour, shows no tendency to become macular on the fore-wing, as in *H. Serpa;* its inner edge also approaches much nearer the median nervure of the same wing. The sub-apical orange spot is crossed by four nervures. Beneath: the pattern and colours are very similar to those of *H. Serpa;* the characteristic markings of the fore-wing cell and basal spaces of median

branches are the same, but the transverse black line with grey spot at the end of the cell is absent, and beyond this there are three longitudinal wedge-shaped grey spots, wanting in *H. Serpa*. The outer borders of both wings are distinctly grey, or rather present a double row of distinct grey lunules. The rufous belts of the hind-wing are not edged with black, although they are nearly the same in position as in *H. Serpa*.

Guatemala, central valleys.

55.—HETEROCHROA IPHICLEOLA.

♂ ♀. 2″ 1‴. Very closely allied to *H. Iphicla*, Lin. (Drury Ill. vol. 1. pl. 14, f. 3, 4), but smaller, the fore-wing more produced and pointed at the apex, and the dentations of outer border of hind-wing longer and more acute. Colours and design the same, except that the sub-apical orange spot is broader, and is not situated on the inner edge behind the lower radial nervure. Beneath: the only differences are the more distinct tracing and the blacker colour of the fine outer marginal line of the wings, which embraces distinct whitish lunules between the dentations; and the constant presence of a slender arcuated rufous line on the inner side of the discoidal rufous streak of the hind-wing.

Guatemala.

56.—HETEROCHROA PITHYS.

♂. Expans. 2″ 4‴. Similar in shape and colours above to *H. Iphicla*, Lin., but differs in the pale belt being pure white, and ending in a point on the median nervure of fore-wing, and in the sub-apical orange spot being elongate, and extending parallel to the outer border from the costa to the second median branch. Beneath: the colours and markings differ from those of all the allied species. The general colour is pallid ochreo-rufous and grey, with the white belt same as above, but edged with a brown line. The cell of the fore-wing has a thin brown line across the middle of the space between the two double lines, and there is an oblique brown line beyond the end of the cell; the basal part of the space between the sub-median nervure and the first median branch is crossed by three brown lines; the sub-apical orange spot is visible beneath, but paler. The cell of the hind-wings is crossed by four fine brown lines, two of which extend to the costal nervure. The outer border of both wings is greyish, and has two rows of faint dusky lunules, the hind-wing also having a sub-marginal and marginal rufous line.

Guatemala.

57.—Heterochroa melanthe.

♂. Expans. 3″. Allied to *H. Mesenteria*, Fabr. (Cramer, 162 B.C.), and resembling it in its markings underneath, but wings more ample, and fore-wing less incurved on the outer border. Above: black, with scarcely a trace of darker marks; fore-wing crossed beyond the middle by a broad tawny-orange belt, commencing on the costa and ending on the outer border; its inner edge even, its outer edge a little broken by the black ground colour extending along the nervures. Beneath: yellowish, base of wings ochreous; markings of cell of fore-wing very similar to those of *H. Mesenteria;* the black colour of end of cell, however, extends to the hind angle of the wing, and there are two grey spots in the interspaces on either side of the base of the first median branch: the rufous-yellow colour of the wing beyond the cell extends quite to the outer margin, which is free from dark lines; the nervures near the apex are broadly margined with dusky, and the apex itself has a white spot. The hind-wing is crossed towards the base by three broadish dark brown streaks, the middle one of which joins the outer one; a dusky streak runs between each of the nervures towards the margin, and there is also a dusky brown patch on the outer disc; the outer margin is pale grey, with two neat black parallel lines.

This beautiful species was found in the interior valleys of Guatemala.*

58.—Timetes corita.

♂. Expans. 2″ 9‴. Almost identical above with *Timete Corinna*, Latr., especially with the variety or allied species called *T. Marcella* (Felder, Lep. Nov. Columb., No. 96), but the fore-wing more pointed. Beneath: entirely different. The ground colour is rufous-brown; both wings are crossed by a central silvery grey line, edged on the outside with darker brown; between this and the base is a less distinct, almost lunulated, grey line, and another sub-basal similar line crosses the fore-wing cell: exterior to the central streak, both wings are crossed by three lines of connected grey lunules, a portion of which is obsolete on the fore-wing: the apical part of the fore-wing has three or four

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* *Heterochroa Spruceana.* Closely allied to *H. Melanthe*, but smaller (2″ 7‴), wings less rounded, fore-wing strongly incurved on the outer margin. Above: very dark brown, basal black marks of under-surface of fore-wing shining through; fore-wing crossed by a narrow orange-tawny belt, extending from the costa to near the outer margin, its external edge very irregular. Beneath: almost identical with *H. mesenteria*, the only decided differences being the dusky brown colour of the fore-wing, through which the belt appears in a paler hue, and extending to the outer margin, and the absence of the third brown streak along the outer border of the hind wing.

Western valleys of Chimborazo, alt. 3-4000 feet. Taken by Mr. R. Spruce.

sagittate silvery spots, and there is a waved row of black dots extending from these to the anal angle of the hind-wing, near which two of them form ocelli with grey irides.

Guatemala, apparently common in the central valleys. Specimens exist in the British Museum Collection with the M.S. name of *T. Corita* attached to them, which name I have adopted.

59.—APATURA THAUMAS.

♂. Expans. 2″ 3‴. Allied to *A. Pavonii*, Latreille (in Humboldt and Bonpland's Obs. Zool., pl. 18, f. 3, 4), and still more closely to *A. Elis*, Felder (Lep. Nov. Columb., No. 100). It differs from *A. Pavonii* in having, near apex of fore-wing, three white spots instead of an orange patch; and from *A. Elis*, in wanting entirely the tawny-orange belt of the fore-wing. It is of a more slaty-black hue than *A. Elis*, and the purple silky gloss is much more diffused and richer in hue. The hind-wing, above, scarcely differs from that of *A. Elis*. Beneath: the hind-wing differs from all the allied species, its costa being short and straight (from the basal dilatation), and its apex is nearly rectangular, the outer margin being quite straight for some distance from the apical angle. The colour of the hind-wing beneath is ochreous-grey, dusted with brown atoms; the centre of the wing is crossed by an irregular brown streak; a fainter and more lunulated streak lies nearer the outer margin.

Guatemala, interior.

60.—APATURA ARGUS.

♂. Expans. 2″ 6‴. Allied to *A. Clyton* and *A. Celtis*, of North America. Fore-wing with the costa nearly straight, apex strongly produced and as if truncated, outer border deeply incurved: hind-wing faintly dentate and slightly incurved in the middle of its outer border. Fore-wing, above, with the basal half dark tawny, becoming clearer tawny externally, apical half black, with a strongly curved row of five white spots; a dusky line and spot lie in the cell. Hind-wing dark tawny, with the nervures, two lines near the outer border, and a strongly curved row of six round spots, blackish-brown. Beneath: pale brownish-grey; fore-wing with two brown stripes across the cell, and a curved red-brown streak across the wing, marking the inner edge of the pale tawny hue of the upper side; white spots as above; the outer border of both wings has a brown line parallel to it, and on the inner side of this a row of dusky lunules. The hind-wing has two brown streaks in the cell, and a flexuous central streak of the same

hue: nearer the outer border is a very irregular row of neatly-defined ocelli, having black pupils with grey centres and yellow irides encircled with black.

This peculiar and handsome species of *Apatura* was found in the Motagua Valley, Guatemala.

(*To be continued.*)

NOTES ON THE DIURNAL LEPIDOPTERA OF NORTH-WESTERN INDIA.

BY CAPTAIN A. M. LANG.

(With descriptions of new species by F. Moore.)

(*Continued from page* 104.)

Danais Chrysippus.—Everywhere very abundant; larva on *Calotropis.*

D. Plexippus.—Tolerably abundant everywhere.

D. Limniacæ and *D. Melissa.*—Same localities as above.

D. Tytia.—Entirely Himalayan. Obtained in wooded glens 6,000 to 7,000 ft. altitude. Flight high and soaring.

Telchinia Violæ.—Seen only at Lucknow in the hot dry season, when it is rather abundant, frequenting fields of lucerne. Of slow flight and easy capture.

Cethosia Cyane.—A single specimen only obtained in a wild jungly spot on the Gogra in Oudh.

Atella Phalanta.—Tolerably abundant in Oudh, at Umballa, and in the Himalaya up to 8,000 ft. elevation. Larva reared on *Flacourtia sp.*(?)

Argynnis Niphe.—Tolerably abundant in certain localities, 6,000 to 8,000 ft. in the Himalaya. The males seem much more abundant than the females.

*A. Jainadeva.**—Taken only at Cheeni, in Kunawar, in the Himalaya, 10,000 ft. elevation, flying fast over the meadows and pitching on tall blossoms of Cruciferæ.

A. Issæa.—Very abundant in the Himalaya, 5,000 to 8,000 ft., at all seasons of the year; even in winter, when snow lies deep on sheltered slopes, this insect may be seen on open sunny sites.

A. Kamala.—N.W. Himalaya.

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* *Argynnis Jainadeva,* Moore, n. sp.—Upper-side rich fulvous, and marked very much as in *A Niphe.* Under-surface palest along the costal half. Hind-wing with the basal portion green, and having the spots similar to those in *A. Adippe,* excepting that in *A. Jainadeva* the marginal series are narrower, and the basal reduced to mere dots. The whole of the spots are, as in female of that species, brightly silvered. Expans. 2½″.

A. Childreni.—A Himalayan species, rarer than the preceding, frequenting grassy slopes near woods, open copses, and gardens. 7,000 to 10,000 ft. elevation. Flight bold and very fast; affects *Compositæ* and *Cruciferæ*.

Laogona Hyppocla.—N.W. Himalaya.

Vanessa Charonia.—This is a thoroughly Himalayan forest insect, of swift flight.

V. xanthomelas.—A local Himalayan forest insect.

V. Kaschmirensis.—As abundant in the Himalaya as *V. urticæ* is in England.

Pyrameis Callirhoë.—Abundant in the Himalaya, 5,000 to 10,000 ft.

P. Cardui.—Everywhere common in the Himalaya at all seasons; and throughout the winter months in the plains.

Junonia Lemonias.—A "Plains" insect, but also seen in the Himalaya. Larva reared on *Barleria prionites*.

J. Œnone.—Same localities. Larva on same as last

J. Orithyia.—Same localities. Partial to bare, dry grass land; to be seen in the hottest hot winds, and in the bleak wintery weather, pitched on the grass, flitting quickly away and pitching again after a short circuit. Larva reared on *Antirrhinum orontium*.

J. Asterie and *J. Almana.*—N.W. Himalaya.

Precis Iphita.—Rather abundant in the Himalaya.

P. Hara.—A Himalayan species. Not so abundant as the preceding. Generally seen on the banks of streams.

Cyrestis Thyodamus.—A Himalayan forest insect, difficult to capture at all, and more so to secure perfect specimens. It frequents generally a well-wooded glen, and in such a place I have often watched its elegant soaring flight, far out of reach as it floated over the blossoms of the horse-chestnut (*Pavia indica*), or rested on its broad leaves in the sunshine. I have also seen it floating up and down the foliage-covered face of a steep cliff overhanging a hill torrent, and rarely would it come within reach.

Neptis Aceris.—Common in woods and gardens in the Himalaya; also taken in winter in gardens at Umballa. It has a beautiful flight, floating in and out of the sunlight in the shade of trees; occasionally basking on the sun-bathed foliage, or resting, in groups of half-a-dozen or more, on the moist fern-covered rocks in the midst of the stream in some Himalayan glen.

N. Nandina.—N.W. Himalaya.

N. Zaida.—A Himalayan species.

Athyma Leucothoë and *A. Opalina.*—Himalayan species.

Limenitis Trivena.*—I have seen but three individuals of this species, all in the Himalaya, 7,000 to 8,000 feet elevation, in forests of oak (*Quercus incana* and *semi-carpifolia*). Has a quick flight, sometimes slower, floating in and out of the sunlight.

Diadema Bolina.—Tolerably abundant in Oudh and at Umballa in the rainy season (autumn), and well into the winter. Larva reared on *Portulaca oleracea*.

D. Lassinassa.—Sexes vary much in size, and the female in colouring. Frequents woods and orchards, affecting the shade of the trees.

Hestina persimilis.—Himalaya, 4,000 to 7,000 feet. I have only seen three specimens of this. One I caught in a narrow glen, well wooded with undergrowth; the other two in an orchard of plum and apricot, on the ripe fruit of which these insects (with the next also, and *Athymæ*) were settling, both on the trees and on the fallen fruit below the trees.

(*To be concluded in our next.*)

DESCRIPTIONS OF SOME UNCHARACTERIZED GENERA OF PHYTOPHAGA.

BY JOSEPH S. BALY, M.E.S.

Fam.—Eumolpidæ.

Genus—IPHIMEIS.

Corpus late ovatum, aut oblongo-ovatum, valde convexum; *caput* perpendiculare, thoraci ad oculos insertum; *antennis* subfiliformibus, basi gracilibus, articulis 5 vel 6 ultimis paullo incrassatis et compressis, plerumque nigris; *oculis* intus plus minusve sinuatis; *mento* quadrato-emarginato; *thorax* transversus, basi elytrorum latitudini fere æqualis, lateribus marginatis, integris, rotundato-angustatis, obliquis, apice medio vix antrorsum producto, utrinque pone oculos sinuato; *elytra* thorace paullo latiora, confuse punctata; *pedes* mediocres, robusti, simplices; *tibiis* posticis extus canaliculatis; *unguiculis* appendiculatis; *prosternum* planum, latitudine longius, basi truncatum; *epimeris* anticis prosterni apice continuatis, subtrapeziformibus, angulo exteriori ab angulo thoracis remotis; *mesosternum* fere quadratum.

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* *Limenitis Trivena*, Moore, n. sp., ♂.—Upper-side brown, with a broad interrupted white band extending across the disc of both wings, beyond which is a marginal series of pale ochrey-red lunules, bordered on each side with black. In the fore-wing are a few small white spots at the apex, before the band, and within the discoidal cell is a transverse white streak, on each side of which is a narrow, pale ochrey-red, black bordered streak, the basal one showing itself below the cell.

♀.—Darker, fuliginous, tinged with green at the base of the wings, the broad transverse band and spots creamy white, the marginal series of lunules also whitish.

Under-side ochrey-yellow, with the broad band, discoidal and apical spots white. Ciliæ white, at the points black. Antennæ at the apex ochrey-red.

Expans. 2½″.

Type—*Iphimeis fulvipes*, Baly.

This genus includes those species of *Colaspidæ* with a short broadly ovate body, which have their antennæ moderate in thickness, appendiculated claws, the sutural line between the prosternum and epimera obsolete, the outer angle of the latter not produced to the anterior angle of the thorax, and the prosternum itself truncate at its base.

Iphimeis fulvipes.

Ovata, valde convexa, cærulea, nitida, violaceo-micans, antennis, palpis, pedibusque fulvis, illis extrorsum nigris. Long, 4½ lin.

Hab.: Brazil.

Head short, somewhat coarsely punctured, strigose-punctate between the eyes, forehead broad, flat, five apical joints of antennæ moderately compressed, dilated, and black. Thorax transverse, distinctly narrower than the elytra, nearly twice broader than long, sides rotundate-angustate from base to apex; upper surface remotely punctured on the disc, sides rather more closely punctured. Elytra impressed transversely below the humeral callus, somewhat closely punctured.

Genus—Colaspoides, Laporte.

Corpus oblongo-ovatum, aut ovatum, aut subrotundatum, valde convexum, metallicum aut non metallicum; *caput* breve, thoraci ad dimidiam partem oculorum insertum, perpendiculare; *antennis* filiformibus, apicem versus leviter incrassatis; ore plerumque prosterni apice occulto; *mento* quadrato-emarginato; *oculis* vix prominentibus, intus sinuatis; *thorax* transversus, basi elytrorum latitudini fere æqualis, lateribus integris, rotundato-angustatis; *elytra* thorace paullo aut vix latiora, confuse punctata; *pedes* modice robusti; *femoribus* muticis; *tibiis* posticis extus non canaliculatis; *unguiculis* appendiculatis; *prosternum* planum, plerumque transversum, rarius latitudine longius, basi truncatum vel concavum; *epimeris* anticis trapeziformibus, ab apice prosterni lineâ impressâ suturali separatis; *mesosternum* transversum aut sub-quadratum, apice obtuse angulato.

Type—*Colaspoides limbata*, Oliv.

The present genus differs from the preceding in the possession of a sutural groove between the apex of the prosternum and its epimera.

Fam.—Halticidæ.

Genus—Iphitrea.

Corpus elongatum; *caput* exsertum; *facie* perpendiculari, inter antennarum insertionem elevata; *antennis* filiformibus, mediocribus, ad

apicem vix incrassatis, articulo primo incrassato, ovato, secundo illo fere dimidio breviori, obovato, tertio et tribus sequentibus singulatim secundo fere duplo longioribus, æqualibus, septimo et sequentibus adhuc longioribus, fere æqualibus, undecimo distincte elongato, acuto; *oculis* prominulis, integris; *thorax* transversus, lateribus fere parallelis, vix marginatis, dorso modice transversim convexo, basi obsolete transversim depresso; *scutellum* trigonum; *elytra* thorace latiora, elongata, modice convexa, punctato-striata, pube adpressa vestita; *limbo inflexo* obliquo, fere perpendiculari; *pedes* modice robusti; *coxis* anticis distantibus, subrotundatis, vix elevatis; *femoribus* posticis modice incrassatis, subtus canaliculatis; *tibiis* posticis dorso non canaliculatis, apice spinâ brevi acutâ armatis; *tarsis* posticis tibiarum apici articulatis; *unguiculis* basi dentatis; *prosternum* angustum, apice dilatato.

Type—*Iphitrea limbata.*

This genus is closely allied in form to *Systena*, but separated from it by the punctate striæ of the elytra.

Iphitrea limbata.

Elongata, subnitida, dorso pube subdepressa sparse vestita, supra nigra, facie, thoracis apice lateribusque, elytrorumque limbo lato (basi excepta), albis; thorace lævi, disco glabro, utrinque puncto parvo notato, ante basim transversim depresso, basi ipsa distincte punctata, sparse pubescente; elytris punctato-striatis, interspatiis disci obsolete transversim rugulosis; subtus nigra, thorace (maculâ utrinque exceptâ) albo, pedibus nigro-piceis, tibiis basi pallidioribus, femoribus basi sordide albis. Long, $1\frac{2}{3}$ lin.

Hab.: Columbia.

Fam.—Gallerucidæ.

Genus—Chthoneis.

Corpus elongatum, angustatum, parallelum; *caput* exsertum; *antennis* corpore longioribus, filiformibus, articulo primo curvato, ad apicem incrassato, secundo tertioque brevibus, quarto et sequentibus ad apicem compressis, singulis articulorum trium basalium longitudini æqualibus; *oculis* prominentibus, integris; *palporum* articulo ultimo conico, acuto; *thorax* transversus, dorso non impressus; *scutellum* trigonum; *elytra* thorace paullo latiora, parallela, confuse punctata; *limbo inflexo* fere perpendiculari, vix ante apicem abbreviato; *pedes* simplices; *coxis* anticis non contiguis, trigonis, erectis; *tibiis* posticis apice inermibus; *tarsorum* posticorum articulo basali elongato, duobus sequentibus brevibus; *unguiculis* appendiculatis; *prosternum* angustum, deorsum productum, coxis æquialtum.

Type—*Chthoneis apicicornis.*

Chthoneis is very similar in form to *Luperus*, but the compressed dilated joints of the antennæ at once divide it from that genus.

Chthoneis apicicornis.

Elongata, parallela, modice convexa, metallico-cærulea, nitida, antennarum articulo basali subtus, penultimo apice, ultimoque toto, sordide albis; thorace transverso, lateribus parallelis, anguste marginatis, medio obtuse angulatis, dorso lævi, tenuiter remote punctato, elytris thorace paullo latioribus, parallelis, intra humeros longitudinaliter depressis, confuse subfortiter punctatis, interspatiis disci exterioris irregulariter transversim elevato-crenulatis. Long 3—3¼ lin.

Hab.: Columbia.

Genus—Byblitea.

Corpus elongatum, parallelum; *caput* exsertum; *antennis* gracilibus filiformibus, corporis longitudini æqualibus, articulis cylindricis, primo curvato, ad apicem incrassato, secundo illo plus dimidio breviori, tertio secundo fere duplo longiori, quarto et sequentibus longioribus, inter se fere æqualibus; *oculis* prominentibus, integris; *mento* quadrato; *palporum* articulo ultimo conico, acuto; *palpis maxillaribus* crassis; *thorax* transversus, dorso non sulcatus; *scutellum* trigonum; *elytra* thorace latiora, parallela, confuse punctata; *limbo inflexo* fere ad apicem distincto; *pedes* sat graciles; *coxis* anticis crassis, erectis, contiguis; *femoribus* posticis non incrassatis; *tibiis* posticis apice muticis; *unguiculis* crassis, bifidis; *prosternum* breve, pone apicem obsoletum.

Type—*Byblitea Deyrollei.*

The absence of a spine at the apex of the hinder tibiæ, the longer basal joint of the tarsus of the same pair of legs, together with the more parallel form of the elytra, separate this genus from *Diabrotica*, to which otherwise it is closely allied.

Byblitea Deyrollei.

Elongata, parallela, modice convexa, flava, nitida, oculis, antennis, tibiis tarsisque nigris, capite thoraceque rufo-fulvis; elytris modice convexis, sat fortiter, crebre punctatis, metallico-viridibus, margine, apice dilatato, fulvo; thorace transverso, lateribus parallelis, medio obtuse angulatis, dorso tenuiter, remote punctato. Long 3½ lin.

Hab.: Columbia.

(*To be continued.*)

DESCRIPTION OF A SPECIES OF CEUTHORHYNCHIDEUS NEW TO SCIENCE.

BY E. C. RYE.

CEUTHORHYNCHIDEUS POWERI.

C. breviter ovatus, convexiusculus, piceus, subtùs cinereo-squamosus, thoracis margine antico elytrisque saturatè rufo-brunneis, pedibus rufo-testaceis; thorace canaliculato, elytrorum interstitiis vix elevatis, pilis brevioribus tenuioribus adspersis, humeris vix prominulis. Long. corp. 1 *lin.*

Three examples of this insect were taken at Weybridge last June by Dr. J. A. Power, to whom I have dedicated the species. I need scarcely inform those who are acquainted with Dr. Power's rapidity of perception, that he at once detected it to be at least new to Britain.

It is nearly allied to *C. floralis* and *C. pyrrhorhynchus* (most resembling the rufous varieties of the latter species), but differs from both as follows:—

It is rather smaller, shorter, more convex, with the shoulders more rounded, the legs shorter and not so stout, and the rostrum and antennæ entirely pitchy; the thorax is rather shorter, with the constriction towards the front of its sides beginning nearer the base, and the dorsal channel having some ashy scales near the scutellum; the suture of the elytra is not clothed with ashy scales, and the striæ are not deeply cut, so that the interstices are only moderately elevated. The especial difference, however, is in the clothing of the interstices, which in *C. Poweri* is composed of short, thin, depressed, rather scattered, yellowish-grey hairs (or, at least, scales so slender as to assume the form of hairs), instead of the usual broad, closely planted scales.

In form *C. Poweri* approaches *Amalus scortillum* more than any other species of its genus; but the latter can be known at once by its deep black colour, and bright red legs, which are also much stouter than in the insect now described.

The fact of the funiculus (or space between the basal joint and club) of its antennæ being comprised of six joints (instead of seven) will of course distinguish *C. Poweri* from any of the smaller *Ceuthorhynchi*. This difference has caused certain continental entomologists to remove *Ceuthorhynchideus* from the *Cryptorhynchidæ*, and consider it as a mere sub-genus of *Amalus*, although in other points of structure, and in general facies, its members are very closely allied to *Ceuthorhynchus*.

It is not improbable that the *C. minimus* of Walton's Catalogue of British Curculionidæ may be identical with the species now under consideration; but as no description of Walton's insect has been published, and no specimens of it are extant, it is of course impossible to speak with any certainty on this point.

OCCURRENCE OF AN OLIGOTA NEW TO BRITAIN.

OLIGOTA PYGMŒA, *Kraatz, in Berliner Entomol. Zeitschrift*, 1858, *p.* 352.

I have determined this species from some specimens taken last September in a refuse heap on Shirley Common, near Croydon, by Mr. D. Sharp (in company with Mr. E. Shepherd). It scarcely equals *O. pusillima* in size, and is of the same narrow, linear form; but differs from that insect in having brown elytra, and *the terminal segments of the abdomen bright yellow*. Its punctuation, moreover, is decidedly finer and more dense.

Dr. Kraatz (loc. cit.) describes four species of *Oligota* in which the terminal portion of the abdomen is of a bright yellow colour, and of these there are two of a slender linear form, viz.: *O. rufipennis*, and *O. pygmœa*; the former, amongst other differences, is distinguished from the latter by having *four* dilated joints in the club of the antennæ. The specimens above mentioned agree with *O. pygmœa* in having but three broad joints, the joint preceding them being *scarcely* broader than the middle joints of the antennæ. In having the legs entirely pale they differ from *O. atomaria*; and their much smaller size and narrower form distinguish them from *O. inflata*.—G. R. WATERHOUSE, British Museum, W.C., 6*th October*, 1864.

OCCURRENCE OF AN ENNEARTHRON NEW TO BRITAIN.

ENNEARTHRON FRONTICORNE, *Panzer, Ent. I.*, 98, *f.* 7 (Apate); *Mellié, Ann. de la Soc. Ent. de France*, 1848, 865, 3.

I have recently determined the above species, of which I found a considerable number of specimens in a fungus upon an old willow at Weybridge, on the 11th September last.

Mellié (loc. cit.) makes two sections of *Ennearthron*; one pubescent, and the other glabrous. The first of these includes three species (the only known European exponents of this genus), of which we have two previously recognized as British, viz.: *E. cornutum*, Gyll., and *E. affine*, Gyll.; *E. fronticorne*, the third, is at once recognized from these by the more equal distribution of its pubescence, which (although short and fine) is scattered thickly and evenly over the whole of the elytra, and not arranged in rows of scant hairs. There is a slightly golden reflection from the pubescence, also, much as in *Cis hispidus*. It is very small, my largest specimens being about the size of the smallest *E. affine*, and decidedly narrower than that insect. The punctuation also is much finer and closer, and the thorax more narrowed in front.—J. A. POWER, M.D., 52, Burton Crescent, W.C., 6*th October*, 1864.

Capture of Quedius truncicola.—Early in the present year I recorded the capture of a large quantity of *Ischnodes sanguinicollis* in some old trees near Esher. In the same trees I also took some half-dozen specimens of *Quedius truncicola*, and its larva.

The depression on the vertex of the head in this species (as in *Philonthus fimetarius*), mentioned by Mr. Rye in the Ent. Ann. for 1863, p. 112, is exhibited also in all my examples; and, in conjunction with the punctured scutellum, will in my opinion afford a constant diagnostic character. It is generally supposed that the abdomen is always ferruginous in this insect, but amongst my series are two

specimens entirely pitchy-black, which, nevertheless, in certain lights exhibit a trace of the ferruginous tinge. It is possible that these are a more mature condition of the insect, in which it more closely resembles the ordinary forms of *Q. fulgidus*, but both the latter species and *Q. cruentus* are liable to many variations in colour. *Q. fulgidus*, when immature, has often a pallid ferruginous abdomen.—*Id.*

Capture of Oligota flavicornis.—I have recently, during a short rustication at Thames-Ditton, met with a curious example of the limited distribution of insects. Some years since, Mr. S. Stevens first took a number of specimens of *Oligota flavicornis*, Er., upon some lime trees at Kennington. These trees were afterwards cut down; and the insect has never, as far as I am aware, again occurred in any quantity. During last September I fell in with it, near Esher. It was *in profusion*, upon *one particular* lime tree, which did not, as far as I could see, differ in any respect whatever from numerous others standing round it. From the trees immediately in contact I beat an odd specimen or two, which, apparently, had passed to them from the emporium; but some twenty or thirty others afforded not an example.—*Id.*

Odontœus mobilicornis.—I recently captured a specimen of this rare Coprophagous insect, just as it was taking flight from a heap of horse-dung on the high road from Twickenham to Hanworth, about 5 p.m.—V. C. de Rivaz, 4, Shrewsbury Road, Bayswater, 28*th September*, 1864.

Hydnobius Perrisii.—A short time after Mr. Rye discovered this insect in England, I found a pinned specimen of it among some old British Coleoptera belonging to my father.—Chas. O. Waterhouse, British Museum, 3*rd October*, 1864.

On the late swarms of Syrphi in the Isle of Wight.—On the 13th of August many thousands of *S. arcuatus* were settled on Ryde Pier, and most of them were paired. Neither *S. pyrastri* nor *S. balteatus* occurred there, but on the two following days these species hovered in hundreds of thousands along the sea shore near Cowes, and *balteatus* was more numerous than *pyrastri*. They mostly settled on the wet seaweed, to which they seemed to be very partial. *Arcuatus* was less numerous, but occurred in greater abundance at a short distance from the shore, while the other two species preferred the sea line.

On the 16th, large numbers of *Syrphi* were passing through the air between Newport and Freshwater, and some of them were the food of wasps. On the two following days *pyrastri* appeared to be the most common species about Freshwater and Alum Bay. On the 19th and 20th the weather was cooler, and the *Syrphi* were numerous near Black Gang Chine, in shrubberies, and such like sheltered situations. During the following week at Ventnor, Shanklin, Sandown, and Ryde, *pyrastri* and *balteatus* were scarce, but *arcuatus* was still tolerably common, and was accompanied by a few nearly allied species. Two individuals of *pyrastri* were of the variety *unicolor*. It may be asked by what means the usual checks on the increase of the *Syrphus* race were diminished last year, and whether all the three species this year exceeded in numbers the excess of their average annual amount, and on what kinds of *Aphides* they were dependant?

Pyrastri prefers the so-called sycamore *Aphis*, which is limited to the maple, and does not belong to any of the migrating groups of *Aphides*. The flittings of

the migratory *Aphides* are, I believe, very short, and are only voluntary in very calm weather. In such weather, large swarms of the sycamore *Aphis* hover about the tree which it frequents, and the rising of the wind might sweep it away, and accumulate its swarms at a distance from its native place. Last summer was very favourable to the sycamore *Aphis*, and its swarms are reported to have been as extraordinary as those of the *Syrphi;* and if the former was the only food of the latter, the unusual numbers of them have been of no benefit to the crops.—F. Walker, The Avenue, Finchley, 1*st October*, 1864.

Description of the larva of Leucania comma, with notes on its habits, &c.—Having for several seasons searched in vain during the spring for the larva of *Leucania comma*, I this summer, towards the end of June, obtained eggs from a female, which deposited them in a cluster, on a tuft of *Dactylus glomerata*, at the axil of the sheath round a stem. In a fortnight they hatched, and for the first few days the young larvæ were exceedingly active and restless, crawling over the grass, spinning threads, and suspending themselves from the tops of their food: after their first moult, they settled well down to their food, and, excepting in very bright sunshine, did not seem to shun the light. They had enormous appetites, and devoured the greater part of three large tufts of the grass, eating always from the top downwards; they did not increase in size after the 10th of August, but continued to feed nearly to the end of the month, when they retired an inch and a half below the surface of the earth, close to the roots of the plant, and spun silken cocoons with a slight covering of earth. On removing these on the 5th September, one was broken (a proof of their fragile texture), and the larva was coiled up within, alive, and looking rather smaller and darker than before it had spun.

The larvæ were striped longitudinally, and bore a very strong resemblance to their congeners, *impura*, *pallens*, *lithargyrea*, and *pudorina*. They were reddish-brown, dull ochreous-brown, or dingy greyish-ochreous, varying but little; a thin thread of pale ochreous edged with dusky brown formed the dorsal line, on either side of which was a space of dingy brown, followed by a line of dusky atoms, and then a stripe of the ochreous ground colour. The sub-dorsal line brown, edged externally with blackish at the anterior portion of each segment; next to it, a thread of pale ochreous edged with reddish-brown, then a broad stripe of ochreous ground colour edged below with reddish-brown, and again with pale ochreous in fine thread-like stripes; a broad brown lateral stripe followed, at the lower edge of which were the black spiracles, with a broad pale ochreous stripe below them; the belly and legs ochreous-grey; ordinary dots black when present, but not visible in some specimens; head brown, streaked and mottled with blackish. The chief distinguishing character by which this larva can be known from those of *L. impura* and *lithargyrea* is the addition of the extra line between the dorsal and sub-dorsal.—Wm. Buckler, Lumley House, Emsworth, *September 12th*.

[We believe the above to be the first occasion on which any British Entomologist has, with a full knowledge of its identity, reared the larva of this species.

Mr. Hellins writes that, from two larva sent to him by Mr. Buckler, he has succeeded in rearing the perfect insects; they emerged on the 1st of October. —Eds.]

Note on the food-plant of Epione advenaria.—Eggs laid May 27th, hatched June 20th, for description see *Zoologist*, p. 7360. That description was taken from a larva which fed, but very lazily, on wild rose; it spun up, but withered before turning to pupa.

Some eggs I sent to a friend at Brighton hatched, but the larvæ would not eat wild rose, and died.

This year I tried several plants and trees growing in the wood where the insect is taken, and finding dogwood and dandelion nibbled, supplied the young larvæ with both. I soon found, however, that the dandelion was forsaken, while the dogwood was eaten freely: I have now a small batch of larvæ nearly fed up on this shrub, and from the great abundance of it in the wood before mentioned, I have no doubt it is the proper food. Its feeding on dogwood also accounts for my not having taken the larva, as it is a shrub I have never thought of beating.

I feel sure that this species does not feed on *Vaccinium myrtillus* in the woods near Malvern, where I take the perfect insect, because I am satisfied that the plant does not grow in those woods. I have also taken the insect in a wood near Worcester, where *Vaccinium* certainly does not occur.

The larvæ may feed on more than one plant, but I must here say, that when I first bred the species, two or three years ago, I tried bilberry, but it was refused, and wild rose chosen.—Rev. E. Horton, Lower Wick, Worcester, ***August,*** 1864.

Procris Geryon versus statices.—The following observations are from my journal:—

May 18th.—Took *Geryon*, larva, pupa, and imago on the same day.

June 2nd.—Took *statices*, six miles from the locality for *Geryon*, which, by their appearance, had been out a week or so. Tried to pair *statices* ♀ with *Geryon* ♂: with no result.

June 9th.—A ♀ *statices* has laid me a lot of eggs in batches of from two or three to twenty; they are oval, yellow, rather flattened, and slightly but irregularly ribbed longitudinally.

June 17th.—*Geryon* ♀ has just laid a lot of eggs; no difference between them and those of *statices*.

July 4th.—Eggs of *statices* hatched. Larvæ pale yellowish, hairy, with light brown heads; "miners" (!), in both upper and under-sides of leaf; some buried far between the skins of the leaf, others with their tails out, always trailing after them a thread of black excrement. Had choice of sorrel and *Helianthemum*; refused the latter.

July 20th.—*Geryon* eggs hatched, with choice of *Helianthemum* and sorrel; refused the latter. Habit of burrowing the same as *statices*; larvæ the same in appearance.

P.S.—Since writing the above, I have received a letter from Mr. Doubleday, in which he says that M. Guenée has also noticed the boring habit of the young larvæ of *statices* which hatched from eggs that I had sent him.—*Id.*

Description of the larva and pupa of Eup. lariciata.—A notice of the occurrence of this insect, hitherto undetected in Britain, has already occurred in the pages of the *Entomologist's Monthly Magazine*. A description therefore of the larva and

pupa may not prove an unpleasant sequel. This I am able to supply through the kindness of Mr. Edward Hopley, who forwarded me a small batch of impregnated eggs, from which I reared nine or ten larvæ. There appear to be two well marked varieties of the larva.

Var. 1.—Ground colour bright grass green, somewhat darker on the centre of the back; central dorsal line dark green; anal tip of central dorsal line reddish; sub-dorsal line wanting, or so faint as to be scarcely visible; spiracular line whitish or pale straw colour; segmental divisions yellowish; belly whitish, with a dark green central line; a long and rather slender larva tapering towards the head. Resembles in general appearance the larva of *Eup. fraxinata*, Crewe.

Var. 2.—Ground colour yellowish-red or reddish-buff; central dorsal line brownish-olive, occasionally very faint; spiracular line pale greenish-yellow; anal tip of central dorsal line reddish; belly whitish, with a dusky central and two broad lateral lines. In general appearance much resembles the larva of *Eup. indigata*, Hübner.

Feeds on *larch* and *spruce fir*. Full fed end of July.

Pupa enclosed in a slight earthen cocoon, rather long and slender; thorax yellowish-olive; wing-cases deep green; abdomen yellowish-green, tinged with red; abdominal divisions and tip red.—H. Harpur-Crewe, The Rectory, Drayton-Beauchamp, Tring, *October 11th*, 1864.

Occurrence of Eupithecia campanulata, Herrich-Schäffer, *in Bucks. Description of the larva and pupa.*—A short time since, Dr. Breyer, of Brussels, sent me a small publication, in which he mentioned having found the larvæ of the above-named *Eupithecia* somewhat plentifully in the seed capsules of *Campanula trachelium*, the "nettle-leaved bell-flower." As this plant is by no means uncommon in many parts of England, it seemed to me that there was no just cause or impediment why the insect should not occur as well, so one afternoon in August I sallied forth into a wood not far from hence, where I knew the plant grew, and set to work to look for the larvæ of *E. campanulata*. Having gathered a few plants I knocked them against the sides of my umbrella, and soon saw a number of small pug larvæ crawling about, which were totally unknown to me. Having made up my bag I returned home, and shortly afterwards enclosed two full-fed larvæ in a quill and posted them to Dr. Breyer, who forthwith returned answer that they were true and indubitable *Eup. campanulata*. I have much pleasure in appending a description of the larva and pupa.

Larva rather short and stumpy, belonging to the *Absinthiata* group, and resembling in general appearance the larva of that species and *E. minutata*; ground colour light ochreous-brown; central dorsal line very deep brown or black, intersecting and uniting a chain of very strongly defined black or deep brown lozenge-shaped spots, placed in the centre of each segment; sub-dorsal lines very slender and faint, blackish or deep brown; head dingy brown or black; spiracular and central ventral lines dingy black or brown; central dorsal spots becoming confluent and merged in the central line on the anterior and posterior segments; both spots and ground colour varying considerably in intensity of colouring; skin rough and wrinkled, and sprinkled with a few whitish hairs. Feeds upon the unripe seeds and seed capsules of *Campanula trachelium*, L. Till nearly full-grown lives either in the

dry corolla-tube, or just at the crown of the capsule. In confinement will feed upon garden species of *Campanula*. Full fed end of August and beginning of September. Pupa enclosed in a slight earthen cocoon. Thorax and wing-cases golden-yellow; abdomen reddish; abdominal divisions and tip red; similar to the pupa of *Eup. expallidata*.—*Id.*

Variation of Zygæna Filipendulæ.—In looking over some captures recently made by two young gentlemen named Leslie, of this town, I observed a singular variety of *Z. Filipendulæ* which had not a particle of the red colour about it; the six spots on the fore-wing were dark brown, almost approaching to black, and the hind-wing was of a decided brown colour; the ground colour of the fore and the margins of the hind-wings were much as usual. This specimen was bred from the larval state, and was the only example presenting the above mentioned peculiarity; a few others, which emerged at the same time, being of the ordinary type.—Edward Cooper, 75, Marina, St. Leonard's-on-Sea, 20*th July*, 1864.

Acronycta alni near Birmingham.—On the 27th August I found a larva of *A. alni* at Sutton Coldfield. It was on a holly bush, but had apparently fallen from an overhanging oak-tree. I am happy to say that it has since turned to a pupa, and I hope to rear it.—F. Enoch, 75, Ryland Road, Birmingham.

Acronycta alni.—A larva of *A. alni* was taken in Manton Copse on the 5th or 6th of this month, by a pupil of the School, Parrington.—Rev. T. A. Preston, The College, Marlborough, *September 25th*, 1864.

Recent Suffolk captures.—During a visit to Lowestoft last month, I spent one morning in searching the sand hills on the coast, and took, among the roots of the sea marram (*Ammophila arundinacea*), above thirty *Agrotis cursoria* and one *A. præcox*. The number of *T. pronuba* and *orbona* sheltering there quite surprised me; I must have turned out hundreds, and now and then an *A. tritici*, *A. valligera*, and *A. nigricans*. On the evening of the same day (August 5th), I caught, at the lamps just outside the town, a pair of *C. graminis*, one *D. cucubali*, a pair of *E. centaureata*, besides a host of commoner things; and since my return to Bury I have taken, at the street lamps, *H. popularis*, ♂ and ♀, as well as a few specimens of *E. tiliaria*, *angularia*, and *fuscantaria*. At Tuddenham, nine miles N.W. of this town, I have captured this summer *H. uncana*, *H. auroraria*, *A. ulmata*, and *T. cratægi* (the latter in the larva stage), and nearer home, *A. berberata* in plenty, *B. amataria* and *A. rubidata*, now and then. Last autumn, in digging at poplars, I met with one *C. ocularis*, six *L. dictæa*, and five *P. palpina*, which duly appeared this season.—Edmund Skepper, 13, Abbeygate, Bury St. Edmunds, *September*, 1864.

Occurrence of Chærocampa Celerio and Sphinx Convolvuli near Alloa.—I have to inform you that *Sphinx Convolvuli* and *Chærocampa Celerio* have been captured in this locality; the first was taken in the garden of Mr. McDonald, at Culross, on September 19th; the last was found resting on the New County Buildings yesterday, by Mr. Mailler, Builder, and was brought to me this morning. Both specimens, which are in good condition, are now in my possession.—Richard Borthwick, Alloa, *September 22nd*, 1864.

Acari on T. pronuba.—Last month I took a specimen of *T. pronuba* at sugar, the wings of which presented a red appearance, not unlike the reddish parts of the wings of *G. libatrix*. Owing to this appearance, I kept the specimen, and on the following morning found the red marks to arise from the presence of no less than fifty-one red *acari*. A day or two after the insect was laid out, however, they all fell off.—Rev. E. Hallett Todd.

Captures near Hartlepool.—The following are the more noticeable *Lepidoptera* which I have taken here, and in this neighbourhood, during the present year.

Erebia Blandina, Castle Eden Dene; *Lycæna Agestis* and *Artaxerxes*, I take both of these forms at Black halls; *Chærocampa porcellus* over *Silene inflata* at dusk, not commonly; all the *Hepialidæ* occurred at Crimdon Dene (a variety of *Velleda*, rather commonly); *Procris Geryon* at Black halls; *Nola cristulalis* at Crimdon Dene; *Asthena Blomeraria* both at Crimdon and Castle Eden Denes; *Acidalia ossetata*, *Strenia clathrata*, and *Abraxas ulmata*, each rather plentiful, the latter at Crimdon Dene; *Hybernia rupicapraria* (♂) very abundant, but *H. progemmaria* and *Larentia multistrigaria* were scarce in the spring months; *Emmelesia affinitata* and *alchemillata*, a specimen or two of each flying along hawthorn hedges; *E. albulata* not scarce, amongst "rattle"; *E. unifasciata* rare; *Eupithecia centaureata* and *subfulvata* off palings, *E. succenturiata* by beating hawthorn, *E. satyrata* at Crimdon Dene, and *E. sobrinata* at Black halls amongst juniper; *Thera simulata* (*coniferata*) also at juniper; *Scotosia certata* off palings; *Cidaria suffumata*, this insect seems to be very scarce this year; *Eubolia cervinata*, in the larva state, on mallow; two other *Eubolia*, viz., *palumbaria* and *bipunctaria*, also occurred at Black halls, together with *Anaïtis plagiata*.

Among the *Noctuæ*, nearly all my captures have been made at flowers, as will be seen by the following list:—*Leucania conigera*, *lithargyria*, *impura*, and *comma*, all came to rush bloom; *Hydræcia nictitans* and *micacea*, as well as some species of the genus *Agrotis*, viz., *A. valligera*, *cursoria*, *nigricans*, and *tritici*, and *Miana furuncula*, were nightly attendants at ragwort flowers (*A. tritici*, which came in abundance, I shall be glad to distribute to any one wanting it, if he will send box and pay return postage); from off palings I obtained *Xylophasia rurea* and *Ceriyo cytherea* in some numbers, and also a female specimen of *Plusia iota*, which deposited some eggs, the larvæ from which are now feeding; *Mamestra abjecta*, *albicolon*, and *anceps*, came to the flowers of the bladder campion, and *Miana fasciuncula*, *Agrotis segetum*, &c., to the flowers of hemlock (*Conium maculatum*); *Miana literosa* flying over hedges at dusk, *M. expolita* at Black halls by day, and *M. arcuosa*, which, however, was scarce, amongst grass; three *Dianthœciæ*, *carpophaga*, *capsincola*, and *cucubali*, frequented the flowers of the bladder campion (*Silene inflata*). The following I also captured at flowers of *Silene*:—*Caradrina Morpheus*, *Rusina tenebrosa*, *Hadena dentina*, *pisi*, and *thalassina*, *Cucullia umbratica*, *Heliothis marginata*, *Plusia chrysitis*, *pulchrina*, and *iota*; the last four, however, were by no means common.

These are the principal of what I have taken; I have, of course, omitted the very common species.—R. Merryweather, Town wall, Hartlepool, 10*th August*.

Lepidoptera at Wokingham.—During a very pleasant week (June 27—July 2) at Wokingham, on the heath, I met with the following species:—

L. Ægon, in abundance. I took many females, which were much scarcer than

the males, sitting at night on the topmost twigs of the heath, and then easily distinguishable from the males by the browner tint of their undersides. *Euthemonia russula* and *L. mesomella*, the latter abundantly; *Hecatera serena* and *Hadena contigua*, the former invariably on palings.

Among the firs *M. liturata* and *E. fasciaria* occurred, and *Acidalia straminata* was not scarce over a bare part of the heath that had been burnt a year or two before.

In this locality I also met with *F. piniaria*, *P. hippocastanaria*, and *C. quadrifasciaria*, as well as *Aventia flexula*, beaten from a larch.

Of the smaller things, *P. palumbella* was abundant, flying about at dusk in company with *A. straminata*; *Retinea buoliana* and *pinivorana*, among the firs; *Tinea semifulvella* on the trunk of a larch-tree, also *O. piniariella*, *C. farinatella*, *P. bicostella*, *Gel. cricetella* and *notatella*, and *A. spartiella*.—Rev. E. Horton, Lower Wick, Worcester, *August*, 1864.

Captures in North Devon.—Besides *T. craccæ* (already recorded), I took the following insects in this locality:—*Agrotis lucernea*, *Miana literosa*, *Eupithecia debiliata*, in worn condition, *Eup. pulchellata*, near old walls where foxgloves were common, *A. immutata*, *C. silaceata*, *E. unifasciata*, *H. costæstrigalis*, *E. flammealis*, abundant amongst fern, *H. cingulalis*, *B. asinalis*, *S. cembralis*, on rocks close to the sea. (N.B.—Most of the genus *Scoparia* knock about in pill-boxes.) *C. pinetellus*, beaten out of furze, *G. geminana*, *D. grotiana*, *A. granitella*, *Œcophora lambdella*, one specimen flying over the short grass on a hill-side studded with furze bushes; I took a single specimen three years ago within twenty yards of the same spot; *P. osteodactylus*, this "plume" was in abundance.—*Id.*

New locality for Dasycampa rubiginea.—Sugaring last week in Oatland's Park, I was not a little surprised to find a very fine specimen of this local and scarce moth on one of the trees; it was a cold night, and the only other moth I noticed was a specimen of *Miselia oxyacanthæ*. Some few years since I spent many an evening in Norbury Park and Mickleham Downs, in the month of October, searching for this rarity, but until now never saw it alive. Oatland's Park is about six miles from this celebrated locality for the insect, and within seventeen miles of London. Thinking it might interest some of your readers I send you this notice.—Samuel Stevens, 24, Bloomsbury Street, W.C., *October 10th*, 1864.

Offer of Leucania phragmitidis.—Having, in company with Mr. Jones, taken a number of this species, we shall be glad to supply any gentlemen who may be in want of it.—C. & J. Fenn, Clyde Villa, Lee, S.E.

NOTES ON NORTHERN *COLEOPTERA*.

BY T. BLACKBURN.

The following notes on an Entomological expedition to the north of England which I made, in company with Messrs. J. B. Blackburn and E. M. Geldart, during the early summer of the present year, may prove interesting to some readers of the *Entomologist's Monthly Magazine*. At the beginning of June I arrived in the north of Cheshire and commenced operations. Owing, however, to the limited amount of time that I was able to give to collecting I obtained few rare insects there. From

the appearance of the country I hoped that it would yield a good supply of *Hydradephaga*, but in this I was mistaken. Many a pond of promising appearance did I search, but, whatever may have been the cause, with very little result. In the *Philhydrida*, however, *Helophorus arvernicus*, Muls., surrendered to my summons in a small pond very much choked up with weeds near Ashley. I cannot but think that my bad luck in water beetles generally, was owing to some accidental cause, as localities so promising in appearance ought to be productive.

The valley of the Bollin repaid my efforts better than most spots. On the sandy banks of the river, close to the water's edge, *Tachyusa leucopa* was running about in swarms in the hot sunshine, accompanied by occasional specimens of *T. constricta*, *Ischnopoda longitarsis* and *rubicunda*, *Homalota internedia*, *Bembidium Mannerheimii*, &c.; *Georyssus pygmæus* was also to be seen hiding its nakedness in a garb of dirt. Sweeping the herbage near the river afforded *Anthobium minutum*, *Apion afer* and *violaceum*, *Stenus fulvicornis*, &c., and my brother (Mr. J. B. Blackburn) captured *Pachyta octomaculata* flying over flowers.

A visit to Carrington Moss was attended with very small results. A dry bank that I passed on the way to it presented a somewhat singular appearance. I gave it a careful search. The grass in several large tufts appeared to have withered, and lay dry in the midst of the fresh grass. These tufts I shook over brown paper, and they yielded *Leistus rufescens* (in swarms), *Stenus nitidus* and *picipennis*, *Atomaria atricapilla* and *Berolinensis*, *Elodes marginata*, and many other commoner species. On the moss itself I took, by searching at the roots of heath, *Homalota euryptera* and *Philonthus marginatus*; by beating firs, *Cyphon padi*; and, by beating birches, *Elater balteatus*.

At Hale I found some ponds completely choked up with reeds, on which were swarms of *Donaciæ*. On one small pond there were seven species, viz.:—*dentipes*, *lemnæ*, *sagittariæ*, *linearis*, *typhæ*, *sericea*, and *aquatica*, all commonly, except the last one. In an adjacent plantation I found a specimen of *Cryptophagus pubescens*.

After paying a short and eminently unsuccessful visit to Delamere Forest, I left Bowdon and transferred my search to the Lake District. Here my troubles began, for the weather, which had so far been moderately fine, from this time was *im*moderately wet, and assumed that utterly unreasonable and dreary character which those alone who have visited the Lake District, can imagine. The meagre character of the list which follows, I attribute entirely to the atrocious weather, as the success which met my efforts on the one moderately fine day during my stay, gives me a very high opinion of the capabilities of the District. Except on that one day, I was scarcely collecting an hour continuously while rain was not actually falling.

The only mountain which the weather allowed me to ascend was Coniston Old Man, but I there took several good species. Near the summit, by turning over loose stones, I obtained specimens of *Patrobus clavipes*, *Anchomenus micans*. *Trechus obtusus*, and *Quedius umbrinus* and *attenuatus*; and, by sweeping the herbage, *Anthophagus alpinus* and *Arpedium brachypterum*.

At the foot of waterfalls I met with *Quedius auricomus*, *Dianöus cærulescens*, and *Stenus Guynemeri*. I can add Westmoreland to the counties where the last named species is said, in Mr. Rye's paper on the *Steni*, to occur.

On the banks of streams *Tachyusa leucopa* was common, and I detected a few specimens of the rare *Homalota currax* running about in its company.

In moss on the rocky sides of several mountain streams I took all the species of *Lesteva* commonly, and also *Geodromicus nigrita*. The latter insect seems to be singularly attached to the water, as I found many specimens hiding in long moss at least half-an-inch under water, and not one turned up where the stream was not constantly rippling over its habitat. *Stenus guttula* was rather common in moss where the rocks were dryer.

The Lake district does not appear to me a promising country for the *Hydradephaga*. Most of the streams run rapidly along, over a bare rocky bed, and there are few sheets of standing water except the lakes themselves—whose margins are generally very bare of weeds—and deep tarns in smooth rocky basons. However, two small puddles, each about a yard across at the widest part, furnished me with *Ilybius guttiger* and *Hydroporus melanarius, nigrita, tristis,* and *obscura,* and others not worth mentioning. From the rapid river Rothay I obtained *Hydroporus elegans* and 12-*pustulatus,* while, strange to say, my efforts did not produce a single beetle from the gently flowing and weedy Brathay. On its banks, however, I obtained specimens of *Hydrocyphon deflexicollis,* hiding at the roots of grass close to the water's edge, and, by sweeping the grass in some damp meadows through which it passes, *Homalota nigra, coriaria, xanthoptera, trinotata,* and *triangulum;* and also *Donacia affinis* in swarms, and one specimen of *D. aquatica.*

One soaking day I was walking along the road near Clappersgate with almost empty bottles, when Mr. Geldart, who was a little in advance of me, looking after bugs and flies, directed my attention to a beetle warily climbing a rock, over the edge of which he (the beetle) appeared to have fallen. However, a nobler destiny than mere escape awaited him. It was his to fill the gap in my collection which I had left for *Tachinus elongatulus.*

In a small heap of decaying vegetables near Ambleside I found *Quedius impressus* and *fumatus,* in the utmost abundance, and several specimens of *Ocalea picata, Tachinus laticollis* and *Philonthus albipes* and *longicornis.*

By beating tall shrubs, on the borders of mountain streams, I obtained *Telephorus abdominalis* (commonly) and *Corymbites tesselatus,* and by sweeping the herbage, *Homalota inconspicua, Anthobium minutum, Apion onopordi,* and other insects, also one specimen of *Aphodius depressus.*

At the foot of a haystack, among other species, I found *Othius fulvipennis* and *Choleva nigricans,* both commonly.

A brief visit to Buxton, on my way back to London, produced no *Coleoptera.*

The description of a tour in the Lake district appears very unusual, unless it contains rhapsodies on beautiful scenery, and stock quotations from such authors as Wordsworth; but if any one thinks the absence of these from my notes betrays want of appreciation of natural beauty, I can only say, let him view the lakes, day after day for a few weeks, through a medium of rain, and he will feel little disposed for rhapsody. If any one thinks the result of my expedition very meagre, I hope he will not attribute its poverty to the unproductiveness of the land, but to the hostility of the sky. I was very glad to leave the district, for collecting with a wet coat on one's back is very hard and discouraging work, and the only poetry that the Lake district brought to my mind was a verse from Horace, with the first word exchanged for one more appropriate—

"Udis omnia nam dura deus proposuit * * "

Platypteryx unguicula.—The 25th September being a fine warm day, I went to Epping Forest to search for *Peronea umbana* and *cristana*; having beaten, however, during the whole of the morning without meeting with the former, and but one or two ordinary varieties of the latter, I set to work thrashing the beech for the larvæ of *P. unguicula*, of which, on reaching home, I found I had taken 42, many of them full-grown. —Wm. Machin, Argyle Road, Mile End, *October*, 1864.

Entomological Society of London, *October 3rd*, 1864.—F. P. Pascoe, Esq., F.L.S., President, in the Chair.

The Secretary exhibited the collection of insects sent from India for the Society by Lieut. Beavan; among them were some interesting species.

Mr. D. Sharp sent for exhibition three new species of British Coleoptera collected by himself in Scotland: 1st, *Autalia puncticollis* (new to science), of which he had taken four specimens at Rannoch; 2nd, *Tachinus proximus* of Kraatz, found in sheep's-dung at Rannoch, and under similar circumstances on Ben Lomond; 3rd, *Lesteva monticola* of Von Kiesenwetter, taken at Rannoch, and in the Isle of Arran.

Mr. Janson exhibited a collection of insects made by an officer in the navy on the Brazilian Coast, from Rio to Monte Video.

The President exhibited a species of the singular Coleopterous genus *Atractocerus*, from Australia, *A. Krensleri*, and remarked that representatives of this genus were found in most parts of the globe. Mr. Wallace remarked that he used to find them in the tropics at night, flying rather rapidly round his lamp.

Mr. Waterhouse said that the allied European species were all flying insects, the larvæ of which fed in the heart-wood of trees.

Major Parry sent for exhibition a collection of insects made by his son, Lieut. Parry, in the neighbourhood of Gibraltar.

Mr. Stevens exhibited a species of *Curculionidæ* with numerous fungoid growths (*Sphæriæ*) protruding from various parts of its body.

Mr. Wallace mentioned that he had seen large numbers of beetles, chiefly *Curculionidæ*, similarly affected in damp tropical localities in the east; he had never found a living insect so attacked, they were always dead and sticking to twigs, &c.

Mr. Bond, in mentioning the immense damage done to turnips, celery, &c., by *Agrotis* larvæ, remarked that when out shooting a short time previously, he had shot a partridge, the crop of which contained several full fed *Agrotis* larvæ.

The Rev. Hamlet Clark (on the part of Mr. Stainton, who was unavoidably absent,) made an appeal to the members on behalf of Mr. W. Winter, late of Aldeby, who has been reduced to great distress through long continued ill-health. Mr. Clark would be glad to receive any donations the members might be pleased to give for Mr. Winter's relief.

Mr. Baly read a paper on new genera and species of *Phytophaga*.

Part 1 of vol. 3 of the third series of the Transactions, containing the commencement of Mr. Pascoe's "*Longicornia Malayana*," was on the table.

A Note.—In my paper on the Egg State (page 65) I omitted to mention that the best clue to the whereabouts of the eggs of many species, more particularly of *Butterflies*, is afforded by watching the movements of the females at large, as they flit from plant to plant, depositing their ova.—H. G. Knaggs.

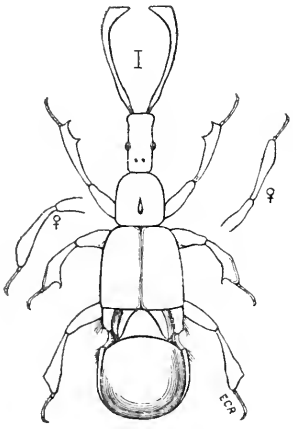
DESCRIPTION OF A NEW SPECIES OF *ARTICERUS* FROM AUSTRALIA.

BY G. R. WATERHOUSE, F.Z.S., ETC.

Genus—ARTICERUS, Dalman.

Articerus Duboulayi. *Elongatus, rufo-testaceus, oculis nigris, supra pubescens crebre punctulatus; caput porrectum, elongatum, cylindricum, ante oculos perparum angustius. Antennæ compressæ, longæ, apice clavatæ. Thorax subquadratus, ante medium quadratum angustior, disco fovea oblonga impressus. Elytra striola suturali impressa. Abdomen supra basi concavum, postice convexum. Long. corp.* 1 *lin.*

The antennæ in this insect are fully equal to the head and thorax in length, and are terminated by a compressed truncated club. The elongate and almost cylindrical head is furnished with a deep fovea on either side, in front of the eyes, into which the antennæ are inserted; and as this pit not only opens laterally but forwards at the apex of the rostrum, the antennæ are much approximated at the base, when they are directed forwards. They are curved inwards at the apex. Viewing the insect from above, they appear slender and to be suddenly dilated into a triangular club at the apex; but, viewed from the side, the antennæ, owing to their vertically compressed form, present a very different aspect; they then appear rather stout, and the width gradually increases to the apex; the club no longer presenting a suddenly dilated form. The organs under consideration appear to be composed of an elongated scape, which is smooth and only pubescent at the apex; a funiculus composed of several joints anchylosed, and distinguished by being somewhat punctured and rugulose and densely pubescent, and finally by a club or larger truncated terminal joint, which is smooth and less densely pubescent. The eyes are rather small, and made up of comparatively large facets. The head, thorax, and elytra are almost destitute of gloss, being densely and finely punctured and pubescent; the abdomen is glossy and sparingly punctured. On the vertex of the head are two small dark raised spots, having much the appearance of ocelli.* The thorax has the disc de-



♂

Articerus Duboulayi.

* Similar raised spots are represented by Mr. Westwood in his figure of *Articerus braziliensis*, See Trans. Ent. Soc, vol. iii., n. s. pl. 7, fig. 5.

pressed, and furnished with a large oblong fovea. The elytra present an indistinct sutural stria, and have two very narrow dusky bands crossing them near the apex. The much-raised and incrassated margins of the basal half of the abdomen are clothed with longish yellow hairs. The legs in the female are simple and moderately stout; the tibiæ, slender at the base, become gradually stouter to the apical third, and are then contracted in width to the apex. In the male the femora are much incrassated in the middle, and somewhat compressed; the tibiæ are much compressed; those of the anterior legs are furnished with two short spines at the apex, on either side of a depression into which the tarsus is inserted; and they are suddenly dilated on the side at the apical third, so as to form an angle terminated by an acute spine. The middle tibiæ are gradually dilated from the base to the middle, then obliquely truncated on the outer side, and are furnished, like the anterior tibiæ, with a spine on the inner side, placed at some little distance from the apex. The hinder tibiæ are more dilated, attaining their greatest width at the apical third, and then being obliquely truncated.

The section of *Clavigeridæ*, to which this insect belongs, and which is essentially distinguished by the possession of eyes, promises, from the wide geographical range of the species hitherto discovered, to become an important one; and possibly the peculiar form of antennæ which characterizes the species just described may hereafter form a sectional, rather than a specific character, in which case, it will be desirable to raise it to the rank of, at least, a sub-genus, to which the name *Horaticus* may be applied.

Several specimens of this insect were found in an ants' nest at Swan River, W. Australia, by Mr. DuBoulay; who, as I am informed, observed a very large number running about when he lifted up a stone covering the nest. A subsequent visit, however, produced neither beetles nor ants, owing to a flood having taken place. Mr. DuBoulay remarks that when this insect is alive, the antennæ seem flexible, "as if made of india-rubber."

AN ESSAY TOWARDS A KNOWLEDGE OF BRITISH *HOMOPTERA*.

BY THE REV. T. A. MARSHALL, M.A.

I design in the present paper to invite the attention of Entomologists to the British *Homoptera Auchenorhyncha*, better known as *Cicadas*. There are probably about 130 indigenous species, the majority of which are described in Continental works, and a few by Curtis, Leach, Hardy,

and Lewis. Mr. Walker's Catalogue enumerates 145, but of these many will be found to be only varieties, and some (*Penthimia atra*, &c.) are only entered provisionally, as likely to be discovered here after further research. I have been enabled, after about two years of not uninteresting labour, but with very moderate opportunities of travel, to verify a goodly number of species. Many more may be detected if other collectors can be induced to take up the subject, which, my experiences enable me to assert, will be found full of interest.

The genera *Delphax*, *Iassus*, and *Eupteryx* (*Typhlocyba*), are rich in species, and I cannot flatter myself that one half of these have ever fallen in my way. The same groups are naturally those in which the verification of species is most difficult. The only complete work whose critical accuracy can be relied on, is Flor's "*Rhynchoten Livlands*," vol. ii., from which I have derived much valuable information. Another work of great partial utility is Kirschbaum's "*Die Athysanus-Arten der Gegend von Wiesbaden*," published in 1858. Curtis's British Entomology contains some well-known and much admired figures, but the text, written for the most part without reference to previously existing descriptions, is full of embarrassment and error. But the enumeration of authorities is no part of my purpose; they can easily be found in Hagen, and I shall give, under each species, a reference to the most satisfactory description that can be found. Neither is it my object to repeat generalities often written before, and which are accessible to every one. Time and space alike forbid me to attempt a monograph: I shall therefore content myself with diagnostic outlines, specially intended for the discrimination of species, together with notes upon synonymy (especially if unpublished), localities, and points of difficulty. The only collection of these insects, besides my own, with which I have made profitable acquaintance, is that of Mr. Douglas, which he has most liberally entrusted to my keeping for more than a year: it contains several species to which I could not otherwise have gained access. I need hardly say that a mere Prodromus like the present can in no way interfere with the value of that complete work which it is to be hoped will one day result from the labours of the Entomologist abovenamed, in conjunction with Mr. Scott. If any other collectors can hereby be induced to accumulate materials and information in aid of such a future monograph, I shall not have laboured in vain. The few genera to which our indigenous *Homoptera Auchenorhyncha* are referred will easily be found in numerous works; it will suffice here to give them synoptically, as follows:—

Ordo HEMIPTERA.

Subordo Homoptera.

Rostrum horizontale ad apicem usque, prosterno applicatum. Tarsi 3-articulati. Antennarum articuli 1-3 incrassati; cæteri in setam unicam tenuissimam conflati:—

Sectio AUCHENORHYNCHA.

A. Ocelli 3. Pedes postici haud saltatorii. Abdomen maris basi utrinque tympano (stridoris causa) instructum...STRIDULANTIA.
Genus unicum.....CICADA, Lin.....(1.)

B. Ocelli 2. Pedes postici saltatorii. Abdomen maris simplex .....MUTA.

(i.) Antennæ sub oculis insertæ. Ocelli in genis siti (FULGORINA.)

a. Antennarum articulus 1mus 2do multo brevior, inconspicuus, capite absconditus.

† Pronotum basi late triangulariter emarginatum. Hemelytra hyalina, pellucida .....CIXIUS, Latr.....(2.)

†† Pronotum basi rectilineare. Hemelytra coriacea, opaca .....ISSUS, Fab.....(6.)

b. Antenn. art. 1mus 2do brevior, sed conspicuus.....DELPHAX, Fab.....(3.)

c. Antenn. art. 1mus 2do paulo longior, vix paulo latior.....ARÆOPUS, Spin.....(4.)

d. Antenn. art. 1mus 2do triplo longior, plus duplo latior .....ASIRACA, Latr. .....(5.)

(ii.) Antennæ inter oculos et frontem insertæ. Ocelli vel in fronte vel vertice siti.

* Pronotum postice productum, scutellum apice suo plus minus obtegens (MEMBRACINA.)

a. Scutelli latera conspicua ..... CENTROTUS, Fab. .....(7.)

b. Scutellum pronoto penitus absconditum .....OXYRRHACHIS, Germ. .....(8.)

** Pronotum postice simplex, nequaquam scutellum obtegens (CICADELLINA.)

¶ Pronotum lateribus foliaceis, in auriculus elevatis .....LEDRA, Fabr.....(9.)

¶¶ Pronotum lateribus simplex.

† Vertex 4-carinatus, carinis transversis, literam ⋈ decumbentem referentibus .....MEGOPHTHALMUS, Curt....(14.)

†† Vertex simplex.

1. Tibiæ posticæ spinis ante apicem omnino nullis .....ULOPA, Fall.....(13.)

2. Tibiæ posticæ spinis ante apicem duabus.

a. Rostrum biarticulatum.

§ Pronoti latera scutello multo breviora ..... PTYELUS, Lep. & Serv. ...(11.)

§§ Pronoti latera scutello longitudine æqualia ..... TRIECPHORA, Am. & S. ...(10.)

B. Rostrum triarticulatum ..... APHROPHORA, Germ. .....(12.)

3. Tibiæ posticæ multispinosæ.

a. Oculi verticis planitie fere bisecti ..... EUPELIX, Germ. .....(21.)

B. Oculi integri.

† Ocelli supra in vertice siti.

* Ocelli verticis limiti posteriori, propiores quam anteriori. (Frons gibbosa. Clypeus gibbosus, apice bifoveolatus)..... TETTIGONIA, Geoffr.....(15.)

** Ocelli verticis limiti anteriori propiores.

1. Frons æqualis, perparum convexa. Clypeus linearis, angustus, planus ..... ACOCEPHALUS, Germ.....(20.)

2. Frons gibbosula, longitrorsum sub-bicanaliculata. Clypeus rotundo-triangularis, convexus, apice bifoveolatus..... EVACANTHUS, Lep. & S.. (16.)

†† Ocelli plus minus infra verticem in fronte siti.

a. Ocelli in fronte media inter verticem et clypeum siti. (Tibiæ anticæ extus non spinosæ.)

1. Vertex antice angulatus. (Hemelytrorum membrana cellulis 5) ..... PEDIOPSIS, Burm.....(19.)

2. Vertex antice latissimus, lente arcuatus, minime angulatus.

¶ Hemelytrorum membrana cellulis 4. (Antennarum seta in ♂ apice clavata)..... IDIOCERUS, Lewis .....(18.)

¶¶ Hemelytrorum membrana cellulis pluribus quam 4. (Antenn. seta in ♂ simplex).. MACROPSIS, Lewis .....(17.)

b. Ocelli in parte frontis superiore et propius verticem siti.

1. Tibiæ anticæ extus plus minus spinosæ ..... IASSUS, Fab.....(22.)

2. Tibiæ anticæ extus non spinosæ.

¶ Caput cum oculis pronoto latius. Ocelli conspicui ..... AGALLIA, Curt. ..... (23.)

¶¶ Caput cum oculis pronoto æquale, aut etiam angustius. Ocelli ægre videndi, vix ulli..... EUPTERYX, Curt.....(24.)

OBS.—The *Vertex* is that portion of the head which is visible from above: the *Frons* is the obliquely sloping surface which lies between the vertex and the clypeus. Below the frons, and separated from it by a distinct suture, is the *Clypeus*. The *Genæ* are situated on each side of the frons, immediately below the eyes, and are divided by a suture, on the inner side of their inferior extremities, from two smaller elongate plates, which are the *Lora*. Beyond the clypeus extends the 3-4-jointed sheath of the *Rostrum*. The remaining terms used above need no remark.

A.—Ocelli 3. Pedes postici haud saltatorii. (Stridulantia.)

Genus i.—CICADA, Lin.

Cicada Anglica, Leach.

For a description of this insect see Curtis, B.E., pl. 392. It is closely allied to *C. hæmatodes*, Lin., but the neuration of the wings is slightly different, and such a discrepancy must be constant and specific. *C. hæmatodes* has seldom been found so far north as Paris. I have taken it in the south of France and in Corsica, but did not hear its voice. Our own species is said to be mute, but the truth probably is that it stridulates feebly (like *hæmatodes*), and that no one has happened to hear it. On this subject see Douglas in Trans. Ent. Soc., 1858, vol. 4. Proc. p. 65. It has occurred only in the New Forest.*

B.—Ocelli 2. Pedes postici saltatorii. (Muta.)

I. Fulgorina.

Genus ii.—CIXIUS, Latr.

† Antennæ medio inter oculos et clypeum insertæ.

1.—*Cixius nervosus*, Lin.

Rostrum ad coxarum posticarum apicem usque productum. [See Flor. Rh. L. 2, p. 21.]

Corp. long. 2-2½ lin.; alar. exp. 5½-8 lin.

Head and pronotum testaceous, the former with two black spots in the foveæ of the vertex. Spaces between the the frontal carinæ black. Scutellum black. Hemelytra hyaline, usually with one or two faint brown transverse bands before the middle; a distinct brown stigmatical spot on the costa near the apex, sometimes with a much fainter spot beyond it. Costa with about 20 black dots, larger than those which beset all the pale nervures of the hemelytra.

The largest and commonest British species. It varies occasionally, as follows:—

Var. *a.*—Hemelytra fascia latiori ante apicem, et maculis quibusdam disci irregularibus brunneis. (*C. cunicularius*, Lin.; *Dionysii*, Panz.)

Var. *b.*—Similis, sed alarum apex litura magna brunnea.

Var. *c.*—Hemelytra fere tota brunnea, apice hyalino. (*C. Dionysii*, Curt. B.E.)

Var. *d.*—Minor; scutellum obscure ferrugineum, s. nigro-piceum; hemelytrorum maculæ parvæ, inconspicuæ; maculæ costales nigerrimæ, valde distinctæ. (*C. stigmaticus*, Latr.)

* Mr. C. G. Barrett, of Haslemere, has lately taken this species in Surrey. *Vide* p. 171.

† Antennæ oculos propius quam clypeum insertæ.

2.—*Cixius contaminatus*, Germ.

Rostrum ad coxarum posticarum basin tantum productum. Frons cum carinis testacea. Scutellum nigrum, carinis pallidioribus. Costa nigro maculata, maculis 3 grandioribus in medio semper conspicuis. [See Flor. Rh. L. 2, p. 24.]

Corp. long. $1\frac{1}{2}$-2; alar. exp, 5 lin.

The smaller size, and structural differences above pointed out, together with the constant occurrence of *three black spots* upon the costa *larger than the other spots*, will serve to distinguish this species. Less common than the preceding; found chiefly in the southern counties. The following are the varieties:—

Var. *a*.—Hemelytra fascia longitudinali lata brunnea, margine interiore tenuiter, exteriore duplo latius, hyalino. (*C. albicinctus*, Latr., Germ.)

Var. *b*.—Hemelytra fere tota brunnea.

3.—*Cixius musivus*, Germ.

Rostrum ut in præcedente. Frons nigra, carinis luteis. Carinæ scutellares nigræ. Hemelytra brunneo suffusa, nervis densissime nigro punctatis, punctis subrotundis, nervo costali circum apicem, and macula stigmaticali pallide brunneis. Costa nigro maculata, maculis omnibus æqualibus. [Germ. Faun. 11, 21.]

Size and form of the preceding. Not common. In Mr. Douglas's collection and my own. The absence of the 3 costal spots distinguish this from *C. contaminatus;* the size will separate it from *C. nervosus*.

4.—*Cixius leporinus*, ~~Panz.~~

Rostrum, &c., ut in præcedente. Hemelytra albida, sublactea, nervis parcius nigro punctatis, punctis sublinearibus, nervo costali circum apicem, et macula stigmaticali, nigris. [Panz. 61, 19. Schrank, Ins. Austr. n. 501, p. 260.]

Size and form of the preceding. I have not met with this species, which is in Mr. Douglas's collection. The 4 species here indicated are probably all that exist in this country.

(*To be continued.*)

DESCRIPTIONS OF THE BRITISH SPECIES OF *BOLITOBIUS*.

BY E. C. RYE.

There are seventeen species of this genus recognized as European;

of which eight are found in this country, one only being at all doubtful, as it stands on the authority of a single specimen in the Stephensian collection.

The *Bolitobii* are all bright, gaily coloured insects, very rapid in their movements, and found in fungi and dead leaves, or by pulling moss and cutting tufts of grass in the winter.

The genus is separated from *Mycetoporus*, to which it bears some resemblance (*M. splendidus* being especially *Bolitobiiform*), by its maxillary palpi, in which the apical joint is nearly, if not quite, as long as, and rather narrower than, the preceding; whereas, in *Mycetoporus*, the apical joint is minute, slender, and subulate, as in *Bembidium* among the *Geodephaga*.

Bolitobius is separated into two sections; the first (being the genus *Megacronus* of Stephens), comprising the first four species, in which the head is less elongate, the antennæ rather stouter, and the joints of the maxillary palpi broad and short; the basal joints of the anterior tarsi are also dilated in the males. In the second section (*Bolitobius* proper), the maxillary palpi are elongate and slender, and the head more porrect; the anterior tarsi are also not dilated in the male. The difference in the palpi is so striking (to say nothing of other characters), that it seems curious to me that these two sections are not generically separated; Dr. Kraatz having founded the genus *Bryoporus*, to include some of Erichson's *Bolitobii*, on certainly no better grounds of distinction.

(MEGACRONUS, Steph.)

1.—ANALIS, *Paykull* (Staphylinus); *Erichson*, *Gen. et Spec. Staph.*, 269, 1.

2½-3 lin. Shining black; the legs (including the anterior coxæ), mouth and palpi, four basal joints, and the apical joint, of antennæ, reddish-testaceous; the elytra, apical, penultimate, and lower half of the ante-penultimate, segments of the abdomen, red. In the male the apical joint of the antennæ is oblong, cylindrical, and almost as long as the three preceding joints.

The thorax is very polished, and with only a few remote punctures along the margins; six along the front, three on each side, and four along the base. The presence of these punctures is indicated by a hair growing out of each. The elytra are a third longer than the thorax, with a row of about ten small, but distinct, punctures on each side of the suture; an irregular row of about seven punctures, almost obsolete, half-way between the suture and the sides, and a row of distinct punc-

tures along the outer margin. This system of punctuation prevails throughout the other British species, with the exception of *inclinans* and *formosus*. The abdomen is sparingly, but strongly, punctured; the punctures being thickest at the base of the segments. The apex is set with stiff and long hairs.

A variety is mentioned by Erichson, in which the thorax also is rufo-testaceous. It appears possibly to be the *Tachinus merdarius* of Gyllenhal.

I have a male of this species, in which (though otherwise typical) the apical joint of the antennæ is very flat, and the elytra are obsoletely punctured all over, besides the usual striæ; the punctuations presenting much the appearance of the depressions caused by rain falling gently upon soft mud.

Hammersmith Marshes, Stockwell, Preston, Paisley, Falkirk, Glasgow, Hampstead, Crystal Palace, &c.; not very uncommon.

2.—CINGULATUS, *Mann.; Erichson*, (*loc. cit.*) 270, 2.

3-3½ lin. Very like *analis* in build and colour, but differing in being rather larger and broader, with a more depressed and ample thorax; also in having the two first joints of the antennæ testaceous, the third ferruginous, and the two apical joints testaceous; the apical joint is also rather more acuminate. The anterior coxæ are black, and the apical joint of the abdomen pitchy. The punctuation of the striæ on the elytra is more remote, and not so distinct, and the basal joints of the anterior tarsi in the male are more dilated.

Erichson remarks that the penultimate joint of the antennæ is ferruginous in the female, instead of testaceous, but I find that sometimes the male exhibits this colouration, and sometimes the female has both the apical joints decidedly testaceous.

Varieties appear to occur, in which the two basal and the apical joints only are testaceous; also in which the three apical joints are testaceous.

Much rarer than the preceding. Renfrewsh., Linlithgowsh., Forfarsh., and summit of Catlaw (Mr. Hislop,), Paisley, Weybridge.

3.—INCLINANS, *Grav.; Erichson, loc. cit.*, 271, 3.

3-3½ lin. Rufo-testaceous; head, except the mouth, pitchy-black; the four first segments of the abdomen pitchy, with the hinder margins rufo-testaceous, the fifth segment almost entirely, and the two apical entirely, rufo-testaceous. The apical joint of the antennæ acuminate,

and very little longer than the preceding. Elytra much longer than the thorax; closely, finely and evenly punctured throughout. Abdomen sparingly and finely punctured. The thorax black beneath, the legs and anterior coxæ testaceous.

In the male the two basal joints of the anterior tarsi are strongly dilated, the intermediate tibiæ are dilated at the apex, and have the apical spur very long, and the intermediate tarsi have the basal joint flattened, and gradually widened towards the middle.

Falkirk and Berwickshire (Mr. Hislop), Edinburgh (Mr. Sharp), Holme Bush, Coombe Wood, Hampstead, and Reigate. Rarer than the preceding.

4.—FORMOSUS, *Grav.; Eric., loc. cit.*, 271, 4.

2½ lin. Slender, rufo-testaceous, shining. Head black, with the mouth testaceous; antennæ very long, brown, with the two basal joints, and the apical joint, testaceous. Thorax almost rectangular behind. Elytra not longer than the thorax; sparingly, but strongly and confusedly punctured. Abdomen black, with the hinder half of the fifth segment, and the two apical segments entirely, rufo-testaceous. Thorax beneath, and legs, testaceous.

In the male the basal joints of the anterior tarsi are very slightly dilated, and the sixth segment of the abdomen beneath has a slight triangular emargination.

One specimen exists in the Stephensian collection, and the locality, &c., given in the manual is, "Moss, &c., London district, and near Swansea, 4, 6."

(BOLITOBIUS, proper.)

5.—ATRICAPILLUS, *Fab., Erichs., loc. cit.*, 276, 14.

2½-3 lin. Fusiform, shining. Head black, with the mouth pitchy; palpi testaceous; antennæ with the point of articulation to the head, the four basal joints, and the apical joint, testaceous, the remainder pitchy-brown. The basal joint is very long, and the apical joint as long as the two preceding.

Thorax ample, polished, testaceous-red; elytra flattish, ample, rather longer than the thorax, blue-black, with a humeral lunulated spot, reaching towards the suture, and the apical margins, whitish; depressed in the region of the suture, on each side of (and close to) which, is a well defined row of about seven punctures. Abdomen sparingly punctured, rufo-testaceous; the apical segment black, but

whitish at its extreme base; the penultimate black, but whitish at the apex, and rufo-testaceous at the base. Thorax black beneath; legs and anterior coxæ yellow.

The sixth segment of the abdomen in the male is truncate beneath, and rounded in the female.

Rather common in fungi, in the autumn, and generally distributed throughout the country. When alive, this insect presents a beautiful appearance, owing to its contrast of colour.

6.—TRINOTATUS, *Erichson. loc. cit.*, 279, 19.

Smaller than *atricapillus*, and varying somewhat in size. Fusiform, testaceous, shining. Head black; mouth, palpi, and four basal joints of antennæ testaceous, the remainder pitchy-brown. Thorax rufo-testaceous. Elytra much longer than the thorax, with a pitchy-black suffused spot, commencing at the shoulder, and reaching to the suture, forming a triangular scutellar patch. This spot is of all sizes, diminishing from the above condition to a mere dark streak on each side of the scutellum, but always present.

There is also a large, suffused, pitchy-black spot, inside the whole outer apical angle of each elytron, not reaching quite to the suture, and leaving the margins testaceous.

The punctuations in the sutural striæ are about eight in number, of which the first and last pairs are faintly or indistinctly impressed.

The abdomen is reddish-testaceous, with the base of the segments sometimes inclined to pitchy, very sparingly punctured, the punctures being stronger and more frequent at the base of the segments.

In the male the sixth segment beneath is obsoletely impressed longitudinally.

The colours in this and the two next species fade considerably after death. All three are very abundant in fungi, during the autumn, throughout the country; and may often be seen on the collecting paper, scampering away rapidly, out of one and the same fungus.

The species may generally be separated easily by the number of punctures in the sutural striæ, and (in the case of *pygmæus*) by the punctuation of the abdomen.

7.—EXOLETUS, *Erichs., loc. cit.*, 280, 20.

The largest examples of this species are rather smaller than ordinary specimens of *trinotatus*, and the smallest are not larger than *Tachyporus chrysomelinus*. Very like *trinotatus* in colour and build

(except that it is not quite so broad), and may be distinguished by the sutural striæ, which are each composed of about twelve closely planted and well defined punctures. The thorax also is not so wide behind; the scutellar spot either does not exist, or is very faintly indicated, and the apical spots are more suffused towards the suture and hinder margin. The apex of the abdomen is often pitchy. Specimens sometimes occur, in which the dark colour is suffused nearly all over the elytron, leaving only the shoulders testaceous; in others, the entire insect is clear testaceous, except the head and apex of elytra and abdomen.

In the male the sixth segment of the abdomen beneath is very slightly emarginate at the apex.

Perhaps this is the least abundant of the three common species.

8.—PYGMÆUS, *Fab.; Erichs., loc. cit.*, 280, 21.

Extremely variable in size, some specimens being as large as any *exoletus*, and others smaller than *Tachyporus humerosus*. From both the preceding species it may be known by the finer and closer punctuation of its abdomen, and by the sutural striæ being composed of only about six punctures. It is more fusiform than *exoletus*, and usually much smaller than *trinotatus*.

It varies much in colour, being either clear testaceous with the head pitchy, or with the head and apex of elytra and abdomen pitchy; or with the head, entire disc of thorax, scutellar patch, lower angles of elytra, and base of abdominal segments, pitchy; sometimes the entire abdomen is pitchy, with only a thin apical margin to each segment testaceous.

In the male, the sixth abdominal segment beneath has an obsolete tubercle in the middle, and a slight longitudinal depression.

NOTES ON *TARSOPHLEBIA WESTWOODII*, GIEBEL, A FOSSIL DRAGON-FLY.

BY DR. H. A. HAGEN.

In Brodie's "Fossil insects," pl. 10, f. 8, Mr. Westwood figures the basal portion of the wing of a *Neuropteron*, and says (l. c. p. 127) "that he is uncertain as to the position of the insect to which the wings belonged." Afterwards, in the "Quarterly Geological Journal," vol. 5, he says "that the wing belonged to a rather large species allied to his *Heterophlebia dislocata*." M. Giebel, in his "Fauna der Vorwelt," p. 288, gives to this species the name of *Heterophlebia Westwoodii*. In my palæontological notes in the Entomologist's Annual for 1862, I

have asserted that some fossil species from Solenhofen are so similar to those described from England, that it will be necessary to prove that they are different. This was especially the case in *Heterophlebia dislocata* and *H. eximia* from Solenhofen. Now, I am able to assert with certainty that these species, apparently so closely allied, are distinct. Of *H. dislocata* I have only had at my disposal a wing from Cheltenham, of which the portion the most decisive—the basal—is wanting, but the remainder is sufficiently clear to separate the species. Without entering into details, I can say that *H. eximia* ranges with the *Calopterygines*, and differs from all other known *Odonata* in the tarsi; the first joint is longer than the others, while it is always shorter in all living *Odonata*. The basal portion of the wing (I suppose always that the details given by Mr. Westwood are correct,) differs from that of *H. dislocata*. In examining the other figures, I find that the basal portion (pl. 10, f. 8,) accords precisely with my genus *Tarsophlebia*. Perhaps fossil specimens found in England, which have not yet been published, will prove the correctness of my determination. In any case it would be to me of the greatest interest to be able myself to compare a wing of *Heterophlebia dislocata* so as to be able to point out the differences in the basal portion also, between the genera *Heterophlebia* and *Tarsophlebia*, for in spite of their resemblance, I believe that *Heterophlebia* belongs to the *Gomphines*—*Tarsophlebia* to the *Calopterygines*. In conclusion, one cannot help remarking the extraordinary fact, that the fossil *Tarsophlebia* deranges our system of the *Odonata*, founded on the species now living on the globe, in a most striking way, by the length of the first joint of the tarsi, which in all recent species is invariably shorter than the following.

NEW SPECIES OF BUTTERFLIES FROM GUATEMALA AND PANAMÁ.

BY HENRY WALTER BATES, F.Z.S.

(Continued from page 131.*)*

61.—AMPHIRENE SUPERBA.

♂ ♀. Expans. 3″ 10‴. Wings with the outer margins scalloped, dentations prominent, acute, median lobe of hind-wing more elongated and narrower than in the allied species. Fore-wing with the apex strongly produced, subfalcate; abdominal edge of hind-wing deeply incurved near the anal angle. Above: deep blackish-brown, both wings crossed by a white belt, much broader on the fore than on the hind-wing, and edged with light blue; hind-wing with a thin, lunulated,

interrupted, sub-marginal pale blue line, and between it and the margin a row of light brown lunules. Beneath: light brown; belt same as above; two rows of pale blue spots cross the fore-wing cell; the fore-wing outer border has a row of brownish-white lunules not reaching the apex, and the hind-wing has a similar row placed between two lunulated red streaks, both edged on each side with dusky.

Guatemala, central valleys.

62.—PAPHIA NOBILIS.

♂. Expans. 3‴. Fore-wing costa somewhat angularly arched, apex acute, outer margin slightly incurved to within a short distance of the hind angle, and thence running straight to the angle, hind margin simple. Hind-wing outer margin faintly waved, tail long and slightly dilated at the apex. Fore-wing above: rich deep purplish-red, with the apical and outer borders, two bent lines from the costa (beyond the cell) to the hind margin, and all the nervures blackish. Hind-wing blackish, with the base deep purplish-red, gradually blending with the dusky limb of the wing; near the tail is a row of whitish specks tipped with black. Beneath: reddish, glossy, minutely irrorated throughout with dusky-brown; hind-wing with two dusky and indistinct transverse streaks.

♀. Expans. 3″ 2‴. Similar in form and colour to the male, but the fore-wing has two transverse bent rows of brownish-white spots which lie behind the two dusky streaks respectively, and correspond to them in direction. The limb of the hind-wing is of a paler and dingier brown hue, and the sub-marginal specks are larger, and form a continuous series. Beneath: same as in the male, but much paler.

Guatemala, central valleys.

63.—PAPHIA EXCELLENS.

♂ ♀. Expans. 3″ 6‴. Fore-wing costa arched, very strongly so towards the apex; apex itself prolonged into a hooked point; outer margin deeply incurved behind the apex, and thence slightly waved but straight to the hind angle; hind margin straight. Hind-wing with the outer margin dilated behind the apex into a broad angular projection; tail very long, broad, and curved, and dilated at the tip; anal angle produced into a short broad lobe; abdominal edge deeply and regularly incurved before the anal angle. Wings above: ochreous, deepening into fulvous towards the base; outer limb of both wings and the veins of the anterior pair blackish, the limb traversed from the costa of fore-wing to anal margin of hind-wing by two rows of large ochreous spots; the outer half of the hind wing is irrorated with

dusky, and the ochreous spots are confused towards the anal angle. Beneath: very similar to *P. Electra* (Hewitson, Exot. Butt., Paph. f. 2); but darker and the costal border of the hind-wing, in the middle, marked with a reniform silvery spot.

Guatemala, central valleys.

64.—PAPHIA XENICA.

♂. Expans. 3″ 3‴. Fore-wing strongly arched, apex obtusely pointed, outer margin of great length and curved outwards, the hind angle being greatly prolonged in connection with a very deep incision of the hind margin. Hind-wing tailed (tails broken). Above: the base of the fore-wing and nearly the whole surface of hind-wing steel blue, outer part of the wings blackish; fore-wing beyond the middle crossed by a broad orange-tawny belt, beginning on the costa, and passing a little above the hind angle to the apical border of the hind-wing. Hind-wing outer margin with a row of pale bluish specks tipped with black. Beneath: rusty brownish-red clouded with blackish, and sprinkled with minute whitish specks; the black colour forms an obscure streak on fore-wing, stretching from the apex to the middle of the hind margin, and two similar transverse streaks in the hind-wing.

Guatemala, Polochic valley. This is one of the most interesting discoveries made by Mr. Salvin, being a species of an appearance quite foreign to Tropical America, and resembling Eastern forms. In colours it resembles closely *Kallima Parakleta* of Horsfield, an inhabitant of Java.

65.—MORPHO OCTAVIA.

♂ ♀. Expans. 5″. Closely allied to *M. Achilles*, Lin., and especially to the Mexican form *M. Montezuma*, Guenée. Fore-wing obtuse, outer margin not incurved. Above: light metallic blue, much lighter than in *M. Montezuma* and the allied forms; outer limb of both wings pallid brown, with two sub-marginal dusky lines which enclose ashy lunules in the fore-wing, and pale rosy-red lunules in the hind-wing, these lunules in some specimens being extended into a continuous streak. Beneath: pale brown, very pale on the outer borders. Cells crossed by grey streaks, a similarly coloured streak also borders the inner side of the rows of ocelli on each wing. Ocelli three in number on the fore-wing and four on the hind-wing; they are round, and have purplish pupils with white centre specks, and yellowish irides edged on each side with black, the whole encircled by a pale greyish ring.

This was the sole species of its stock, found on the Pacific slopes of the Guatemala highlands. In all the central valleys *M. Montezuma* alone was found of the forms allied to *M. Achilles*.

66.—BRASSOLIS STRIX.

♀. Expans. 4″ 4‴. Wings of the same shape as in *B. macrosiris* (Dbldy. & Hew. Gen. D. L. pl. lix., f. 3). Above: dark blackish-brown; costal edge of fore-wing near the base streaked with grey; the same wing crossed, just beyond the cell, by a white belt which terminates towards the end of the second median branch, and is succeeded by a large spot of the same colour between the first and second branches; near the apex are two small white spots. Hind-wing with the apical border narrowly white. Beneath: fore-wing blackish; basal part crossed by a number of slender grey streaks, white belt as above, and beyond this, near the apex, are two large ocelli of a dark grey colour, with black pupils on their inner sides, both are surrounded by a broad fulvous iris, open towards the apex of the wing; close to the apex are two black spots. Hind-wing tawny, crossed by numerous dark streaks, which are brown towards the abdominal border, and black towards the disc and outer border; beyond the cell is a row of obsolete ocelli, and near the middle of the costa a large tawny spot.

Guatemala, central valleys.

67.—BRASSOLIS ISTHMIA.

♂. Expans. 3″ 7‴. Closely allied to *B. Sophoræ*, L., smaller, apex of the fore-wing broader, and the outer margin consequently less broadly and deeply incurved; hind-wing outer border much more curved outwards. The fore-wing is of the same colour as in *B. Sophoræ*, but the tawny belt is broader and paler. The hind-wing is quite destitute of tawny stripe.

Panamá.

68.—PRONOPHILA LÆTIFICA.

♂. Expans. 2″ 7‴. Fore-wing costa slightly arched, apex broadly rounded, outer margin incurved in the middle and waved. Hind-wing outer margin strongly dentate, the lobe at the end of the second median branch nervure longer than the others. Above: dark brown, fore-wing with a large spot behind the median nervure ochreous white, and with four small spots of the same colour nearer the apex. Hind-wing with a large ochreous-white spot passing over the end of the cell, and having three deep sinuations on its outer edge. Beneath: fore-wing dark brown, with spots same as above; apex obscure rufous-brown, with a lighter streak near the apex. Hind-wing tawny-brown, crossed by two nearly straight ochreous-white streaks; posterior to the outer streak is a broad pale belt, rusty-brown in its middle part, and traversed therein by a straight row of black ocelli, the three middle ones of which are very minute; the outer edge of the pale belt is deeply multisinuate.

Guatemala, interior.

(*To be continued.*)

Cidaria russata and *immanata*.—I send you the following note, in the hope that some account of the investigation of the earlier stages of these species, on which, during the past twelve months, I have bestowed as much pains as untoward circumstances would permit, may not prove altogether unacceptable.

To begin with *russata*. On August 11th, 1863, I captured a ♀ moth; she at once laid some eggs, from which the larvæ were hatched simultaneously on 23rd of same month; I fed them on sallow and strawberry, and they attained the length of half-an-inch before hybernation: about 15th February, 1864, they began to feed again, and had all of them attained their full growth, and were spun up between 10th and 23rd April. During the latter month I also captured 4 or 5 larvæ, and they too were spun up by the 26th. The moths (about 15 in all) from both bred and captured larvæ emerged between May 5th and 18th. Meanwhile, on May 10th, I received from Mr. Batty, of Sheffield, one full-fed larva, which he had found on whortleberry; this spun up at once, and the moth appeared May 27th. A few days later, during the first week of June, I obtained 4 or 5 batches of eggs from captured ♀s; the larvæ from the first of these were hatched on June 11th, and the rest in due order; they fed up fast on sallow and strawberry; the first began to spin on July 15th; the first moth appeared on August 5th, and the rest continued to emerge till the first week in September; I did not set out all of them, but there must have been several dozens.

Now for the dates of *immanata*. I captured a ♀ moth of the var. *marmorata*, August 12th, 1863; she at once laid eggs; also in the latter part of August, and the first week of September, I received from Mr. Hodgkinson (who was then in Westmoreland), and from Mr. Batty, of Sheffield, several batches of eggs laid by ♀s of the dark type (they kindly enclosed the moths for my inspection); some of these eggs I kept for a time indoors, and some outdoors, but not a single larva broke shell until March 5th, 1864, when the larvæ of my *marmorata* began to make their appearance at the rate of one or two a day. The eggs from Westmoreland and Sheffield, having been deposited in chip boxes, could not so well be kept damp, and had nearly all dried up; most fortunately, however, in the first week of April, a few larvæ were hatched from them. The *marmorata* larvæ fed away freely on wild strawberry, and occasionally on sallow, and began some of them to spin up on 27th May (the day on which I bred my latest specimen of the spring moths of *russata*), and by 11th June, all were in pupæ; the moths, to the number of nearly 50, emerged between June 13th and July 4th: the type *immanata* larvæ fed up more slowly, going into pupæ from June 10th to about the same day in July, and the moths appearing from June 28th to quite the latter end of July, numbering about a dozen in all.

The above dates call for no special remark, except that (as is the case at times when insects are reared in confinement) some of them are a little earlier than those rightly assigned for these species; but I may make one or two remarks about the perfect insects: and first as to constancy of form and markings. It will have been seen that both broods of *russata* were investigated, as well as both varieties of *immanata*, these last too coming from parts of the country very distant from each other; yet in no instance could there be any doubt but that the moths bred fully possessed the distinctive characters of their respective parents; there was no confusion of species. Next as to variation of colour. Whilst, as Mr. Doubleday has

often proved, two or three varieties of *russata* appeared in the same brood, for example *saturata* and *perfuscata* from eggs of *centum-notata*, and again *centum-notata* from eggs of *comma-notata*; on the other hand, neither the type *immanata*, nor the variety *marmorata*, produced any offspring differing in depth of colour from themselves; still, I quite expect that further experiments in breeding them will clearly prove that these are varieties of one good species; and that Mr. Doubleday's opinion (that there are *two, no more* and no less than two species of *Cidaria* to be made out of all the moths to which the various names enumerated in this paper have been given,) maintained by him so long in face of the opposition of Continental Entomologists, and one may add, the negligence of those nearer home, will be fully borne out by facts in every point.

I subjoin comparative descriptions of the eggs and larvæ, the latter made from living specimens, and rendered more exact by the help of Mr. Buckler's pen and pencil; it was a great satisfaction that in the second week of July we were able to put full-grown larvæ of the two species side by side for comparison, but I am sorry I was not able to make fuller notes of their changes after each moulting.

The eggs of *russata* are of a flat oval shape, in colour a very *pale ochreous*, resembling that of a pale tinted chip box. The larvæ when first hatched are *dirty whitish*, and somewhat translucent; after a change of skin they become greenish, and some individuals soon acquire a pink spiracular stripe, which, however, occasionally disappears again at the last moult. When full-fed, fine individuals (the hybernated larvæ were finer than the summer broods, and resulted in finer moths,) attain the length of 1¼inch, in shape they are rather long and slender, the head round but flattish above, the anterior segments a good deal wrinkled, the spiracular region puckered and projecting, thus giving the whole larva rather a flattened appearance; the two anal points *acute*. The ground colour varies from a yellowish-green to a light tint of full green; the slender dark green dorsal line is *bordered by the ground colour;* the sub-dorsal line pale yellow, or yellowish-white; in some individuals there is a broad purplish-red stripe extending from 2nd to 13th segment, and including the ventral and anal pairs of legs, in others this is of a rose-pink, and is much narrower, and extends from 3rd to 10th segment; others again have only a row of 5 or 6 irregular dashes of pink, whilst in a great many there is no pink whatever to be seen, but instead a slender stripe of a dark tint of the ground colour running along the spiracles; segmental folds yellow, dots and spiracles whitish, anal points sometimes pink, sometimes green.

The eggs of *immanata* do not differ from those of *russata* in shape, but in colour are yellowish, sometimes lightish red; the newly-hatched larvæ are *yellow*, nearly as yellow as the pollen of the flowers of the wild strawberry; this seemed to me a very strong mark of distinction from *russata*, and was possessed by the larvæ both of the type and the variety (*marmorata*), which, in fact, at every period of growth were identical in colour and markings; after the first moult they become more greenish. When full grown they attain the length of about 1¼inch. In shape they much resemble *Russata*, only they seem *more cylindrical*, and the anal points are *blunt*; the ground colour is a *dull, pale* yellowish or whitish-green; the dark green dorsal line bordered by a space *paler than the ground colour*, the sub-dorsal

line dirty whitish, and at the middle segmental folds, just above the spiracles, are 6 *or* 7 *pale oblique streaks;* the spiracular line green, with a yellowish thread running throughout its length; dots and spiracles white; segmental folds yellow, anal points sometimes very pale pink, sometimes pale green. Altogether the full-grown larva (though when first hatched so gaily dressed,) is a much duller looking creature than that of *russata*.

The pupæ, with their transparent cases, showing green when new, and growing darker as the moth approaches perfection, as well as the slightly formed cocoons, did not appear to differ.—Rev. J. Hellins, Exeter.

Alterations in Nomenclature. Anisotoma ornata, and Tychius brevicornis.

Anisotoma litura, *Stephens, Mandib. v.*, 403; *id. Man.* 104, 829.

The description of *A. ornata* given by Fairmaire *(Annales de la Soc. Ent. de France, 3me série, vol. iii.*, 1855, *Bull. p.* 30*)* accords so exactly with the structure of *A. litura*, Steph., that I can come to no other conclusion than that the two species are identical, and, if so, that the name *ornata* must be suppressed.

The following is the description given (loc. cit.) for *A. ornata.*

"*Rufo-testacea, nitidior, ovalis, parum convexa, antennarum clavâ, articulo* "*secundo excepto, nigricante: prothorace densè sed tenuissimè punctato, basi fere* "*rectâ, angulis posticis subrectis, ferè obtusis; elytris punctato-substriatis, interstitiis* "*indistinctè punctulatis; maris femoribus posticis muticis, tibiis posticis valdè* "*arcuatis; feminæ tibiis posticis ferè rectis, vix arcuatis. Var., elytrorum suturâ* "*margineque externo brunneis. L.* 2½-3 *mill.*"

Fairmaire seems to have had but a very limited number of specimens, and yet considers the form with dark suture and outer margins to the elytra as a variety of the immaculate condition, which he makes the type. I have recently taken five specimens of the unicolorous form (of both sexes), at Mickleham, by sweeping among dead leaves; and have found upwards of a dozen in Dr. Power's collection, mixed with *A. calcarata* (which it greatly resembles, superficially), and also one among some unexamined *Anisotomidæ* from Cumberland, sent to me by Mr. T. J. Bold. I find also that this pale form is the "13 sp——— ?" of Mr. Waterhouse's catalogue. The latter gentleman, on seeing further examples, is now of opinion that this insect cannot be separated specifically from the dark form, viz., *A. litura;* especially as the light condition occurs in the north of England, from whence also he now possesses intermediate states of colour; e.g., specimens with the suture alone brownish, with the suture and margins darkened, and with the thorax black, and the suture and margins broadly black. The last form seems to be the type of the species. All the southern specimens I have seen (upwards of twenty in number), although structurally identical with *A. litura*, exhibit no tracing of dark colouration.

It is somewhat curious that both authors should have named the species from its dark coloured form. Stephens, I think, was right in so doing, though he appears not to have known the pale condition. Fairmaire, on the contrary, describes an immaculate light coloured insect, and names the species from a form of which he considers it to be a variety.

The species varies considerably in size, the males being much the largest; and, in its light coloured form, may be distinguished from the pallid condition of *A. calcarata* (next to which it must be placed, on account of its anterior tibiæ not being widened at the apex, and the apical joint of its antennæ being decidedly narrower than the two preceding joints) by the following characters. It is of a shorter ovate form, and not quite so convex; the thorax has its base nearly straight, not so sinuous near the hinder angles, which are almost acute, and not rounded off; and the punctuation of the striæ of the elytra is not quite so deep.

In the male, moreover, the hinder femora are not toothed beneath, but are rounded off at the lower apex, and the hinder tibiæ are elongate, and much curved inwards. There are of course (as in the other species of the genus, and indeed in all insects where the male character is normally of strong development) specimens in which the latter peculiarities are not so conspicuous as in the type form.

Tychius pygmæus, *De Barneville, Rev. et Mag. de Zool., série ii., Tom. xii*, 1860, *p.* 167.

From the description given in the above-mentioned publication there can, I think, be no doubt that *Tychius brevicornis, Waterhouse* (Proc. Ent. Soc., Lond., 5th May, 1862), is synonymous with, and subsequent in date of publication to, the above-named species; and, if so, that the name *brevicornis* must be suppressed.

The chief remarkable point in this insect, next to its small size, is however omitted in M. de Barneville's diagnosis, viz., the comparative shortness of the antennæ, both the scape and separate joints of the funiculus being not so long as in the allied species. I have compared Mr. Waterhouse's specimens with the description of *T. pygmæus*, and find them to accord very exactly, as far as the description goes.—E. C. Rye, 284, King's Road, Chelsea, S.W., *5th November*, 1864.

A New British Tachinus.—T. pallipes, Grav.

While looking over some *Tachini* lately taken by me in this neighbourhood, I have noticed some specimens which cannot be referred to any species in our lists. At first sight they very closely resemble the common *T. rufipes*, but the structure of the terminal segment of the abdomen, especially of the female, is very different to what it is in that insect, agreeing on the other hand remarkably well with Kraatz's description of those parts in *T. pallipes*, Grav. In other respects, however, the specimens in question do not correspond so entirely with this description; the chief difference being that the elytra appear to be rather longer than Kraatz's diagnosis of *T. pallipes* would lead one to expect. I therefore rather hesitatingly assign my insects to that species. They are about the size of *T. rufipes*, but with paler legs, and with the lateral margins of the thorax yellow. In the male, the upper plate of the seventh abdominal segment ends in four not very acute teeth, the middle pair being most prominent, and the triangular notch which separates these does not extend so far as the termination of the external teeth. The under-side is much as in the male of *T. rufipes*. In the female, the upper plate of the seventh segment ends in four long, sharp, teeth, the central ones being a very little the longer, the notch between them reaching very nearly to the point where the outer ones commence getting narrower. The under plate ends in six teeth, the

external ones being the shortest, the central ones the longest; the notch between these last is broad, and is not plain at the base, but contains a short, broad, triangular tooth.—D. Sharp, 12, St. Vincent Street, Edinburgh, *Oct. 26th*, 1864.

An Aphodius new to Britain.

Aphodius obliteratus, Panzer; Erichs., Ins. Deuts., iii., 883, 61.

I captured, last month, at Mickleham, two specimens of an *Aphodius*, which I noticed at the time as being new to me; and, last week, I took in this neighbourhood another pair of the same species. I have no doubt they are to be referred to the insect named above. The only British species of *Aphodius* with which *A. obliteratus* is likely to be confounded is *A. contaminatus*. From this species it differs in being considerably smaller; the clypeus is bordered with yellow; the pro-thorax is more punctured, and its sides are without ciliæ: the elytra are more widened behind, and are but slightly pubescent, the interstices are also much less evidently punctured.—*Id.*

*** I have no doubt that this species is mixed with *contaminatus* in collections, as it presents an extremely close resemblance to that insect. I have long had the two species separated in my own cabinet; but, knowing the sexes in *Aphodius* to vary much *inter se*, have (without proper investigation) imagined the specimens of *obliteratus* were females of *contaminatus*; and this, in spite of Dr. Power's often expressed opinion that we had in England a closely allied species mixed with the latter. On the 16th October last I took at Mickleham about a score of examples, large and small, from at least a hundred, out of one "deposit" (human), and found them all to be *obliteratus*. They vary in size, the largest male being very nearly as big as ordinary examples of *contaminatus*, though the smallest female was considerably smaller than any specimens I have seen of that species.

The characters above pointed out by Mr. Sharp will amply serve to distinguish both sexes of *obliteratus*; I would, however, remark that the yellow bordering of the clypeus must not be too much relied upon, as it is indistinct in some specimens, and appears also in some examples of *contaminatus*. The males of the two species are readily to be separated by the difference in the armature of the anterior tibiæ; the external apical teeth being longer in *contaminatus*, and the spur on the inner side broader, and rather obliquely truncated at its apex; the inner spur in *obliteratus* being thin and gradually pointed. The inner spurs of the hinder tibiæ are also longer and stouter in *contaminatus*, especially in the male. The depression in the metasternum of the male also affords a good diagnostic character, as far as my opportunities of observation have extended, although it seems not to be mentioned by Erichson (loc. cit.). In *contaminatus* this depression is rather deeper, and with a very thin medial longitudinally *elevated* line, which line is represented by a *furrow* in the middle of the depression in *obliteratus*.

In both species the males are the largest, with the thorax broader and rather less distinctly punctured, the teeth of the anterior tibiæ more developed, and the interstices of the elytra a little more elevated. In the male of *contaminatus* the interstices also are more closely punctured, and rather more thickly pubescent than in the female.—E. C. Rye.

[Having received, through my friend Mr. Kirby, a packet of small stones covered with very minute white objects and acari, sent, accompanied by a letter from Mr. Weatherhead, of Leicester, I at once forwarded them for identification to Professor Westwood, who has, in the following notes, most obligingly complied with my request for information respecting them.—H. G. Knaggs.]

Notes on Trombidium lapidum.—The minute white objects on the stones are the eggs of the mite *Trombidium* (*Tetranychus*) *lapidum*, first figured by Hammer in Hermann's Memoire Apterologique, (pl. 7, fig. 7-8,) with the eggs which were discovered in similar situations. Hammer's correspondent found with the eggs minute red-coloured *six-legged* mites which had been hatched from the eggs, and which ran very quickly. Accompanying these mites (with six legs) were always found others, two or three times larger, of a brown colour, and with *eight legs*, but these latter wanted the long *setæ* at the end of the four anterior legs of the small individuals; Hammer thought these constituted two distinct species and that they were not varieties, different in stage or sex, because no metamorphoses had been noticed in these insects, and no individuals intermediate in size had been observed. He also inclined to regard the so-called eggs, in consequence of their comparatively large size to that of the insects, as a kind of crysalid enclosing the mite in a sort of nymph state.

From what has since been observed of the changes of these mites, however, there can be no doubt that the large specimens are full-grown individuals which had previously borne the appearance of the smaller ones. All this is the more necessary to be explained, because, in his note, Mr. Weatherhead states that the eight-legged mites were produced from the eggs. This I believe must be a mistake. Unfortunately I cannot make out the number of legs, the specimens in the small phial having been so battered by the particles of stone, that some of the legs may have been, as some certainly have been, detached in the journey from shaking about. I suppose also that this species is *six-legged* in the larval state. The eggs are beautiful microscopic objects. — J. O. Westwood, Oxford, 18*th October*, 1864.

Notes on the capture and variation of Gelechia humeralis (*Lyellella*).—The capture of a fine series of this species here has afforded me an opportunity of noticing a striking instance of variation in habit. At its old locality, the New Forest, it is said to occur on oak trunks. My specimens, with one exception, which was trampled out of heath in the spring, were all beaten from thatch.

For a *Gelechia* it is rather a long-lived species, appearing from the beginning of August to October, and again, after hybernation, at the end of February.

This insect is singularly variable, and seems to have hardly one constant character. The deep black streak at the base of the costa of the fore-wing appears to be the most so, but even that is almost obliterated in the unicolourous brown variety.

One form, which might be called the type, has the ground colour of the fore-wings white, with the inner margin pale ochreous, the basal streak, two elongate spots on the disc, and the two opposite dots black, and the hind margin dotted with fuscous.

In another the opposite dots are larger, the basal streak and first spot become confluent, and the middle portion of the wing is suffused with ochreous and brown.

In a third a large brown blotch occupies the inner margin, and includes the elongate spots.

In a fourth the wing is entirely brown, the basal streak and spots being very indistinct.

A fifth, also brown, has the streak and spots deep black, these latter becoming tufts of raised scales.

And lastly, a sixth form is nearly black, with minute white dots scattered over the disc.—Charles G. Barrett, Haslemere.

Cicada anglica in Surrey.—One day last June I had the good fortune to meet with a specimen of this insect in a copse near here. It was flying in the sunshine, down a grassy ride, and pitched rather suddenly among some rushes and long grass which were growing in a wide open space at a bend of the path, where I managed to secure it.

Its strong membranous wings made a rustling sound similar to that produced by dragon-flies, but, being a female, it of course made no other noise whatever.

I am pretty certain I saw another specimen a few days afterwards flying by the same spot (one of the warmest and most sheltered nooks in the neighbourhood), but its flight was so rapid that there was no chance of capturing it.

The occurrence of this uncommon species is interesting, especially as it has not, I believe, been previously noticed in the county of Surrey.—*Id.*

Occurrence of a Depressaria new to Britain.—Depressaria olerella.—I have beaten this species from thatch in several places in this neighbourhood, principally on a wide extent of heath called Woolmer Forest, which commences about five miles from here.

It seems almost exclusively confined to the heaths, and doubtless feeds upon the yarrow (*Achillea millefolium*) in those places.

This species is figured and described in the Nat. Hist. of the Tineina, vol. 6.

It bears a general resemblance to *Dep. albipunctella*, but is decidedly paler, and has the pale hinder fascia much more sharply angulated.

It occurs in September and October.—*Id.*

Entomological Society of London, *November 7th*, 1864.—F. P. Pascoe, Esq., F.L.S., President, in the Chair.

Before the business of the Meeting had commenced, the President, on behalf of Members of the Society, presented Mr. W. Wilson Saunders with a Testimonial (which had been subscribed for by upwards of 50 Members), as an acknowledgement of the immense benefit rendered to the science of Entomology by Mr. Saunders, and as a slight return for the pleasant excursions and annual entertainments to which he had invited them at Reigate.

The Secretary read an address suitable for the occasion, and Mr. Saunders replied.

Mr. Janson exhibited, on behalf of Mr. Sidebotham, of Manchester, four new British species of *Curculionidæ*, viz., *Lixus filiformis* of Fabricus, taken by Mr.

Sidebotham near Devizes; *Sibynes canus* of Herbst, also from the same neighbourhood; *Peritelus griseus* of Olivier, from Ventnor, taken by Mr. Wainwright; and *Ceuthorhynchideus Powerі* of Rye, from Silverdale, near Lancaster.

Mr. Smith exhibited specimens of a new British *Bombus*, which he considered to be the true *B. pomorum* of Panzer. He had long had two male specimens in his collection taken by himself near Deal, and a female had recently been taken by his son in the same locality.

Mr. Saunders exhibited some singular galls found near Reigate on the roots of oak, at least four feet below the surface, in a sandy soil.

Mr. Smith remarked that he had repeatedly found these galls, and considered them to pertain to *Cynips aptera*.

Mr. Saunders also exhibited specimens and drawings of three kinds of galls which he had found in Switzerland: the first was a beautiful rose-coloured gall, shaped like a small fir-cone, and placed at the apex of willow twigs; the second, a red berry-like gall, found in great abundance on a species of dwarf narrow-leaved *Salix*; and the third were singular conical woody galls, placed on the surface of beech leaves.

Mr. Stainton exhibited a strange looking woolly gall, found by Mr. C. E. Broome on oak near Bath.

Mr. Smith read a letter from Mr. Stone, of Brighthampton, calling attention to the fact that many wasps' nests are deserted about the commencement of September, instead of continuing occupied up to late in the autumn, as is usually the case. He also mentioned that he had found workers busy carrying the grubs away from these deserted nests, and that he had noticed that these grubs were always diseased.

Professor Westwood said that this fact might be analogous to what is called "foul brood" by bee-keepers, in which case, not only do the bees and grubs die, but bees fed with honey from hives so affected also become diseased.

Mr. Stone also mentioned in his letter that he had found some larvæ of *Rhipiphorous* so large that he at first thought they might belong to a distinct species, but afterwards he imagined that these might belong to females; these large grubs he had always found feeding on female wasp-grubs.

Mr. Carter, of Manchester, brought for exhibition four beautiful specimens of *Trochilium sphegiforme*, which he had lately bred out of alder branches from North Staffordshire.

The Secretary read a translation of a pamphlet by M. E. Icery, of the Mauritius, intituled "Pou à Poche blanche," being a history of the *Coccus* of the sugar-cane, of which specimens were exhibited at the June Meeting of this Society. The author mentioned several modes of stopping the injuries caused by this insect, amongst others that of washing the plants with diluted alcohol.

Mr. Saunders said that he had found a mixture of spirits of wine and water in equal quantities the best remedy against the ravages of *Coccus* in his hothouse.

Professor Westwood called attention to the fact that the so-called male *Coccus* described by M. Icery was in reality a parasite belonging to the hymenopterous genus *Coccophagus*.

Mr. Baly read "Descriptions of New Genera and Species of *Phytophaga*."

Mr. Wilson, of Adelaide, communicated "Notes on South Australian Entomology."

ON VARIOUS SPECIES OF *TRICHOPTERYGIDÆ* NEW TO BRITAIN.

BY THE REV. A. MATTHEWS, M.A.

There are certain species, or rather groups, in the genus *Trichopteryx*, which seem involved in universal confusion. Of those now recorded for the first time as British, four are quite common in this country, and may be found in any good collection mixed up with other species. The discrimination of these diverse forms is mainly owing to the exertions of an entomologist, often I think much underrated, I mean M. V. Motschulsky, who in various parts of the "Bulletins de Moscou," has described their differences in a manner for the most part amply sufficient for recognition. It is much to be regretted that he has not done this more fully, for I feel sure that most of those which he has separated are genuine species. Take, for instance, the heterogeneous group which is often seen bearing the common name of *T. sericans;* by the side of a broad depressed insect, with brown pubescence, you will probably find a neat looking oval specimen, considerably convex and very black; while next to this appears a flat oblong example with long legs and antennæ; not one of the three bearing the slightest resemblance to either of the others, except that in all the antennæ are nearly black. To the first mentioned Motschulsky correctly applies the name of "*sericans*, Heer" (*depressa*, Gillm.); the second he makes a new species, and calls "*bovina;*" the third he clearly describes as the true "*picicornis*, Mann." In each of these a microscopical examination will reveal characters abundantly distinct; so much so, that in larger insects the most careless observer would not fail to perceive their difference.

Again, if we look at the species which Motschulsky has separated under the name of *T. lata*, the only matter of surprise will be that it should have so long escaped the notice of others. In examining large masses of *T. fascicularis* and its allies, I have often met with specimens for which it was almost impossible to find a satisfactory position; their long brown pubescence and wide subquadrate shape disagreed altogether with *T. fascicularis*, while on the other hand the absence of erect setæ, and other differences, seemed to forbid any association with *T. grandicollis;* and, under the microscope, many essential characters appeared, equally diverse from either species. But all these characters agreed exactly with Motschulsky's description of *T. lata*. This separation at once obviated all difficulty in correctly classifying the group, and cleared up the previous obscurity.

T. brevis is another instance of a like nature; this is always mixed with *T. pygmæa*, although no two species of nearly the same size can differ more strongly.

The species which I have called "*dispar*" I cannot recognize among those described by Motschulsky; it is most probably one of the number, since it appears to be widely dispersed, though very rare; I have myself taken two specimens, and have examined others captured by Messrs. Wollaston and Waterhouse; I have also received it from the continent, under the name of *T. picicornis*.

T. ambigua is another which I cannot recognize among Motschulsky's species; it is very distinct and well marked, but appears to be generally confounded with *T. pumila*, Erichs. I have lately received a great many examples of this species from Dr. Schaum, taken by himself in America, precisely similar in all respects to the European specimens. I have never yet been able to discover what the *T. pumila* of Erichson can be; not one of the thousands which I have examined has agreed with his description, but the name appears in every catalogue, and the species is supposed to exist in every good collection of this family; nevertheless, all which I have seen, invariably turned out to be either *T. ambigua* or *T. similis*. Figures of both these will shortly be published in the "Annals and Magazine of Natural History," in my paper on Dr. Schaum's American *Trichopterygidæ*.

Perhaps the insect I call *T. Kirbii* may be the true *T. pumila* of Erichson; it agrees with his description insomuch that it has the four anterior tarsi dilated, but it differs from it in having the posterior tarsi also partially dilated, and in many other points.

Trich. fucicola, Fairmaire.

This species, formerly taken only in Ireland and on the continent, has now occurred on the British shores. One specimen was found last autumn by Mr. Crotch on the Chesil Bank, and I detected another in the collection of the late Mr. Griesbach, which probably came from the estuary of the Thames.

Trich. lata, Motschulsky, Bull. Mosc., 1845.

May be known by its large size, subæneous colour, long brownish pubescence, subquadrate shape, long legs and antennæ (the latter being entirely pale yellow), and by the sculpture of the thorax, which is strongly tuberculate, with the interstices faintly alutaceous.

It may be found in the summer, not uncommonly, in heaps of dead leaves.

Trich. bovina, Motsch., Bull. Mosc., 1845.

Differs from *T. sericans*, with which it is usually associated, in its

deep black colour, ovate shape, much shorter antennæ, and in the peculiar sculpture of the thorax, which is covered with small distinct tubercles disposed in wavy rows, with the interstices distinctly and elegantly alutaceous.

This is a common species, and may be found, as its name implies, beneath cow-dung, but is seldom met with elsewhere.

Trich. picicornis, Mannerheim.

This is another species usually included under the name of *T. sericans*, but is easily distinguished from all its congeners by its oblong parallel and depressed shape, long legs and antennæ, sculpture of the thorax (which is not tuberculate, but simply alutaceous), and also by the dilated joints of the four anterior tarsi.

It is by no means rare.

Trich. brevis, Motsch., Bull. Mosc., 1845.

This is generally confounded with *T. pygmæa*. It does not, however, bear the slightest resemblance to that species, except in size. The latter is parallel in shape throughout, very black, without tubercles on the thorax, and has the basal joint of the anterior tarsi dilated; while *T. brevis* is clothed with a pale brownish pubescence, its thorax is dilated towards the base, with the sides somewhat rounded, and is covered with distinct tubercles prettily arranged in wavy rows, with the interstices deeply alutaceous; its head is also ornamented with tubercles in perfectly straight rows. It also differs from *T. pygmæa* in having the sides of the elytra strongly margined, the apical joint of the antennæ obtuse, and the anterior tarsi simple.

It is, moreover, of much rarer occurrence.

Ptenidium turgidum, Thomson.

I feel much pleasure in adding this species to our list; one specimen was taken by Mr. Waterhouse near London, in 1862, and I met with another mutilated example in the collection of the late Mr. Griesbach.

It may be known from *Pt. Gressneri* by the dilated sides of the thorax, and the four small equidistant foveæ near its basal margin, and also by the very obtuse apex of the elytra; from the rest of the genus it differs in its obtuse and exceedingly convex shape, and the shining red colour of the whole body; in size it is equal to *Pt. apicale*.

Trich. Kirbii, n. s.

L. c., $\frac{6}{16}$ lin. Ovate, very convex, clothed with a longish yellow pubescence, covered with small distinct tubercles, closely arranged with-

out order, with the interstices deeply alutaceous, with a long deep transverse fovea on each side of the thorax extending from the posterior angle nearly to the scutellum; antennæ piceous; the basal joints of all the tarsi enlarged in the male.

Head moderate, rather prominent, with the eyes moderate and prominent; antennæ long, piceous, with the basal joints paler.

Thorax rather longer and wider than the head, with the sides dilated, rounded, and rather contracted at the base, thickly covered with minute tubercles, with the interstices deeply alutaceous; the posterior margin strongly sinuated, with the angles considerably produced and acute, with a long deep transverse fovea on each side, gradually increasing in width from the scutellum to the hinder angle.

Scutellum large, triangular, deeply asperate, with the interstices alutaceous.

Elytra ovate, not wider than the thorax, about as long as the head and thorax united, with the sides rounded, deeply and irregularly asperate, much contracted and deflexed towards the apex, with the apex straight and narrowly pale.

Abdomen considerably exposed.

Legs long, yellow, with the basal joints of all the tarsi dilated in the male; in the anterior pair the basal joint is very short and wide, the second is immensely dilated and unequally bifid; on the interior edge it is fringed with a row of strong, incurved, and very long setæ, equal in length to the whole of the third joint, which is simple; in the four posterior tarsi the basal joints are enlarged rather than dilated.

Underparts black, with the mouth, apex of the abdomen, and coxæ yellow, and the thighs dusky.

This species may be known by its ovate and posteriorly contracted shape, long piceous antennæ, the sculpture and the foveæ at the posterior angles of the thorax, and by the peculiar formation of the anterior tarsi in the male.

Two specimens, male and female, were taken by myself under damp litter in the Norfolk Marshes, in April, 1863.

Trich. dispar, n. s.

L. c., $\frac{6-7}{16}$ lin. Castaneous-brown, rather depressed, clothed with a silvery pubescence, rather thickly covered with small distinct tubercles,

arranged in curved rows, with the interstices deeply and elegantly alutaceous; the head and thorax rather narrow, and the elytra in the female (?) very much dilated towards the apex.

Head large and rather prominent, with the eyes large and prominent; antennæ long, wholly of a dull yellow colour.

Thorax small, scarcely wider than the head, slightly dilated posteriorly; with the sides a little rounded and slightly margined; rather thickly covered with small distinct tubercles, placed in curved rows, with the interstices very prettily alutaceous; the posterior margin very slightly sinuated, and the angles scarcely produced.

Scutellum rather large, triangular, elongate, thickly asperate.

Elytra rather longer than the head and thorax united, narrower than the thorax at the shoulders, towards the apex very much dilated in the female, and slightly contracted in the male, closely and rather confusedly asperate, with the interstices deeply alutaceous, the apex very little rounded, narrowly pale, with the extreme edge white.

Abdomen somewhat attenuated, and moderately exposed.

Legs rather long, bright yellow.

Underparts pitchy-brown, with the mouth and coxæ yellow.

This species appears to be rare, though widely dispersed. It has been found near London by Mr. Waterhouse; in Devonshire by Mr. Wollaston; and near this place, as well as in Oxfordshire, by myself. It is distinguished from others by its castaneous colour, narrow head and thorax, by the wide elytra of the female, and by the beautiful sculpture of the thorax. One of my specimens, which I suppose to be the male, differs in no respect from the rest, except that the elytra are contracted towards the apex.

Trich. ambigua, n. s.

L. c., $\frac{6\text{-}7\frac{1}{2}}{16}$ lin. Castaneous-brown, oblong, rather broad, very convex, clothed with a golden pubescence, covered with rather large tubercles disposed in interrupted transverse rows, with the interstices rather deeply alutaceous; legs and antennæ long and stout.

Head rather large and broad, eyes small, not prominent; antennæ pitchy-testaceous.

Thorax large, scarcely dilated posteriorly, with the sides very slightly rounded and lightly margined, covered with rather large tubercles disposed in interrupted transverse rows, with the interstices rather deeply alutaceous; the posterior margin depressed, sinuated, and slightly reflexed, with the angles acute, very little produced.

Scutellum large, triangular, rather elongate, and deeply asperate.

Elytra quadrate, not attenuated posteriorly, rather longer than the head and thorax united, deeply asperate in curved transverse rows, the apex broad and rounded, with the extreme edge white.

Abdomen somewhat exposed.

Legs bright yellow, long and robust.

Underparts piceous, with the terminal segments of the abdomen, coxæ, and metasternum yellow, and the thighs clouded.

T. ambigua differs from all the other species of the genus in its broad, oblong, convex form, castaneous colour, long and stout legs, and in the sculpture of the thorax. In the male the thorax is slightly contracted towards the base.

It is very rare in Europe, but appears to be quite common in America, where many specimens were taken in various parts of the country by Dr. Schaum. I have hitherto seen only two British examples, these were taken by myself or my brothers in Oxfordshire.

Gumley, Market Harborough,
November 18*th*, 1864.

NEW SPECIES OF BUTTERFLIES FROM GUATEMALA AND PANAMÁ.

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

(*Continued from page* 164).

69.—PRONOPHILA HILARA.

♂. Expans. 3″. Fore-wing costa very slightly arched, apex broadly rounded, outer border waved and scarcely incurved. Hind-wing outer border strongly dentate, the lobe at the end of the second median branch scarcely longer than the others. Above: rich dark tawny-brown, outer part of both wings crossed by two rows of orange spots, the outer row of the hind-wing partly connected as a zigzag line; the two rows of the hind-wing enclose a row of obscure black ocelli, the two anal ones alone having minute white pupils. Beneath: fore-wing brown, apex tawny-rufous; the spots are paler, and enclose a row of small, indistinct, black, blind ocelli. Hind-wing rusty-brown, with a broad belt of an ochreous hue crossing a little beyond the cell; a streak, also of an ochreous hue, crosses the wing nearer the base, and all the nervures are ochreous; the broad belt is rust-coloured in the middle, and has a row of black ocelli with white pupils.

Guatemala, Pacific slope.

70.—PRONOPHILA NAPÆA.

♂. Expans. 2″ 3‴. Form of wings precisely as in *P. Panyasis*, Hewits. (Trans. Ent. Soc. Lond., N. S., vol. vi., pl. 3, f. 22); the outer margin of both fore and hind-wings being dentated, though more feebly in some specimens than in others. Above: dark brown; a broad stripe, parallel to the fore-wing outer margin, paler brown, and a broader dentated stripe tawny-orange, parallel to the outer margin of the hind-wing. Beneath: brown, minutely irrorated or streaked with dark rusty-brown, with indications of the pale belts of the upper surface.

Guatemala, central valleys.

71.—PRONOPHILA DEJECTA.

♂. Expans. 2″. Wings rounded and their outer margins faintly dentated. Above: dark brown, darker over the basal halves of the wings, spotless. Beneath: dark brown, minutely strigose with darker rusty-brown (faintly so on fore-wing); hind-wing with a sub-anal black ocellus, having a distinct white pupil, between the first and second branches of the median nervure.

Guatemala, Polochic valley.

72.—TAYGETIS SATYRINA.

♂. Expans. 2″ 7‴. Fore-wing; costa arched, apex slightly produced but obtuse, outer margin just perceptibly incurved, free from dentations; outer margin of hind-wing broadly and obtusely dentate. Above: dark brown, including the fringe, with a faint ocellus between the first and second branches of the median nervure. Beneath: rusty brown, paler near the outer margin of the fore-wing; both wings are crossed, near their middle, by two parallel lines of a dark rust colour, both lines edged with ochreous, but the inner line is edged on its outer side, and the outer on its inner side; both wings have also a slender festooned pale rusty sub-marginal line, and on the inner side of this the hind-wing has three small black ocelli with pale rusty irides and white pupils, one ocellus being sub-anal and two apical; the fore-wing has one small ocellus near the apex.

This species is not closely allied to any other known species of the genus. Guatemala, central valleys.

73.—ANTIRRHÆA CASTA.

♂. Expans. 3″ 4‴. Similar in form and size to the well-known *A. Philoctetes* of Cramer. The fore-wing has a similar dilated hind-border accompanied by a distortion of the sub-median nervure, but the

anal dentations of the hind-wing are more strongly pronounced, the one at the end of the first median branch forming a rather large lobe. Above: brown, as in *A. Philoctetes*, fore-wing with a sub-apical palish streak and two white spots; hind-wing darker brown, the hind part of its disk having an irregular white spot destitute of ocelli. Beneath: paler brown, darkest in the middle of the wings; both wings are crossed by a broadish sub-marginal white streak, which is dilated near the anal angle of the hind-wing, enclosing in its dilated part a large round blackish spot. Near the base the hind-wing has a transverse curved blackish line, and on the inner side of it two black spots; the cell of the fore-wing is crossed by two dark brown lines.

Guatemala, province of Vera Paz.

74.—HETÆRA MACLEANNANIA.

♂. Expans. 3″ 2‴. ♀. 3″ 5‴. Allied to *Hetæra Piera;* hind-wing produced and angular near the middle of its outer border. Wings transparent; fore-wing costal and outer margins dusky, hind-wing destitute of the yellowish cloud existing in *H. Piera*, outer border with two large ocelli and a more or less broken brown line; the middle of the border in the male has a small reddish spot, in the female the whole anal portion, or one-third the surface of the wing, is of a rich rosy-red hue.

Isthmus of Panamá. Named after its captor, Mr. Macleannan. This gentleman has also sent home a species of *Hetæra* which, although known, is perhaps of more interest than a new one would be, as it enables us to rectify an error into which entomologists have fallen with regard to some of these transparent winged species. It is, without doubt, the true *Andromeda* of Fabricius (*Menander*, Drury; *Piretus*, Cramer), and entirely distinct from the species so abundant in the interior of South America, which has gone hitherto under the name of *Andromeda*. This latter must now take the name of *H. Aurora*, given it by Dr. Felder (Wein. Ent. Monats., 1862, p. 175. The true *Andromeda* turns out to be a smaller insect, not larger than *H. Esmeralda;* above, it principally differs from *Aurora* in the feeble intensity of the rosy hue of the hind-wings, and their dark outer border with absence of brown sub-marginal line. Beneath, *H. Andromeda* may be always distinguished by a red tinge at the base, and on the basal part of the costa of the hind-wing. I have since seen several examples of the true *Andromeda*, in a collection from New Granada.

(*To be continued.*)

NOTES ON THE DIURNAL LEPIDOPTERA OF NORTH-WESTERN INDIA.

BY CAPTAIN A. M. LANG.

(With descriptions of new species by F. Moore.)

(*Concluded from page* 133.)

Castalia dichroa.—Same habits and somewhat the same locality as the former, but I have also seen it in open woods further in the interior of the Himalaya, pitching on the sprays of tall shrubs, making rapid flights, and returning to the same spot.

Adolias Garuda.—N.-W. Himalaya.

A. Epiona.—Frequents oak-forests at altitudes of 6,000 to 8,000 ft. in the Himalaya during the rainy season (July and August). It flies very swiftly over the tops of the trees with a skimming flight like a swallow. Two or three may be seen chasing one another in and out of the shade among the branches of the trees. They pitch abruptly, often with expanded wings, basking in the sun-light, until some passing insect, another *Adolias* or a *Neptis* floating near, tempts the quarrelsome species to dash off, buffet the passer by, and after a rapid skim, pitch once more, suddenly, near its former resting place, and bask again. It soon gets battered, and is difficult to capture.

Nymphalis Athamas.—An insect of extremely rapid flight, flashing like lightning up and down rocky-bedded streams in Himalayan glens (3,000 to 5,000 ft.). It pitches on rocks in mid-stream, and flashes off again if approached. It is not common, and very difficult to capture; yet one very hot day in June I saw seven individuals sitting with closed wings, motionless, on a foul spot (by the damp sandy margin of a stream), so close together, that I might have put my hat over all of them. Except on that occasion, I have only seen one at a time.

N. Fabius.—Taken at Lucknow.

Kallima Inachis.—Has a very rapid, irregular, "pitching-about" flight, now high over tree tops—then low. It is fond of the shelter of large trees, near the roots of which it suddenly pitches: and when pitched you may hunt long to see it, however carefully you have watched it settle, so perfectly does it resemble a dead leaf.

Debis Europa.—A common species; my examples are all Himalayan. This species I obtained at Kussowlie (6,000 ft.), frequenting grassy slopes in the shade, or near hedges; constantly pitching under bushes or at roots of trees, and lying *perdue*.

D. Isana.—This frequents another region 200 miles from Kussowlie; in damp glens, where tall rocks cast a shadow all day, this insect is to be found pitched on the rocks or at their foot, or in the rank vegetation near, but never seeks the broad sunshine.

D. Verma.—Frequents the same region as the preceding, but is more autumnal, and affects trees in preference to rocks, pitching on the trunks of Rhododendrons and Oaks.

Enope Pulaha.—I have only seen two specimens of this, in two localities far apart in the interior of the Himalaya, in dark forests of Oak, Sycamore, and Horse-chestnut, affecting shade and pitching on trunks of trees.

Cyllo Leda and *C. Banksia.*—Both common in the plains of India (Oudh and Umballa), replacing there the alpine species of *Debis*, and resembling them in habit, always flitting about under the shade of trees, or lurking in long grass. The larvæ of *Leda* I have reared on *Saccharum Ravennæ.*

Lasiommata Schakra.—A very common Himalayan species, to be seen at all seasons flitting about the rocky road-side, and pitching on the rocks or banks. More abundant on the Outer Himalayan ranges, on bare grassy slopes.

Satyrus Swaha.—Very common during the rains (August and September) in the interior of the Himalaya, chiefly on grassy slopes and in fields near woods; also in open woods.

S. Saraswati.—Frequents the same ground as the preceding, at the same season; and has a similar flight.

Hipparchia Parysalis.—Of this insect I have only secured one specimen; on steep precipices over bare hill-sides above the Sutlej; and these Himalayan precipices are not quite the ground for the Entomologist with net in hand, and eye fixed on the soaring insect. The aspect of the insect on the wing is quite Nymphalidian; a soaring flight, swift if frightened, pitching in all sorts of inaccessible spots.

Mycalesis Drusia, *M. Orea*, and *M. Polydecta.*—All Oudh insects, appearing in autumn; feeble of flight, flapping weakly about near the ground and amongst long grasses and low herbage.

M. Hesione.—Also an Oudh insect. Taken also at Umballa.

Erebia Scanda, and others.—These are autumnal insects of weak "flopping" flight, with an irregular pitching action; frequenting bare grassy slopes, or else hedges, copses and fields near woods.

Ypthima Lysandra.—The species of the genus *Ypthima* are all Himalayan insects of very feeble flight, frequenting banks, hedges, and grassy land.

Ergolis Coryta.—An Oudh insect, of slow, floating flight, over low bushes, and round and round higher ones, as if playing hide and seek; seldom actually settling, but appearing as if about to do so, or to hide within the bush.

Libythea Myrrha.—Not uncommon in Himalayan woods.

Dodona Durga.—Common on pastures and grassy slopes in the Himalaya, 5,000 to 8,000 ft. Affects the sunshine; flight quick, almost Hesperidian. *D. Egeon* Mr. Hewitson considers to be a var. (♂) of *Durga*. It may be a Nepal variety. In Busahir, and about Simla, Kussowlie, &c., both sexes of *Durga* remain constant in form.

D. Egeon.—I have only seen this butterfly once, in September, in a richly wooded Himalayan glen, full of Horse-chestnut (*Pavia*), Maple, Sycamore, Oak (*Q. incana*), and Rhododendron, through which fell, in numerous little cascades, a clear stream, bordered with bushes (*Rubus*, &c.), and an undergrowth of grasses, ferns, &c.; quite a different country to that of *Durga*. I have only passed this glen once in September; in former or subsequent months I never saw the insect; it appears, therefore, to have but one short-lived, autumnal brood. The insect was pretty numerous, seated on tall Umbelliferæ, and flitting from plant to plant, with short, quick flight, in an open glade in the glen, close to the stream.

Sospita Echerius.—Taken at Umballa in August.

DESCRIPTIONS OF A NEW SPECIES OF *ZEUGOPHORA*, AND A NEW SPECIES OF *SPHÆRODERMA*.

BY J. S. BALY, M.E.S.

Zeugophora Kirbyi, n. s.

Fulva, subnitida, oculis nigris, thorace utrinque obtuse spinoso, sat profunde punctato, punctis irregulariter congregatis; elytris profunde punctatis.

Long. 1½ lin.

Hab. North America.

This species closely resembles in colour *Zeugophora Turneri*, Power; the pale under-side, rather more robust form, somewhat shorter antennæ, together with the entirely different shape of the thorax, will separate it from that species. In form of thorax *Z. Kirbyi* most nearly approaches *Z. flavicollis*. In both species the hinder margin of the lateral spine commences *at* the middle of the thorax, and is produced almost directly outwards to form nearly a right angle with the basal half of the side itself; in *Z. Turneri, scutellaris* and *subspinosa*, the spine commences *just behind* the middle, and forms an obtuse angle with the side; the punctuation on the sides is as deep, and even more crowded than in *Z. flavicollis;* on the disc, however, it is rather fine and irregularly crowded, leaving spaces free from punctures. The punctuation of the elytra closely resembles that of *Z. flavicollis*, but the punctures are rather larger and deeper.

Sphæroderma fuscicornis, n. s.

Subrotundata, convexa, rufo-testacea, nitida, antennis extrorsum fuscis, oculis nigris, thorace elytrisque fortiter punctatis, facie inferiori rugulosâ. Long. 1¼ lin.

Hab. Chinese Tartary; collected by Mr. A. Adams. This species approaches very closely to our *S. cardui;* it is somewhat smaller and more rotundate, the outer half of the antennæ is dark fuscous, the lower portion of the face is rugulose as in *S. cardui*, but the facial ridge is less narrowed and obtuse at its apex, the facial plates being shorter and not triangular; the thorax is rather shorter and more transverse, its punctuation, together with that of the elytra, being precisely similar to that of *cardui*.

NOTES ON INSECTS INHABITING THE REED, AND THEIR PARASITES.

BY F. WALKER, F.L.S.

The natural history of *Lipara lucens* was first observed in this country by Mr. Winter, and when he communicated to me his researches on that and other insects of the reed, I sent a notice of them to the Entomological Society in 1861.

In the Verhandlungen der Zoologisch-botanischen Gesellschaft (1863) xiii., 1251, there is the following article:—"Memoire sur les insectes qui vivent sur le Roseau commun, *Phragmites communis*, Trin. (*Arundo phragmites*, L.), et plus spécialement sur ceux de l'ordre des *Hymenoptères*, par le Dr. J. Giraud. This author enumerates the following species, and describes their character and habit:—

1. *Lipara lucens*, Mg. 2. *Polemon liparæ*, Giraud. 3. *Pteromalus liparæ*, Giraud. 4. *Tetrastichus legionarius*, Giraud. 5. *Gymnopoda tomentosa*, Meg. 6. *Pimpla arundinator*, F. 7. *Hemiteles liparæ*, Giraud. 8. *Polemon melas*, Giraud. 9. *Pachyneuron formosum*, Wlk. 10. *Pleurotropis fascialis*, Giraud. 11. *Lipara similis*, Schiner. 12. *Cecidomyia inclusa*, Frauenfeld. 13. *Callimome lasioptera*, Giraud. 14. *Tetrastichus arundinis*, Giraud. 15. *T. gratus*, Giraud. 16. *Cecidomyia phragmitis*, Giraud. 17. *Lasioptera flexuosa*, Winnertz. 18. *L. arundinis*, Schiner. 19. *Eupelmus Cordairii*, Ratzeburg. 20. *Platygaster phragmitis*, Schrank. 21. *Chlorops tarsata*, Fall. 22. *Oscinus pusilla*, Mg. 23. *Leptomyza gracilis*, Mg. 24. *Agonioneurus locustarum*, Giraud. 25. *Trypoxylon figulus*, L. 26. *Mesoleptus sanguinicollis*, Grav. (Tryphon). 27. *Omalus auratus*, Dahlb. 28. *Macronychia anomala*, Zett. 29. *Osmia leucomelana*, K. 30. *Cephus arundinis*, Giraud.

Nos. 2, 3, & 6 are parasites of No. 1. Nos. 2, 3, 6, 7, 8, & 10 are parasites of No. 5. Nos. 13, 14, & 15 are parasites of No. 12. Nos. 13, 14, 19, & 20 are parasites of No. 18.

The genus *Polemon* is allied to *Cœlinius*, Nyl.

Pleurotropis is a genus divided by Forester from *Entedon*.

Pachyneuron formosum is afterwards mentioned with doubt as a parasite of *Lipara lucens*, and is suggested as parasite on a *Syrphus*.

The same author has observed, on *Triticum repens*, some swellings, which he believes to have been formed by one of the *Diptera*, and he has reared from them the following parasites:—1. *Pimpla graminellæ*, Grav. 2. *Isosoma graminicola*, Giraud. 3. *I. linearis*, Wlk. And, 4. *I. sociabilis*, Giraud.

Chlorops tarsata has been reared in abundance from the reed by Mr. Winter, and *Pteromalus spectabilis*, discovered by him, is probably identical with *Pteromalus liparæ;* he has also discovered on the reed some other species, which I purpose mentioning in a future communication.

Hyphidrus variegatus.—I possess a specimen of this insect, taken some years ago by a young man of the name of Kay, who resided at Bury, near Manchester. It is believed that he took it in Delamere Forest, where there are natural lakes, but of this I cannot feel quite certain; the fact is however doubtless, that he did take it in Lancashire or Cheshire.—E. Brown, Burton-on-Trent, 5*th December*, 1864.

*** I have examined Mr. Brown's specimen, which must certainly be referred to the *H. variegatus* of Aubé. In Stephens' Illustrations (Mand. ii., 45) and Manual (64, 490), a species of the same name is recorded as British, the localities given being Wimbledon Common and Epping Forest; but the insects therein referred to are *H. ovatus*, which varies slightly.

Mr. Brown's specimen is rather larger than the ordinary examples of the latter, and more rounded; the head is black, with a broad triangular ferruginous space in front; the thorax ferruginous, with two black spots at the middle of the hinder margin, confluent near the scutellum; the elytra yellowish-ferruginous, with the base near the scutellum, a small humeral spot, and two or three broad and exceedingly irregular bands, black.

It has been pinned twice; originally, with the usual skewer of the period, through the *left* elytron; subsequently, by Mr. Brown, with a fine pin, through the right elytron.

According to Aubé (Spec. Gén. des Hydroc., 466, 11), this species is found in the meridional parts of Europe, and the North of Africa.

Fairmaire (Faun. Ent. Fr., ii., 196, 2), states it to be found in the south and central parts of France, but to be very rare in the north; also, that in one locality (La Teste) it is taken in brackish waters. According to Redtenbacher (Faun. Austr., 85), it was on one occasion found near Vienna, and then not scarcely.—E. C. Rye.

Tachinus pallipes taken in Northumberland.—Amongst my unexamined captures of this year, I find three specimens agreeing in every respect with Mr. D. Sharp's description of *Tachinus pallipes*. Two of these were taken in Gosforth Woods, and the other near Bothall ; in both instances in fungi, and in the first week of October. In all probability it will be found common enough here, for when I took these I noticed several others, and let them go, thinking them to be only *T. rufipes* : but the pale margins of thorax, and armature of abdomen, leave no doubt of their being very distinct from that insect.—T. J. Bold, Long Benton, 3*rd Dec.*, 1864.

Aquatic habit of a Hymenopteron.—As I was entomologizing in Sutton Park three or four years ago, in the latter part of June, I saw a Hymenopterous insect deliberately crawling along the stones under the water at the bottom of a shallow stream which runs there. I thought that I had killed it by pressing it with my finger against the stones, but it only feigned death, and on my taking it out it flew away. It looked much like *Pompilus plumbeus*, and at the time was referred by me to that group ; there can be, however, little doubt that it was an ichneumon fly on the look out for caddis worms.—R. C. R. Jordan, M.D., Edgbaston, Birmingham.

[This insect was probably *Agriotypus armatus*, an ichneumon which infests the larvæ of the Trichopterous genera *Göera* and *Odontocerus*.—R. McL.]

**Trombidium lapidum*, Hermann.—It is figured together with the pretty little flattened eggs in Hermann's "Memoire apterologique," pl. 7. His figures of this species, both in the adult and immature form, are good, and the delineations of the eggs excellent.

When the *acari* are immature they have only six legs, and differ considerably from the adult specimens, which have always eight.

It is also described under the generic name of *Tetranychus* by Dugès in the "Annales des Sci., Nat.," and by Paul Gervais in "Walckenaer's Hist. Nat. des insectes aptères," Tom. iii., p. 167, who says that it is found in different parts of France on stones and leaves, and that in the autumn the eggs may be seen in Paris on the stones of the public promenades.

Koch, too, mentions it in his "Übersicht des Arachniden Systems," 3 Heft., p. 57, and calls it *Raphignatus lapidum*.

I may add that at the beginning of October, after receiving your letter with the *acari* and eggs, I found some of the latter myself on a stone in a garden near Bicester, in Oxfordshire.—R. H. Meade, Bradford.

Note on Gelechia humeralis (Lyellella of Dbl. Cat.).—While beating beech on Epping Forest late in September, I disturbed three *Gelechiæ*, very fine specimens ; I recognized one of them as *G. humeralis*, but the other two quite puzzled me at the time ; on examining them at home, however, they proved to be most beautiful varieties of the same insect. I had previously captured two on the 2nd August, so that the time of its appearance would seem to last for some time, and it most probably passes the winter in the imago state.—William Machin, Argyle Road, Mile End.

[Vide Mr. Barrett's notes on this species at page 170.]

* The above communication (received through Mr. W. F. Kirby) was not published simultaneously with one from Professor Westwood upon the same subject, as the Editors had not at the time the requisite permission to do so.

Ennomos fuscantaria.—Having during the past summer made the notable discovery that the larva of this species varies more than (in my ignorance) I was pleased to think it did, I venture to send descriptions, made with Mr. Buckler's kind help, of the varieties that so far have become known to us.

The larva may be generally described as elongate, with the true legs well developed, the third pair being sometimes of large proportions, and with two anal points.

The variety which I first set eyes on gratified a crotchet of mine, inasmuch as it resembled the leaf-stalk of the ash, from which tree I beat it. In figure it was smooth; in colour it was green on the back, with a sub-dorsal stripe of yellow; the spiracular stripe primrose yellow reaching to the mouth, and bordered above with deep green, which became lighter near the sub-dorsal line; the belly apple-green; two little warts on 12th segment; the true legs black, ventral legs tipped with crimson-brown, and the anal legs green. This I thought was the invariable pattern of *fuscantaria*, but last summer Dr. Knaggs sent me 6 larvæ to rear for him, and I found that at their last moult some of them developed an entirely different appearance; to wit, the ground colour was reddish-grey, slightly mottled with greenish; sub-dorsal yellow stripe scarcely visible; spiracular line rather greener than the ground colour, and becoming yellowish from 2nd segment to the mouth; across the 3rd segment was a row of red-brown warts, the largest being on the sides; large transverse red humps on 6th and 9th segments, and very small ones on 8th and 12th; lateral red warts on 5th, 6th, and 7th, and a ventral hump on 7th; pale lateral warts on 10th, 11th, and 12th; the true legs crimson-brown, the third pair being very large. And Mr. Doubleday sent Mr. Buckler another larva, which appears intermediate between these two. It was nearly smooth, the ground colour a pale apple-green, sub-dorsal and spiracular lines yellow, but not clearly defined; the last five segments suffused with pink; two small red spots placed on a swelling at 7th segment; two dorsal warts on 12th; small lateral warts on 10th, 11th, and 12th; on 3rd segment a short red-brown stripe, running backwards from the spiracles to middle of the back.—Rev. J. Hellins, Exeter, *November 4th.*

Dasypolia Templi.—I took a ♂ specimen of this species (the first I ever saw alive,) at rest upon the whitewashed interior wall of one of the County Prison Corridors, yesterday, at about 10.30 a.m.; I suppose he had been attracted by the gaslights during the previous night to enter the open window at the end of the corridor, and as might be expected of a gentleman who had found his way into prison after knocking about late at night, his appearance was not very reputable.—*Id., November 16th.*

Trochilium culiciforme.—I met with a fine specimen of the above at Darenth Wood, on the 26th of May, seemingly fresh from the pupa.—George Stockley, Bromley, Middlesex, *November 7th.*

Suffolk captures.—I can add to my friend Mr. Skepper's list of captures at Bury that *S. certata* is as common there as *A. berberata.* At Aldeburgh *D. pinastri* swarmed at sugar, and I took a pair of *H. suasa*, and also of *A. valligera*, much larger than the specimens from Lowestoft.—A. H. Wratislaw, School Hill, Bury St. Edmunds.

Notes on Platypteryx lacertula.—I captured this species on a birch tree on the 1st June last, in fine condition. Upon the 1st July following I took eleven larvæ, and upon the 5th, seven more of the same species. A few commenced spinning up in two or three days afterwards, and four moths appeared on the 19th, 22nd, 24th, and 31st July respectively. Having waited a long time expecting others to emerge, and feeling much disappointed at their non-appearance, about the end of September I examined the remaining cocoons, fearing the pupæ had perished, but to my surprise they were all alive and very active; each, being touched upon its apex, gave unmistakeable signs of animation. It appears, therefore, that only a small proportion of the summer brood of the larvæ arrives at the imago state the same season, the majority remaining in pupa until the following May and June. However, from those that do not emerge, a second brood of larvæ is produced; I having captured twelve, which were of several growths, in one day in September last. The moths I took in June were much more beautiful than those that emerged the following July; I hope to be able to prove next season whether this is usually the case or not. The larva is correctly described in the *Manual*, therefore I need not attempt any repetition. The cocoons are spun between the growing and united leaves, some are whitish, others pale yellow, but the most remarkable feature is they are all open at the lower end, so that the apex of the pupa sometimes protrudes. They are thickly covered with a white powder, as though they had been rolled in very fine flour. On the 25th July I took a cocoon off a birch tree spun up six feet from the ground, from which I obtained a fine and perfect moth.—Abraham Edmunds, The Tything, Worcester, *November*, 1864.

Note on the larva of Platypteryx falcula.—Upon the 1st July last, in company with the larvæ of *P. lacertula*, I captured five larvæ of *P. falcula*, which entered the pupa state immediately, and all of the moths emerged a day or two in advance of *P. lacertula*. It appears that the whole of the summer brood of larvæ of *P. falcula* ara perfected the same season. I met with one larva of the second brood upon the 26th September last (this was late), but it was full grown, and spun up the following day.—*Id.*

A southern locality for Glyphipteryx Haworthana.—Cotton grass is common enough about here, but *Glyphipteryx Haworthana* seemed to be such a peculiarly northern thing, that I feared there was but little chance of finding it. However, I went to work in the winter, gathered a lot of the seed heads, and in June was rewarded by the appearance of this pretty species.—Chas. G. Barrett, Haslemere.

Lemmatophila phryganella ♀ (*Novembris*, Haw.)—The proportion which the sexes of this species usually bear to each other would seem, from observations I have lately made near Canterbury, to be reversed in that locality. Its head quarters are apparently just at the union of the old and new Dover roads, about one mile distant from the town, though, judging from the comparative scarcity of the males on the wing, no one would suspect it; but on examining the twigs of the white-thorn hedges, the side of an old barn close by, and the bars of the neighbouring turnpike gate, the females were easily detected.

A very little searching and beating furnished me with above thirty examples of the female; my opportunities of going after them were few, but I noticed that they were more abundant in cold and windy weather.—B. Pifford, *November*, 1864.

Lepidoptera near Worcester.—The past season has, I trust, not proved unprofitable with many of my entomological friends; I am thankful to say, that I have enjoyed many delightful rambles this summer, and I have no reason to complain of any want of success.

In this neighbourhood I have taken the following species:—

Leucophasia sinapis, (the only butterfly worth recording).

Procris statices.—I found one rather worn, but undoubted, specimen, close to the locality for *Geryon*. There was no sorrel to be seen near, and it had probably come from a neighbouring meadow.

Limacodes testudo.—I obtained three specimens in a wood by stamping against the stems of young oaks in a part free from underwood, and watching the effect of the sudden shake on the tree-tops: the moths came down, half falling, half flying.

Nemora viridata.—The only locality I know for this insect in Worcestershire is a large village green covered with heath, kept very short by donkeys, &c. The County Militia have made it their drilling ground, and I fear *viridata* will soon become extinct with us. This season I could find only two specimens.

C. silaceata, *S. certata* and *undulata*, *M. hastata*, *E. advenaria*, *A. Blomeraria* and *sylvata*, *P. bajularia*, and *E. heparata*, all occur here. Of *S. certata* I may say that it has been frequently taken in a lane about two miles from here, where the wild barberry grows. Last year I first observed it flying about *Mahonia aquifolia* in my garden, and took two specimens; I also took two this year, one being a female, which laid me a good batch of eggs. The larvæ fed indifferently on *Mahonia aquifolia* and *Berberis dulcis*, both garden species of barberry, and I have now a supply of pupæ from them. The larvæ are very sluggish, and rather given to biting one another.

Among the *Eupithecicæ* I have taken the following here:—*E. coronata*, *tripunctata*, *trisignata*, *plumbeolata*, *satyrata*, and *Haworthiata*; the three first and the last in the larval state.

Pionea stramentalis, *Botys pandalis*, and *Cryptoblabes bistrigella*, I have also met with in this neighbourhood, as well as the following *Tortrices* and *Tineina*:—*C. splendidulana*, *A. Baumanniana*, *A. cnicana*, *E. tetragonana*, *C. ochraceana*, *G. obtusana*, *G. fasciellus*, *T. Oëhlmanniella*, *A fibulella*, *G. ligulella*, *G. oculatella*, *C. lineola*, and *L. roborella*.

And I have bred the following from larvæ or pupæ found near here:—*T. subtusa*, *E. viminalis*, *C. ocularis*, *X. conspicillaris*, *S. lunaria*, *G. papilionaria*, besides the "pugs" before mentioned.—Rev. E. Horton, Lower Wick, Worcester.

A list of Lepidoptera captured in 1864.—During the past season I have taken, or bred, the following *Lepidoptera*, besides others, which have either already been recorded, or are too common to mention. To those species to which I have prefixed an asterisk (*) I have duplicates, and shall be glad to hear from any one in want of them.

**Thecla betulæ.*—A fine series: Loughton.

Thecla quercûs.—On oak: Darenth.

Deilephila galii.—A larva found on *Galium verum* at Folkestone; it is now safe in pupa.

Limacodes testudo.—A female at Darenth.

**Procris statices.*—Abundant at Loughton.

Calligenia miniata.—At Swanscombe Wood.

Lithosia helveola.—Three specimens; the larvæ were beaten from spruce fir on Mickleham Downs.

**Liparis monacha.*—Several larvæ found in the crevices of oak trunks.

Orgyia cœnosa.—Eight bred from pupæ kindly sent me by Mr. Bond.

Ellopia fasciaria.—Bred. Larvæ on Scotch fir: West Wickham.

Eurymene dolabraria.—Bred. Larvæ beaten from oak: Loughton.

**Selenia illustraria.*—A fine series bred from the egg.

Selenia lunaria.—A larva beaten from ash: Darenth Wood.

Ennomos fuscantaria.—Bred from larvæ found on ash near Box Hill.

Ennomos erosaria.—Five specimens bred; it appears to be a very difficult species to rear.

Nyssia hispidaria.—On the trunk of an oak in Richmond Park.

Amphidasis prodromaria.—Reared from the egg.

**Boarmia abietaria.*—Bred a fine series; the larvæ were beaten from spruce fir on Mickleham Downs.

**Gnophos obscurata.*—This species was common at Folkestone.

Pseudopterpna cytisaria.—Found two larvæ on *Genista anglica.*

Geometra papilionaria.—Bred. Larvæ found on birch at Darenth.

**Iodis vernaria.*—Larvæ common on *Clematis* in the Darenth Lanes.

Phorodesma bajularia.—One at Swanscombe Wood.

**Ephyra trilinearia.*—Abundant amongst beech at Loughton.

**Acidalia ornata.*—This pretty species was common at Folkestone.

Acidalia promutata.—While searching for *T. Bondii* at Folkestone, I met with two specimens of this "wave" sitting on the grass at night.

Cabera rotundaria.—I always breed this from the green coloured larvæ.

**Corycia temerata.*—Common at Loughton.

Corycia taminata.—Several specimens at Darenth.

Aleucis picturia.—Two on Hainault Forest.

Macaria alternata and *M. notata.*—Both occurred at West Wickham.

Scodonia belgiaria.—Larvæ abundant on Shirley Common.

**Aspilates gilvaria.*—Abundant at Folkestone.

Ligdia adustata.—Common among spindle at Darenth.

Pachycnemia hippocastanaria.—Several on Shirley Common.

**Eupithecia venosata.*—Bred.

Eupithecia helveticaria.—Bred. The first perfect insect came out on the 20th December, and specimens continued to emerge till March 28th.

Lobophora lobulata.—Sitting on trunks of Scotch firs: West Wickham.

Melanthia albicillata.—A specimen at Box Hill.

Melanippe galiata.—In both larva and imago state at Folkestone.

Phibalapteryx tersata.—Common amongst *Clematis* at Darenth.

**Phibalapteryx vitalbata.*—Also common amongst *Clematis* at Darenth.

Scotosia dubitata.—On Buckthorn at Darenth.

Scotosia vetulata.—In rolled-up leaves of buckthorn: Darenth.

**Scotosia rhamnata.*—Common at Darenth.

Scotosia undulata.—Two specimens bred from larvæ which were found in rolled-up leaves of dwarf poplar in Darenth Wood.

Cidaria silaceata.—At Box Hill amongst *Epilobium angustifolium.*

**Anaitis plagiata.*—Common at Darenth.

**Platypteryx lacertula* and *falcula.*—Also common at Darenth.

Platypteryx hamula.—I fancy that this insect is often passed over for *Orgyia antiqua*; it flies in the hot sunshine, up to mid-day, round young oak trees in Darenth Wood, and is rather common.

**Platypteryx unguicula.*—This species was abundant at Loughton.

Dicranura furcula.—Bred on the 20th May.

Stauropus fagi.—Bred from the egg; as soon as the egg hatches the young larva devours the egg-shell, after which it casts its first skin, and then begins to feed on the food-plant.

Clostera curtula, anachoreta, and *reclusa.*—All three species bred.

Ptilodontis palpina.—Bred from larvæ taken off black poplar at West Wickham.

**Notodonta dictæa.*—West Wickham.

Notodonta dictæoides.—Larvæ beaten from birch on Mickleham Downs.

Notodonta ziczac.—West Wickham.

Notodonta chaonia.—Three beautiful pale varieties bred from eggs kindly sent me by Dr. Knaggs; the larvæ fed on oak.

Cymatophora duplaris.—Five specimens bred from larvæ which were beaten off birch at West Wickham.

Cymatophora or.—Larvæ in rolled-up leaves of dwarf poplar: Darenth Wood.

Acronycta leporina.—Two bred from larvæ beaten off birch at Darenth.

Acronycta ligustri.—Larvæ common on ash: Darenth Wood.

Xylophasia sublustris.—Abundant at Folkestone.

Agrotis agathina.—Larvæ abundant on Shirley Common.

**Trachea piniperda.*—West Wickham.

Tæniocampa gracilis and *munda.*—Common at sallow blossoms.

**Anchocelis rufina, pistacina,* and *litura.*—All common at sugar.

Xanthia aurago.—One at ivy blossom: Loughton.

**Dianthœcia carpophaga, capsincola,* and *cucubali.*—All three in the seed-capsules of *Silene inflata.*

**Epunda viminalis.*—Larvæ abundant in rolled-up leaves of dwarf poplar at Darenth.

**Hadena contigua.*—Larvæ on golden-rod: Darenth Wood.

Cucullia verbasci.—Larvæ abundant on *Verbascum.*

Cucullia lychnitis.—About 40 larvæ, mostly ichneumoned on *Verbascum.*

**Cucullia asteris.*—A fine series bred from larvæ found on *Solidago virgaurea* at Darenth Wood; the larvæ have been very scarce this season.

Heliothis marginata.—Larvæ abundant on Rest-harrow at Folkestone.

Erastria venustula.—A single specimen on Epping Forest; this insect has been very scarce since 1860.

Erastria fuscula.—At Darenth, but scarce.

**Brephos parthenias.*—Abundant at West Wickham.

Cledeobia angustalis.—Abundant on Box Hill.

Ennychia cingulalis.—On Box Hill.

**Ennychia octomaculalis.*—Common at Darenth Wood.

**Endotricha flammealis*.—Abundant at Loughton.

Crambus dumetellus.—Both at Boxhill and Folkestone.

Phycis roborella.—One specimen at Swanscombe Wood.

Halias chlorana.—Larvæ abundant in screwed-up shoots of osier.

Tortrix cinnamomeana.—At Loughton.

**Tortrix semialbana*.—In the lanes near Darenth.

Roxana arcuana.—Loughton.

Phtheochroa rugosana.—Among *Bryonia dioica* at Darenth.

**Phoxopteryx uncana*.—Common at Loughton.

Phoxopteryx biarcuana.—Not scarce at Darenth.

**Phoxopteryx comptana*.—Common at Box Hill.

**Phoxopteryx lundana*.—Abundant at Loughton.

**Phoxopteryx derasana*.—Common amongst *Viburnum lantana* at Darenth.

Grapholita Paykulliana.—At Darenth.

**Grapholita nigromaculana*.—Abundant amongst ragwort at Folkestone.

Olindia ulmana.—Two specimens on Box Hill.

Semasia Wœberana.—Common at Loughton.

Retinia turionana.—Bred. Larvæ taken at West Wickham.

Endopisa nebritana.—Common in the pea-fields at Darenth.

Stigmonota Weirana and *S. puncticostana*.—At Loughton.

**Pyrodes Rheediana*.—Flying in the hot sunshine over hawthorn hedges.

Chrosis Audouinana.—A single wasted example at Loughton.

Cochylis stramineana.—Both at Folkestone and Darenth.

Epigraphia avellanella.—West Wickham, and **E. Steinkellneriella*, Dartford.

Psyche radiella.—Loughton.

**Laverna Raschkiella*.—Amongst *Epilobium angustifolium* at Box Hill.

**Laverna conturbatella*.—Also amongst *Epilobium* at Box Hill.

Laverna rhamniella.—Abundant at Darenth, feeding, in the larva state, within screwed-up shoots of buckthorn.—Edward Meek, 5, King Street, Old Ford Road, N.E., *November 7th*.

Captures at Chertsey, 1864.—The following are the most notable captures I have made during the past season.

T. W. album.—On bramble blossom by the roadside, July 17th.

(*L. Corydon*.—I took one specimen, and saw another in Ladbroke Square, Notting Hill, on August 14th.)

C. porcellus.—I saw several hovering over Bedstraw at dusk, early in June.

E. advenaria.—One specimen flying along a hedge, May 27th.

P. bajularia.—I took one specimen, and saw another on June 22nd in an oak plantation.

C. quadrifasciaria.—July 21st.

C. picata.—July 6th, this species is not uncommon here.

D. pinastri.—At sugar, June 25th, less common than usual this year.

H. populairs.—At light, September.

T. fimbria.—Came freely to sugar between the 2nd and 13th September, but all the specimens I took were more or less wasted.

N. neglecta.—At sugar, September 3rd, 6th, 9th, and 12th.

X. citrago, *silago* and *aurago.*—At sugar, September 7th to 16th.

C. xerampelina.—At sugar, September 16th.

H. rostrali.—Common at sugar, September.

H. albistrigalis.—At sugar, September 3rd.

During the summer insects were certainly unusually scarce, the diminution was not so much in the number of species as in that of individuals. There was, however, apparently no falling off in the autumn species. *Catocala nupta* was very abundant.—A. H. CLARKE, 18, Kensington Park Gardens.

NOTES ON COLLECTING, MANAGEMENT, &c., (*LEPIDOPTERA*).

BY H. G. KNAGGS, M.D.

THE CATERPILLAR STATE.

"Thus are my blossoms blasted in the bud,
"And caterpillars eat my leaves away."
SHAKESPEARE.

COLLECTING.

With the exception of a few special manœuvres, larva collecting may be divided under three chief headings—searching—beating—and sweeping, which I now proceed to discuss in order.

Searching.—The only apparatus required for this purpose will be a goodly stock of boxes, either chip ones strengthened,* or tin with perforated lids; the disadvantage of the former being their comparative want of security, and the food-drying nature of their material; of the latter, their tendency to cause the contained larvæ to, what is commonly termed, sweat; of these evils the collector must judge for himself which is the least, on the whole perhaps chip will suit Noctuæ best, tins the Geometræ; he will also require two or three large tin boxes, holding half-a-pint or so; a hooked stick, and a pocket-knife (or pair of scissors) will also be found most useful; and a botanist's collecting box would enable him to bring home a plentiful supply of fresh food, though the ordinary chimney-pot hat of daily wear answers very well for the purpose and saves the extra burden.

Thus equipped, the larva-hunter having selected his locality,† may proceed to work.

Indications of the presence of larvæ. These are numerous, and the collector will do well to keep an eye to them.

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* It is very annoying to find that some good insect has been smashed or liberated, from the box having collapsed under pressure or come to pieces from damp. The following appears to be the simplest, neatest, and most effectual way of rendering chip and pill boxes secure:—Cut strips of calico in a direction diagonal to the texture of the material ("on the cross," as it is termed), of about half-an-inch in width, and of the length of the circumference of the boxes to be operated on. Brush over one of these strips with shoemakers' paste (best for the purpose,) and apply round the lid at the line where the two pieces of wood which form it are united, gently pulling the strip at the same time so that stretching in its middle line it will adapt itself to the angular surface; then smooth down the calico on to the top and down the sides, and if the operation has been neatly conducted, it will be found that a smooth fillet, firmly encasing the angular joint of the lid, has been formed. Prepare the bottom in the same manner.

† See foot note (No. 3) to page 66.

If a leaf be eaten it is usually a sign that larvæ have been the cause,* if more particularly the edges have been devoured and the ribs more or less completely demolished, it may as a rule be set down as the work of a Lepidopterous larva; whereas, if the centre of the leaf be attacked, the ribs being avoided, it looks rather suspiciously indicative of saw-fly larvæ, though by no means necessarily so, for the young larvæ of many Lepidoptera feed much after the same manner; and case-bearers seem almost invariably to attack the centre parts of the leaf.

If the parts eaten present a fresh appearance the larvæ, in all probability, will not be far distant, and diligent search should be made for them; in this way it is by no means difficult to track the larvæ of many of our Sphinges, most of our Bombyces and Pseudo-bombyces, as well as of several Geometræ, butterflies, case-bearers, &c. The search must be effected by turning the branch or stem in such directions as will enable the collector to see in succession all parts of the leaves (especially of edges and midribs), leaf stalks, twigs, and the bark of the branch itself, indeed, the procedure is the same as that which has been recommended under egg-hunting, excepting that here we have a more certain clue as to the presence of the object of our search. In very important cases it may even be desirable to pluck off and examine attentively in succession leaf after leaf, twig after twig, but I have some hesitation in recommending this plan, which has an air of wantonness about it.

Whenever two or more **leaves** *are* **spun together**, or when a shoot is unable to expand, or a leaf is folded, the hunter should at once proceed to unravel the cause, which will most frequently be found to be Lepidopterous, and would indicate that a larva or larvæ were, or had been, feeding between or within. In this manner feed the larvæ of *Clostera*, *Cymatophora*, *Tethea*, *Dicycla*, *Cosmia*, *Epunda viminalis*, *Cheimatobia*, *Ypsipetes elutata* and *ruberaria*, *Melanippe hastata*, *Eupithecia debiliata*, *Scotosia* (when young), some species of the genera *Pyrausta*, *Botys*, *Pionea*, and *Scopula*, also some of the *Phycidæ*, *Halias chlorana*, and a vast majority of the *Tortrices*. As many of these larvæ, however, have a knack of wriggling from between the leaves on the slightest handling of the "leafy hut," a net should be held beneath, preparatory to securing them. When only two leaves are drawn together the contained larva may usually be discovered by looking through them against the light, when of course there will be no need to disturb them. When the bunches are composed of more than two leaves, one or two may be opened to ascertain whether or not the larva be present, and of the proper growth for being collected, when, if the result be satisfactory, the spun leaves should be cut off and placed in the tin box without further examination.

A withered or sickly appearance *of the food-plant* often denotes the presence of an internal stem or root-feeding larva, and by attention to this point the practised eye will detect at a glance an infected plant amongst a number of healthy ones. Thus, when the centre leaves of reeds die off, the presence of the

* Slugs, snails, wasps, leaf-cutting bees, &c., however, frequently eat or cut leaves in such a manner as to lead the inexperienced to believe the work to have been executed by larvæ, but when the molluscs have been the cause the leaves are generally *riddled*, and traces of their slimy trails and long string-like droppings are readily discernible, while the leaf-cutting of the Hymenopterous imagos is usually clean and of some neat shape, as oval, circular. Other mutilations of leaves, as those produced by animals, birds, friction between contiguous branches, rupture from force, such as that of the beating stick or pelting hail, &c., present a bruised appearance unlike that produced by the feeding larva.

larva of *M. arundinis*, *N. geminipuncta*, *Helmanni*, *Ch. forficellus*, or *S. ulvæ*, even possibly of *M. flammea*, may be suspected;* when the flowers of thistles have an abortive appearance, some internal stem-feeding larva is generally the cause; the sickly appearance of *Echium* plants on the coast indicates the whereabouts of the larval *Odontia dentalis;* and as further examples, I may mention *Leucania littoralis* (at roots of *Ammophila arenaria*), *L. phragmitidis* (reeds), *Nonagria cannæ* and *N. typhæ* (stems of *Typha latifolia*), *Gortyna* (*Arctium lappa*, *Scrophularia*, *&c.*), *Hydræcia* (roots of *Tussilago*, *Cyperaceæ*, &c.), *D. templi* (*Heracleum*), *O. antiquana* (roots of *Stachys*), *Argyrolepia* (roots of various plants), *E. cirsiana* (stems of thistles in woods), and *scutulana* (ditto in open places).

This aspect of the plant is usually accompanied with a hole in the stem at which the larva had originally entered; after one or two stems or roots have been inspected, and the hunter is assured that the larva of a Lepidopteron is the cause of the drooping of the plant, then, if the stem be the affected part, it should be cut off considerably above and below the position (as ascertained by experience) of the contained larva, and afterwards kept stuck in damp sand; when it is the root which is affected, the stem may be cut off low down, the roots pulled up, and placed in sand.

Flowers or buds drawn together, or otherwise distorted or notched, should be carefully examined (as indeed should be the flowers of all special food-plants), when the cause will generally be detected without difficulty. The larva may be simply feeding openly upon the flowers, as, for instance, "a shark" on golden rod or mullein; it may be concealed, as *Dianthœcia* and *Eup. venosata* in the capsules of *Silene*, *Lychnis* and *Dianthus*, or *Eup. tenuiata* in sallow, while *Ep. viminalis* and *Y. elutata* will spin together two or three female catkins, and so conceal themselves; it may hide itself by day, as *Triphœna fimbria*, which feeds by night on flowers (by choice) of primrose and other plants; or larvæ may spin a web within a flower-head, as *Spilodes palealis* in the umbels of *Daucus carota*. Other instances of species whose larvæ show preference for flowers are *Lycæna argiolus*, on holly and ivy; *Eremobia*, on grasses; the two *Hecatera*, on sow-thistles and other *Compositæ*; young *Xanthia* larvæ in sallow catkins; the members of the genus *Cucullia*, on mullein, water-betony, golden rod, wormwood, and chamomile respectively; *Erastria venustula*, on tormentil; most of the *Heliothidæ*, on *Ononis*, *Erodium*, *Hyoscyamus*, &c.; a large proportion of the *Eupithecïæ*, chiefly on *Umbelliferæ* and *Compositæ; Larentia cæsiata*, on whortleberry; the genus *Emmelesia*, on various flowers and seeds; *Anaïtis*, on *Hypericum;* several *Tortrices*, and (though I refer the reader to Mr. Stainton's "Companion" for information respecting *Tineina*), *Depressariæ*, and *Gelechidæ*.

(To be continued.)

Entomological Society of London, *December 5th*, 1864.—F. P. Pascoe, Esq., F.L.S., President, in the Chair.

Rev. R. W. Milner, of Matlock, Trovey Blackmore, Esq., of Wandsworth, and William Hume, Esq., of Gracechurch Street, London, were balloted for and elected Members of the Society.

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* Mr. Hellins mentions that the larva of *C. sagittata* bites through the stems of *Thalictrum*, and then feeds on the leaves thus caused to wither. I have myself noticed this procedure in other larvæ in captivity, but doubt if it is the case in nature.

Mr. Weir exhibited several microscopic preparations of the haustelli of various British butterflies, and remarked that these presented great differences, especially in the minute papillæ at the tips, even in genera so closely allied as *Vanessa* and *Grapta*.

Mr. Bond exhibited a beautiful coloured drawing of the larva of *Acronycta strigosa*, executed by Mr. Buckler, and a photograph of a splendid variety of *Abraxas grossulariata* in Mr. Edleston's collection.

The Rev. Hamlet Clark exhibited a collection of insects, chiefly *Coleoptera* and *Hemiptera*, taken by the Rev. O. Pickard-Cambridge, in his recent journey up the Nile. Mr. Smith said that two species of ants in the collection were identical with species taken by Mr. Lowne in Syria.

Mr. Smith exhibited a beautiful wasp's nest sent by Mr. Stone, of Brighthampton. The peculiarity in this nest consisted in its being formed by two species of wasps, viz., *Vespa vulgaris* and *V. germanica*. Mr. Stone had a nest of each species, one in the corner of a window in the ground floor of his house, and the other in a similar corner of a window in the first floor; and it would seem that those belonging to the first floor nest, when heavily laden, flew to the nest on the ground floor; that the latter nest was constructed jointly by the two species, and as one species used decayed wood and the other used sound wood, the parts of the nest formed by each were distinctly separable.

Mr. Stone also sent for exhibition specimens of the large and small larvæ of *Rhipiphorus* alluded to at the last meeting, and made some additional remarks respecting them.

Mr. Smith mentioned that the Rev. F. W. Hope was always in the habit of taking *Rhipiphorus* in the nests of *Vespa rufa*, whereas Mr. Stone always found them in those of *V. vulgaris*.

Mr. W. F. Evans sent for exhibition specimens of a beetle, *Pyronota festiva*, which had been found in some numbers in New Zealand wool.

The President exhibited some singular spiders' nests from South Australia. These were small and globular, and attached to the branches of a shrub, and greatly resembled the fruit of a *Leptospermum*. The spider always rested on the exterior of the nests, and, when in that position, looked like the excrement of a bird.

Mr. Stevens exhibited several examples of one of the smaller Goliath beetles, *Cheirolasia Burkei*, collected by Mr. Layard in South Africa. He also exhibited some insects sent by Mr. Du Chaillu from West Africa.

Mr. Hewitson communicated a monograph of the genus *Ypthima*, together with descriptions of two new allied genera.

Mr. Moore, on behalf of Captain Hutton, read a continuation of a paper on the reversion and restoration of the silkworm, and exhibited drawings of the larvæ of six species of the silk producing genus, *Bombyx*, together with an extensive collection of the cocoons of the different species and varieties.

Professor Westwood remarked, that although the perfect insects of *B. mori* and *B. Huttoni* were closely allied, the larvæ as represented in the drawing were very different.

Mr. Kirby read a paper intituled "Notes on the Synonymy of certain British Butterflies," in which he mentioned, that according to the law of priority, several of the names generally in use must give way to others of earlier date.

Mr. Kirby's mention of the species placed by Fabricius as the type of his genus *Sesia*, led to some discussion as to what constituted the type of a genus, Professor Westwood and Mr. Pascoe maintaining it was not necessarily the species placed first in the genus, but that from which the dissections had been made.

Part 3 of Vol. 2 of the 3rd series of the Society's transactions was laid on the table.

NOTES ON THE GALLS OF *LAVERNA DECORELLA*.

BY C. G. BARRETT.

On August 24th last, happening to be in one of the favourite haunts of *Laverna decorella*, and having a few minutes to spare, I determined to have a search for the larva.

There was plenty of *Epilobium* growing in a sheltered spot; and, having fortunately hit upon the right place, I almost immediately found galls, and in a short time had gathered a large handful.

I was much disappointed, however, on opening some, to find only pupæ. Not a single larva was to be found, and in a few more days I should have been still more tantalized by finding only empty pupa skins; for on the 28th August the first moth emerged, and the rest soon followed it.

The gall is a swelling in the upright stem of the plant, generally at one of the joints. Doubtless it is caused by the irritation consequent upon the larva eating away the pith, as it is quite hollow. At its lower end is a small round hole (probably used by the *larva* for ejecting the frass), out of which peeps the end of the cocoon, so that enemies are carefully excluded, and the perfect insect finds a soft lining to the place through which it must escape, a great advantage, as the pupa is not extruded.

The pupa is black, and lies invariably head downwards, the milk-white cocoon filling the interior of the gall.

This insect is not confined to one species of *Epilobium*; I found the galls equally common on *E. montanum* and *E. palustre*, and two or three plants of *E. parviflorum* were also attacked.

For the names of these three plants I am indebted to the kindness of a lady who is pretty well versed in Botany. I cannot pretend to any knowledge of so difficult a group myself.

In *E. montanum* the galls are generally about the size of a large pea, and frequently occupy several joints of the same stem, but do not otherwise distort the plant or much impede its growth.

In *E. palustre*, however, they do materially check the growth of the plant, lessening the distance between the joints, and distorting the upper part of the plant into a confused mass of leaves and blossoms, in which several galls often become confluent, while the energy of the plant is thrown into side shoots, which run up like long arms raised above the bunch of a head.

In *E. parviflorum* the attacked joints formed a thick mass of about half-a-dozen confluent galls, upon which the natural silky pubescence of the plant was strongly developed.

HASLEMERE.

AN ESSAY TOWARDS A KNOWLEDGE OF BRITISH *HOMOPTERA*.

BY THE REV. T. A. MARSHALL, M.A.

(*Continued from page* 155).

Gen. DELPHAX, Fab.

This genus is rich in species, which my own unassisted efforts have hitherto failed to bring together. Mr. Walker's catalogue enumerates 20; Flor has described 29; and Stål (Öfv. af. Sveriges Delphax-arter) gives 35 indigenous to Sweden. The other principal authorities are Boheman, Germar, and Dahlbom. From these sources I have succeeded in identifying only 17 British species, to which I anticipate considerable additions in future seasons. The Greek word "Delphax" means a young pig, a porker, and the specific names should be masculine; they have the feminine termination in most authors, probably owing to their transference from the genus *Fulgora*. Their identification is no easy matter, owing to (1) the meagre descriptions of authors, (2) the disparity between the sexes, and (3) the fact that an apterous form with abbreviated elytra frequently co-exists with those more fully developed; so that an acquaintance with no less than four different kinds of individuals is necessary to complete the knowledge of one species. These imperfectly fledged adults have no doubt been frequently passed over by collectors as mere pupæ. The insects are found abundantly on various grasses and rushes, and for the most part in damp situations. The eggs, at least of several, are hatched in the autumn; and extremely minute larvæ may be detected at all times during the winter at the roots of the plants whose juices they suck. A synoptical view of the species is subjoined.

A. Vertex elongatus, parte dimidia ultra oculos porrecta ..... LINEOLA, Germ.

B. Vertex transversus, ultra oculos non, aut vix, porrectus.

* Hemelytra apice quam basi angustiora, abdomine semper longiora.

† Genæ nigro unimaculatæ; hemelytra apice nigrolineata ..... GUTTULA, Germ.

†† Genæ et hemelytra pallida, immaculata ..... PALLIDULUS, Boh.

** Hemelytra apice et basi æquilata, vel etiam apice latiora, abdomine sæpius breviora.

(1) Carinæ faciales omnino obsoletæ ..... PTERIDIS, Boh.

(2) Carinæ faciales plus minus conspicuæ.

¶ Pronoti carinæ laterales rectæ, marginem posteriorem attingentes ..... NOTULA, Germ.

¶¶ Pronoti carinæ laterales incurvæ, ante marginem posteriorem abruptæ.

a. Hemelytrorum nervi albi, maculis nigris rotundis notati ..... LIMBATUS, Fab.

b. Hemelytrorum nervi nunquam maculis discoloribus notati: aliquando obsoletius impresso-punctati.

* Frons apice, scutellum basi, nigro bimaculata ..... NASALIS, Boh.

** Frons et scutellum non nigro bimaculata.

† Frontis carinæ mediæ 2, supra ipsum clypeum conniventes ..... ALBOMARGINATUS, Curt.

†† Frontis carina 1 media, ad altitudinem antennarum fere baseos bifurcata ..... HAMATUS, Boh.

††† Frontis carina 1 media, longe supra antennas et prope verticem bifurcata.

¶ Hemelytra in clavi angulo posteriore nigro lineolata ..... STRIATELLUS, Fall.

¶¶ Hemelytra ibidem non nigro lineolata.

(1) Frons, ab oculis ad clypeum usque, æquilata, parallela. Scutellum nigrum, apice albo ..... ELEGANTULUS, Boh.

(2) Frons medio inter oculos et clypeum latissima. Scutellum nigrum, apice nigro ..... LEPTOSOMA, Flor.

(3) Frons sub ipsis oculis latissima, dein ad clypeum sensim angustata.

a. Frontis carina media in vertice obsoleta ..... LUGUBRINUS, Boh.

b. Frontis carina media in vertice conspicua.

i. Frons duplo longior quam sub ipsis oculis latior.

* Liber rostri apex clypeo æqualis longitudine. Hemelytrorum nervi conspicue impresso-punctati... PELLUCIDUS, Fab.

** Liber rostri apex clypeo brevior. Hemelytrorum nervi non conspicue impresso-punctati.

† Pronotum et scutellum longitrorsum albido vittata. Carinæ frontales nigro marginatæ ..... COLLINUS, Boh.

†† Pronotum et scutellum longitrorsum non albido vittata, verum extra carinas suas laterales [plus minus infuscata. Cariuæ frontales non nigro marginatæ, sed frons ipsa nigra..... NEGLECTUS, Flor.

ii. Frons dimidio fere longior quam sub ipsis oculis latior ..... DISCOLOR, Boh.

A.—Vertex elongatus, parte dimidia ultra oculos porrecta.

1.—*Delphax lineola*, Germ.*

Ochraceus, striga longitudinali a vertice ad metathoracis basin lactea. Hemelytra abdomine longiora, apice angustata, linea apicis longitudinali nigro-fusca. Abdominis segmenta supra utrinque plus minus nigricantia. ♂ ♀. Long. $1\frac{3}{4}$-$2\frac{1}{3}$, alar. exp. $4\frac{1}{2}$-5 lin.

Germ., Mag. 3, p. 209; id., Fauna. Ins. Eur. 7, tab. 19. Stål. Öfv. 1854, p. 190. *D. longipennis*, Curt. B. E. 657 (var.). *Fulgora minuta*, Fab. Ent. Syst. 6, 6, 20 (?)

The largest of the genus, and distinct from all other species by the shape of the vertex. Face very long, with three parallel carinæ, of which the medial is the broadest, and is forked upon the vertex. Eyes reddish. The black apical stripe of the hemelytra is often absent, sometimes doubled, and continued to the base; in the variety described by Curtis (see his fig.) it occupies nearly the entire surface. The black marks on the abdomen are similarly inconstant. The spurs of the hinder tarsi, and the last joint of all the tarsi, tipped with black.

Common on the south coast, and near London (Wimbledon, Esher, Epping); also on the Cotswold Hills, Cheltenham, and Swithland Slate Quarries, Leicester.

B.—Vertex transversus; ultra oculos non, aut vix, porrectus.

* Hemelytra apice quam basi angustiora, abdomine semper longiora.

† Genæ nigro unimaculatæ; hemelytra apice nigrolineata.

2.—*Delphax guttula*, Germ.

Albido-ochraceus, pronoti scutellique lateribus, et abdomine supra plus minus nigricantibus. Genarum apex utrinque macula magna nigra rotunda notatus. Hemelytra abdomine longiora, linea apicis longitudinali, extrorsum latiore, nigrofusca. ♂ ♀.

Long. 1-$1\frac{1}{4}$, alar. exp. $2\frac{1}{2}$-$3\frac{3}{4}$ lin.

Germ. Mag. 3, p. 216. Curt. B. E. 657. Flor, R. L. 2, p 42. Stål. Öfv. 1854, p. 191. *D. minuta*, Zett. Ins. Lapp. p. 305. (*Fulgora minuta*, Fab. is more likely to be this than the preceding, but his brief description is vaguely applicable to both.)

The dark stripe on the hemelytra is sometimes visible to the base, where it is narrower and paler. Sometimes it appears only as a black triangular spot at the apex, in which case the hemelytra are shorter and blunter. The wings are sometimes rudimentary, and then the hemelytra are much narrowed at the apex, but never shorter than the abdomen.

* This species recedes so much from the type of *Delphax*, that, in a monograph, I should scarcely hesitate to establish a new genus for its reception. Its claims to separation are at least equal to that of *Araeopus* and *Asiraca*. The structure of its head indicates a relation to *Pseudophana*, of which one species is found in southern Europe.

Found at Birch Wood, on the railway embankment. Charnwood Forest (the variety with shorter hemelytra). I. of Bute, and Dorsetshire (Curtis).

† Genæ et hemelytra pallida, immaculata.

3.—*Delphax pallidulus*, Boh.

Totus pallide testaceus. Hemelytra abdomine paulo longiora, flavo-hyalina, apice lævissime angustata. Alæ vix ullæ. ♂ ♀.

Long. $1\frac{1}{4}$-$1\frac{1}{2}$, alar. exp. 3 lin.

Bohem., Handl. 1847, p. 48. Flor, R. L. 2, p. 44.

The medial carina of the frons becomes obsolete upon the vertex. Lateral carinæ of the pronotum rectilinear, and reaching the base. Sometimes a black dot appears on each side of the prosternum, above the fore coxæ. Ovipositor of the ♀ dark brown.

I have found this species in one place only, on the *Arundo phragmitis*, surrounding a secluded pool in an osier bed near Leicester, in August and September.

* Hemelytra apice et basi æquilata, vel etiam apice latiora, abdomine aliquando breviora.

1. Carinæ faciales omnino obsoletæ.

4.—*Delphax pteridis*, Boh.

Niger, nitidus; antennis, capite, pronoto, pedibusque flavis. Hemelytra ♀ basi obscure flava. Coxæ ♂ nigræ. Tarsi ♂ ♀ apice nigro-fusci. Long. ♂ 1, ♀ 2 lin.

Bohem. Handl. 1852, p. 115. Stål., Öfv. 1854, p. 197.

Face smooth and yellow, without a vestige of carination; the two hinder foveolæ of the vertex visible, the anterior impression nearly obsolete. Eyes reddish. Pronotum narrow, with two lateral imperfect carinæ, and two shallow discal impressions. Hemelytra of the ♂ only half as long as the abdomen, sub-quadrate, deep black, coriaceous, and shining; of the ♀ only one-third as long as the abdomen (when full of eggs), and testaceous at the base. Wings wanting. Apical abdominal segments of the ♀ edged with testaceous, the two last segments entirely of that colour. Ovipositor hardly exserted, black. Genital segment of the ♂ deeply emarginated on its hinder edge above, and testaceous in the middle of the emargination.

I took six specimens on the common fern, in Epping Forest, July, 1864.

(*To be continued.*) 226

NEW SPECIES OF BUTTERFLIES FROM GUATEMALA AND PANAMÁ.

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

(*Concluded from page* 180.)

75.—EUPTYCHIA SERICEELLA.

♂. Closely allied to *Eu. Ebusa* (Cramer, Pap. Exot., pl. 292, f. F.G.). Above: of the same silky-blue as in *Eu. Ebusa*, but on both fore and hind-wings, the fore-wing having a narrow costal border, the apex, and a broader outer border of a brown hue. There are two obscure, dark lines across the fore-wing, one much behind the cell, the other near the outer border; the hind-wing has the outer edge obtusely dentate, with a broad dusky fringe, and two fine parallel sub-marginal dusky lines enclosing a thicker dull rufous line. Beneath: tawny-brown, both wings crossed by two brown lines, one fine over the middle of the wing-cells, the other thicker, and beyond the cells, this latter broadly bordered externally with pale lilac; both wings have also two very fine sub-marginal lines, the inner one festooned; and between this latter and the lilacine band is a row of small equal-sized ocelli, three or four on the anterior wing, and five on the hind-wing; the first (from anal angle) and fourth on hind-wing are black, with white pupils and yellowish irides, the other three are white, with yellowish irides. Antennæ dark brown, club beneath rufous.

Guatemala; province of Vera Paz.

76.—EUPTYCHIA GLAUCINA.

♂. Size and shape of wings same as in *Eu. Lysidice* (Cramer, Pap. Exot., pl. 169, fig. C.D.). Above: of a pale blue-grey, without gloss; fore-wing rather duller and browner, especially towards the outer margins; the terminal portions of the nervures also bordered with greyish-brown; the hind-wing has two fine dusky lines close to the hind-margin, and a thicker one a little distant from the others, not reaching the anal margin. Beneath: pale blue, clearer and purer than above; all wings crossed by four reddish-brown lines, besides two fine lines close to the outer margins; the third line, on the hind-wing, has four small ocelli, two minute near the apex, and two larger near the anal angle, black, with yellow irides, and minute silvery pupils.

Duenas, Guatemala.

77.—MESOSEMIA GAUDIOLUM.

♂. Exp. 1″ 10‴. Costa of fore-wing slightly arched towards the tip, the latter a little produced, but obtuse; outer margin very slightly bowed outwards. Hind-wing with the middle of the outer margin produced

in the middle into a somewhat lengthened lobe. Above: deep black, wings crossed by a broad light blue belt stretching, in the fore-wing, from the basal part of the costa to near the hind-angle, and, in the hind-wing, accompanying the outer border and dilated near the lobe. Beneath: brown, with a large black ocellus, having two white pupils placed obliquely, and surrounded by two yellowish rings; outer border dark brown, with a dark brown belt between the border and the cell. From the ocellus extends a light brown line (margined with dark brown), which crosses also the hind-wing to near the abdominal margin; the hind-wing has a small black ocellus with yellowish iris, and the outer border is broadly dark brown, with a row of six dull whitish specks.

Guatemala; province of Vera Paz.

78.—MESOSEMIA VESTALIS.

♀. Closely allied to *M. Lagora* (Hewits., Exot. Butt. *Mesos.*, f. 20). Above: white. Fore-wing crossed by three light brown lines, namely, one near the base, and two beyond the end of the cell, besides which, the outer border is narrowly light brown; at the end of the cell is an ocellus, with a linear deep black pupil, surrounded by a pale and a greyish ring; near the outer margin is a string of blackish spots. The two outer brown lines are continued on the hind-wing, but the basal one is wanting. There is a row of three black spots near the anal angle; the outer border is white and free from dark lines. Beneath: the dark lines are much thicker than above, and there are four on the anterior wing and five on the hind-wing; besides which, the outer borders are broadly brown, and have a line of sub-marginal black spots, edged with grey lunules. The ocellus of fore-wing is rounded and black, and has a white pupil.

Guatemala; province of Vera Paz.

79.—PHELES ALICIA.

♂. Fore-wing of same form as *P. heliconides* (H. Sch.). Hind-wing more ample, anal angle slightly produced and pointed. Above: deep blue-black, opaque, glossy; fore-wing crossed, beyond the cell, by a faintly transparent and silky-white belt; some of the nervures which traverse it are black, and it terminates near the end of the first median branch, a small white spot lying between this and the hind angle. The hind-wing has a clear white fringe. Beneath: duller bluish-black, with the white belt same as above; the hind-wing has a number of bluish-grey streaks, one of which is on the costa, another on the abdominal edge, and the rest, much abbreviated, between the nervures. Head

and palpi rosy-red. Thorax, abdomen, and antennæ, black. The fore-wing first and second sub-costal branches arise near the end of the cell; the upper radial joins the sub-costal at a distance from the end of the cell, and the lower radial is separated from the sub-costal by a somewhat lengthy middle disco-cellular. The numerous species of *Pheles* differ much in the position of these nervures.

Guatemala; province of Vera Paz.

80.—MESENE RUBELLA.

♀. Closely allied to *Mesene Pharea* (Cramer, Pap. Exot., pl. 170). Paler brick-red; black borders of the wings very much narrower, and in the middle of the costal border of the fore-wing there is a single linear spot extending over the end of the cell. Beneath: of a reddish-saffron colour, the black costal border of the fore-wing dilated near the base of the wing.

Panamá.

81.—MESENE CROCEELLA.

♂. Same form as *M. Pharea*. Colour, saffron inclining to ochreous; the costa and outer margin of fore-wing, and the outer margin of hind-wing, with a narrow and uniform black border. Beneath: same as above. Body reddish; antennæ black.

Guatemala; Motagua Valley.

82.—LEMONIAS DOMINA.

♀. Expans. 2″ 6‴. Resembles in form and general colours *L. Aurinia* (Hewits., Exot. Butt. *Lem.*, f. 19, 20), but very much larger. Above: reddish-tawny, with a number of blackish spots crossing the middle of the fore-wing, succeeded by a short paler tawny belt; outer borders of both wings darker brown, the fore-wing having a row of sub-marginal reddish-tawny spots, and the hind-wing a row of large ocelli, with blackish centres and broad tawny irides. Beneath: paler than above; fore-wing pattern similar to that of the upper surface; hind-wing browner in hue, with a broad central dingy-white belt, basal portion of the wing also whitish, with a number of annular brown spots; hind-wing with a row of ocelli, like those of the upper surface, but pale in colour.

Panamá. The species is allied to *L. Mormo* (Felder), of California.

83.—NYMPHIDIUM OLINDA.

♂ ♀. Expans. 1″ 3‴–1″ 5‴. Intermediate in form of wings and markings between *N. Mantus* (Cramer, p. 47, fig. F.G.) and *N. Bœotia* (Hewits., Exot. Butt. *Nymph.*, fig. 5). Fore-wing costa

moderately but regularly arched, outer border scarcely rounded outwards; hind-wing outer border rounded. Above: both wings brown, as in *N. Bœotia*, with a white common belt; fore-wing with the middle of the outer border bluish-grey, and a sub-marginal row of bluish-grey semi-circles. Hind-wing outer border edged with white, and in many examples with a bluish-grey line on the inside of the white; the bluish-grey lines are not in regular semi-oval form as in *N. Bœotia*, but are elongated and triangular in form. In some examples the brown borders, especially of the hind-wings, have more or less of a reddish tinge.

Panamá. Also on the Amazons, rather common in many localities.

Note.—The new *Lycænidæ* of this collection will be named and figured by Mr. Hewitson in a monograph of the family now in progress. The new *Hesperidæ* will also shortly be published with figures. A number of species received during the progress of the foregoing article will be described in a supplement in a future number of this Magazine.

ON THE SYNONYMY OF *CICADA ANGLICA*, (LEACH).

BY DR. HAGEN.

Under the name of *Cicada Anglica*, of Leach, the only English species of the genus *Cicada*, is mentioned by the Rev. T. A. Marshall at p. 154 of this Magazine; also at p. 171 it is called *C. Anglica*.

When in England, in the year 1857, I carefully compared the types of *C. Anglica* in the collection of Curtis, Stephens, and Westwood, and can confidently pronounce that it is identical with the *montana* of Scopoli. In the Stettin Entomologische Zeitung for 1856, at page 74, I have carefully described the species, and rectified the synonymy; in most cases, after an examination of the typical specimens. This species occurs likewise in Prussia, Sweden, and even at St. Petersburg.

In the Stettin Ent. Zeitung for 1858, p. 135, I gave a notice respecting the types of *Cicada hæmatodes* in the Linnean Collection; they are from Barbary, and are very different from the *hæmatodes* of Scopoli, which occurs in southern Europe. It is evidently to the latter species that the Rev. T. A. Marshall alludes as having met with it in the south of France and in Corsica. Since Scopoli's name, *C. hæmatodes*, is older than the Linnean, which occurs in the 12th Edition of the Systema Naturæ, the *hæmatodes* of Linné will have to be re-named.

The date of Scopoli's name *Cicada montana* is 1772; Leach's *C. Anglica* in Samouelle's Compendium, p. 447, pl. 5, fig. 2, is 1819. The figures given by Curtis, Samouelle, Newport (in Todd's Cyclopædia of Anatomy, f. 353, p. 868), and Westwood (Introduction to the Modern Classification of Insects, II., fig. 114), all belong to *C. montana*, a species not known to Linné.

EXTRACT FROM M. ALLARD'S PAPER ON *SITONES*, &c.

BY E. C. RYE.

M. Allard, under the modest title of "*Notes pour servir à la Classification des Coléoptères du genre Sitones*," of which the first part has recently appeared in the Annals of the French Entomological Society (Tom. xiv., 1864, p. 329 et seq.), having, in the most able manner, reviewed the different species of this genus (a frequent *crux* to beginners), giving numerous distinctive characters, and an analytical table. I now propose to extract therefrom such parts as are likely to be useful to British Entomologists; adding a few remarks of my own. When the remaining portion of M. Allard's paper is published, a communication, similar in character to the present, will appear in this Magazine.

M. Allard remarks, that the *Sitones* appear only to be found in cold or temperate regions; and that of the 56 species known, 23 are exclusively proper to Europe, and 24 of the remainder are found in Europe, as well as in Asia, Africa, or America. He also adds, that it is reasonable to expect to meet with all the Asian and African species in the middle of Europe.

I subjoin M. Allard's analytical table, so far as it affects the species hitherto recorded as British; from which it will be seen that the three groups of Schönherr (wherein the sub-depression, moderate prominence, and extreme prominence of the eyes constitute the sole characters of separation) are disregarded in favour of an arrangement which is less likely to be artificial, as it is founded on a study and comparison of several parts of the body, instead of being limited to any one organ.

First Group.—Thorax truncated before and behind, moderately enlarged in the middle, and assuming in its enlargement a form more angular than rounded. Elytra convex; contracted in their lower third, and ending rather in a point.

1*st division*.—Elytra elongate, more than twice as long as broad.

A. Eyes very prominent .....(no British species.)

B. Eyes but little prominent.

1. Elytra not set with slight white bristles.

a. Insect variegated with brown and grey; scutellum concolorous: elytra rather strongly punctate-striate .....GRISEUS.

2. Elytra set with little, white, erect, and very conspicuous bristles .....(no British species.)

2*nd division*.—Elytra shorter, and more oval. Form of the insect more compact, or the elytra moderately longer than the head and thorax together. Eyes very slightly prominent.

A. Elytra not pubescent.

1. Thorax not contracted before the anterior margin, which is not elevated.

* Thorax perceptibly longer than its breadth in the middle .....(no British species.)

** Thorax of the same length as, or shorter than, its breadth .....FLAVESCENS.

2. Thorax having a slight contraction before the anterior margin, which consequently appears elevated.

* Forehead and rostrum level, with a longitudinal furrow in the middle. Elytra with golden or green bands .....SUTURALIS.

B. Elytra with rather long pubescence. Forehead with a pit-like excavation, the eyes thereby becoming prominent .....SULCIFRONS.

Second Group.—Thorax very slightly dilated at its sides, which are often nearly straight; elytra more level on the upper side than in the first group, elongate, and more parallel at the sides. Eyes rather prominent.

A. Insects clothed above with short, silky, depressed pubescence.

1. Sides of the elytra parallel.

* Forehead level; and, with the rostrum, scarcely furrowed. Thorax and elytra rather finely punctured .....TIBIALIS.

2. Elytra narrower at the base than in the middle.

* Forehead rather convex, rostrum furrowed. Thorax broader at the base than at the apex ...LINEELLUS.

B. Hinder part of the elytra set with small erect bristles, of which the majority are white, and planted in series on the interstices.

1. Interstices convex, unequal .....WATERHOUSEI.

2. Interstices level.

* Colour very pale.

a. Head and thorax rather strongly punctured ... .CRINITUS.

Third Group.—Thorax very rounded at the sides; eyes very prominent.

A. Elytra very broad, and broader behind than in front.

1. Elytra not pubescent .....(no British species.)

2. Elytra with bristles rather long, especially behind.

* Legs entirely red .....(no British species.)

** Femora black .....REGENSTEINENSIS.

B. Elytra with the sides almost parallel, and the extremity regularly rounded.

1. Vertex of head uniform.

* Elytra with scattered pubescence; black, spotted with grey or brown .....CAMBRICUS.

2. Vertex with two little rounded elevations, formed of yellow hairs .....(no British species.)

FOURTH GROUP.—Thorax moderately rounded at the sides. Eyes little prominent. Elytra with the sides almost parallel, and the extremity regularly rounded.

A. Femora black.
1. Elytra oval.
* Elytra with the extremity of the 5th interstice sub-elevated, forming a little callus.
(no British species.)
** Elytra with level interstices, and no apical callus.
a. Thorax finely and thickly punctured..... PUNCTICOLLIS.
2. Elytra oblong.
* Thorax longer than broad (no British species.)
** Thorax the same length as, or shorter than, its breadth ..... LINEATUS.
B. Femora red .....(no British species.)

FIFTH GROUP.—Thorax moderately rounded at the sides. Elytra ending more in a point; of a somewhat elliptic form. Eyes but little prominent, or level with the head.

1*st division*.—Elytra with parallel sides.
A. Thorax contracted before the anterior margin, which consequently appears elevated ..... (no British species.)
B. Thorax not contracted before the anterior margin.
1. Elytra set with little bristles.
* Elytra with a slight apical callus.
(no British species.)
** Elytra with the interstices level to the extremity, and the bristles rather close.
(no British species.)
*** Elytra with the interstices level to the extremity, and with long, white, scattered bristles.
a. Elytra yellowish, with spots of dark brown..... HISPIDULUS.
2. Elytra not set with little bristles.
* Forehead level, with a simple linear furrow, continued on the rostrum.
a. Thorax shorter than broad.....MELILOTI.
** Forehead excavated with a deep pit.
a. Elytra with a white shoulder spot .....HUMERALIS.
2*nd division*.—Elytra perceptibly broader after the middle than in the upper third. Eyes level with the head.
(no British species.)

(*To be continued.*)

A SYNOPSIS OF THE *SPHINGIDÆ* OF EUROPE.

BY W. F. KIRBY.

On account of the immense extent and difficulty of some of the larger groups of *Heterocera* of Europe (e. g. *Anthrocera* and *Ægeria*), and the poverty of most of the English collections in some of these, I cannot promise to give a Manual of the *Heterocera* of Europe just yet; but I thought a series of synopses of some of the easier and most interesting groups might be useful, and now offer one of the *Sphingidæ* and *Sesiidæ*.

I have not thought it necessary to give detailed descriptions of the genera (all of which, except *Proserpinus*, are represented in this country), nor of the British species, as the latter will be sufficiently noticed in the tabular arrangement which is mostly borrowed from Herrich-Schäffer; and Stainton's Manual of British Butterflies and Moths is in the hands of every one who is likely to read this paper.

Walker's arrangement of the genera is here adopted, and that portion of his table of genera which refers to those of Europe is translated.

A. Abdomen tufted at the tip.
  B. Hind margin of fore-wings entire.
    C. Wings transparent. 1. MACROGLOSSA.
    CC. Wings opaque. 2. SESIA.
  BB. Hind margin of fore-wings concave. 3. PROSERPINUS.

AA. Abdomen not tufted at the tip.
  D. Proboscis of considerable length.
    E. Abdomen with pale streaks. [CAMPA.
      F. Fore-wings with the hind margin entire. 4. CHÆRO-
      FF. Fore-wings with the hind margin very slightly denticulated. 5. PERGESA.
    EE. Abdomen spotted, or without shining bands.
      G. Hind-wings rounded at the anal angle, or with a hardly perceptible projection.
        H. Proboscis and wings long. 8. SPHINX.
        HH. Proboscis and wings of moderate length. 9. ACHERYX.
      GG. Hind-wings with a perceptible projection at the anal angle.
        I. Head of moderate size. 6. DEILEPHILA.
        II. Head large. 7. DAPHNIS.
  DD. Proboscis very short or wanting.
    J. Wings entire. 10. ACHERONTIA.
    JJ. Wings dentated. 11. LAOTHOË.

Sesiidæ.

Genus 1.—MACROGLOSSA, Ochs. (*Sesia*, Fab. p.). Two species.

M. FUCIFORMIS and M. BOMBYLIFORMIS. Both species common in collections; generally distributed.

Genus 2.—SESIA, Fab. (*Macroglossa*, Steph, non Ochs.) Two species.

S. STELLATARUM. Common in collections; generally distributed.

S. CROATICÆ, Esp., 1″ 1‴-1″ 2‴ Green; hind margin of fore-wings broadly reddish-brown; hind-wings red (Walker), VI. VIII.

Larva like that of *fuciformis*, but darker; bright green, speckled all over with little white dots. Sub-dorsal line darker. Lateral streak pale yellow; stigmata red, bordered below and slightly above with pale yellow; legs and horn orange (Freyer). On Scabious, VII.

Dalmatia, Greece. Scarce in collections.

Genus 3.—PROSERPINUS, Hub. (*Pterogon*, Bd., *Macroglossa*, Ochs. p.) Two species.

Body thick; head obtuse; proboscis rather long. Abdomen rather longer than the thorax, very slightly tufted at the tip. Wings moderately broad, hind margins concave; fore-wings slightly hooked at the tip (Walker).

P. ŒNOTHERÆ, Fab., 1″ 3‴-1″ 6‴. Fir green, with a very distinct darker transverse band, and the hind margins darker. Hind-wing orange, with a broad black border; tip of antennæ white. Fore-wing very variable, VI.

Larva dark bluish-grey, mixed with black. Belly and sides pale rosy-white, stigmata red, prolegs flesh-colour; horn replaced by a shining round plate, marked with a black pupil in a red or orange-yellow ring (Dup.) On *Epilobium angustifolium*, *roseum*, and *montanum*. VII. Hides itself under stones during the day.

Sub-alpine and southern Europe. Common in collections. Flies in the evening.

P. GORGON, Esp. (*Gorgoniades*, Bd.) 1″ 3‴. Fore-wing grey, mixed with brown; hind-wing brownish, with several obscure greyish lines (Hubn.) V. VI.

Larva unknown.

South Russia. Very rare in collections.

Sphingidæ.

Genus 4.—CHŒROCAMPA. Five species.

A. Abdomen with the sides not tessellated.

B. Ground colour rosy, mixed with olive; fringe of the hind-wings white. C. ELPENOR.

BB. Fore-wings brown, not silvery.

C. Hind-wings red. C. Alecto.

CC. Hind-wings black. C. Boisduvallii.

BBB. Fore-wings brown, with silvery lines. C. Celerio.

AA. Abdomen with the base and sides varied with black and white. C. Osyris.

C. Elpenor. Common in collections; generally distributed.

C. Celerio. Common in collections; generally distributed in south Europe.

C. Osyris, Dalm., 2″ 11‴-3″ 3‴. Very near *Celerio*, but the markings of fore-wing are less silvery, the marginal band of hind-wing is twice as broad, and the black basal markings are less distinct. Body similar, but the principal stripes are pinkish, and there are two interrupted black bands on the first segments of the abdomen.

Larva unknown.

Reputed to have been once taken at Cadiz. It is a universally diffused *African* species, and is probably not indigenous in Europe.

C. Alecto, Lin., 2″ 10‴-3″ 2‴. Fore-wing brown, with two distinct transverse lines, the most conspicuous running from the middle of the inner margin to the tip; hind-wing red, blackish at base, hind margin black; anal angle with a pale pinkish-white blotch. Head and body greenish-brown, with a broad white stripe down each side of the head and thorax, and a black spot on each side at base of abdomen. V.

Larva purplish-brown, punctured with bluish-white, belly dirty greenish-yellow. A broad flesh-coloured lateral streak, on which is a row of seven white rings bordered below with black, and having a large pupil, black above and flesh-coloured below (Horsfield & Moore). On vine.

Greece, Turkey, South Russia European specimens rather scarce in collections; Indian ones common.

C. Boisduvalii (Brugnion) 3″ 2‴. Fir-brown, with a green band near the costa running from base to tip, at which point it is nearly touched by a narrow green streak running from the hind margin down to the inner margin; hind-wing black, with an oval white spot at anal angle, slightly tinged with pink (H. S.)

Larva unknown.

Turkey, Greece. Very rare in collections. Walker thinks that this species is a variety of the Indian *C. Clotho*, the larva of which feeds on vine. As *C. Alecto* and *C. Boisduvalii* have been confounded under the name of *C. cretica*, it is better to reject the latter altogether, as Staudinger has done, and employ the name *Boisduvalii*, which is open to no such objection.

(*To be continued*).

DESCRIPTION OF A SPECIES OF *OXYPODA* NEW TO SCIENCE.

OXYPODA GLABRIVENTRIS, n. s.

Elongata, parallela, ferrugineo-testacea, nitida, subtiliter parcèque punctata, longiùs flavescenti-pubescens; antennis validioribus, articulo ultimo elongato; thorace æquali, posticè sub-angustato, angulis posterioribus rotundatis; elytris hoc vix brevioribus; abdomine ferè glabro. l. c. 1⅔ lin.

In general appearance this species resembles *Ischnoglossa corticalis*, and in its stout antennæ it exhibits a likeness to *Ilyobates forticornis*; from both of which its lighter colour and generic characters will serve to distinguish it. It is closely allied to *O. lucens*, Muls.; differing from that insect as follows:—it is unicolorous, rather larger and more robust, more shining; its thorax is widest a little above the middle, and much more contracted and rounded off behind; its punctuation is not so close, and pubescence rather stouter and longer; its antennæ are stouter, with the apical joint longer, and the abdomen is shining, very slightly and remotely punctured, in which respect it recedes from any *Oxypoda* known to me.

It is entirely ferruginous-testaceous (though some specimens, in drying up, have the abdomen suffused with a slightly darker tint); the head and thorax are moderately, closely, and very finely—the elytra rather more distinctly—and the abdomen remotely and *very* finely, punctured. The antennæ have the 1st and 2nd joints sub-equal and elongate-conic; the 3rd is shorter than the 2nd, and obconic; 4-10 are strongly transverse, gradually widened, and getting slightly longer; and the 11th joint is elongate, oval at the apex, equal in width to the preceding, and longer than the two preceding joints.

Several examples (accompanied by *Homœusa acuminata*) were taken in May and June, 1863, by Dr. Power, in the "runs" leading from a nest (now destroyed) of *Formica fuliginosa*, at the root of an old beech-tree in Headly Lane, Mickleham, Surrey.

The characters of antennal development and lack of abdominal punctuation in this insect are so marked, that I bring it forward as undescribed with much doubt; nevertheless, I can find no species answering to it in the works of Erichson, Kraatz, Thomson, Fairmaire, &c.—E. C. RYE, 284, Kings Road, Chelsea, S.W.

Occurrence of a Cryphalus new to Britain.—CRYPHALUS TILIÆ, Fab., S. E., ii., 383; Ratzeburg, Forst., i., 164, tab. xiii., fig. 20. I have recently determined this species, which is new to our lists. Redtenbacher places it in a section of the genus wherein the anterior margin of the thorax is armed with teeth; and, under a moderately high power, these teeth, in the present insect, can be distinctly seen; assuming the form of four small, closely packed, longitudinal ridges, exactly in the middle of the anterior margin.

In form and size *C. tiliæ* most resembles *C. abietis*, being somewhat short and robust; *C. binodulus* is much larger, and *C. fagi* is much more narrow and elongate.

The hair-like scales, forming a kind of greyish pubescence, are much stronger than in the other species, and are distinctly disposed in rows upon the elytra, resembling those of *Cis villosulus*, as contrasted with *Cis boleti*.

The thorax exhibits a marked difference from that of all the other British species, in having the tufted processes which surmount it limited to the upper and

anterior part, and not extending to the lateral margins. Moreover, instead of being scattered, so as to produce a kind of granulated appearance, they are symmetrically arranged in about three distinct rows placed in transverse curves, with clear intervals between them; and, in the median line, the absence of the tufts produces the appearance of a smooth space connecting the interspaces.

Immature specimens are palish, with pale legs. Mature ones are brownish-black, and have the legs concolorous, but the tarsi very pale. The insect varies greatly in size, some specimens being more than twice as large as others. Its general magnitude is about that of *C. abietis*; the largest specimens I have seen being not so large as small *C. binodulus*.

Charles Turner took the first examples (about 8 or 10) in December, 1860, near Bridgnorth. These remained in the collections of Mr. Jeakes and myself, but Turner has recently taken a large number near Lincoln. The specimens in the European collection of the British Museum are singularly small and pale, but entirely coincide with the immature ones above mentioned.

I cannot satisfactorily make out the tree on the bark of which the insect feeds, but Turner tells me that the country people call it "Bass;" and I have no doubt that it is some species of *Tilia*.—J. A. Power, 52, Burton Crescent.

Leucoma vau-nigrum.—I have a specimen of *L. vau-nigrum*, which was given me by Mr. S. Jessop, of Rawmarsh; and as there seems to be some doubt about this insect being British (many Entomologists having omitted it from their lists), at the request of some of my friends, I have made it my special business to call on Mr. Jessop and learn how he became possessed of it.

The insect was taken about twenty years ago in Tinsley Park, which is situated between Rotherham and Sheffield, by a man named Siddell, who was a kind of gamekeeper, and who, at the time, did not know the value of the moth he had captured. Mr. Jessop informs me that he met him early in the morning and asked him what he had in his box; which, being opened, revealed four or five specimens of *vau-nigrum* (at the time considered by them both to be only *S. salicis*).

They were pinned with large common pins, and some of the specimens were still alive, not having been quite killed with the pinch they had received under the thorax.

Siddell told him that he could have them all if he liked, but he only took one, for the reason above given.

I am of opinion that if once an insect has been taken in this country it ought not to be excluded from our lists.

I believe that if this species were sought for in the proper locality it might turn up again; and should all be well next August I shall certainly be on the look out for it myself.—E. G. Baldwin, 3, Earlham Villas, Forest Gate, 29*th Nov.*, 1864.

Vanessa Antiopa at Warwick.—A fine specimen of *V. Antiopa* has lately been given to me by a lady friend, who captured it in her garden at Warwick.—*Id.*

Food of the larva of Caradrina cubicularis.—During the past summer, some field peas grown in this neighbourhood were observed by the owner and his men to be very much blighted, and constantly visited by flocks of starlings, especially just before they were harvested.

When the peas were taken into the barn on the 12th of December to be threshed, an immense number of larvæ of *Caradrina cubicularis*, from half to full-grown, were dislodged from the haulm.

Having previously only known this species to infest wheat stacks, and seeing these larvæ to be rather greener than usual, I resolved to rear some of them, in the hope of obtaining varieties of the moths; and accordingly secured eighty specimens, most of which are now nearly full-grown, and inhabit cocoons formed of their food and fragments of the peas and earth spun together.—Wm. Buckler, *4th Jan.*, 1865.

Noctuæ at sugar.—There can be little doubt that some influence with which we are but very little acquainted regulates the abundance or scarcity of *Noctuæ* at sugar. Every year complaints are made as to the unproductiveness, in some places, of this mode of collecting, while it has invariably happened that, in other localities, the result has been quite different.

I have heard the complaint made of the past season, but my own experience has been more agreeable, since, although I was only able to sugar occasionally, at intervals generally of a week or more, I took the following *Noctuæ* at sugar.

In June—*Ceropacha or*, *Acronycta aceris* and *ligustri*, *Neuria saponariæ*, *Hadena adusta* and *genistæ*, *Aplecta advena*, *herbida* and *tincta*, and *Mamestra anceps*, the last three very common.

In July—*Ceropacha duplaris* and *or*, and *Triphæna fimbria*.

And in August—*Cerigo cytherea*, *Noctua neglecta*, *Triphæna interjecta*, and *T. janthina*, which last was very common.

Besides *Noctuæ* I met with many representatives of other families of *Lepidoptera*, an account of which I enclose.—C. G. Barrett, Haslemere.

Capture of Agrophila sulphuralis, with notice of its habits.—While searching in Suffolk for *Acidalia rubricata* with the success already recorded in "The Magazine," I met with two specimens of the above-named local species. The habit of this pretty little *Noctua* appears, in this locality, to be much the same as in its Cambridgeshire haunts, where I have had the pleasure of meeting with it. It starts up from the ground herbage on one's approach, and then having flown sharply for a short distance, soon settles again. It is, however, far more active during bright and warm sunshine.

Occasionally I have seen it settled on the flowers of knapweed (*Centaurea nigra*) and clover, the wings being neatly roofed at an acute angle, as is the case with *H. uncana*.

In hunting for this little beauty, a switch, for the purpose of brushing the herbage, is of great advantage; and in capturing it, the net should be quickly placed over it as soon as one can get within reach.—F. Bond, *22nd December*, 1864.

Note to "The Egg State.—Management."—I have thought of the following plan for keeping eggs in a natural state of dampness. I get a clean smooth piece of that velvety moss which grows on old walls and cottage roofs, and having carefully sprinkled the eggs over it, place it in a flower-pot together with the food plant: as the eggs sink into the moss they cannot get shifted about; and, moreover, the moss will not entangle the legs of the newly-hatched larvæ. I have some eggs of *L. cespitis* treated so now, and waiting to be hatched in spring. Of course the moss should be growing.—Rev. J. Hellins, *December*, 1864.

Dasycampa rubiginea.—With reference to the notice in your Nov. No. by Mr. Stevens of the capture of this species, I may state that, although I have never been lucky enough with it to be able to say much of my own experience, yet I have always understood from others who were luckier, that there was just as great a chance of taking *rubiginea* on cold nights at the end of October and beginning of November, when only two moths in all might be seen, as on warm favourable nights when the ivy blossoms were swarming with hundreds of moths of other species. One night I shall never forget (October 27th, 1857), when three of us took as many as nine specimens in less than an hour; it was almost my first visit to the ivy, and I am fully convinced (to use a phrase often addressed to me by certain penitent sinners of my acquaintance,) it was the "first and last time" of such luck for me.—Rev. J. Hellins.

Description of the larva of Pterophorus brachydactylus.—In June, 1856, I received, through the kindness of Mr. Stainton (who had them from Professor Zeller, of Zurich), two larvæ of *Pterophorus brachydactylus*; they were found on *Prenanthes purpurea*, but whilst in my possession they ate *Lactuca muralis* freely, feeding on the upper surface of the leaf, and living on it without any attempt at concealment.

The larvæ were narrowly fusiform in shape, not flattened from above downwards, and with sixteen feet, the two segments which followed the three pairs of true legs having, however, prominences beneath.

The head was yellowish-brown; the body green, with the dorsal line of a darker green colour; the sub-dorsal line was also dark green, but so wavy, as almost to present the appearance of separate spots upon each segment; the spiracles were black. There were two rows of lateral tubercles, each of which had a few dusky grey hairs springing from it.

Neither of these larvæ were reared; when apparently full fed they became stationary, without forming any silken fastening, and in a few days a cocoon of one of the *Muscidæ* emerged from each larva. The small flies reared from these apparently belonged to the genus *Musca*, or *Anthomyia* (*Tachina?* Eds.).—R. C. R. Jordan, M.D., 18*th November*, 1864.

Note on Rhizophagus parallelocollis, Gyll.—What is the usual habit of this species? I have twice taken it myself, and both times in or near a burying ground. On the first occasion I found it in the grounds at Lanercost Abbey, Cumberland, some years ago, either crawling on the tomb-stones, or concealed between them and the turf at their feet; and this year I met with the same insect at Jesmond Cemetery, near Newcastle. A "brother chip," who sent it to me for a name, also found it frequenting the head-stones in a churchyard.—T. J. Bold, Long Benton, 21*st November*, 1864.

Singular cocoon of Saturnia carpini.—I have a very singular cocoon of *S. carpini*, it is constructed with *three* valvular apertures for egression; two of which are quite perfect and beautifully formed, the other is deficient of the usual converging filamentary portion. It was constructed by a larva from which I bred a fine male specimen.—A. Edmunds, The Tything, Worcester.

Remarks on Cœnonympha Typhon and *C. Davus*.—Some time ago I sent specimens of *C. Typhon* to Prof. Hering, who informs me they are the var. *Rothliebii* of German writers, and that similar examples had been taken near Hamburgh. *C. Typhon* is not rare in Argyleshire (where I have found it scarcely above the sea-level), and all that I have seen differ from *C. Davus* in having the white streak on the u. s., f. w. far more oblique and directed towards the *anal angle*; while in all the specimens of *C. Davus* I have seen it is directed towards the *inner margin*, at some distance from the angle. Typical *C. Davus*, from Germany, more resemble Scotch than English specimens.—A. Wilson, Edinburgh, *January*, 1865.

Note on the manner in which the females of the genus Leuctra carry their eggs.—In the autumn of 1862, when entomologizing along the banks of one of the impetuous streams of south Devon, my attention was attracted by one of the small *Perlidæ*, which when flying, seemed to have the abdomen of a pale yellowish colour. On catching this, I found that it was a female of *Leuctra geniculata*, of Stephens, and that the apparent paleness of the abdomen was owing to a mass of eggs which the insect carried. In *Leuctra* the last abdominal segment is curved upwards, and the mass, composed of many hundreds of small eggs, extended from the up-curved last segment to near the base of the posterior wings, along all the dorsal surface of the abdomen. I have since repeatedly captured females of this species, carrying their eggs in a similar manner, and have remarked a like habit in the females of a smaller species, *L. fusciventris*, of Stephens. I have in my collection females with the mass still attached *in situ*.

This interesting fact is not mentioned by previous authors as far as I know, but it has long been noticed that the females of the large species of *Perla* carry their eggs about with them after being extruded, in the form of a little rounded mass, and the females of the *Phryganidæ* do the same, until a fitting time or opportunity arrives for their deposition. In the case of these latter insects the eggs are enveloped in a jelly-like substance, and it has struck me that they may carry them until this secretion is sufficiently hardened to resist the immediate action of the water.—R. McLachlan, Forest Hill, 21*st December*, 1864.

Notes on Nepticulæ at York.—*N. atricapitella*.—I have found the larva of this species making slender galleries in the leaves of the oak. Cocoon reddish.

N. pygmæella.—In whitethorn. Larva yellowish. Cocoon brown. Plentiful.

N. pomella.—I have met with this species from October to December, chiefly in the leaves hanging from the lower branches of the apple-tree, and very gregarious in its habits. I have found a leaf with as many as nine of the orange-coloured larvæ in it. Cocoon of a rich brown. The imago, which makes its appearance in the latter part of June, or the beginning of July, flies at sunrise; and is to be found on the trunks of trees during the day. So far as my observation goes, I have not found this species double brooded.

N. oxyacanthella.—The larvæ of this species, which are rather plentiful, are of a bright green colour and mine in whitethorn. I have also found them in the wild apple. The cocoon is purplish-brown.

N. anomalella.—Plentiful in wild rose; larva yellow.

N. sub-bimaculella.—I have taken this species on the trunks of oak-trees in Askham bogs, near York.

N. salicis.—Larva yellowish-green, making blotch-like mines in the sallow. Cocoon rather large; brown, with the broad end yellowish.

N. flos-lactella.—The larva of this species is yellow; it is very gregarious, and occurs in nut-bushes. I have seen one leaf containing twelve of the larvæ. Cocoon white, of a rather sickly appearance.

N. ignobilella.—This insect is scarce, and is found in whitethorn. The rich yellow larvæ make blotches in the leaves, very much like those of *pygmæella*. This species was authenticated for me by Mr. Stainton.

N. angulifasciella.—This species frequents the wild rose, and is very gregarious in its habits; I have found one bush quite infested with it. The larvæ, which are of a greenish hue, form at first dark contorted tracks of excrement, which terminate in large blotches. Cocoon nearly black. This species was authenticated by Mr. Wilkinson, of Scarborough.

N. atricollis.—This insect is found in whitethorn. Larvæ greenish white, forming a dark track of excrement. Cocoon black.

N. malella.—Very plentiful in wild apple. Larvæ bright orange. Cocoon yellow.

N. gratiosella.—This species breeds in whitethorn. Larvæ yellow, making small blotches. Cocoon pinkish-white.

N. marginicolella.—Scarce; found in elm. Larvæ yellowish, making long galleries at the edge of the leaf. Cocoon green.

N. aurella.—Plentiful in bramble. Larvæ yellow. Cocoon whitish-green, with a flat angulated margin.

I now possess the above species, which were quite unknown to me before the publication of Mr. Stainton's Manual.—R. Hind, 25, Gillygate, York, 19*th November*, 1864.

NOTES ON COLLECTING, MANAGEMENT, &c., (*LEPIDOPTERA*).

BY H. G. KNAGGS, M.D.

THE CATERPILLAR STATE.

COLLECTING (*Continued from page* 195.)

Fruits, seeds, &c., which fall before they have ripened, unless the weather be very tempestuous, generally contain some larva, frequently of the family *Tortricina*, as *Carpocapsa pomonana* (apples); *C. funebrana* (plums and sloes); *C. grossana* (beech masts); *C. splendana* and *juliana* (acorns). These should be collected at the time of falling as quickly as possible, for the larvæ soon quit the fruit to spin up elsewhere. Other seeds, flower-heads, &c., even though presenting no outward sign, are so apt to contain larvæ, that the simple fact of their presence may be looked on as an *indication* of the probable inhabitants, as *A. gentianana*, in the pith of teasel heads; *Eup. roseana*, in the seeds of the same; *D. pisana* and *nebritana*, in pea-pods, and many others. All that is necessary is to collect the catkins, fruits, seeds, and pods, and place them in a suitable breeding cage, such as a common scaleboard hat-box, into the lid of which a piece of muslin has been inserted for ventilating purposes.

Tumid twigs, rough unnatural appearance of bark, holes in the boles and branches of trees, &c., usually denote the presence of larvæ, sometimes of *Lepidoptera*, sometimes of *Diptera*, sometimes of *Coleoptera*; at one time of a wood feeder, at another of a bark feeder. As examples, let us take the unmistakeable signs of the wood-boring *Cossus* in its ravages on willows and various other trees, and *Zenzera* in ash, privet, and lilac; *Trochilium apiforme* and *bembeciforme* in aspen, sallow, &c.; *tipuliforme* in nodulated twigs of currant-bushes; *cynipiforme* in the bark of unhealthy looking oaks; *sphegiforme*, *scoliæforme*, and *culiciforme* in birch* and alder trunks; *myopæforme* in bark of apple and pear trees; *formicæforme* in osier twigs; besides several *Tortrices*, such as *S. Wæberana* (apple); and *Ephestia pinguedinella* (ash), which, by roughening the bark, and ejecting their "frass" at the openings of their galleries, betray their whereabouts.

The smell, as of the *Cossus* larva, so strongly inherent in the animal (for aught I know existing in other larvæ), would indicate its proximity, and the hunter, if it please him, may "follow up the scent."

The *sound* of the jaw-work of the larger larvæ, as those of the *Sphingidæ* for instance, or of falling frass, might assist us also to their situations.

Webs, whether on trees, bushes, or herbs, frequently indicate the position of a colony of larvæ; the collector having satisfied himself that the contained larvæ are worth the trouble of rearing, should take nest and all, as the web seems in some measure to be necessary to the welfare of the species, affording as it does a place of retirement for the larvæ when not engaged in the work of defoliation.

Single silken threads hanging from branches, or wherever else observed, often have a larva at the end of them; when they extend to the ground, the threads should be jerked up so as to lift the larvæ, or they may be tracked to their destination.

Cast-off skins are sometimes noticed on the leaves of plants, &c.; when the skins are soft and fresh the larvæ are usually not far off.

But **frass** (a word derived from the German, and used to express the pellets of excrement,) next perhaps to the abnormal appearances of the plants themselves, is one of the surest signs to go by. Upon the sand hills, chalky places, paths, roads, or other places where ground vegetation is scanty, we may frequently find these evidences, and from them, bringing a knowledge of the laws of gravitation to our help, make a shrewd guess at the position of the larva; we can, thereby, also form an opinion as to the size of the larva, and even in some cases as to the very species (e. g. *D. galii* and *M. stellatarum*), while from its fresh or stale appearance we may calculate the chances of the larvæ being in the vicinity; by this, aided by trails, often has the larva of *Deilephila* been successfully tracked.

The Trails and burrowings of larvæ as of *Deilephila*, *Agrotis*, and others, indicate the direction which they have taken, and these too may sometimes be followed up with advantage.

The *presence of ichneumons* and birds, such as Tomtits, Tree-creepers, &c., would also point out that their prey, and our game, was in the neighbourhood.

* *Culiciforme*, and perhaps its birch and alder-feeding allies also, seem to prefer the stump of a tree which has been felled, so that it is advisable to search these stumps on the next year after the trunk has been cut down; and here we have another *indication*, for the mouth of the gallery in which the larva is feeding presents the peculiar appearance of being capped over, as it were, with agglutinated particles of wood. N.B.—The inner bark is the favoured spot with *culiciforme*.

The **situations** *and modes of concealment* of larvæ vary considerably, even in individuals of the same species, according as they happen to be feeding, moulting, or reposing, some remaining attached to their food, others forsaking it at times to shelter elsewhere, the latter being the rule with the largest proportion of night-feeding *Noctuæ*.

Of Butterfly larvæ some, as those of the well-known "garden whites," feed and repose openly and exposed upon their food-plants; others, which are more or less onisciform in shape and green in hue, generally attach themselves in repose to the mid-ribs on the under-sides of leaves, where they should be sought for on their special plants; a third set conceal themselves when at rest under the lower leaves of their food-plant, or on neighbouring objects; while the gregarious larvæ of some of our *Vanessidæ* remain more or less hidden in their webs.

Sphinx larvæ: some of these feed openly, and usually hold firmly to their positions, not forsaking their food while resting; I may instance those of the *Smerinthi;* others, as the larvæ of *A. atropos* and *S. convolvuli*, hide away under sods, &c., when not occupied in feeding; but the internal wood, bark, and stem-inhabiting *Sesiidæ*, of course, do not quit their tunnelled habitations.

Bombyces have various habits in the larval state, some, as the low-plant-feeding "tigers" and "ermines," feed openly in the day-time, and especially during the hours of morning sunshine, hiding away under leaves, sods, stones, or amongst rubbish, when not so engaged; some clinging closely to stems, twigs, or leaves; several colonizing in webs, and a few feeding internally, &c.

Geometra larvæ, whether feeding, reposing, or moulting, usually remain fixed to some part of their food-plant, as also do the *Pseudo-bombyces;* those of *Clostera*, however, spinning together leaves as a means of protection and concealment.

The larvæ of Noctuæ are more inclined to roam when they are not exerting their masticatory powers; on such occasions they may not unfrequently be found sheltering under stones, logs, sods, rubbish, loose bark, in the chinks of bark, amongst dead leaves or ground herbage, in cut-off stems of reeds, and sometimes below the ground, those of *Leucania littoralis*, *Agrotis ripæ* and *præcox*, actually burrowing to the unusual depth of seven or eight inches in the sand; others again live between leaves, as *Cymatophora*, *Tethea*; in catkins, as young *Xanthiæ*; in capsules, as *Dianthæciæ*; a third class feeding openly and in the bright sunshine, as the *Cucullias;* and, while not a few, as the genera *Nonagria*, *Hydrœcia*, *Miana*, &c., are to be met with in the stems of *Graminaceæ*, *Cyperaceæ*, *Cynarocephaleæ*, and other families of plants, *Bryophila* constructs artful lichen-covered places of retreat, and so on.

The instinct and skill frequently displayed by larvæ in selecting such situations as will, from colour or form, render them less open to obervation is at times remarkable, and necessitates very careful searching on the part of the hunter; he will, however, be most materially assisted in his search by blowing upon the branch at first gently, and with net held beneath, for such larvæ as drop under this kind of treatment; and afterwards more forcibly, by which the tightly-holding larvæ are compelled instinctively to curl up their segments, erect themselves, or otherwise alter their postures, and so, perchance, betray their presence.

Examples of caterpillars "mimicking" different portions of their food and other objects are by no means of uncommon occurrence. That of *S. populi* greatly

resembles a leaf of willow, upon which it is frequently found feeding; the respective larvæ of *G. quercifolia*, *P. populi*, and *E. fusciaria*, when in repose lie at full length, flatly pressed upon a branch or twig, to which, moreover, their colour often so closely approximates, that they are with difficulty discovered, the apparent tumidity of the twig being readily passed over; the larva of *Cidaria silaceata* greatly resembles the seed-pod of the *Epilobium*, on which it feeds; that of *G. papilionaria* looks, in repose, much like a birch catkin. Many geometric larvæ assimilate in a wonderful degree to the colours and forms of the twigs, stems, or leaf-stalks of their food-plants; and Mr. Birchall has remarked that the coiled up larva of *Lithosia caniola* is not unlike a little snail-shell, which is abundant in its native haunts.

And so, the collector's hope of becoming a successful larva-hunter lies, in a great measure, in his aptitude for acquiring a kind of eighth sense—a power of *discriminating* these living animals from their vegetable environings—a power only to be obtained by experience in the hunting ground.

(*To be continued.*)

Entomological Society of London.—F. P. Pascoe, Esq., F.L.S., President, in the Chair.

Edward Saunders, Esq., of Hillfield, Reigate, was elected an Ordinary Member of this Society; Mons. H. H. Hays van de Lier, of Delft, was elected a Foreign Member; and Mr. J. A. Brewer, of Newgate Street, London, was elected an Annual Subscriber to the Society.

Mr. Bond exhibited specimens of *Ephestia ficella* bred from larvæ, which fed upon cork; also of the new British *Depressaria olerella*, lately detected by Mr. C. G. Barrett near Haslemere.

Mr. Bond also exhibited specimens of the curious variety of *Hepialus humuli* from the Shetland Islands, noticed by Dr. Knaggs in the Entomologist's Annual for 1865, p. 98.

Mr. A. R. Wallace exhibited a fine series of Longicorn beetles collected at Penang by Mr. Lamb; out of 200 species captured, nearly 70 were new to science. The generic forms were frequently similar to those discovered by Mr. Wallace in Borneo and at Singapore, whilst others seemed to represent the Siamese type.

The Rev. Hamlet Clark (on behalf of the Rev. O. P. Cambridge, who was present as a visitor) exhibited a collection of *Lepidoptera*, *Hymenoptera*, and *Orthoptera*, from the banks of the Nile; according to the observations of Mr. Pickard-Cambridge insect life was not abundant in Egypt, for of the *Microlepidoptera* he had caught every specimen he saw.

The Secretary read a letter from Mr. Roland Trimen, in which the writer pointed out that *Charaxes Argynnides* of Westwood was identical with the previously described *Nymphalis Jahlusa* of Trimen.

The Secretary also stated that a considerable number of specimens of *Dasypolia Templi* had been captured during the past autumn near Huddersfield by the Rev. J. Collins.

Mr. Frederick Smith communicated a paper, entitled "Wasps and their Parasites in 1864," by S. Stone, Esq., F.S.A.; after which, Mr. Smith made some remarks on the various diseases prevalent amongst Wasps.

NOTICE OF AN UNDESCRIBED SPECIES OF THE GENUS *DEPRESSARIA*.

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

Early in June, 1863, I received from my friend Herr Julius Lederer, Vienna, some larvæ of the genus *Depressaria*, which he at the time supposed should be referred to *D. quadripunctata*, of Wocke. They were feeding on the leaves of *Siler aquilegifolium*, turning down a small portion of the edge of the leaf. From these larvæ I made a description, and had one figured by Miss Wing, but I was not successful in rearing any of the imago. Herr Lederer wrote to me afterwards that from the nine specimens he had bred, it would appear not to be *D. quadripunctata*, but most probably a new species. Last summer towards the end of June, I again received a bounteous supply of these *Depressaria* larvæ, from my liberal correspondent, and from them I bred nearly 20 specimens.

Having such a fine series of an undescribed species before me, the temptation to describe it is very great, and having heard lately that Herr Lederer has not himself described the insect, and is quite willing I should undertake the task, I cheerfully do so, adopting the name of *silerella*, which has been given to it in Herr Mann's latest list of duplicates.

Depressaria silerella is most nearly allied to *adspersella* and *thapsiella*, differing from both however in the terminal joint of the palpi being entirely pale yellowish; in *thapsiella* the terminal joint of the palpi is dark at the base, and with a ring in the middle, and the extreme tip black; *adspersella* wants the dark base, but has the medial ring, and the extreme tip black or blackish. *Depressaria silerella* also differs from both these species in the position of the conspicuous black spots near the centre of the anterior wings: these are four in number;—one just below the sub-costal nervure before the middle, corresponding to the first spot in the other two species, and another obliquely beyond this on the fold, which has no corresponding spot in *adspersella* and *thapsiella*, though a darker scale or two may be noticed on the fold about the same place; on the other hand both *adspersella* and *thapsiella* show a very conspicuous black spot obliquely beyond the first, on the disc considerably above the fold. Then in *silerella* follows the third spot on the disc a little beyond the middle; beyond which, a little lower down, is the fourth spot, much less distinct, and corresponding to the dark semi-ocellated spot in the two other species. The form of the anterior wings is rather more truncate than in *adspersella*, but very similar to what we find in *thapsiella*. Lastly, *silerella* agrees in size with *thapsiella*, being smaller than *adspersella*.

Expansion of the wings, 9—11 lines; head pale greyish-ochreous; face paler; palpi with the second joint ochreous beneath, externally greyish-fuscous, the terminal joint entirely pale yellowish; antennæ dark fuscous. Anterior wings pale greyish-ochreous, with a faint violet gloss near the base towards the inner margin, sparingly clouded with pale grey; at the base of the costa is a minute dark spot, (not nearly so large as the black spot we see in *adspersella*), and on the hind margin is a row of dark spots; near the base is a short oblique dark streak from the inner margin; the position of the conspicuous black spots is as follows: — one high up on the disc before the middle, one on the fold obliquely beyond, and one on the disc a little beyond the middle, these three spots almost forming an equilateral triangle; a little beyond the third spot, and lower down, is a smaller and less distinct spot, (almost in a line with 3 and 1); cilia whitish-ochreous; posterior wings pale grey, with whitish-grey cilia.

The larva I have thus described:—Length, 9 lines. Green: head black; second segment brown, shading to black-brown posteriorly and at the sides; front of the incision between the third and fourth segments reddish-brown; ordinary spots small and black. When full fed there is a faint appearance of darker bands across the middle of each segment, most conspicuous at the sides, where, when the larva is near pupation, they almost form blotches.

Feeds on *Siler aquilegifolium* in June, near Vienna.

DESCRIPTION OF A GENUS & SPECIES OF *BRACHELYTRA* NEW TO BRITAIN.

BY DR. J. A. POWER.

I have the pleasure of adding the following most interesting genus and species of *Brachelytra* to our Fauna.

BORBOROPORA, Kraatz, Berl. Ent. Zeit., vi., 404 (1862).

Saulcyi, Kraatz (loc. cit.).

Borboropora has a close external resemblance to *Scopæus*, but its structural affinities are with the *Alcocharidæ*. The pedunculated head, and four jointed anterior tarsi, bring it near *Falagria;* to which Dr. Aubé's original specimen was at first referred by Kraatz himself.

From any known genus of the group it may be distinguished by the very large sub-quadrate head, and the peculiar formation of the oral organs; the mandibles being very slender and produced, and the right one having a large strong tooth at the base. The labial palpi are sub-acuminate at the apex.

B. Saulcyi somewhat resembles *Tachyusa sulcata* and *uvida;* and with the exception of these, or a species of *Scopæus*, I do not know any British *Brachelytrous* insect with which it can for an instant be confounded.

The specific description, as given by Kraatz, is as follows :—

> Depressed, nigro-piceous, shining, with a grey pubescence. Elytra and legs piceous. Head broad, transversely sub-quadrate ; forehead deeply channelled. Thorax narrower than the head and elytra, deeply foveolate at the base, and obsoletely channelled. Abdomen very finely punctured. Length, $1\frac{1}{2}$ lin.

Only seven specimens are known to exist in the Continental collections. The first was taken by Dr. Aubé, near Paris; and subsequently, six specimens were taken by Herr Fuss, in Germany, under half-dried dung and the carcase of a toad.

I took one specimen by sweeping at Mickleham, on the 13th July, 1862; on the same day on which I took my first specimen of *Oxypoda glabriventris*, recently described by Mr. Rye. I have made many unsuccessful attempts to determine it; and, at last, Mr. Crotch took it with him to Paris, where Dr. Aubé at once recognized it.

52, Burton Crescent.

NOTES ON THE SOUNDS EMITTED BY INSECTS OF THE GENUS *SETINA*.

BY M. A. GUENEE.

(*Translated from the Annales de la Société Entomologique de France, 4me série, 4me tome*, 1864, *3me trimestre.*)

In "Etudes sur le genre *Lithosia*" inserted by the Society in its Annals for 1864, I have brought forward the considerable differences which separate the genus *Setina* from *Lithosia*, properly so called. Among these differences, which the study of exotic species has done nothing but since confirm, I have especially insisted on the presence, in the genus *Setina*, of a particular organ which no one had yet observed, and which consists of two large tympaniform vesicles situated in the pectoral region. I added that I thought Nature had not uselessly created these curious appendages, and that they would be used to produce a sound analagous to that which has been already remarked in *Chelonia pudica*; promising to verify my conjecture on the living insect, and to make known to my colleagues the result of my researches.

The provincial excursion of the Society in the valley of Zermatt, in which I congratulate myself on having taken part this year, has put it

into my power to thoroughly inform myself on this subject, two species of *Setina* being widely distributed there. I have been able to assure myself that, as I had supposed, the *Setinæ* produce, by means of the organ that I have characterized, sounds very easy to perceive; and one of our colleagues, M. Constant, who on his part has verified it, even indicated to me the means of causing these sounds at will. In order to do that, it suffices to press the insect softly between the thumb and finger (in the way that one would do in order to suffocate it in the net), and to place it to the ear. One hears then distinctly a sort of crepitation, consisting of repeated strokes, which imitate slightly the ticking of a watch, or the pulsations of *Anobium*, rather than they resemble the stridulations of grasshoppers or crickets, with which the analogy would, however, appear most striking at first sight. There can be no doubt that, when the creatures produce these sounds in liberty, and during their flight, they make them heard yet more distinctly; since they are not then stunned by the pressure: and that the vibration of the drums makes itself then heard with all its sonorousness, especially in the silence of night.

The male alone appears able to emit this sound, or, if you like, this song; not that the female is deprived of the organ in question, but in this sex the tympaniform vesicle is much smaller, depressed, and reduced, so to speak, to a rudimentary condition. I dare not, however, affirm that it is totally deprived of the faculty of producing sounds, perhaps, perceptible to the delicate organs of these insects.

However, what is the use of these songs in our *Setina?* Is it a call for the union of the sexes? This is the first supposition which presents itself to the mind, and would appear perfectly justified if it were the female that possessed it, because she has, as we know, the wings so much reduced in proportion to her enormous abdomen, that she is almost deprived of the faculty of flight. But we have just seen that it is, on the contrary, the male that is provided with the means of call, though with it the means of locomotion are complete. Besides, this supposition would not be capable of being applied to the other *Lepidopteron* furnished with these drums—*Chelonia pudica*, the female of which has the wings as much developed as the male. We must, then, seek another explanation; and I avow that, for my part, I am not able to imagine anything plausible.

Let us now examine by what means the sound is produced; this is still a question not altogether plain to my eyes, and I much fear that it will remain as long disputed as that which operates *à propos* of

Acherontia Atropos. Here there is no organ provided with spines or teeth, by the aid of which the animal is able to cause a friction of any power on the resonant vesicle. The foot is completely unarmed in all its parts, the haustellum almost absent, the antennæ too soft to cause any compression; the forehead flattened and simply roughened, has not, as in that of *Chelonia pudica*, those strong corneous teeth, which, however, cannot be brought in contact with the musical organ. No cause, then, appearing externally, it is evidently in the interior of the drum that the bow, or rather the clapper, which produces the sound must work; for, if we may judge from its nature, it will be produced by percussion, rather than by friction. If we open the vesicle, we see that it is separated into two parts by a membranous division: the right cavity is absolutely empty; the left, deeper, it is true, and more difficult to explore, appears to me, however, to contain no particular organ, and in any case, no body that is able to be used as a hammer. One must then renounce the supposition of a percussive body. There remains the action of the air; and for my part, without asserting anything, this is the mechanism which appears to me the most probable. The membrane which covers the apparatus is thin and flexible, and at the same time of the consistence of talc or parchment; one is able to bend it at pleasure, and as soon as the pressure placed upon it ceases, it resumes its original position with elasticity. It is, then, I think, by rumpling (*froissement*) that the sound is produced. It may be that the insect, contracting its pectoral organs, bends and unbends the membrane alternately; it may be, which to me appears the most probable, that it is endowed with the means of causing momentary emptiness—at any rate partially—in the cavity of the apparatus, by inhaling a portion of the air that it contains, which being made to re-enter the membrane, has the effect of inflating it anew by a sudden expiration. Every one is able, as we know, to cause with the mouth these two opposite movements in a dry bladder, and to produce, by this means, a dry and piercing noise, quite analagous to that of the *Setina*. I leave these suppositions to the reflections of Entomologists.

[Has any British Entomologist ever observed these sounds in *Setina irrorella?* The vesicles so minutely described by M. Guenée are very conspicuous in that species, and I have seen them also in specimens of *S. aurita* and *S. Andereggii*, which I owe to the kindness of M. J. Fallou. May I ask that Entomologists will follow up this most interesting question, and endeavour to ascertain, if possible, whether M. Guenée's supposition, as to the means by which the sound is produced, be correct?—R. McLachlan.]

AN ESSAY TOWARDS A KNOWLEDGE OF BRITISH *HOMOPTERA*.

BY THE REV. T. A. MARSHALL, M.A.

(*Continued from page* 201).

2. Carinæ faciales plus minus conspicuæ.

¶ Pronoti carinæ laterales rectæ, marginem posteriorem attingentes.

5.—*Delphax notula*, Germ.

I.—*Forma macroptera.* Color variat. Caput testaceum, genis utrinque nigro bimaculatis. Pronotum pallidum, disco sæpe obscurius, puncto utrinque ad angulos anteriores nigro. Scutellum nigro-fuscum, sub-rufescens, apicem versus late depresso-foveatum. Metathorax albo nigroque varius. Abdomen nigricans, infra et ad latera plus minus fusco-testaceum. Hemelytra abdomine multo longiora, apice quam basi nonnihil latiora, hyalina, decolorata, nervis inconspicuis, macula nigra oblonga in ipso angulo posteriore clavi sita. ♂ ♀ *D. lineola*, Stål. Öfv. 1854, p. 190.

II.—*Forma brachyptera.* Hemelytra abdominis 3^tiam. partem non excedentia, longitrorsum fusco vittata; nonnunquam tota fusca, vel etiam nigricantia. Alæ nullæ. ♂ ♀ *D. truncatipennis*, Stål. l.c. See Flor. R. L., 2, p. 45.

The black dash on the inner margin of the transparent hemelytra, immediately distinguishes this species, in its winged form. With the brachypterous variety I am unacquainted. I took one ♂ and two ♀ at the same time and place as *Delphax pallidulus*, No. 3.

¶¶ Pronoti carinæ laterales incurvæ, ante marginem posteriorem abruptæ.

a. Hemelytrorum nervi albi, maculis nigris rotundis notati.

6.—*Delphax limbatus*, Fab.

I.—*Forma macroptera.* Testaceus; abdomine, et sæpe scutello, fuscis. Hemelytra abdomine longiora, apice dilatata, albo-hyalina, nervis melanostictis, fascia incurva post medium, marginem interiorem vitante, et nervorum apicibus, fuscis; macula etiam disci, et altera ad marginem interiorem apicali, indeterminate et pallide fuscescentibus. Pedes vel testacei, vel fusco-varii, vel etiam toti fusci. ♂ ♀.

II.—*Forma brachyptera.* Hemelytra abdomine multo breviora, alba, basi et apice plus minus infuscata; nervi, &c., ut in præcedente. Alæ nullæ ♂ ♀. Long. 1¼-1½; alar. exp. 3¼ lin.

Fab., Rhyng., p. 84. Flor., R. L. 2, p. 85. *D. signifera*, Boh., Öfv. 1845, p. 164: *palliata*, Boh. Handl. 1847, p. 56; *anceps*, H. Sch., Nom. Ent. p. 65; *pictipennis*, Curt., B. E. 657, No. 7 (forma macropt.)

This elegant little species is very common on rushes in swampy fields throughout the country. But, among hundreds which I have seen, only one, found in Birch Wood, belongs to the macropterous variety. Either form may be readily known by the distinct black dots upon the white portion of the hemelytra.

b. Hemelytrorum nervi nunquam maculis discoloribus notati: aliquando obsoletius impresso-punctati.

* Frons apice, scutellum basi, nigro bimaculata.

7.—*Delphax nasalis*, Boh.

I.—*Forma brachyptera*. Testaceus, pallidus. Frons supra ipsum clypeum utrinque nigro maculata. Oculorum orbita postice, scutelli maculæ 2, macula etiam laterum supra coxas medias, et alia in coxis posticis, nigra. Abdominis segmenta basi supra plus minus infuscata. Tarsi apice nigri. ♂ ♀.

II.—*Forma macroptera*. Hemelytra hyalina, nervis pallide brunneis; nervus marginalis extus, basi excepta, fuscus. Scutellum aliquando nigrum. Abdomen supra nigrum, subtus testaceum, lateribus nigro maculatum, vel totum nigrum, segmentis testaceo marginatis. ♀.

Var. *a*.—Niger, capite pedibusque testaceis. Frons haud nigro maculata. ♀. Long. ♂ 1½; ♀ 2 lin.

Boh., Handl. 1847, p. 41. Stål., Öfv. 1854, p. 197. *D mutabilis*, Boh., Handl. 1847, p. 43. *D. bicarinata*, H. Sch., D. Ins. 143, 21.

The frontal carinæ are very feebly expressed, or entirely absent, except towards the vertex. The black spots above the clypeus are sometimes confluent, and sometimes wanting. The apex of the scutellum is occasionally black.

Not common, but found in Darenth Wood in July (the brachypterous ♀ only).

** Frons et scutellum haud nigro bimaculata.

† Frontis carinæ mediæ 2, supra ipsum clypeum conniventes.

8.—*Delphax albomarginatus*, Curt.

I.—*Forma brachyptera*. Niger, nitidus; capite, pronoto, scutello, hemelytrorum humeris, testaceis. Carinæ frontales, pronoti basis

late, scutelli limbus anguste, hemelytra apice latissime, albida. Pedes fusco-testacei, femoribus plus minus nigricantibus, tarsis apice nigris. ♀ totus flavo-brunneus, abdominis segmentis nigro variis. Pronotum albidum, antice pallide testaceum. Hemelytra testacea, apice albo. ♂.

II.—*Forma macroptera.* Hemelytra abdomine multo longiora, hyalina, sub-infuscata, nervis pallide brunneis. ♀.

Long. ♂ 1¼; ♀ 1¼-2 lin.

Criomorphus albomarginatus, Curt., Ent. Mag. 1, p. 195. *Delphax mœsta*, Boh., Handl. 1847, p. 59. Flor., R. L. 2, p. 80. Stål., Öfv. 1854, p. 196; *D. collaris*, id., ib. 1853, p 175.

This elegant and scarce species is at once distinguished by the medial frontal carina, which is *forked just above the clypeus*, the two branches thence continuing parallel to the vertex. The two exterior carinæ curve outwardly in the middle, and converge again slightly between the eyes. All the carinæ are yellowish-white, bordered with black, the ground colour of the face being testaceous brown. Curtis appears to have founded his genus *Criomorphus* upon a brachypterous ♀, for he says the abdomen behind is conical.

I have not met with this species, but two brachypterous males are in the collection of Mr. Douglas. I have no knowledge of their locality in this country, nor does Curtis indicate that of his specimen.

†† Frontis carina 1 media, ad altitudinem antennarum fere baseos bifurcata.

9.—*Delphax hamatus*, Boh.

I.—*Forma brachyptera*, ♂. Pallide testaceus, subtus cum abdomine niger. Segmenta duo penultima supra rufo-testacea. Segmentum genitale maximum, profunde emarginatum, in forcipem dehiscens, nigrum, nitidum, supra medio flavum. Frons sæpius flava carinis albidis, nigro marginatis; vel nigra, carinis pallidis. Hemelytra abdomine dimidio breviora, sub-hyalina, niveo marginata, macula suturæ apicali elongata fusca. Tarsi apice fusci. ♀. Abdomine testaceum, plus minus nigro varium.

II.—*Forma macroptera*, ♂ ♀. Hemelytra abdomine longiora, hyalina nervis fusco-testaceis, extrorsum obscurioribus. Costa basi pallida, circa membranam fusca. Macula in clavi angulo interiore oblonga nigra. ♀ paulo obscurior quam in forma I.

Long. ♂ 1¼-1½; ♀ 1½-1¾ lin.

Boh., Handl. 1847, p. 45. Flor., R. L. 2, p. 51. *D. notula*, H. Sch., D. Ins. 143, 19. *D. striatella*, Stål., Öfv. 1854, p. 191.

The ♂ is remarkable for the shape of the genital segment, which is very large, and terminates in a blunt, gaping forceps, of which the extremities are slightly deflexed. The medial frontal carina is *bifurcate at about the height of the insertion of the antennæ*. The two exterior carinæ are straight and parallel to the eyes, after which they are slightly approximated,

I have two ♂ and eight ♀, obtained from Birch Wood and the neighbourhood of Esher. They are all brachypterous; but one ♀ has the hemelytra ⅔ as long as the abdomen, and rounded more narrowly at the apex, thus presenting a transitional form.

(*To be continued*). 25 /.

EXTRACT FROM M. ALLARD'S PAPER ON SITONES, &c.

BY E. C. RYE.

(*Continued from page* 208.)

I shall now notice the different species in the order in which M. Allard arranges them, and must refer those who require further information to the late Mr. Walton's paper on *Sitona* (ex. Ann. & Mag. of Nat. Hist., 1844, p. 66 et seq.); to which, however, M. Allard does not make any specific reference in his notes.

The characters given in the table above at p. 206 will render it unnecessary for me to give any lengthened description.

S. GRISEUS, Fab. This species varies considerably in size; but its greater length, elytra somewhat suddenly contracted at the apex, longitudinally impressed thorax, and broad grey sutural band, at once distinguish it from all its British allies. It is abundant in sandy places on the coast, especially in Lancashire, and is sometimes found inland. According to M. Allard it lives on furze.*

S. FLAVESCENS, Marsham. This species closely resembles *puncticollis*, but is lighter in colour; the elytra are broader and shorter, and less regularly rounded at the extremity, being more contracted in their lower third. The entire insect is also more closely and uniformly clothed with silky scales. M. Allard gives as a diagnostic character the presence of three white points on each side of the middle band of the thorax, corresponding to two white analogous points on the vertex; but as *puncticollis* exhibits a similar marking (in a decidedly stronger de-

* An allied species, *S. gressorius*, Germ., occurs generally in Europe, and may be found here. It was re-united by Schönherr to *griseus*, but differs in being larger, with the head less inclined, and the eyes more prominent; the head and thorax together are longer in proportion, and the latter has a *narrow*, straight, longitudinal, white line, exactly in the middle. The punctuation of the thorax is stronger, and the striæ of the elytra are more evident.

gree), I do not see how these points can be of help. The male is rather narrower than the female, and its thorax appears to be a little more elongate. This insect varies somewhat in depth of colour, but is usually greyish-yellow.

Common in clover and lucerne fields.*

S. SUTURALIS, Steph. The smaller size, more depressed eyes, and longitudinal bands of colour, distinguish this species from *flavescens*, with which it agrees in many points of structure. Its depressed eyes, metallic hue, and shorter, more robust, and less parallel elytra separate it from *lineatus;* and the very prominent eyes of *tibialis* (the only other species at all like it,) at once distinguish that insect from *suturalis;* the latter is always metallic, varying from greenish to coppery or golden-purple, the suture being considerably lighter, and the tibiæ and antennæ testaceous.

According to Allard it feeds on furze. It occurs near London in damp meadows, and I have taken it in wet places in Derbyshire.

S. SULCIFRONS, Thunb. Somewhat similar in build to *suturalis*, but smaller, and readily distinguished by the strong depression between the eyes, and the scantier scales; indeed, the small size and frontal excavation will serve to separate it from all the other species. It is slightly metallic, sparingly clothed with scales (having always a somewhat abraded look), and with short elytra. The legs are sometimes entirely ferruginous.

Abundant in lucerne, &c., especially on the south coast.

S. TIBIALIS, Herbst. This species varies exceedingly in size and colour, and also somewhat in shape, the males being narrower and more cylindrical. The commonest form is about the size of *suturalis*, oblong, very convex; clothed with very short, inconspicuous bristles (only visible under a strong lens), and brownish-grey, somewhat metallic, scales, variegated by three not very well defined longitudinal bands of silvery, greenish, or slightly coppery scales on the thorax and elytra. The tibiæ are usually testaceous; but the legs are sometimes uniformly

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* An allied species, *S. longicollis*, Schön., occurs in temperate Europe, as far north as Paris. It resembles a *small* specimen of *flavescens*, but differs in having the furrow on its forehead deeper, the eyes a little more prominent, and the thorax evidently more elongate, and more distinctly punctured. It has, moreover, no white spots on the thorax or head, and the punctuation of the striæ of the elytra is stronger.

Another allied species, *S. longulus*, Schön., is found in North Germany, &c. It resembles *S. longicollis*, but its thorax is rather shorter, narrower at the base than at the apex, and unequal, with a slight double impression on each side of the median line. The elytra are longer, and very decidedly narrower, with the base truncate; they are a little contracted at the shoulders, which are rounded, and are thence slightly enlarged, again contracting in their lower third.

black. The eyes are very prominent. In some varieties the shape is more elongate and parallel, and in others the bands of colour are more defined than in ordinary specimens.

It is very common on furze all over the kingdom.*

S. LINÆELLUS, Gyll., Ins. Suec., iii., p. 281 ; Schön. ; Allard.

This insect is included in Mr. Crotch's catalogue of British Coleoptera. According to Allard, it appears to have considerable likeness to small specimens of *crinitus*, differing from that species as follows :— the eyes are less prominent ; the thorax is usually more dilated in the middle, with its punctuation (though strong) finer and closer ; the elytra are slightly contracted towards the base, thence a little broader to the middle, more distinctly and strongly punctured, with the striæ more deeply impressed, the interstices being a little convex. The upper surface is brown (except the scutellum, which is white,) with a white spot, more or less prolonged, at the origin of the 5th, 6th, and 7th interstices. The two or three last interstices, and the under-side, are also white. Lastly, instead of the erect white bristles of *crinitus*, the present species has merely some small and extremely short hairs *at the hinder extremity* of the elytra. M. Allard believes this insect to be thoroughly boreal, having only seen it twice ; on the first occasion from Siberia, and on the second from Sweden.

I have certainly never seen any insect answering to this description ; the specimens occasionally seen in collections under the name of *linëellus* being always vars. of *tibialis*. Mr. Walton remarks that he has carefully examined two foreign specimens from Gyllenhal himself, four from the collection of Billberg, and five from Schönherr, and that they were all, in his opinion, examples or varieties of *tibialis*, with which I opine that so close an observer could not possibly have confounded the insect above characterized. He also adds that Dr. Germar had informed him that he believed *linëellus* to be a small var. of *crinitus*.

S. WATERHOUSEI, Walton.

setosus, Redt.

In the extreme prominence of its eyes, this species bears some analogy to *S. cambricus ;* from which, however, it may be readily distinguished by its lighter colour, more parallel thorax and elytra, and

* *S. languidus*, Schön., found in Austria, is closely allied to the form *striatellus* of *tibialis*, but is narrower, the thorax is larger behind than in front, and with coarser punctuation ; the head is more deeply sulcated, and the elytra more strongly punctate-striate, the striæ being more evident at the apex of the elytra.

S. arcticollis, Schön., has been taken near Paris ; it also is allied to *tibialis*, but differs in having the forehead and rostrum more strongly excavated, and the thorax smaller, almost quadrate, black, nearly scaleless, and very strongly and rugosely punctured.

more erect and setose pubescence. It has considerable affinity to *S. crinitus;* differing from that insect in its larger size, darker colour, more prominent eyes, more broadly grooved rostrum, broader thorax, coarser punctuation, more sparse clothing of scales, and in the alternately elevated interstices of its elytra. It is grey beneath; and on the upper-side black, with rather sparingly distributed brownish, slightly coppery, or greenish-grey scales. The thorax has a medial and two lateral lines, decidedly lighter in colour, which are, as it were, continued on the elytra (but in a more indistinct degree). The sutural and alternate interstices are somewhat elevated, variegated with slight transverse bands of dark brown or blackish scales, and clothed with sub-erect short hairs. The legs are not always entirely testaceous, as mentioned by Walton; but the tibiæ are of a rather darker testaceous than in *crinitus*, and the femora are usually distinctly infuscate, or even blackish; examples however, occur in which the legs are wholly pale.

Besides the specimens mentioned in Mr. Walton's paper (in which no certain locality is given), this insect was taken in some numbers by Mr. Walton and Mr. Stevens near the "Lovers Seat," Hastings, and has recently been found in quantity by Dr Power, on *Lotus corniculatus* on the South Devon Coast.

S. CRINITUS, Oliv. Somewhat resembles *S. tibialis*, but is lighter in colour, less convex, and with longer elytra, which are distinctly clothed with slight erect hairs. The darkest specimens are ochreous grey, with four broad fuscous lines on the thorax, in a manner continued on the elytra; the two middle lines forming a broad mark near the scutellum, and then becoming narrower along the suture; these bands are slightly mottled with darker colour. The lightest examples are pale ochreous-grey, exhibiting scarcely a trace of the above markings, and with the legs entirely testaceous, although the femora and apex of the tarsi are usually fuscous. Intermediate conditions are of course to be found, some of which have an isolated darker mark on the elytra.

It is common on tares, especially on the south coast; and may be readily known in the sweeping net by its peculiar chalky look.

(*To be continued.*)

A SYNOPSIS OF THE *SPHINGIDÆ* OF EUROPE.

BY W. F. KIRBY.

(*Continued from page* 211.)

Genus 5.—PERGESA, Walker.

Body moderately stout, antennæ slender, filiform. Wings moderately broad, forewings acuminated, hind-margin rather oblique, very

slightly undulating, its fore-part very slightly concave. Hind-wings rounded at the tips.*

P. PORCELLUS: common in collections, generally distributed.

Genus 6.—DEILEPHILA. Nine species.

A. Head and thorax with a white lateral streak.

B. Abdomen with a row of white spots on the back.

C. Margins of fore-wings paler than the ground colour.

D. Fore-wings with white lines. D. LIVORNICA.

DD. Fore-wings without white lines. D. DAHLII.

CC. Margins of fore-wings of the same colour as the ground colour. [D. ZYGOPHYLLI.

E. Inner margin broadly white. D. TITHYMALI &

EE. Inner margin concolorous. D. GALII.

BB. Back of the abdomen not spotted.

F. Abdomen with a white basal fascia on segments 4 to 6, interrupted in the middle.

D. EUPHORBIÆ & D. NICÆA.

FF. Abdomen with segments 4 to 6 unspotted.

D. HIPPOPHÄES, and the false species D. EPILOBII, Bd., and D. VESPERTILIÖIDES, Bd.; the former of which is a hybrid between *D. vespertilio* and *D. euphorbiæ*, and the latter a hybrid between *D. vespertilio* and *D. hippophäes*.

AA. Sides of the thorax not white. D. VESPERTILIO.

D. LIVORNICA. South Europe. Tolerably common in collections.

D. EUPHORBIÆ. Generally distributed; common in collections.

D. NICÆA, De Prunner, 3″ 3‴-3″ 8‴. Fore-wing grey, base white, next to which is a dark green band, slightly bordered outside with white. Near the centre of the costa is a large dark green spot, and nearer the tip are one or two other costal markings; near the anal angle is a large dark green band, which narrows suddenly, and branches off at almost a right angle to the tip. Hind-wing black, with a central flesh-coloured band, having a white spot at the anal angle; hind margin broadly pale flesh-colour. VI. IX.

Larva very pale rose colour, with two contiguous eyes on the back of each of the last ten segments; pupil orange, ring black. A lateral row of

* Walker's genera, *Pergesa* and *Anceryx*, are founded on extremely natural groups of exotic species. I have abridged the characters of these genera, only retaining enough to divide them from the larger genera from which they have been separated, and omitting the more minute distinctions.

orange spots, bordered by two black ones. Head rosy grey; legs black, horn rough and black (Dup.). Lives solitarily on various southern species of *Euphorbia*, especially *E. esula*. VII.-IX.

South Europe. Frequent in collections.

D. GALII. Europe generally. Common in collections.

D. TITHYMALI, Bd., 2″ 4‴. Fore-wing dark greenish-grey, the transverse band white, with a slight pinkish tinge, irregular and tapering, with a dark green spot in the middle of the costal side: hind margin pale grey. Hind-wing rose-colour, base and costa black; a black marginal line, and a white spot at the anal angle (Dup.).

Larva bluish-green, granulated with numerous clear yellow dots; dorsal line and first segment bright brown red. A series of round ocellated spots on each segment, of moderate size, of a very clear yellow, surrounded with black. These are placed in a broad lateral streak of a much deeper yellow. Immediately below the stigmata, which are of the same colour as the spots, runs a bright yellow line. Head rather large, uniform brown red, with yellow mandibles. Legs, pro-legs and horn of the same colour. Horn long, straight, rough, and truncated at the tip. Belly clear green (Bellier de la Chavignerie). On various species of *Euphorbia*, especially *E. paralias* and *E. piscatoria*.

South Spain. Scarce in collections.

D. ZYGOPHYLLI, Ochs., 2″ 6‴. Fore-wing greyish-green, with a narrow yellowish-white band running from the base of the inner margin to the tip, projecting one or two short branches towards the costa; hind margin yellowish. Hind-wing crimson, base black; a narrow black marginal line (Dup.).

Larva undescribed. On *Zygophyllum fabago*.

South Russia, Greece, Turkey. Scarce in collections.

D. DAHLII, Tr., 2″ 5‴-2″ 8‴. Much resembles *galii*, but the pale band of fore-wing is whitish-grey and suffused; the pale hind margin is much better defined, and the green part between them is generally slightly veined. Hind-wing black, with a central flesh-coloured band, and a white spot at the anal angle. Fringes of all the wings white. VI. IX.

Larva slaty-grey, dotted all over with white; dorsal streaks alternately red and yellow; horn red; two large white spots and three smaller ones, all surrounded with black, on the side of each segment; legs and stigmata red, lateral streak yellow (Hub.) On *Euphorbia*.

Corsica and Sardinia. Frequent in collections.

D. HIPPOPHÄES, Esp., 2″-2″ 4‴. Fore-wing pale grey; base dusky; a black mark, like a note of interrogation, near the centre of the costa; outer portion of the wing with the usual dark green stripe, bounded by the grey hind margin, but the inner side of this is clearly defined by a nearly straight line. Hind-wing as in *nicæa*, but the band is of a darker red. VI.-IX.

Larva varies according to age, from pale yellow to sea-green, with a number of little white or yellow dots arranged in transverse rows; two straight white or yellowish dorsal bands, and a white line between the flesh-coloured legs and the fulvous stigmata. Horn rough, orange-coloured. Head greenish-grey (Dup.). On *Hippophäe rhamnoides*. VI.-VII. IX.-X.

It is uncertain whether or not the larva hides itself by day. Duponchel thinks the species will eventually prove to be co-extensive in distribution with its food-plant.

Corsica, Sardinia, France, Switzerland. Frequent in collections.

(*To be concluded in our next.*)

Correction to the notice "The development of an imago of C. Caja, and parasites from the same larva."—In a note published in the first part of the French "Annales" for 1864, p. 158, (Ent. Mo. Mag. p. 73,) it is said that the parasites which permitted the development of an adult *Chelonia Caja* were Hymenopterous. Subsequent information furnished by M. Künckel proves, on the contrary, that the case of the larva contained cocoons of the pupæ of *Diptera*. The important point of the note is not modified, that is to say, the exceptional occurrence of the development of a perfect insect, notwithstanding the presence of parasites in the larva.—M. MAURICE GIRARD: *in Ann. Soc. Ent. France*, 1864, *Bulletin p.* 35.

On some new and rare species of British Coleoptera.—Mr. Sidebotham, of Manchester (who so lately added to our Fauna *Peritelus griseus*, *Sibynes canus*, and *Lixus filiformis*), a short time since liberally presented me with some recently captured insects which require notice. One of them I have determined as new to our Fauna, and the others will restore to our list species which have been expunged by the Rev. J. F. Dawson and Mr. Crotch.

The first is a very fine insect, *Agriotes pilosus*, Fab.

It is very like *Synaptus filiformis* in habit, but fully twice as large, and has the colour and pubescence of *Ag. sputator*.

I merely wish to place this insect on record, since there is some suspicion with reference to its authenticity as a British species.

Mr. Sidebotham is in the habit of giving bottles to working men, that they may put into them anything which they may find; and from such a bottle this insect was obtained, having been taken near Manchester; but, from certain

circumstances, it appears probable that the man who obtained it was in the habit of visiting yards in which timber and dye woods and *roots* were stored. As an importation, it is not very likely to have been introduced with timber, being a root feeder; but it may have come in with some of the *dye roots*. It is a native of Germany.

The second is *Lebia hæmorrhoidalis*, a fine specimen, beaten out by Mr. Sidebotham himself from a wood near Devizes, in the first week of June, 1864.

The third is *Oxythyrea stictica*, also taken by Mr. Sidebotham himself on rose flowers, on the Lancashire coast, in June, 1862. He took two specimens *in copulâ*, and Mr. Edleston, who was with him, took one individual.

The fourth insect is *Brachinus glabratus*, Dej.

This insect somewhat resembles a small specimen of *B. crepitans*, but differs from that species in the entire absence of all costatiou from its elytra, which are finely and closely punctate. Moreover, if I am not mistaken, the head is very much shorter, and the eyes are much more prominent, so as to give the head a much more rhomboidal form.

Dawson, in his Geod. Brit., gives the *B. glabratus* of Stephens as a variety of *B. crepitans*; if he be right in so doing the insect is still worth recording, though only a variety, for it is certainly a very rare one. In my opinion, however, it must be considered as a separate species. I have examined, I may say, almost thousands of *B. crepitans*, but never saw *one* like this before.

Mr. Waterhouse has a specimen in his cabinet which he has ticketed *B. glabratus*, taken long ago by Mr. Hope.

Mr. Sidebotham's insect is one of the supposed *B. sclopeta*, taken the summer before last in Cumberland (and alluded to in the Entomologist's Annual of this year) under the following circumstances:—

Mr. Murton, of Silverdale, a Lepidopterist, on an excursion into Wastdale in June and July, 1863, had a bottle, into which he put beetles at random for his friend, Mr. Sidebotham, and in this bottle the latter found three or four specimens of a *Brachinus* (referred to in this note as *glabratus*), taken most probably at Wastdale, but possibly at Silverdale, for Mr. Murton is not sure as to the exact locality, though it was certainly in one of these two places.—John A. Power, M.D., 52, Burton Crescent.

*** Mr. Sidebotham has kindly sent to me, for examination, one of the *Brachini* above mentioned, which is certainly quite unlike the insect referred to by Dr. Power, as *B. glabratus* (though supposed to have been taken in its company); being larger, with unspotted antennæ, more elongate front to the head, and longer elytra, which are moreover not nearly so smooth, and have more prominent shoulders, with a lurid red stain below the scutellum. This species exhibits a superficial resemblance to *B. sclopeta*, for the reason last above mentioned; but differs from that species in being much larger, with more elongate, less convex, and rather duller elytra, and in having the underside, &c., of the same colour as *crepitans*, instead of the bright, clear red so peculiar to *sclopeta*. The stain on the elytra, also, has the appearance of being accidental, as it is not equilateral, nor sufficiently continuous with the scutellum, which latter is rather dark. I can form no decided opinion as to this insect; it may, perhaps, be a variety of *B. crepitans*, in which the antennæ are sometimes unspotted.

Dr. Power's insect is, I have no doubt, *B. explodens*, Duftsch. (Faun. Austr., ii., 234, 3), which is allied to *B. crepitans*, but smaller, with shorter and somewhat more convex elytra, which are blue or green, and shining, with the striæ either very gently impressed or almost obliterated. The antennæ have the third and fourth joints spotted with black; and these spots are conspicuous in Dr. Power's specimen. There seems to be a very rare variety of this species in which the antennæ are unicolorous, and Dr. Schaum (Ins. Deut., i., 241-2) remarks that *B. glabratus*, Dej. (*B strepitans*, Fairm. et Lab.) is allied to this variety, *having its antennæ unspotted*, and the striæ of the elytra somewhat *more* distinctly impressed. These differences are well exhibited by types of *explodens* and *glabratus* in Mr. Waterhouse's European Collection.

Dr. Schaum, in his Catalogues, now considers *glabratus* as a variety of *explodens*; whether this view be right or not, Dr. Power's specimen cannot be referred to the former, being the type form of the latter insect.—E. C. Rye.

Oxytelus speculifrons, Kraatz.—A specimen of this insect (first noticed as new to Britain in No. 1 of this Magazine) has been recently forwarded to me for determination. It was taken nearly four years ago at New Brighton, in Cheshire, by Mr. B. Cooke, of Manchester, who has thus discovered a new locality for the species; all the examples yet recorded having been captured near London. I took the insect last autumn in the Isle of Wight. It is evidently widely distributed, and will, perhaps, prove to be common.—T. Blackburn.

Alterations in nomenclature; Anisotoma litura and Tychius brevicornis.—I am now in a position to confirm my opinion as to these two species, Mr. G. R. Crotch having been good enough to bring me types from M. de Barneville of *A. ornata* and *T. pygmæus*, which are respectively identical with the insects above mentioned. The changes in nomenclature, referred to in p.p. 167 and 168 of the present vol., must therefore be made.—E. C. Rye, 284, King's Road, Chelsea, S.W.

Re-discovery of Dianthœcia albimacula.—On the 8th of June last, whilst insect-hunting at dusk, along a weedy bank a few miles from here, I started up a *Noctua* which I am since informed is referable to this species. An Entomological friend (a Mr. Stevens), who was with me at the time of capture, had the satisfaction of seeing me transfer it from my net to safer quarters.—G. H. Lacey, Gosport, *February 2nd*, 1865.

*** The above mentioned specimen has been sent to me for identification; it is undoubtedly a fresh female example of *Dianthœcia albimacula* in good condition, and set in unmistakeably English fashion. I trust that Mr. Lacey, and my friend, Mr. Horn, of Portsmouth, may, during the coming season, succeed in "turning up" this lovely *Dianthœcia*, which is said to feed on *Silene nutans*.—H. G. K.

Captures at light near Worcester.—Seeing notices of captures appearing in the "Monthly," I have made out a list of some of the best species taken in my bed-room, at light, during the past year:—*Nola cucullatella*, *Pœcilocampa populi* (19 ♂, and 1 ♀, which laid a few eggs), *Pericallia syringaria* (3 ♀; from these I procured batches of eggs), *Selenia lunaria*, *Hemerophila abruptaria*, *Geometra papilionaria*, *Ephyra omicronaria*, *Ligdia adustata*, *Hybernia aurantiaria*, *Eupi-*

thecia centaureata and *succenturiata*, *Anticlea rubidata* (I obtained eggs from 3 ♀), *Scotosia dubitata*, *Cidaria miata* and *corylata*, *Eubolia palumbaria*, *Platypteryx hamula*, *Petasia cassinea* (16 ♂), *Notodonta camelina*, *Diloba cæruleocephala*, *Leucania comma*, *Gortyna flavago*, *Charæas graminis*, *Cerigo cytherea*, *Miana literosa*, *Aplecta advena*, *Hadena pisi*, *adusta*, and *thalassina*.

My light proceeds from an argand burner, and is reflected by an 8-inch concave mirror.—George J. Hearder, Powick near Worcester, *January 19th*, 1865.

Hybernation of Cidaria miata and other Lepidoptera.—Lately, on a bright sunny day, when one could see as well in-doors as out, I found time to carefully examine two empty buildings. The result was that I found the following species hybernating on the walls and ceilings:—4 *Vanessa urticæ*, 2 *Cidaria miata* (in very fine condition), 4 *Gonoptera libatrix* (also very fine), and 5 *Alucita polydactyla*.

I used to fancy that some of the *miata* remained in pupa all the winter, as the spring examples were sometimes so fresh-looking; but certainly no bred specimens could exceed in brightness of colouring the two above mentioned. The species must be abundant about the building, for there were lots of the wings in the spiders' webs with which the windows were plentifully furnished.—C. G. Barrett, Haslemere, *February 1st*, 1865.

Hybernation of Cidaria miata.—Yesterday, while helping to remove the snow from the top of my house, I saw a fine specimen of *Cidaria miata*, with its wings up, walking daintily on the dazzling snow-drift. It had probably been disturbed from its hybernaculum under the tiling.—E. Horton, Worcester, *February 1st*, 1865.

Pterophorus osteodactylus: correction of an error.—I beg to call attention to a slight error in the Annual for this year. At page 115, *Pt. osteodactylus* is said to have been taken by me at Wokingham: it should have been North Devon. It is rather remarkable that I also took this species on the opposite side of the Bristol Channel, in South Wales.—*Id.*

Abundance of Syrphi and other destroyers of Aphides.—The occurrence of *Syrphus pyrastri* and one or two other species in vast swarms has already been recorded. Probably they have extended along the whole or the greater part of the south coast, but beyond these limits I believe evidence is wanting. Here, the whole family of *Syrphidæ* were particularly scarce throughout the spring months, and up to the end of July; after this time the commoner kinds of *Syrphus* began to appear in fully their usual numbers, and one species, *S. balteatus*, in far greater numbers than usual, still not in swarms, but strikingly abundant. It was not until after the third week of August that they were at their height, or a trifle later than the swarms on the south coast. They had probably been bred in this neighbourhood, as I found the pupa in different places. There was no great excess of *S. pyrastri*.

Spending a week at Ollerton, Notts., in September, I was surprised at the great abundance of *Coccinella septempunctata*. They seemed to pass the night in companies of from ten to twenty individuals, the furze bushes being their favourite resort; and were so to be seen in the morning until the heat of the sun was sufficient to rouse them into activity. Frequently there would be upwards of a hundred on

one bush, and they were on every furze bush; and when on the move were constantly exhibiting themselves everywhere. This beetle does not like the neighbourhood of Manchester; at all events, after passing ten summers here, I have not seen it within twelve miles of Manchester.

It has been said that *Aphides* are most numerous in dry seasons. I cannot confirm this from my own observation, though it is true a very extensive assemblage of them has been recorded at page 123. On the contrary, they were more conspicuously abundant here in the wet season of 1860, and I collected more of them that year than I have done either before or since, just because they were abundant and other insects were not. They were then partially kept in check by their *Hymenopterous* parasites of the genus *Aphidius*, of which I bred several species; and in the preceding autumn I bred a few specimens of *Allotria victrix*, (fam. *Cynipidæ*), from *Aphides* found on cabbage.

Although the sweeping net and the beating stick have not revealed any alarming excess of *Aphides* during the past season, as far as I am aware, we know not to what extent their numbers may have been limited by the larvæ of *Syrphus* and *Coccinella*.—Benjamin Cooke, Manchester, 14*th December*, 1864.

Diptera in the Lake District.— There were three Entomological interests represented in our excursion, of which my friend, Mr. T. Blackburn, gives so graphic a description in the November number of this magazine: they were as follows:—The *Coleopterous*, the *Dipterous*, and the *Lepidopterous*. Corresponding with these interests the three degrees of comparison, wretched, more wretched, and most wretched, were descriptive of our experience; a more monotonous period of damp anguish I never spent. In *Coleoptera*, the captures were many, if the pleasure were small; but in the *Diptera* and *Lepidoptera* the pleasure of collecting was nil, and the captures very scanty indeed. As for *Lepidoptera*, one might say that there were absolutely none; the few we took being the exceptions that proved the rule.

Of *Diptera* there were plenty, in drowned and undistinguishable state; but of recognizable specimens so few that, had there been anything else to do, I should have given up looking for them in disgust. Still, from what I took, in spite of all obstacles, I have come to the conclusion that the district must be very rich in two-winged flies. *Syrphidæ*, I need scarcely say, were very scarce; yet I took *Sericomyia lapponæ* flying in the rain, in a lane between Kirkstone Pass and Ullswater; and *Crysotoxum arcuatum* in a lane near Clappersgate. Here, during a brief gleam of sunshine, I took the beautiful *Crysoclamys ænea*. *Baccha elongata* got into my net somehow, and so did *Xylota segnis* and *Syrphus scalaris*. With the exception of the two last named, the above *Syrphidæ* are wanting in the Bowdon district, so far as my experience goes, nor do I think I have ever met with them here at Oxford. *Chrysops cæcutiens*, the most glorious of the *Tabanidæ*, came flying about me one day in considerable numbers. *Beris chalybeata* and *clavipes* represented the *Stratiomydæ*. *Muscidæ* were common enough, but mostly in a soaked condition. By sweeping herbage in damp meadows I took *Tetanocera reticulata* and *Hieracii* (?). It is indeed superfluous to say "damp" meadows, as all meadows were damp there, and then. However, to proceed, I believe all the following *Muscidæ* were taken by sweeping:—*Anthomyia fumosa*, *Ortalis syngenesiæ*, *Palloptera 5-maculata*, *Psilu bicolor*. Among the *Empidæ* I took *Empis stercorea* and *Platypalpus varius*; the latter by sweeping the herbage near a pond.

The only representative of the *Mycetophilidæ* which I discerned among my captures was *Bolitophila cinerea*. The *Tipulidæ* suffered severely, of course, from the wet. *Limnobia picta* I found very common among a lot of wild sage by the side of the Grassmere Road, but only secured one specimen. *Tipula annulicornis* was among the most attractive species of the family, to which *T. longicornis* formed a dowdy contrast. *Limnobia leucophæa*, and *flavipes*, and *Erioptera nodulosa*, complete my list of *Tipulidæ*, so far as I have been able to determine the species. By far the best of my captures were two in the same family, *Leptidæ*, both taken on the same day and at the same place, Coniston Old Man, viz.:—*Leptis notata*, which is, according to Walker, "Rare; in the collection of the Entomological Club," and *Atherix crassicornis*, of which the same learned authority remarks monosyllabically "Rare." I confess to have named the latter rather on the "*aut Erasmus, aut diabolus*" principle; but Professor Westwood, after kindly subjecting my specimen to a close scrutiny, arrived at the same opinion.

So ends the "*Dipterous*" account of our excursion. May another year prove more auspicious!—E. M. Geldart, Balliol College, Oxford.

NOTES ON COLLECTING, MANAGEMENT, &c., (*LEPIDOPTERA*).

BY H. G. KNAGGS, M.D.

THE CATERPILLAR STATE. (*Continued from page* 220.)

Times of year.—Necessarily, larvæ may be taken all the year round; but, inasmuch as the hunter will stand a better chance of "making a bag" at particular seasons, it may be as well to mention the more profitable times in which to pursue his occupation.

Firstly, as soon after winter as may be convenient, it will be advisable to collect, at favourable localities, quantities of fallen leaves; and, having placed them on a sheet, to knock them about in order to detach any hybernating larvæ which may be present. The French say that, though this method is rather chance-work, the larvæ of many of the rarer *Noctuæ* are sometimes to be got in plenty by the process; at any rate it is worth trial; nor do I doubt but that indoor examination of sackfuls of dead leaves and moss from likely localities; rubbish, soil, tufts of plants (roots and all), especially from our heaths and sandhills; herbage gathered from favoured banks and slopes, &c., would be most productive, not only in the matter of hybernating larvæ, but of other prizes, and amply repay the trouble of collection and the expense of transport.

About this time also loose bark may be detached (by means of a lever such as used by Coleopterists); earthward-looking surfaces, the bottoms of stacks and ricks whether of faggots, heather, gorse, beans, reeds, straw, or hay, &c., should be poked about and investigated; barns, out-houses, garden frames and pits, inspected; thatched and other roofings beaten; stones, logs, sods, &c., turned over; chinks and crevices in trees, posts, pales, and walls, peered into; tufty plants, (as grasses, storks-bill, primrose, garden pinks, and the like) and tangled herbage turned up, shaken, and both they and the surface of the soil beneath them carefully examined, and indeed every conceivable hybernaculum should be hunted up, not forgetting the nests of *Hymenoptera* (especially deserted ones) for the *Gallerida*.

After continued heavy rains in February, there generally ensues a mild night or two, without a breath of wind, and the ground being saturated with moisture,

the atmosphere becomes foggy; these are the nights to be looked for, and seized by the collector of larvæ, for though many (or most) of the species he may meet with will be of small size, some can then be found which he is not likely to capture in a more matured state; when, therefore, such opportunities occur, the known spots in woods, such as openings, clearings, barn-patches, &c., should be visited soon after dark, and all the dead stalks and blades of dry grass (for in woods no new herbage is as yet visible,) examined, on which will be found numbers of larvæ, stretched out as if to enjoy the soft air on waking from their winter sleep. One such night in February is often more remunerating than a dozen a month later, for many species, whose natural habits keep them close to the roots of grasses, seem on such occasions to evince a desire to rise and survey the aspect of their locality. On such a night, Mr. Buckler assures me he has taken larvæ in the greatest profusion, and indeed on one occasion, sought for, and found no less than 173 of various kinds.

On the arrival of verdure to the vegetable kingdom, larval life begins to put in an active appearance, hybernated species coming forth from their winter quarters, and newly-hatched ones from their egg-shells; of the former, some may be found on weedy-banks, feeding or basking in the spring-tide sun-rays, others on warm evenings freely exerting their jaws on newly expanded buds of trees, bushes, &c., or discussing the leaves of "various low plants." Thus in the spring of the year, the larvæ of many butterflies, several *Bombyces*, *Ouraptery.e*, *Pericallia*, *Boarmia*, *Geometra*, and some of the other Emeralds, *Acidalia*, some of *Larentia* and *Melanippe*, *Bryophila*, *Leucania*, *Xylophasia*, *Heliophobus*, *Miana*, *Triphæna*, *Noctua*, *Aplecta*, *Mania*, &c., may be found after hybernation feeding by night, as well as the small fry aforesaid. The latter (the small fry) are generally to be found at home upon their food, from which, upon the slightest jar or approach of danger, they lower themselves by silken threads, and could be readily collected at this period of their existence with the almost certainty of their being free from the stings of ichneumons.

Most collectors, however, do not care to take the latter at this stage, preferring to wait until at the end of May or beginning of June, they have advanced in growth, are more distinguishable, one species from another, and require less time and care to feed up.

After this, caterpillar life begins to wane and collecting the perfect insect becomes the pursuit of the Entomologist, until again, towards autumn, vegetation once more abounds with larvæ, many of which, particularly the smaller geometric ones, and those of *Noctuæ* whether large or small, hybernate.

Times of day.—Much depends upon whether it is desired to capture any given larva whilst feeding or reposing; the great feeding-times of the majority (as of *Noctuæ*, *Geometræ*,) being just after sun-set, and again in the morning when the leaves are bathed in dew (a wholesome condition of things which seems to give a zest to the food); but some, as "Sharks," evidently select the bright hours of sunshine for their meal times; the hairy Bombyces prefer the morning sun; and other larvæ feed, on and off, through either day or night, or both. Some night-feeding larvæ which leave their food to seek repose may be sought for in the day-time; thus, in their haunts, those of *L. monacha*, *M. aprilina*, *T. munda*, and the genus *Catocala*, are often found hiding in the crevices of bark of oaks, willows, and other trees, or under semi-detached pieces of bark.

Searching by night is conducted much after the manner of day-work; but a lantern, to aid vision, is required, and a net (or substitute for it) becomes an important auxiliary for holding under the bushes examined, in order to circumvent such individuals as drop under the stimulus of light or man's interference: for which reason the lantern should be darkened until the hunter is quite prepared to commence his search. At night too the trunks of trees should not be neglected, as larvæ will frequently be found crawling (swarming I might say in the case of some *Orthosidæ*) up to regain their food. Whilst "sugaring" also, an eye should be kept open for such larvæ as may be attracted; and the blossoms of certain trees and shrubs, as the elm, oak, sallow, and arbutus, seem to allure many larvæ, most of which however probably feed naturally on these plants.

For ordinary night searching the following trees, shrubs, and herbs will be found among the most productive:—birch, elm, oak, black-thorn, white-thorn, sallow, bramble, (especially the young shoots), heath, dock, plantain, persicaria, geum, violet, ground-ivy, various grasses, &c., &c., but all plants should be inspected, and when search has to be made for any special larva, a previous acquaintance with its natural food is necessary.

Capturing is usually an easy job, the collector simply cutting off the leaf or twig with the larva attached, or gently picking off the latter and placing it, together with a sprig of the food, in one of his boxes, taking care not to overcrowd his captures, and keeping a sharp look out for cannibals, such as *Scopelosoma satellitia* and the blood-thirsty *C. trapetzina*, with whose appearance he should early familiarise himself. For those larvæ which drop upon the least touch, a box or net should be held beneath. Some, as for example those of *Cucullia*, actually jump, jerk, or wriggle with such alacrity, as to render their capture a matter of difficulty; in such case, the collector must either be ready with his net, or prepared to catch them dexterously in his hand as they fall, and so ensure their transfer to appropriate boxes.

Traps *for larvæ* may be worth trial. The gardeners' plan of sticking cones of paper or little inverted flower pots about the plants has been recommended and seems to answer in the country, but near London I am persuaded that the catch (or "no catch.") would mainly consist of *Euplexoptera* and *Mollusca*. For such larvæ as desert their food, to repose or hybernate, folded pieces of old flannel or carpet may be spread upon the surface of the soil in likely places with a probability of success.

As a bait I am not aware that any substance, barring the questionable one of sugar, has been found attractive; but as the smell of "iodine" is said to cause slugs to congregate (not that slugs have anything in common with larvæ), it is not impossible that a discovery of the kind may be made. It has been noticed, however, that many herbivorous larvæ are remarkably fond of *lettuce*, and it has therefore been found worth while to scatter lettuce leaves over the hunting ground some hours before commencing our search for larvæ.

(*To be continued.*)

Lepidopterous captures in 1864.—The following is a list of some of my captures of *Lepidoptera* during the past year.

A. Galathea, under the cliffs at Deal. *H comma*, Box Hill. *M. stellatarum*,

Deal. *Z. Æsculi*, the parks in London. *L. asellus*, Epping. I believe this insect is to be found over the whole extent of the forest. The male, which is almost black in colour, flies swiftly along the ridings, and, in my experience, is never beaten out. *S. irrorella*, Box Hill, getting worked out. *L. helveola*, Headley Lane, &c. *E. advenaria*, Leith Hill. *E. fasciaria*, Box Hill. *E. dolobraria*, Epping, scarce. *B. abietaria*, Leith Hill, &c., many more seen than captured. *G. obscurata*, under the cliffs at Deal. *A. emarginata*, Leith Hill. *C. temerata*, Darenth. *A. pictaria*, getting scarce at Hainault. *M. liturata*, Leith Hill. *F. conspicuata*, Grays, scarce. *A. citraria*, Deal. *A. gilvaria*, plentiful at Deal. *E. nanata*, St. Leonard's Forest. *E. absynthiata*, Darenth. *E. dodoneata*, Epping. *E. sobrinata*, Headley Lane, &c.; comes freely to the flowers of the ragwort in the evening. *E. lariciata*, Leith Hill. *P. vitalbata*, Darenth. *E. lineolata*, taken freely at Deal. *P. lacertula*, Darenth. *N. despecta*, on rushes at Epping. *N. fulva*, Epping, never taken freely. *N. typhæ*, Grays, bred from pupæ in the stems of *Typha latifolia*. *H. nictitans*, freely to light at Epping. *N. neglecta*, light variety, New Forest, in September. *E. venustula*, very scarce the last three seasons. *C. promissa*, New Forest in September. *P. æneca*, St. Leonard's Forest in April. *H. crassalis*, Leith Hill. *A. flexula*, Headley Lane, &c. *C. angustalis*, Box Hill. *P. punicealis*, Reigate. *P. purpuralis*, abundant at Pinner. *B. hyalinalis*, Reigate, rather abundant. *P. carnella*, Box Hill, scarce. *P. palumbella*, Epping, at dusk. *C. gigantana*, Deal. *Pt. parvidactylus*, Box Hill. *Pt. phæodactylus*, Reigate. *Pt. bipunctidactylus*, Rufus' Stone, New Forest. *Pt. microdactylus*, Box Hill.—Battershell Gill, M.D., 5, Cambridge Place, Regent's Park, N.W.

Incredible Masses of Larvæ.—Fully a mile from the Loughton Station, on the left hand side of the road to Epping, upon somewhat lower ground than the surrounding forest, stands a spacious grove of trees of considerable size, chiefly beech, oak, and hornbeam, forming a densely canopied wood of several acres.

Approaching its skirts, last May, I was astonished to observe what appeared to be long lines of cobwebs enshrouding every tree, but crossing and re-crossing each other at angles, in length and arrangement unlike those of the *Arachnida*.

Penetrating still further into the covert, and using my beating-stick to displace these shreds of webbing, it was soon apparent that their silky lines *depended* from the branches, swinging even more multitudinously beneath and within the grove than on its confines. I presently perceived that the web had seemingly captured nothing but a small larva,*—thousands and millions of which, wherever the eye turned, were, with their peculiar wriggle, actively occupied in hauling, crawling, twining, winding, and enshrining one another in mid-air, in such a vague, hopeless tangle as no description can realize. And these countless acrobats I found thus suspended, literally from every *limb* in this very considerable and stately plantation; and it was a little gale of a few hours previous which had enabled these grand trees to shake them from their crowns.

Soon, as I could look about, on the ground were noticeable little masses of what seemed to be ladies' muslin handkerchiefs, which, on closer inspection, proved to be colonies of these creatures who had seized upon some unfortunate fern-plants in despair of re-gaining their more lofty thrones, and which, in an hour or two, they had stripped to mere skeletons. Then, to my amazement, I discovered the entire ground itself positively thick with caterpillars, moving hopelessly everywhere, over

* The larva of *Cheimatobia brumata*.

one another, and the fallen last year's leaves,—not more numerous than themselves, —searching, and finding not; while, amidst the profound silence, the strange ticking sound of their little claspers on the dry, dead foliage, fell perpetually upon the ear like the gentle and plentiful pattering of a summer shower. There it would seem to be their fate to die of starvation, by countless millions, in the very bosom of plenty, their own strugglings and contortions their sufficient bondage!

I found no serviceable breeze for *my* purposes, on escaping from a spot which had enabled me to notice at once more organised life than I had ever before seen at one glance. On garments, hair, flesh,—over my eyes, my ears, my nostrils, and down my neck, crawling, crawling, crawling, had I brought them away; and infinite was the picking, plucking, and displacing of what, had I remained long enough, would probably for once in my life have attired me in silk, if not in fine linen.

It was inexpressibly saddening to see these heaps of "butterflies in embryo" annihilating one another through the very plenitude of the abundant life there sacrificed in this huge "struggle for existence."

The next morning I found a couple of them alive in my bed, and gave them a chance by dropping them from the casement to some shrubs below.—E. Hopley, 14, South Bank, Regents Park, N.W.

Entomological Society of London, Feb. 6th, 1865.—F. P. Pascoe, Esq. F.L.S., President, in the Chair.

Mr. Brewer exhibited specimens of a *Corticaria* which he considered to be *C. truncatella*, of Mannerheim, and not previously recorded as British. These he had taken on the sea-shore at Worthing. He also exhibited specimens of *Ceutorhynchus biguttatus* from the same locality.

Major Cox communicated a paper, in which he stated that having found that some of his dogs were very much infested by a species of Tick (*Ixodes plumbeus*), he examined their kennel, and found it swarming with the creatures in question, they concealing themselves in crevices, and as he thought causing the destruction of the wood-work, by boring into it. He sent for exhibition portions of the kennel, containing the creatures, and stated that he had found the most effectual remedy to be a solution of arsenic, in which the dogs were washed.

Mr. Saunders and Prof. Westwood thought that the injury to the wood-work was caused by *Onisci*, and not by the Ticks. The latter gentleman called attention to the fact that many of the creatures sent were *in copulâ*, and that the male was very minute compared with the large berry-like female, and was attached to the under-portion of the thorax of the latter.

Mr. Rich, who was present as a visitor, said that he had destroyed ticks in dogs by simply rubbing the dogs well with grease.

Mr. Rich also exhibited the remaining portions of the insects captured by his son in the Shetlands, among them was a long series of the curious variety of *Hepialus humuli*.

The President called attention to the singular geographical distribution of the genus *Cossyphus*, mentioning that he had recently received a species from Australia, closely allied to one found at Rangoon. Mr. Wallace had not found any species of this genus in the Indian Archipelago.

Prof. Westwood said that he had recently received a species from the Zambesi.

The President announced that the Council had determined to offer (through the liberality of one of its members,) two prizes of 5 guineas each for the best essays on any branch of Economic Entomology. Further particulars would be given at the next meeting.

NOTE ON *ANOMMATUS* 12-*STRIATUS*.

BY T. V. WOLLASTON, M.A., F.L.S.

This little insect, which appears to be a decided English rarity, is, nevertheless quite indigenous in Devonshire. I have captured four or five specimens of it during the last few months, in a conservatory attached to my house,—adhering to the under-sides of slices of potato which I had placed on the borders in order to attract slugs. It will be remembered that it was likewise found at Exeter (which is no great distance from Teignmouth), by Mr. Parfitt. I should state that my examples were all taken on *peat* soil, which had been brought down from the neighbouring hills of Haldon—as a *bonne bouche* for that noblest of climbers, the *Lapagoria rosea*. It is not impossible that by laying a few pieces of wet board upon my flower-beds I should be enabled to entrap more; for the species is usually met with beneath moist logs of wood, particularly when the latter are so firmly pressed to the earth as to be partially buried in it. At Madeira I once alighted on it in profusion, under the trunk of a cherry-tree which had been long felled, in a damp mountain-ravine.

I see that the English catalogues cite it as conspecific with the *Cerylon obsoletum* of "the Illustrations;" but certainly there must be some mistake,—either as regards the identification, or else in Stephens's *habitat*,—for he expressly mentions that he "caught several specimens of it *flying* in a garden at Hertford" (a remarkable fact, it will be admitted, for an insect which has no wings). Indeed, the mere circumstance of its being *blind* would alone suffice to neutralize the above assertion, for any creature "desporting itself in the air" *without eyes* is something more than a paradox; and, therefore, *à fortiori*, when it has neither organs of vision *nor* of flight.*

With respect to the affinities of *Anommatus*, I am surprised to find that it should still be assigned to the *Colydiadæ*,—with the essential characters of which it has really nothing whatever in common. But since it was Erichson who placed it in that family, we can easily understand why it has been kept there. Yet it is, nevertheless, a fact that Erichson was grossly mistaken concerning one or two of its most important structural details,—*par excellence*, in regarding its feet,

* I have examined the four specimens representing *Cerylon obsoletum* in the Stephensian Cabinet, Brit. Mus. The first, with a ticket attached, is identical with the exponents of *C. oryzæ*, the species following *C. obsoletum* in the same collection; and is, I imagine, an imported insect. I cannot refer it to any of our recognized genera. It has somewhat the facies of *Aglenus brunneus*, but its legs are much stouter, and its antennæ more strongly and abruptly clavate. The second specimen is a true *Cerylon*; viz., the species known to us as *ferrugineum*; and the third and fourth are decidedly *Anommatus* 12-*striatus*, with which the description also agrees. E. C. R.

which are *tri-articulate*, as tetramerous. I dissected it with great care in 1860, and gave the result in the "Ann. of Nat. Hist." for April of that year; but since the "Annals" may not be readily accessible to all your readers, perhaps the following extract will not be out of place.

"The little *Anommatus* 12-*striatus* bears so strong a *primâ facie* "resemblance to *Aglenus* that it has been universally, with one "exception, placed alongside that genus, amongst the *Colydiadæ*. "Nevertheless, the various authors who have thus tacitly acknowledged "its affinities seem merely to have followed blindly in the wake of "Erichson, whose description of its structural details was, as M. Duval "has recently well remarked, both loose and inaccurate; and, after a "very careful dissection of it, I agree with M. Duval that it should "undoubtedly be assigned to the *Latridiidæ*. True it is, that its robust "limbs and abruptly clavated antennæ are not in accordance with the "normal members of that family; but then, on the other hand, neither "are they universally indicative of the *Colydiadæ;* whilst even among "the *Latridiidæ* such genera as *Cholovocera* and *Merophysia* afford us "an abundant precedent for the supposition that the terminal joints of "the antennæ may sometimes, in that group, become absolutely lost "by uniting into a densely compact mass. Then, with respect to the "tarsi of *Anommatus*, having mounted them in balsam for the micro-"scope, I believe that Duval is perfectly right in regarding them as tri-"articulate, instead of quadri-articulate (as stated by Erichson). The "basal joint is certainly a little constricted on its under-side, but even "polarized light will not show the merest rudiment of a suture; and I "have not the slightest hesitation, therefore, in concluding it to be a "single joint, and the whole foot to be consequently tri-articulate—"which is almost universally the case with the *Latridiidæ*. The "antennæ are composed of only nine joints besides the club,—which "latter is extremely compact, and with no annular traces on it what-"soever. Hence, although we *assume* that the two ultimate joints are "fused into it, we must practically regard the entire number (*i.e.* the "recognizable number) as diminished from the normal standard,—"which is, likewise, perfectly in accordance with the generality of the "*Latridiidæ*, in which the antennal joints vary from eight to eleven. "All points considered, I believe that *Anommatus* is more nearly akin "to the (likewise blind) *Langelandia anophthalma* than to almost any "other, perhaps, of our European genera."

The non-development of eyes is, also, greatly characteristic of these immediate groups of the *Latridiidæ*. In *Langelandia* and *Anom-*

matus, their absence is complete; in *Cholovocera*, they are either entirely wanting, or else so rudimentary as to be barely traceable; in *one* species, at least, of *Holoparamecus*, they are extremely small and imperfect; and in *Metophthalmus* (which approaches closely to *Latridius* proper), they are composed of merely a few facets, and must be practically almost useless.

DESCRIPTIONS OF THREE NEW SPECIES OF *TRICHOPTERYX* FOUND IN THE CANARY ISLANDS.

BY THE REV. A. MATTHEWS, M.A.

Among the *Trichopterygia* collected by Mr. G. R. Crotch and his brother, during their recent excursion to the Canary Islands, I have found three species which I believe to be at present unknown; and, at the request of Mr. Wollaston, who will shortly publish a detailed account of the discoveries of the Messrs. Crotch, I will now proceed to describe them. I would, however, first remark that, from previous observations of Mr. Wollaston, confirmed by these later explorers, the distribution of the *Trichopterygia* in the Canary Islands appears to be somewhat singular; thus, while the species which I have named *Wollastoni* abounds in the sylvan districts of Grand Canary, Teneriffe, Gomera, and Hierro, in Palma alone it is unknown, its place in that island being occupied by another and totally distinct species; among the rest of the family, a similar local distribution holds good, to a greater or less extent.

T. Wollastoni was originally discovered by my friend, whose name it will hereafter bear, in his first exploration of these islands; and, on his return to England, some specimens of it were forwarded to me for examination. At that time, however, I was not aware of the only safe diagnostic in this most obscure genus—I mean the superficial sculpture of the upper surface, especially on the thorax,—and I returned them to Mr. Wollaston marked as a local variety of *T. fascicularis*, an insect which has an almost unlimited range; and under that name they appeared in his "Catalogue of Coleopterous Insects of the Canaries in the Collection of the British Museum." Since that time, I have carefully examined all the specimens taken by Mr. Wollaston, and also an immense series of the same species captured by the Messrs. Crotch, and find the distinctive characters persistent throughout the whole number, although different individuals vary considerably in size. I have, therefore, determined to separate it from *T. fascicularis*, the only species to which it bears any affinity, and have named it *Wollastoni*, in honour of its original captor.

T. Wollastoni, n. s.

L. c., $\frac{6\text{-}8}{16}$ lin. Oblong, moderately convex, black, clothed with a long fulvous pubescence; the thorax moderately dilated at the base, and the posterior angles considerably produced; covered with minute and very distinct tubercles arranged in sinuated rows on the disc, which become straighter towards the base, with the interstices elegantly alutaceous; elytra moderately attenuated; antennæ bright yellow, long and slender.

Head moderate, somewhat elongate towards the mouth; eyes moderate, rather prominent; antennæ long and slender, wholly yellow.

Thorax rather large, convex, much depressed at the base, dilated posteriorly, with the sides slightly rounded and very slightly margined, thickly covered with minute, but very distinct, tubercles, arranged in sinuated rows on the disc, and in nearly straight rows at the base, with the interstices beautifully alutaceous; the posterior margin strongly sinuated, with the angles pale, much produced, and acute.

Scutellum moderate, triangular, closely but not deeply asperate.

Elytra about as long, and as wide, as the head and thorax united; rather attenuated posteriorly (especially in the male), closely and finely asperate in transverse rows, with the sides nearly straight, and slightly margined, the apex scarcely rounded, and narrowly pale.

Abdomen moderately exposed.

Legs bright yellow, with the basal joint of the anterior tarsi slightly dilated in the male.

Under-parts black, with the mouth, apex of metasternum and of the abdomen, and the whole of the coxæ, bright yellow.

T. Wollastoni somewhat resembles *T. fascicularis*, but may be distinguished from that species by its smaller size, long fulvous pubescence, sculpture of the thorax, longer and paler antennæ, and by the nearly straight apex of the elytra.

This species is found abundantly in Grand Canary, Teneriffe, Gomera, and Hierro, but has not occurred in Palma.

T. Crotchii, n. s.

L. c., $\frac{6}{16}$ lin. Short and broad, convex, castaneous-brown, clothed with rather long pale hairs; the thorax large and much dilated posteriorly, covered with very minute tubercles placed in widely distant oblique rows, with the interstices finely alutaceous: elytra short, much attenuated towards the apex; legs and antennæ bright yellow, with the apical joints of the latter considerably incrassated.

Head moderate, faintly punctured, shining; eyes moderate, rather prominent; antennæ pale yellow, with the three apical joints considerably incrassated.

Thorax large, very convex, not depressed at the base, much dilated posteriorly, with the sides considerably rounded and slightly margined; covered with very minute tubercles placed in remote oblique rows, with the interstices faintly alutaceous; posterior margin nearly straight, with the angles very much produced, and widely pale.

Scutellum moderate, triangular, short, broad, and acuminate; closely and very finely asperate.

Elytra paler than the head and thorax, short, and much attenuated posteriorly, narrower than the thorax, and not as long as the head and thorax united; faintly and rather remotely asperate, with the apex nearly straight.

Abdomen moderately exposed, black.

Legs bright yellow.

Under-parts castaneous, with the mouth, coxæ, and apex of the abdomen bright yellow.

This species may be known by its short attenuated shape (which is intermediate between *T. atomaria* and *T. fenestrata*), by the sculpture of the thorax, and by the more incrassate club of the antennæ. It appears to be rare, and has only been found in Gomera, where five examples were captured by Messrs. Crotch.

T. CANARIENSIS, n. s.

L. c., $\frac{5\text{-}6}{16}$ lin. Oblong, sub-parallel, moderately convex, intensely black, very sparingly clothed with a short dark pubescence; the thorax scarcely dilated at the base, covered with large and strongly elevated tubercles, placed without order, with the interstices strongly alutaceous; the elytra long and parallel; legs bright yellow, and antennæ pitchy-black.

Head large and wide; eyes moderate, not prominent; antennæ rather short and stout, pitchy-black.

Thorax small, a little wider (but scarcely longer) than the head, a little widest behind the middle; covered with large tubercles, placed without order, with the interstices strongly alutaceous; the base slightly depressed, the posterior margin nearly straight, with the angles large and moderately produced.

Scutellum very large, triangular, asperate in straight, transverse, and remote rows.

Elytra oblong, with the sides parallel, as wide as the thorax, and rather longer than the head and thorax united; strongly asperate, or almost tuberculate, in transverse rows, with the interstices alutaceous; the posterior half of the suture elevated, and the apex much rounded, and very narrowly pale.

Abdomen but little exposed.

Legs yellow, robust.

Under-parts black, with the mouth and coxæ pitchy.

T. canariensis differs from *T. sericeus* in its smaller size, longer and sub-parallel shape, very short obscure pubescence, deep black colour, and deep and peculiar sculpture; by which last character it is especially distinguished from all the other species of this genus.

It is not uncommon in Teneriffe and Gomera, but does not seem to have occurred in any of the other Islands.

Gumley, 10*th March*, 1865.

ON THE LUMINOSITY OF *FULGORA LATERNARIA*.

BY DR. HAGEN.

I perceive in the proceedings of the Entomological Society of London (Trans. 3rd Series, Vol. 1, p. 207—209), there is a communication on the luminosity of *Fulgora laternaria* and *candelaria*, from which Mr. Smith infers that the controversy as to their luminosity or non-luminosity may now be considered as concluded. In this, I believe he is wrong. The statement that *F. laternaria* is not luminous was first made by Olivier, and since then by a number of credible observers and acknowledged Entomologists, such as Becker Hancock, Hoffmansegg, Burmeister. The assertions for and against are about of equal value, and are diametrically opposed to one another. As we cannot possibly suppose that either side states that which is false, I would seek another explanation. May it not possibly be the case that *Fulgora* is only luminous at certain seasons, or which is very credible, the luminosity may be confined to one sex.

The latter notion according to all analogy seems extremely probable, and as I do not recollect that any observer of the luminous or non-luminous insects has stated their sex, the explanation would admit of our agreeing both with the affirmative and negative statements. I cannot, therefore, consider the subject disposed of.

In the Stett. Ent. Zeit., 1853, p. 55, I have remarked that Professor Westwood and Dr. Burmeister have incorrectly stated that the

earliest notice of the luminosity of *Fulgora* occurs in Merian's Insects of Surinam. As far as I know, the earliest notice occurs in an English work published in 1685, by Nehemiah Grew, M.D., entitled, "Museum regalis societatis: or a catalogue and description of the natural and artificial varieties belonging to the Royal Society, and preserved at Gresham College." The notice will be found at p. 158, and a recognisable figure of the lanthorn-fly from Peru, at pl. 13. From what source Grew obtained the information that the Indians tied two or three of these insects to a stick, and thus obtain sufficient light to work or to travel, I cannot discover. Yet probably there is here some confusion with *Elater noctilucus*, since Mouffet (1634), in Theatrum Insectorum, p. 112,—Jonston, (1653), in Hist. Nat. de Insectis, p. 112, and Nieremberg, (1635), in Historiæ Naturæ, give precisely the same account of the use made of the *Elater*, which Grew and Merian apply to the *Fulgora*.

Probably all these accounts have their origin in some notice in the travels of Peter Martyr, or some other voyages published by Hakluyt, and have been copied from thence.

Since Aldrovand, whose work is otherwise very complete, makes no mention of the circumstance, the earliest notice of the luminosity of these insects must have appeared in some work published between 1602, and 1632, and I should feel extremely obliged to any one who would give me the reference to the work in which it occurs.

Königsberg.

AN ESSAY TOWARDS A KNOWLEDGE OF BRITISH *HOMOPTERA*.

BY THE REV. T. A. MARSHALL, M.A., F.L.S.

(*Continued from page* 229).

††† Frontis carina 1 media, longe supra antennas et prope verticem bifurcata.

¶ Hemelytra in clavi angulo posteriore nigro lineolata.

10.—*Delphax striatellus*, Fall.

I.—*Forma brachyptera*, ♂. Niger; carinæ frontales, pronotum, scutellum vel totum vel apice, testacea. Pronotum utrinque post oculos nigro lituratum. Hemelytra abdomine parum longiora, fusco hyalina, nervis vix impresso-punctatis; costa vel tota concolor, vel pone medium et circa membranæ apicem nigricans; clavi angulus posterior nigro striatellus. Pedes testacei; femora et coxæ sæpe fusca.

♀ Differt scutelli angulis anticis sæpius nigro unimaculatis.

Var. ♂. Pronotum nigrum, postice pallido marginatum.

II.—*Forma macroptera*, ♂ ♀. Hemelytra abdomine multo longiora, hyalina, pellucida, nervis apice infuscatis.

Long. ♂, 1; ♀, 1½ lin.

Fall., Hem., 2, p. 75. Flor, R. L., 2, p. 54. *D. notula* Stål, Öfv., 1854, p. 192.

This is one of the most abundant species, and either of its forms may readily be taken in grass fields, especially when newly mown. It is somewhat variable, and the typical black stria in the angle of the clavus is frequently indistinct. The medial frontal carina is *forked very close to the vertex*, forming a small triangle. This species is likely to be confounded with *D. neglectus* and *pellucidus*: the former however differs in having the frontal carinæ concolorous with the face, and the sides of the scutellum and pronotum occupied by a broad brown stripe; the latter is known by the distinctly impressed and close punctures of the nervures of the hemelytra: while both are sufficiently separated from *striatellus* by the structural characters indicated in the synopsis.

¶ ¶ Hemelytra in clavi angulo posteriore non nigro lineolata.

(1.) Frons ab oculis ad clypeum usque æquilata parallela. Scutellum nigrum, apice albo.

11.—*Delphax elegantulus*, Boh.

Niger; carinæ frontales testaceæ. Pronotum albidum, utrinque sub oculorum marginibus, et medio inter carinas longitudinales, nigricans. Scutellum nigrum, summo apice albidum. Hemelytra abdomine dimidio breviora, fusco hyalina. Pedes testacei, coxis omnibus et femoribus posticis nigricantibus. ♂.— ♀ latet. Long. 1 lin.

Boh., Handl., 1847, p. 63. Flor., R. L., 2, p. 57. Stål, Öfv., 1854, p. 195.

Although I have only a single specimen (taken in Darenth Wood), its agreement with the descriptions above referred to is so exact, as to leave no room for doubt as to the species. The medial frontal carina is forked somewhat lower down than in the preceding, forming a more elongate triangle, whose apex is nearly upon a level with the inferior margin of the eyes. The segments of the abdomen (and especially the genital segment,) are testaceous brown in the middle of their hinder edges.

(2.) Frons medio inter oculos et clypeum latissima. Scutellum nigrum, apice nigro.

12.—*Delphax leptosoma*, Flor.

♂ Niger; pronotum nigrum, albo marginatum, vel albidum, basi

tantum nigricans. Scutellum nigrum, apice rarius pallidiori. Hemelytra abdomine dimidio breviora, nigra, apice albo marginata, basi prope scutellum tenuiter albescentia. Pedes nigri; femora apice, tibiæ hic illic, tarsi toti, testacea. ♀ Totus testaceus; pedes nigro lineati; hemelytra brunnea, apice et prope scutellum albomarginata.

Long. ♂, $\frac{2}{3}$-1: ♀, $1\frac{1}{3}$ lin.

Flor, R. L., 2, p. 76.

I took five specimens on rushes in a marshy tract near Weybridge last September. They were all males, and the above diagnosis of the ♀ is borrowed from Flor. They agree very well with his description, except that the apex of the scutellum is black in four instances, and obscurely pale in the fifth. I cannot regard this circumstance as sufficient to invalidate an identification based upon structure, and otherwise satisfactory.

(*To be continued*).

A SYNOPSIS OF THE *SPHINGIDÆ* OF EUROPE.

BY W. F. KIRBY.

(*Continued from page* 235.)

D. VESPERTILIO, Fab., 1″ 10‴-2″ 7‴. Fore-wing unicolorous slaty-grey. Hind-wing flesh-colour, black at base, with a marginal black band very narrowly bordered outside by flesh-colour. VI.-IX.

Larva ashy-grey, slightly tinged with greenish, and mixed with black and brown, with two flesh-coloured spots on all the segments except the first and last. Head bluish-grey. Sides and belly pale rosy-grey, legs rosy, stigmata yellow. No horn (Dup.). On *Epilobium angustifolium*. VII.-IX.

Sub-Alpine Europe, France, Italy, Switzerland. Frequent in collections.

Genus 7.—DAPHNIS, Hüb. One species.

Body thick; head somewhat conical; legs long, moderately stout. Wings long, rather narrow. Fore-wings acuminated, straight along the costa, very oblique along the hind margin, which is indistinctly undulating. Hind-wings slightly acuminated; hind margin somewhat emarginate towards the anal angle.

D. NERII. South Europe generally. Frequent in collections.

Genus 8.—SPHINX. Two species.

S. CONVOLVULI.
S. LIGUSTRI. } Europe generally. Common in collections.

Genus 9.—Anceryx, Bd., Walker. One species.

Legs long and slender; fore-wings straight along the costa, acuminated, very oblique, and slightly denticulated along the hind margin; hind-wings slightly acuminated, hardly denticulated along the hind margin.

A. pinastri. Europe, generally distributed. Common in collections.

Genus 10.—Acherontia. One species.

A. Atropos. Generally distributed. Common in collections.

Genus 11.—Laothöe, Fab. (*Smerinthus*, Ochs.) Five species.

A. Proboscis distinct, but very short.

B. Fore-wings with green markings. L. tiliæ.

BB. Fore-wings with no green markings.

C. Hind-wings with a large eye-like spot. L. ocellatus.

CC. Hind-wings with a brick-red blotch. L. populi.

CCC. Hind-wings with neither eye nor red blotch. L. tremulæ.

AA. Proboscis obsolete. L. quercus.

L. ocellatus. } Generally distributed. Common in collections.
L. populi. }

L. tremulæ, Fisch., 2″ 4‴. Brown, varied with green. Fore-wing with a pale spot at tip, and with hind margin pale; a row of three blackish spots across the wing just within the disc. cell. Hind-wing with the hind margins blackish, base darker than the rest of the wing, but no basal blotch (H.-S.).

Larva pale yellowish-green, spotted with black. Head dark green, bordered with yellow; stigmata yellow; horn yellow above and rusty beneath; legs rosy, prolegs green, and seven pale blue oblong streaks bordered below with white, which meet on the back (Fischer quoted by Dup.). On *Populus tremula.*

Central and northern Russia. Very rare in collections.

L. tiliæ. Europe generally. Common in collections.

L. quercus, Fab., 3″ 3‴-3″ 9‴. Fore-wings tawny-grey, with several transverse reddish-brown lines running across them: the wings suffused with reddish-brown outside the outer ones and inside the inner ones. A reddish-brown parallelogram on the inner margin near the anal angle, and a round spot of the same colour above it. Hind-wing fawn-colour, with an irregular white mark, with two dark spots below it, near the anal angle. V. VII.

A most difficult insect to describe.

Larva very clear green, back paler; seven oblique streaks darker than the ground colour, and bordered below with white. Horn rough, yellowish, tip bluish; a white line on the back of the two first segments; stigmata white; head bordered on each side with a rosy line, bordered within by a white one; legs rosy, prolegs green, yellowish at tip (Dup.) On oak and evergreen oak. VI.-IX.

Central Europe. Frequent in collections.

The total number, therefore, of the larger *Sphingidæ* occurring in Europe is 31, or, omitting *C. Osyris*, 30. Of these, 18 occur in Great Britain, thus leaving 13 not yet discovered in this country. It is possible one or two new British species of *Deilephila* may still reward the collector in the south of England, but it is most probable that our *Sphinx* fauna is complete, and it is quite hopeless to expect any additions to it in any other genus.

Staudinger's arrangement of the *Sphinges* is as follows.—SPHINGIDÆ: 1. Acherontia, 1 sp.; 2. Sphinx, 3 sp.; 3. Deilephila, 18 sp., 2 exotic; 4. Smerinthus, 1 sp., 2 exotic; 5. Pterogon, 2 sp.; 6. Macroglossa, 4 sp. SESIIDÆ: 7. Trochilium, 3 sp.; 8. Sciapteron, 5 sp., 4 exotic: 9. Sesia, 50 sp., 6 exotic; 10. Bembecia, 1 sp.; 11. Paranthrene, 2 sp., 1 exotic. THYRIDIDÆ: 12. Thyris, 2 sp. HETEROGYNIDÆ: 13. Heterogynis, 3 sp. ZYGÆNIDÆ: 14. Aglaope, 1 sp.; 15. Ino, 13 sp., 1 exotic; 16. Zygæna, 58 sp., 16 exotic. SYNTOMIDES: 17. Syntomis, 3 sp., 2 exotic; 18. Naclia, 4 sp. In all, 179 species, occurring in, or on the borders of Europe.

DESCRIPTION OF A *PTEROMALUS* NEW TO BRITAIN (*P. LIPARÆ*).

BY F. WALKER, F.L.S.

Mr. Winter is the discoverer of *Pteromalus liparæ*, and has remarked that it makes a small hole on one side of the cane, and thus escapes. As no description of it has yet been published in England, I subjoin the characters of this species.

Pteromalus liparæ.—Mas et fæm. Lœte cupreus, capite thoraceque subtilissime punctatis, antennis nigris maris filiformibus, fæm. subclavatis; abdomine maris sub-fusiformi, fæm. longi-ovato, pedibus luteis, femoribus posticis maris ex parte nigricantibus, alis limpidis.

Male and female. Bright cupreous, robust. Head and thorax very finely punctured; head a little broader than the thorax. Antennæ of the male black, filiform, more than half the length of the body; scape luteous, black at the tip; third and fourth joints short; the following

joints long, successively decreasing in length. Antennæ of the female subclavate, not more than half the length of the body. Thorax elongated, of the usual structure; meta-thorax well developed, tricarinate, with two slight ridges diverging obliquely hindward from the middle keel. Petiole extremely short. Abdomen of the male sub-fusiform, smooth, concave above, except towards the tip, very little shorter and narrower than the thorax, with a slight small luteous discal streak before the middle; abdomen of the female elongate-oval, a little broader but hardly longer than the thorax, keeled beneath for fully half the length from the base, slightly ascending from the end of the keel to the tip; first segment long, second and third short, fourth, fifth, and sixth moderate, the apical small, conical. Legs luteous; tarsi with black tips; hind femora of the male partly blackish exteriorly. Wings limpid; veins brownish; humerus nearly twice the length of the ulna; radius shorter than the ulna; stigma black. Length of the body, 3-3½ lines; of the wings 4-4½ lines.

This species belongs to my 25th section of *Pteromalus* (see Ent. Mag., vol. 3, p. 465.)

Besides the above, Mr. Winter was the first who captured *Polemon liparæ*, which I mentioned as belonging to an apparently undescribed genus; and he has also made the noteworthy observation that the yellow larva of *Chlorops tarsata* feeds in April and May in the folds of the reed cane, in companies of four or five together; and that it changes to pupa soon after the middle of May, and remains in that state about forty days.

The Avenue, Finchley, *December*, 1861.

Note on Sitones cinerascens, recorded as British by M. Allard.—In M. Allard's "Classification du genre Sitones" (a concluding notice of which, as regards the British species, &c., will appear in our next number), *S. cinerascens*, Schön. (gen. vi., p. 256), is stated to occur in England, on the authority of the collection of the French Museum. This species is stated to be very closely allied to *S. cambricus*, having *the same structure and size*, and to be distinguished from that insect principally by the cinereous silky pubescence on its upper surface. This pubescence is closer and longer than in *S. cambricus*, and often (not *always*) prevents the punctuation of the insect from being seen: the punctuation itself, moreover, is *a little* weaker; the head is less furrowed, and the elytra *seem* to be *a little* longer. The antennæ *appear* to be more ferruginous, and the entire insect has an uniformly lighter appearance.

It will be observed that the differences between these two insects are extremely minute.—E. C. Rye, 284, King's Road, Chelsea.

Occurrence of Choleva longula in Britain.

Choleva longula, Kellner, Stett. Ent. Zeit., vii., 176, 1 (*Catops longulus*).

tristis, var B, Murray, Mon. of Gen. *Catops*, 38.

? pilicornis, Thomson, Skand. Col., iv., 61, 3.

This species is allied to *C. morio*, *nigrita*, *coracina*, and *tristis*; from which, besides its much more elongate form, the following characters will distinguish it.

Compared with *C. morio*, the club joints of its antennæ are longer, the seventh being in every way larger, and the apical half only of the eleventh testaceous; its elytra are more evidently punctured, and more gradually contracted behind; and its legs (and especially the apical joints of its tarsi) are longer.

It may be known from *C. nigrita* by its thorax being broadest a little before the middle, with the posterior angles less straight; from *C. coracina* by its uniformly stouter antennæ, and the hinder angles of its thorax not being prominent, or even slightly recurved, as in that species; and from *C. tristis* by the obsolete club of its antennæ, in which all the joints are much narrower, the eighth being stouter, and the apical more elongate; the club in *C. tristis* being abrupt, with the eighth joint small, shallow, and very transverse, and the apical joint short.

In *C. longula*, the antennæ are pitchy-black, with the two basal joints, and apical half of the last joint, testaceous; joints 1, 2, and 3 are elongate and equal; 4, nearly three-fourths as long as 3; 5 and 6, gradually more shortened, and a little widened, the latter being transverse; 7 conic, nearly as long as 5 and 6 together, and rather broader than the latter; 8 like 6 in every way, but a trifle smaller; 9 like 7, but smaller; 10 conic, longer and narrower than 9; and 11 longer than 10, ovate, acuminate.

The thorax is clothed with yellow hairs; transverse, considerably broader than long, rather narrower at its greatest width than the widest part of the elytra; the sides gently rounded, broadest a little before the middle, more straightly (though in about an equal degree) contracted behind than in front; the anterior angles rounded off, and the posterior angles somewhat obtuse; the hinder margin is evidently sinuated on each side of, and near, the middle.

The elytra are clothed with short yellowish hairs, but have a leaden-blue bloom; oblong oval, at least four times the length of the thorax, gradually narrowed behind, very obsoletely striated; and, with the thorax, somewhat strongly and not very closely punctured, the punctures running into irregular, transverse, indistinctly defined wrinkles.

The legs are elongate, ferruginous, the middle and hinder femora and tibiæ pitchy-brown; and the tarsi (especially the apical joints) very long. In the male, the middle tibiæ are very slightly curved, and the anterior tarsi have the basal joint strongly, and the second and third gradually less, dilated.

I detected an example of this species among some *Choleva* taken near Newcastle, and sent to me for examination by Mr. T. J. Bold, who subsequently found another specimen, which he liberally conceded to me.

I cannot understand how so close an observer as Mr. Murray could consider *C. longula* to be a var. of *tristis*, as he correctly gives the abruptly clubbed antenna for a distinguishing character of the latter, and also quotes, from Kellner's description, the fact that the club of the antennæ is but little thickened in the former species. The

inference also, in the face of the latter remark, that *longula* must be a thick-clubbed species, because it was recorded as having been taken under a dead bird, is a marvellous adaptation of facts to theory.

Mr. Murray also endeavours to account for the great difference in the antennæ by allowing a certain amount of variation in the thick-clubbed species; but, admitting that the *entire bulk* may be influenced, either by the sex of the individual, or its bodily development, I can scarcely believe a difference of *relative proportion* in the joints ever exists, and much less one of so striking a character as the present. Considerable *apparent* differences are often exhibited, owing to the various ways in which the joints can be gummed on the card in setting; e. g.,—the joints of one antenna, set on their edges, look quite unlike those of the other antenna of the same specimen, if the latter are properly flattened down; and the mere fact of the joints being jammed close together, or extended to the limit of their articulations, or being much or little clogged with gum, causes a different appearance in the same species.—In the *Cholevæ*, moreover, the usually minute eighth joint acts as a hinge; so that, without due care, the apical are often set in a different plane to the basal joints.

C. pilicornis, to which Thomson ascribes *longula* as a synonym with doubt, would seem to be different from that species, as he places it in a section "*antennis clavâ distinctiore;*" subsequently, in diagnosis and description, terming the antennæ "*crassis*" and "*validiores*,"—whereas Kellner's words are "*antennis obsoletê clavatis*" and "*keule wenig verdickt.*" Thomson also states the thorax in *pilicornis* to be a little longer than in *tristis*, a difference which I do not find in *longula*; and, in his comparison, calls no attention to the length of the elytra. If Thomson's insect be identical with Kellner's, it will show how the endeavour to strengthen an artificial section tends to mislead; for *longula* is clearly a natural ally of *morio*, as much as, or rather more than, of *tristis*.

C. longula has been already included in our lists, solely, I believe, on the ground of Mr. Murray's var. B of *tristis*.—*Id.*

Occurrence of Anisotoma Triepkii in Britain.

Anisotoma Triepkii, Schmidt, Germ. Zeits. f. d. Ent., iii., 153, 5; Erich., Ins. Deuts., iii., 55, 3; G. R. Crotch, Cat. Brit. Col.

I have detected an example of this species among some *Anisotomidæ* belonging to Mr. Hislop, taken near Falkirk, and which that gentleman has kindly ceded to me. It is allied to the *A. brunnea* of Wat. Cat., and may be described as follows.—Elliptic-oval, moderately convex; ferruginous, with the antennæ concolorous. Antennæ short, the apical joint narrower than the preceding, the two penultimate joints very transverse, and shallower than usual. Head large; thorax closely and strongly punctured, with the base sinuate on each side near the hinder angles; elytra strongly punctate-striate, with the interstices delicately punctured; the alternate interstices, however, having large scattered punctures. The anterior tibiæ are moderately widened, and strongly spinose. In the male, the hinder femora are widened in the middle, with the lower side of the apical end rounded, and the hinder tibiæ curved.

In this insect, as in most (if not all) others wherein the male characters of any part of the body are different from those of the female, modifications of the excess of development occur. In the present instance, some male specimens have nearly straight hinder tibiæ.

I find the example above mentioned agrees with description, and also with a type sent by Dr. Kraatz; and subsequent to my determination, have compared it with Mr. Crotch's original specimen, with which it also accords.—*Id.*

Anisotoma silesiaca.—Mr. Crotch has kindly allowed me to examine the specimen on the authority of which he introduced this species into his catalogue, and which he informs me was so named by M. Schiödte. The insect in question is only *A. ovalis*, and differs in every way from the true *A. silesiaca*, which is a large, oblong, convex species, with coarsely punctured thorax, and strongly spined anterior tibiæ.—*Id.*

Note on Carpophilus sexpustulatus, a dubious British species.—I have recently found, among some British Coleoptera, sent to me for examination by Mr. Edleston, of Manchester, an old specimen of *C. sexpustulatus* (Fab., Ent. Syst., i., 260, 1, *Nitidula*: Er., Ins. Deut., iii., 137, 4), which was formerly in the British collection of the Entomological Society, and has the name "Kirby" attached to it, printed on a pink label. The species is found in Germany under bark, and may possibly be truly British.

It has somewhat the appearance of *Nitidula flexuosa* or *4-pustulata*, but may be known from both of those species (apart from generic differences) by its thorax being more distinctly punctured, and contracted behind. From its congener *hemipterus*, it differs in having six spots on its elytra; which are, moreover, considerably longer.—*Id.*

Brachinus glabratus, Dej.—Since my remarks in our last number were written upon the insect brought forward as this species, I have examined another of the specimens therein referred to, which has been kindly sent to me by Mr. Edleston. This example is decidedly *B. glabratus*, having the antennæ unspotted, and elytra more roughened than in *B. explodens*. The fact of the two forms being found together would seem, in some degree, to warrant their being considered as one species by Dr. Schaum; but I must admit that the insects in question present considerable points of difference. Dr. Power was misled in determining his specimen by the erroneous descriptions in Steph. Illust.—*Id.*

To preserve the metallic colour in the Cassidæ.—Dr. Morsbach, in the Stettin Ent. Zeit., 1865, p. 114, states that a drop of glycerine, placed under the metallic stripes on the elytra of the *Cassidæ* and their allies, will cause the colour to remain. This colour is evidently owing to the moisture of the body, since it fades when the specimens become dry.—*Id.*

Locality for Micropeplus tesserula.—I captured nine specimens of this rare insect at Grange, Morecambe Bay, Lancashire, about the end of May, 1863.—R. S. Edleston, Bowdon, *March 10th*, 1865.

Captures of Coleoptera during the past winter.—I commenced the new year with a short excursion to Seaton (near Colyton), on the South Devon Coast. I was on a visit, so that I could only entomologize occasionally. The weather was delightful, but insects were not generally abundant.

I found, under the cliffs and elsewhere, a few specimens of *Dermestes tessellatus*, *Corylophus cassidöides*, *Apion subulatum*, *Limnichus sericeus*, *Baridius lepidii*, *Phyllotreta melæna*, *Apion difforme*, *varipes*, &c., and other more common species.

I was surprised at the great scarcity of *Brachelytra*. At the roots of grass, &c., I found a few specimens of what is called the Isle of Wight variety of *Dromius sigma* (*D. oblitus*, Boield., of Mr. Crotch's Catalogue). I think this is quite a new locality for it.

In the moss, &c., on the landslip, and Seaton Down, I found *Thyamis parvula* in abundance, associated (in the same way as I saw it in Norfolk in August) with an *Aphthona*, exceedingly like that which occurs at Mickleham, and which we always called *A. hilaris*. It is singular, however, that both the Norfolk and Devonshire specimens should invariably be nearly twice the size of those from Mickleham, and I strongly suspect that they will be found to be different species.

Last spring I took *Apion stolidum* in great abundance, by sweeping the *Chrysanthemum leucanthemum* on a bank near Watford. At Seaton, I found the cognate species, *Apion confluens*, also in great abundance, by examining the *Matricaria chamomilla* on the cliffs and beach. I never took it but once before, and then scantily—at Brighton. It is singular that, at this dead season, it is not apparently *laid up* at the roots of the plant, but is out on the leaves, and a fresh supply seems to come out day by day. They were very quiet, but scarcely torpid, and I frequently found them *in copulâ*. Lastly, I took a very considerable stock of *Sitones Waterhousii*, an insect which I never before saw alive. I first found one or two specimens, but on investigating more closely the ways of the creature, I found it to be laid up in the tangles of the stems of *Lotus corniculatus*, which I have no doubt is its food-plant. It was only present where the spot was moist, and its locality was limited to a distance of about 20 yards. My specimens are generally splendid ones, not rubbed at all, so that clearly it is "*in situ*."

Trachys nanus, *Pachyrhinus 4-nodosus*, &c., &c., are still to be found at Mickleham, and the last time I was there, I was surprised at taking upwards of thirty specimens of the beautiful *Thyamis dorsalis* at the roots of the herbage.

At Reigate, I have recently taken *Callistus*, *Lebia cyanocephala*, *Amara rufocincta*, *Pachyrhinus 4-nodosus*, *Scymnus Mulsanti*, *Pseudopsis sulcatus*, *Stenus nigritulus*, Gyll. (*unicolor*, Steph.), &c., &c.—J. A. Power, M.D., 52, Burton Crescent.

Capture of Lathridius filiformis.—In Mr. Murray's "Catalogue of the Coleoptera of Scotland," p. 43, is recorded the capture of *Lathridius elongatus* by me. I have lately (by Mr. Rye's assistance) discovered that the species so named ought to have been *L. filiformis*. On again looking for this insect to-day, I secured seven examples, besides seeing several of its larva.

I am not aware that *L. filiformis* has been met with so far north by any other person, and I understand that the few British specimens in collections have come mostly from Devonshire.—M. Young, 7, Old Sneddon Street, Paisley, *3rd March*, 1865.

Remarks on the habits of Phytosus, &c.—Much patience is required to find the *Phytosi*, and I have often sought them for many weeks in vain. In fine warm weather, they are to be obtained in moderately dry sand, *near* a swathe of thrown-up *Algæ* (seldom *in* the weed); and a very good plan of hunting is to stretch yourself at full length upon the sand, shifting your position after a while, when you will find that the pressure of your body has brought the insects to the surface. Should the sand be wet, they are to be found beneath flat stones (being easiest seen when the stones are white); and in very wet weather, they lurk beneath plants of the Sea-rocket (*Cakile maritimus*), which here grows on slight elevations of the sand. The above remarks, however, apply only to *P. spinifer;* the much rarer *P. nigriventris* never having occurred to me in any other place than on, or beneath, the Sea-rocket, and my way to find it is to turn back the branches, and closely watch the sand beneath, for it requires a quick eye to detect so thread-like an insect, and which is nearly of the same colour as the sand. Both species disappear in cold stormy weather, most probably going deep into the sand. I have frequently taken *P. spinifer* flying, on a hot sunny day, but never accompanied by its congener: nor have I met with the two intermixed, or even in the same places of concealment. *P. spinifer* is also sometimes to be found in depressions in the loose sand, often made by a foot or horse's hoof, into which the insect is blown during flight. Many other beetles are thus trapped, and fall a prey to spiders and mites; hundreds of the latter, of a very minute size, abound in these holes, and often cover insects so thickly, that not one portion of the latter can be seen. *Bledius arenarius*, generally found on level sand, and often within tide-mark, occurs here sometimes, at the foot of the sloping banks (especially when they are wet) on the landward side of the sands, and is usually accompanied by *Dyschirius thoracicus*, and occasionally by *Stenus nigritulus*, Gyll. (*unicolor*, Steph.). Meeting with an individual of the rare *S. atratulus* on his travels, in the same place, one fine June day, I watched him to a small conical hillock of sand, and eventually bottled him and all his family, many of whom were *in cop.* I have since seen a few wanderers of the same species astir, even near the end of October. On shaking tufts at the edges of these banks, *Calathus mollis* skates down with great rapidity, often simulating death cleverly; and on, and under, the low plants, *Saprinus maritimus*, *Scymnus Mulsanti*, and *Chrysomela marginata* are to be found; the latter being one of those species which disappear for years. *Cleonus sulcirostris* affects the thistles, and is only mentioned as a warning to brother collectors; for, having been induced last spring to bottle a very fine specimen of it, with other beetles, I found, on setting my captures, that it had bitten nearly everything else; half a leg, a tarsus, tip of an abdomen, or edges of elytra,—all were nibbled in sheer wantonness. Besides the above insects, the following are to be found in the same place (the sands skirting the villages of Whitley and Hartley, on the south coast of Northumberland), viz.,—under *Algæ*, *Cillenum*, *Tachyusa sulcata*, *Aleochara obscurella*, *Homalota plumbea*, *puncticeps*, and *maritima*, *Oxytelus maritimus*, *Omalium læviusculum* and *riparium;* and on the sands, *Ilyobates nigricollis*, *Mycetoporus nanus*, *Philonthus procerulus*, *Bledius longulus*, *Omalium Allardi*, *Orthochætes*, &c. North of Hartley, both species of *Æpus* occur.—T. J. Bold, Long Benton, 1865.

Locality for Carabus auratus.—I have in my collection a specimen of this rare beetle, taken by a friend (who knows little of Entomology, and has no foreign insects) on the coast, at Torbay, in (or about) 1854. When I received the specimen, its left elytron was pierced with a very coarse pin; but I have since re-pinned it with a fine one through the same wing case.—R. Lyddeker, Harpenden Lodge, Herts, 22*nd February*, 1865.

Notes from Japan.—The sea-weed here is full of the ordinary coast forms, such as *Heterothops*, &c.; and I get *Cossus*, with its *Homalotæ*, *Nitidulæ*, &c.: as may be easily imagined, I have all the trees to myself. *Longicornes* and *Curculionidæ* are fine and common; *Lycoperdina* occurs in toad-stools; the oaks are covered with *Apoderus* and *Agrilus*, and *Crioceris* is largely represented in species, but I have, as yet, only seen three or four *Geodephaga*; one of which, a *Cicindela*, is awfully sharp on the wing. I am told that *Damaster blaptoides* is very abundant near Yokohamma. Butterflies and moths are fewer than at any place I have visited, being even more scarce than at Penang; there are, however, 6 or 8 species of "clearwings" very common.—George Lewis, Nagasaki, *July*, 1864.

Offer to capture Lucanus cervus.—I should be very glad to capture specimens of *L. cervus* for any entomologist who would like them; I could have taken hundreds last year.—Henry Stephens, National School, Alverstoke, Gosport.

Observations on the habits of Oligoneuria rhenana, Imhoff.—The eggs of this species are attached to the last abdominal segment, and are enclosed in a clear jelly-like substance; and I have noticed that, soon after extrusion, this egg-bundle becomes so hard and brittle that it can be broken like glass. The imagos appear at Basle in the first days of September, in immense numbers; but their existence is limited to a day or two, after which period their dead bodies may be seen lying about in heaps in corners of the seats of bridges, where they are accumulated by the wind, until a contrary current of air carries them away.

Their rise from the water begins soon after sunset, and I may mention that they are never seen coming out near the banks of the river, but always from the middle, where the water is deepest and has the strongest current. I have not yet been able to find the larva, nor is it any where described, so far as I know.—Albert Müller, 2, Camden Villas, Penge, S.E., 1st February, 1865.

[The singular *Ephemeridous* insect to which these notes refer, appears to be almost confined to the upper part of the River Rhine; a few scattered specimens have occurred at Turin, and also (a variety) in Hungary.—R. McL.]

Rhyssa persuasoria.—In one of my entomological rambles about two years since, my eyes lighted upon a fine female specimen of this large *Ichneumon*, enjoying, as I was, the genial heat of a summer sun. In an instant, my net was over it, for I had never seen the like before. The length of the body was from 15 to 16 lines, and the ovipositor 19 lines, giving a total length of nearly 3 inches! This species is, I believe, the largest of the European Ichneumons.—H. Dorville, Alphington.

Description of the larva of Nemoria viridata.—Last summer, Mr. McLachlan kindly sent eggs of this species to Mr. Buckler and myself, and we were successful in rearing several larvæ. I should not, however, have said anything about them had they not been of a variety differing considerably from that to which the description by Borkhausen in Stainton's Manual must refer.

The larvæ were hatched on June 30th, being then of a saffron-yellow colour. They chose for their food whitethorn, especially preferring the young pale summer growth, and the tender shoots thrown up from stems cut off close to the ground. That they should make this choice, and thrive on it, seems strange, for I have generally observed that the summer growth of trees and bushes is not such wholesome food for larvæ as the older firmer foliage.

Some of this batch of *viridata* escaped, and I afterwards captured one of the runaways feeding on a withered poplar leaf; but this was evidently only from starvation, and the larva never recovered sufficiently to become a pupa.

The remainder of them were full-grown about the last week in August, being then about $\frac{7}{8}$-inch in length. In form, they were rather slender, somewhat flattened, and tapering towards the head; the head and second segment acutely bifid; the anal segment ending in a pointed flap; the whole skin rough with fine granules.

The ground colour was either a full clear green, or a yellow-green; the granules of the skin whitish; the points of the head and second segment red; a purple-red stripe down the back, or, in some individuals, this was interrupted on the middle segment, and, with some small whitish dashes, formed five acute diamonds; the sub-dorsal line whitish; spiracular line yellowish or whitish-green, in some specimens having in it small purplish spots on eighth, ninth, tenth, and eleventh segments; the belly with sub-spiracular and central pale lines; the true legs light red.

In habit, these larvæ were quiet, generally resting in an extended, rigid posture. About the beginning of September, they drew the leaves of their food together with a few threads, and changed to pupæ, rather truncated in front, but slender and pointed behind; colour, a dull pale ochreous, head and wing-cases dusky, with a faint tinge of olive-green; a dark line down the back; the spiracles showing black, and two short dark lines along the belly.—Rev. J. Hellins.

Description of the larva of Corycia temerata, &c.—This species occurs in this neighbourhood, flying in May and June near wild cherry-trees, or along black-thorn hedges, and I have once or twice succeeded in rearing it from the egg.

The ♀s certainly prefer to deposit their eggs in the crevices of the bark of their food-plant, or at the axils of the small shoots; and if they have not the opportunity of doing so, will lay but sparingly, or even refuse to lay any eggs at all. The larvæ are hatched in about fourteen days, and are at first of a deep yellow colour; they soon change to green, and after a time put on a broadish dorsal stripe of pale yellow; this, at the last moult, changes to the dorsal row of bright red spots, which, contrasting with the rich velvety green of the ground colour, make the larva so handsome to look at. The only variety of the larva I ever saw, I captured on black-thorn, in August, 1863; it was of a pale bluish-green ground

colour, the sides and belly being more of a whitish-green; the bright red dorsal spots of the type were replaced by a very indistinct, interrupted, reddish-brown line, and on either side of this there was, on each segment, a pale whitish dot, while the usual red spots on each side of the head were absent. Fortunately, Mr. Buckler, after having taken a figure and description of the larva, bred the moth during the next summer, and thus settled the question of its species beyond doubt.—*Id.*

Occasional visitors at sugar.—The number of species belonging to families not generally considered "sugar insects" has been rather remarkable during the past season.

In June, I took *Lithosia aureola* feeding on the sugar with apparently great enjoyment, and frequently *Crambus pascuellus* and *pratellus*, and *Eudorea ambigualis*.

In July, I found a lovely specimen of *Nola strigula* similarly engaged, and also, *Lithosia miniata*, *Hypenodes albistrigalis* and *costæstrigalis*, *Crambus inquinatellus*, *Rhodophæa consociella*, *Halias quercana*, *Tortrix corylana*, and several lovely specimens of *Psoricoptera gibbosella*. One evening, as it was getting dark, I watched a fine *Cossus ligniperda* flying about a baited tree, and hovering in front of the sugar until it settled upon it. In attempting to secure the specimen, I frightened it away, so do not know its sex, but feel quite satisfied that its settling on the sugar was no accidental coincidence; it certainly was attracted,—though why, I cannot say.

In August, *H. albistrigalis*, *R. consociella*, *H. quercana*, and *P. gibbosella* again occurred, and *T. corylana* was very common on windy nights, as also were *Penthina betulætana*, *Ephippiphora bimaculana* and *Cerostoma costella*. Besides these, I met with *Eudorea truncicolalis*, *Pædisca solandriana*, *Depressaria arenella*, *atomella*, *carduella*, *ocellana*, *albipunctella*, and *nervosa*, *Gelechia populella*, *maculea*, *gemmella*, and *Chelaria conscriptella*.

It is also worthy of remark, that on one or two nights, when hardly a *Noctua* was to be seen, *Tortrices* and *Tineæ* were in greatest force.—C. G. Barrett, Haslemere.

Food of Tinea parasitella.—While searching the trunks in a wood near here, one day last May, I came to a fir tree, of which the top had been broken off some twenty feet from the ground, and which was, in consequence, dead and decayed. Some small pupa skins were protruding from the bark, and a little closer observation revealed *Tinea parasitella* hiding in the crevices. It was not very common, but, for weeks after, I never visited the tree without meeting with one or more specimens. *T. cloacella* was also there sometimes, but not so commonly as might have been expected, probably because there was very little lichen on the tree.—*Id.*

Notes on the occurrence of certain varieties.—Hepialus velleda.—The only specimen I ever took of this insect was the variety *carnus*; this was in 1863; and it is curious that, though I searched the same spot both then and last year, I failed to take the typical form.

Grammesia trilinea.—It was, I think, in the summer of 1859 that, for some unaccountable reason, this usually abundant species did not appear in its accus-

tomed haunts, and was represented by a single leaden-coloured specimen of the variety *bilinea*. In both previous and subsequent years, the type was common enough, while of the variety I have only taken three examples altogether.

Xanthia cerago.—I meet with this insect not rarely in September and October; but last year did not see one of the typical form. On the 19th and 20th September, however, I took three specimens of a pale *Xanthia*; these, at first, much puzzled me; but afterwards, by the aid of my books, I made them out to be a variety of this species.

Phigalia pilosaria.—Common enough in 1863, but in 1864 I did not meet with a single specimen till the 10th March, when, while snow lay thick on the ground, I found a very handsome black variety at rest on an oak trunk. This was the only *P. pilosaria* which came under my notice in 1864; the usual form is already out this year (1865).

These instances of varieties appearing when the types were absent seem to me to be curious.

Xylophasia rurea.—I have generally found the red form, *combusta*, in considerable numbers: both it and the type are very constant to their respective markings, and I have not noticed any intermediate variation.

Tæniocampa cruda.—Amongst a number of this abundant insect, one, of a beautiful lilac tint, is worthy of notice; its colour, however, has rather faded since the moth was captured six or seven years ago.

Boarmia repandata.—I have on several occasions taken the banded variety, *conversaria*, but seldom in very fine condition. A friend tells me that, in a certain wood in this county, it is actually commoner than the typical form.

I should be much pleased to hear the results of others' experience and observation in this most interesting branch of Entomology.—JOHN T. D. LLEWELYN, Ynisygerwn, Neath.

Vanessa Ichnusa, Bon., Hub., Rbr. This insect is given by Mr. W. F. Kirby (who follows Dr. Staudinger) as a variety of *V. urticæ*, Linn.; although its larva, as described in Chenu's Encyclopædia, is quite unlike that of the latter species. In addition to this, the perfect insects differ more from each other than *V. polychloros* does from *V. xanthomelas*.—ANDREW WILSON, Edinburgh.

NOTES ON COLLECTING, MANAGEMENT, &c. (*LEPIDOPTERA.*)

THE CATERPILLAR STATE (*continued from page* 242).

BY H. G. KNAGGS, M.D.

Beating is the next mode of collecting which comes under consideration; the apparatus ordinarily used, consists of a clap net* (the larger the better) or an umbrella, a beating stick, such as a heavy hook-handled walking stick, and as

* An ingenious invention, by Mr. Norcombe, is carried out in the following simple and inexpensive manner:—Two pieces of cane (or lath) are "hemmed" into opposite sides of a piece of window blind, and through a hole made in the middle of one of them a loop of string is passed. Now for use:—Take an umbrella net (such as used for "sweeping,") open it, slip the loop over the ferrule end, unfurl the blind over the net, and hold down the other cane by means of the thumb of the left hand. Thus not only is a large surface afforded for receiving the results of his beatings, but the collector may instantaneously detach the appendix leaving him, net in hand, free to chase any Insect which may suddenly start up.

many boxes* and tins† as the beater can conveniently manage to stow away in his pockets or satchel: but for beating the higher branches of trees a large sheet (of canvass or other material) and a long beating pole become necessities;‡ the sheet too is of the greatest use where any large extent of tall bushes has to be beaten or shaken, as, for example, a sallow hedge for the larvæ of *A. Iris*.

Saplings may be jarred by kicking against them with the heel, but both they and the lower branches of trees are best worked by means of the mallet ("*le maillet*,")§, an instrument much in vogue with our French neighbours, to the efficacy of which I can myself attest. In using this implement it must be remembered that our endeavour is not to thrash the larvæ off the food, but rather to jar or shake the food from their foot-hold, and therefore, after administering a gentle tap or two for such larvæ as fall readily, we should *strike sharply and suddenly in the direction opposite to that in which we desire the larvæ to fall*, otherwise most of them will be jerked away and lost, though even with the greatest care it is difficult to entirely avert this occurrence.

The beating-stick is most serviceable for ejecting larvæ from bushes, and this is generally wielded in the right hand, while the left is employed in holding the clap net, umbrella, or "what-not," in the most advantageous position for receiving the results of the beating. Although most people think the direction in which they apply their beating-sticks unimportant, my friend Dr. Wallace will tell them that, unless they attend to the above italicised sentence, they will labour with little chance of success for the larvæ of *Aleucis pictaria*, and other clinging geometric larvæ.

From time to time the "beatings" should be carefully examined, and such larvæ as the collector desires to retain boxed with as little handling as possible. The contents of the net should then be turned about, and blown, or smoked, upon with a view to rendering active such larvæ as may have instinctively coiled up, or become otherwise inert, from the suddenness of the shock which has dislodged them: when the collector can find no more, he should cautiously turn out the contents, and cast a last lingering glance over the net or umbrella for any larvæ which may have attached themselves to the fabric of the receptacle.

Whilst *beating by night* the operator will act wisely to eschew the use of a lantern, which would certainly do more harm than good, as its tendency is certainly to "scare" many larvæ; he will, however, of course require it when examining the results of his beating.

Shaking is sometimes preferable to beating bushes, as for example in cases where it is desirable to procure the larvæ of certain species wtihout injuring them,

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* A handy box is thus formed:—Take a chip box and put a second lid on the bottom; punch, or cut, a hole through the second lid *and* bottom, towards the circumference:—when the holes thus formed are opposite to one another, larvæ may be inserted, but when the second lid is shifted round, the holes are not opposite, and there is no opening.

† The form of larva tin best suited for the pocket is "oval," size optional, the bottom perforated and the lid provided with a short tube into which a cork is fitted:—Larvæ are easily put down the tube and the danger of crushing them, by removing and replacing the lid, is obviated.

‡ An iron crook, whipped with waxed string to the top of a long pole, is very useful for suddenly and forcibly shaking the upper branches; as the larvæ, thus detached, fall straight down on the sheet below.

§ An ordinary mallet the striking-end of which is loaded with a pound or two of lead, and encased in stout leather or gutta percha, which has the double effect of preventing, in a great measure, injury to the trees, and diminishing sound; for working the lower branches of trees, a lighter one, with a long handle, is more suitable.

or to tire out such as those of *Apatura*, *Dicranura*, *Notodonta*, *Petasia*, for which the beating-stick has no terrors, and whose grip seldom relaxes for anything short of a mortal wound or blow.

In shaking bushes, spread the sheet beneath, grasp in each hand a large stem, pull towards you, give as strong a downward jerk as strength will permit of, and keep on repeating the process. I need hardly say it is tough work. Shaking is also the more effective plan of working herbs, (beating being hardly applicable) and is effected by gathering in the hand a head or bunch of the plant, bending it down, shaking it over the umbrella or net, and striking it against the stick or ribs.

Fumigation *and vaporation*, applied to bushes, whether by means of the smoke-bellows, in the form of tinder and tobacco smoke, or by "Maw's Atmospheric odorator!" in the form of a cloud of Benzine, strongly methylated spirit, or other objectionable fluid, would I dare say astonish the inmates, and doubtless cause their precipitate retreat. Never having tried the plan, however, I cannot speak with that amount of certainty which I hope to be enabled to do on a future occasion; fumigation, has however, been employed as a means of disquieting, the larval occupants of low herbage, with, at any rate, some amount of success.

Sweeping is undoubtedly the best plan for obtaining the inhabitants of low-ground herbage, in fact the number of larvæ, of species otherwise far from common, which may thus be taken is often perfectly surprising: it may also be used for working bushes, but for this purpose it scarcely comes up to beating.

The apparatus required consists of a sweeping-net,* and the usual complement of tins and boxes:—The operator, as he advances step by step, makes long steady sweeps of the net alternately from right to left, and back again from left to right, much after the movements of a mower, except that the sweeper mows, as it were, both ways, a very little practice enabling him to acquire the requisite turn of the wrist whereby the contents are retained within the net.

By day many larvæ may thus be obtained on the slopes of hills and undercliffs, particularly such as have a good assortment of wild herbs, along banks and ditches where herbs and weeds grow rankly, &c.; but the grand time for sweeping, as with beating, is just after sunset, when our heaths, moors, sandhills, banks, rides in woods, and other "canny" places, teem with larvæ, affording abundance of sport, especially on warm evenings in the spring months. When the vegetation swept is of an uniform character, as heather upon a moor, bilberry on a "chase," reeds, rushes, &c. in a marsh, or clover in a field, much time will be saved by putting the whole of the "sweepings" *without examination* into a closely fastening bag, for future leisurely investigation at home:—By this means, in addition to the time saved, the necessity for a lantern is done away with, many larvæ, which on the field would certainly have escaped notice, are secured, and *Psyche* and *Coleophora* cases when present will be got sometimes in plenty—besides which sawfly larvæ, beetles, *Hymenoptera* and bugs, as well as spiders, may be saved, without trouble,

* The frame of the sweeping-net of the Coleopterist is formed of a ring of stout steel wire, (jointed or hinged for convenience of doubling up and pocketing,) which screws into a handle, and the bag of the net is made of "Cheese Cloth," the hem through which the ring passes (easily) being composed of leather. This answers very well for *sweeping*, but for the Lepidopterist, who is, (or ought to be) always having insects fly up under his very nose, it is too heavy: Mr. Cooke, of New Oxford Street, has however acted on a hint I gave him, and now produces, at a reasonable rate, an umbrella sweeping-net of such strength as to defy breakage, and yet sufficiently light to permit of easy aërial manipulation. I purpose describing the manufacture of this self-acting umbrella-net in a future paper; in the present, space will not permit me to do so.

for friends or fellow-labourers whose spécialité leans towards them, and who may at some future time in gratitude for your services, mention you honourably in some great monograph or other.

To give an idea of the returns to be anticipated from an evening's work, I may remark that it is by no means unusual during a favourable evening towards the end of May, upon a heath or moor (as in the hollows at Shirley), to meet with larvæ of the following in greater or less abundance: *Agrotis agathina* and *porphyrea*, *Noctua neglecta* and *Dahlii*, *A. myrtilli*, *P. hippocastanaria*, *A. strigillaria*, *F. atomaria*, and *belgiaria*, *Eup. minutata* and *nanata*, &c., besides the heterogeneous *pôt pourri* before mentioned.

On reaching home we should lose no time in looking over our sweepings, and this is the *modus operandi*.—Unfasten the bag, shake out a handful or so into a large white meat-dish, and having tied up the bag again and distributed the sweepings over the surface of the dish, proceed to examine; put the Lepidopterous larvæ into glass-topped jam pots, in which fresh sprigs of the food-plant have already been placed; the beetles into a laurel bottle ticketed "*For E. C. Rye;*" the bugs into another "*For John Scott;*" pin the *Hymenoptera* "*For F. Smith;*" and immerse the spiders in a bottle of proof-spirit "*For the Rev. O. P. Cambridge:*"—repeat the process until the sweepings are exhausted, placing them after each examination into what is known as a "sixpenny pan," which tie over with muslin: for days after *Coleophoræ* will (and *Psychidæ* would too, if present) come up and attach themselves to the muslin, where they may be instantly detected. NOTE.—This is the way I should set about obtaining the cases of *Psyche nigricans* and *opacella*, as well as other low-feeding case-bearers.

With three lines of advice to the larva-hunter, I close this chapter on collecting:

1. Lose no time in making out the species to which your captures belong.

2. Do not think that, because you find a larva in abundance, it necessarily pertains to a common species; or the converse.

3. Do not expect to breed one tythe of the larvæ you obtain by beating and sweeping and you will not be disappointed.

(To be continued.)

ENTOMOLOGICAL SOCIETY OF LONDON, 6th March, 1865, F. P. PASCOE, Esq., F.L.S., in the chair.

Herbert Jenner, Esq., of Hill Court, Berkeley, and the Rev. T. A. Marshall, of Calthorpe Street, were elected Members, and R. Lyddeker, Esq., of Harpenden Lodge, St. Albans, was elected a Subcriber.

The President read a paper entitled "Notes on generic names having the same sound," in which he strongly condemned the practice (adopted by some Continental writers) of changing generic names because they happened to have nearly the same sound, although placed in distinct orders. In the discussion that ensued, the President's views on this matter were generally acquiesced in.

Mr. McLachlan read a paper entitled "*Trichoptera Britannica;* a monograph of the British species of Caddis-flies," in which were described 124 species, belonging to 43 genera.

Mr. Wood exhibited a variety of *Apatura iris*, from Kent.

Professor Westwood mentioned that, with respect to the specimens of *Ixodes* exhibited at the last meeting, he had discovered that De Geer had already noticed the remarkable position of the male when *in copulâ*; he remarked also that he had

found with the perfect specimens a large number of eggs and larvæ. These latter, until after their third moulting, were hexapod and nearly transparent, after which they acquired an additional pair of legs and somewhat the colour of the perfect "tick." He promised to lay drawings and full particulars before the Society at a future meeting.

Mr. Bond exhibited some singular rose-shaped galls, formed at the apex of willow twigs, and remarked that, on a large willow tree, about fifty feet in height, growing near Cambridge, almost every twig was so affected.*

Professor Westwood said that he had before seen galls of a similar nature, but larger; he was uncertain as to the insect which produced them, but suspected that it was a *Cynips*.

Mr. Bond also exhibited remarkable varieties of *Colias Edusa* and *Vanessa urticæ*.

With respect to the Entomological Prize Essays, the President read the following notice:—

"As an inducement to the study of economic Entomology, and with a view to "increase the practical utility of the Entomological Society, the Council offers two "Prizes, of the value of Five Guineas each, to be awarded to the authors of Essays "and Memoirs, of sufficient merit, and drawn up from personal observation, on the "anatomy, economy, or habits, of any insect, or group of insects, which is in any "way especially serviceable or obnoxious to mankind. The essays should be illus- "trated by figures of the insects in their different states, and (if the species be "noxious) must shew the results of actual experiments made for the prevention of "their attacks, or the destruction of the insects themselves.

"On former occasions, the Council has selected a definite subject, e. g. "'the *Coccus* of the Pine-apple,' 'the larva of *Agrotis segetum*,' &c. The consequence "was, that competition was diminished, or not called into play. On the present "occasion, therefore, the selection is left to the candidates, provided only that the "subject be one fairly belonging to the economic branch of Entomology.

"The essays must be sent to the Secretary, at 12, Bedford Row, with fictitious "signatures or mottoes, on or before the 31st December, 1865, when they will be "referred to a Committee to decide upon their merits; each must be accompanied "by a sealed letter, indorsed with the fictitious signature adopted by its author, "and enclosing the name and address of the writer.

"The Prize Essays shall be the property of, and will be published by the "Society."

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* The following letter has appeared in the columns of the *Athenæum*, March 18, 1865:—

"In Saturday's *Athenæum*, p. 352, it is recorded that, at the meeting of the Entomological Society "held on March 6th, 'Mr. Bond exhibited specimens of a gall found on a willow tree near Cambridge; "the attack of the insect . . . . . caused a premature terminal development of leaves in whorls, "so as to resemble a flower-head." Galls of this kind are of very frequent occurrence on willows in "this neighbourhood, and, I believe, throughout the whole of Lincolnshire. They are so common here, "that I have always supposed they must be familiarly known to naturalists. They first show them- "selves in the latter summer and early autumn, but are not easily discovered until the tree sheds its "leaves. When that happens, the gall-leaves become prominent objects. Their form is singularly like "that of a small rose, and the likeness is increased by the colour; which, in December and January, "is a light brown, very often nearly approaching red. As time goes on, the brown becomes deeper, and "when the green leaves shoot forth in spring, the galls fall off. The likeness to a rose is often so com- "plete, that an uninstructed person might easily be led to the absurd conclusion that he had seen roses "growing on willows. That this opinion was current at one time, is proved by the following entry in "the chronicle of John Capgrave, 1238:—'In that same yere welowes bore roses, red and frech; and "that was in Januarie,' (p. 207). This is another proof to be added to those accumulating daily, "that the strange histories to be found in the records of past ages, are not, for the most part, deliberate "fables, but truths ill understood, or facts seen out of their proper perspective. There is a story told "by an Irish writer, of a certain willow-tree, which, having received the blessing of St. Coëginus, "straightway began to bear apples (*Lan. Beyerlinck, Theat. Vitæ Humanæ*, t. 1, p. 921a). It is "highly probable that the foundation of this legend must be sought in a similar direction.—EDWARD "PEACOCK, Bottesford Manor, Brigg, *March 13th*, 1865."

NOTES ON THE LEPIDOPTERA OF IRELAND.

BY EDWIN BIRCHALL.

Owing to the almost entire absence of local collectors, our knowledge of the *Lepidoptera* of Ireland is still in a very unsatisfactory state; and even of the native Butterflies it can hardly be doubted the record is very imperfect. The following twenty-four British species have not been noticed in Ireland:—*P. Machaon*, *P. Daplidice*, *A. Adippe*, *A. Euphrosyne*, *A. Selene*, *M. Cinxia*, *V. C-album*, *V. Antiopa*, *L. Sybilla*, *A. Iris*, *M. Galathea*, *E. Blandina*, *Th. W-album*, *Th. pruni*, *P. dispar*, *L. Adonis*, *L. Corydon*, *L. Acis*, *L. Arion*, *N Lucina*, *S. alveolus*, *St. Paniscus*, *H. comma*, and *H. Actæon*,

There seems no reason why all (except perhaps *P. Machaon*, *P. dispar*, and *A. Iris*), should not be found. If Entomologists who may visit Ireland during the coming summer will only make notes of the Butterflies observed, I am convinced we shall not have long to wonder at the absence of such generally distributed species as *A. Euphrosyne* and *Selene*. I believe it is the observers, and not the insects, which are the absentees, especially as there are about a dozen Irish counties, comprising almost the whole of Ulster, into which even the wandering Lepidopterist has scarcely penetrated; so that theories based on the presumed absence of certain species must, in the present state of our knowledge, be received with great reservation. As an illustration of this, I may mention that *Gonepteryx rhamni* had not been noticed until last year since its discovery at Killarney by Mr. Andrews in 1839, and the fact of its existence in Ireland had come to be doubted; that so conspicuous an insect could escape observation for a quarter of a century is proof of the very fragmentary nature of our knowledge of the *Lepidoptera* of Ireland.

Still some little progress has been made; and since the publication of Messrs. Boyd & More's Essay on the Geographical distribution of Butterflies in Great Britain and Ireland (Zoologist, April, 1858), the following species have been observed in Ireland:—

Argynnis Lathonia at Killarney, August 10th, 1864, in the lane leading from Muckross Village towards Mungerton Mountain.

Melitæa Athalia I found in plenty at Killarney in 1862.

Vanessa polychloros. I saw a specimen near Galway in 1861, but was unable to secure it.

Lycæna Agestis. Wicklow; also Mourne Mountains, near Ross Trevor.

The species to which the remainder of these notes refer, have already been noted as occurring in Ireland.

Theela betulæ.

This species, usually considered a scarce insect in the British islands, occurs abundantly in the west of Ireland. In August, 1863, I saw it in great numbers near Galway, hovering over bramble blossoms, and at Killarney sparingly last August. It is active on the wing, but will only fly during sunshine, settling on the flowers when the sun is obscured even by a passing cloud, and if the weather is at all cold or wet, is so lethargic as to allow itself to be readily taken with the fingers. One wet afternoon in Galway I obtained about sixty specimens, mostly in fine condition, by this method.

The curious onisciform larvæ I have beaten in June from stunted blackthorn bushes.

Erebia Cassiope.

The only Irish locality for this insect, about which I can speak from my own knowledge, is Croagh-Patrick, near Westport; in some marshy hollows about halfway up the mountain, I took a fine series in June, 1854; but most likely it would also be found on the Nephin range, and I have reason to believe it occurs on Slieve-Donard, near Ross Trevor.

Anthocaris cardamines.

Our ordinary "White Butterflies," by which I mean the genus *Pieris*, are not generally common in Ireland, at least, in the south and west you may collect for the length of a summer's day without seeing a specimen; and I have thought it possible that the Exodus of the Irish peasantry has something to say to this: the character of the vegetation has been changed over vast tracts of country—innumerable cabbage gardens have been suppressed, and grazing farms substituted—over wide districts once studded with villages and alive with beggars, no signs of man are to be seen. An American gentleman with whom I travelled to Killarney last summer constantly asked, as we rolled hour after hour over the fertile but silent central plain traversed by the Great Southern and Western Railway, "Where are the people?" Gone for ever; and the dependent pigs, sparrows, cabbages, and Butterflies gone after them. But it would seem, from what Mr. Bowles, the Secretary of the Entomological Society of Canada, tells us of the appearance of *Pieris rapæ* in Canada,* that the Butterflies are more loyal to the British connection

* See Canadian Naturalist, new series, vol. I., No. 4, p. 258, transferred to Zoologist for December, 1864, p. 9374.

than the 'Paddies,' and have selected Canada for their future home in preference to the United States. But to come to *Antho. Cardamines*: One day in May, 1860, at Sligo, I saw more of this insect than I have seen in all my life before or since; the fields were alive with them, and even in the streets of the town they swarmed. They did not appear to be moving in any one direction, like the migrating clouds of *Callidryas*, of which travellers in tropical countries tell us, but to be flitting about on their ordinary avocations, only in extraordinary multitudes.

I am unable to say whether this species is usually very abundant at Sligo, but on the eastern side of the island, *Cardamines* is not a very common insect.

Leucophasia Sinapis.

This butterfly is pretty generally distributed in the west and south, and is very abundant near Galway. I have not met with an autumnal brood in Ireland, although I have carefully searched the spots where it abounds in June.

10, Chester Street, Bradford: *March*, 1865.

(*To be continued*).

AN ESSAY TOWARDS A KNOWLEDGE OF BRITISH *HOMOPTERA*.

BY THE REV. T. A. MARSHALL, M.A., F.L.S.

(*Continued from page* 253).

(3.) Frons sub ipsis oculis latissima, dein ad clypeum sensim angustata.

a.—Frontis carina media in vertice obsoleta.

13.—*Delphax lugubrinus*, Boh.

I.—*Forma brachyptera*, ♂. Testaceus, abdomine nigro, supra plus minus testaceo, segmentis 2-3 ultimis interdum totis testaceis. Genæ sub antennis plus minus nigræ. Carina media in fronte sat conspicua, in vertice indistincte fuscata et postea obsoleta. Scutellum basi utrinque nigro notatum, vel nigrum, apice testaceo. Hemelytra paulo ultra abdominis dimidium extensa, nigra, basi testacea, apice anguste albo limbata. Pedes testacei, coxis nigris. Segmentum genitale magnum nigrum. ♀ Totus testaceus, hemelytris dimidio abdomine brevioribus, nervis validis, fuscis, impresso-punctatis, costa undique pallida.

II.—*Forma macroptera*, ♀. Hemelytra testacea, pellucida, abdomine longiora. Long. ♂, $1\frac{1}{4}$; ♀, $2\frac{1}{4}$ lin.

Boh., Handl., 1847, p. 55. Flor, R. L., 2, p. 73. Stål, Öfv., 1847, p. 266.

A single *brachypterous* ♀, from the neighbourhood of Leicester, is before me, which I refer, with some slight hesitation, to this species. Its large size, as well as the abolition of the medial carina on the vertex, are characters which I am obliged, at least for the present, and in the absence of more specimens, to regard as conclusive. The rest of the diagnosis is compiled from the above authorities.

b. Frontis carina media in vertice conspicua.

i. Frons duplo longior quam sub ipsis oculis latior.

* Liber rostri apex clypeo æqualis longitudine. Hemelytrorum nervi conspicue impresso-punctati.

14.—*Delphax pellucidus*, Fab.

I.—*Forma macroptera*, ♂ ♀. Niger; carinæ tam frontis quam pronoti, scutelli et pronoti margines, testacei. Hemelytra abdomine longiora, hyalina, *nervis dense et conspicue impresso-punctatis;* costa circa membranam nigricans. Pedes fusci, vel obscure testacei.

II.—*Forma brachyptera*, ♂. Plerumque niger, carinis tantum frontalibus testaceis. Sed variat ultra modum, una alterave corporis parte testacea. Segmentum genitale medio in angulum fere excisum. Rostri articulus 1mus 2do æqualis longitudine. Hemelytra duplo longiora quam latiora, abdominis tres partes obtegentia, dense impresso-punctata. Alæ nullæ. ♀ Sæpius testacea, raro nigricans ut mas.

Long. 1-1¼ ♂; 1¼-1½ lin. ♀.

Fab., Rhyng., p. 84. Germ., Mag., 3, p. 212. Flor, R. L., 2, p. 65. *D. suturalis*, Curt., B. E., 657.—*flavescens striata marginata*, Fab.—*dispar*, Fall., Zett.—*hemiptera*, Germ.—*obscurella*, Stål, &c., &c.)

Other works must be consulted for the synonymy and numerous varieties of this common species. However its individuals may differ in colour, size, or development of hemelytra, they may be separated from *all* others by the dense and deeply impressed punctures of the veins:—from *D. neglectus*, by wanting the deeper brown tinge at the sides of the pronotum and scutellum, and by their shorter antennæ, the apex of the 2d joint of which does not reach the clypeus;—from *D. striatellus*, by the absence of the black streak in the angle of the clavus;—and lastly, from *D. discolor*, by the different form of the frons (see synopsis). Zetterstedt (Ins. Lapp., p. 305. *Delphax dispar*) was the first to observe that the various forms of this insect cohabit, and that the apterous and winged individuals are to be found *in coïtu*, thus establishing their identity upon the surest basis. They are found abundantly in grassy places throughout northern and central Europe, less commonly in the south.

** Liber rostri apex clypeo brevior. Hemelytrorum nervi non conspicue impresso-punctati.

† Pronotum et scutellum longitrorsum albido vittata. Carinæ frontales nigro.

15.—*Delphax collinus*, Boh.

I.—*Forma macroptera*, ♂. Testaceus, abdomine nigro. Frons flava, carinis albidis, nigro marginatis. Pronotum et scutellum testaceo-brunnea, carinis tribus et linea media conspicua albicantibus. Hemelytra hyalina, abdomine longiora, nervis apice fuscis; margo interior pallide brunneus. Alarum nervi nigricantes. Pedes testacei vel pallide brunnei. ♀ Abdomen testaceum, supra nigro-maculatum, maculis in sex potissimum lineas digestis.

II.—*Forma brachyptera*, ♂ ♀. Hemelytra abdomine dimidio breviora, testacea, costa albicante. Long. ♂, 1-1¼; ♀, 1¼ lin.

The broad white mesial line, commencing at the vertex, and continued nearly to the anus, will serve at a glance to distinguish this species. It appears to be rather uncommon, but has been found by me in meadows near Leicester, in September.

†† Pronotum et scutellum longitrorsum non albido vittata, verum extra carinas suas laterales plus minus infuscata. Carinæ frontales non nigro marginatæ, set frons ipsa nigra.

16.—*Delphax neglectus*, Flor.

I.—*Forma macroptera*, ♂ ♀. Testaceus, abdomine plus minus brunneo, supra nigricante. Frons tota cum carinis pallida. Oculi nigri. Pronotum et scutellum medio pallida, utrinque extra carinas laterales brunnea vel fusca vel etiam nigricantia. Hemelytra abdomine multo longiora, hyalina, nervis, extrorsum fuscis; costa basi pallida, circa membranæ apicem nigra. Pedes testacei.

II.—*Forma brachyptera*, ♂ ♀. Hemelytra modo ad abdominis apicem producta, modo dimidia parte breviora. Cætera ut in præcedente. Long. ♂, 1¼; ♀, 1¼-1¾ lin.

Flor, R. L., 2, p. 57. *D. dispar*, H. Sch., D. Ins., 126.

Taken in abundance by me in meadows of the midland district, and near Esher. Flor has found it in Esthonia, and also in the South of France. The larva is of a pale yellowish white, with two longitudinal dark stripes, extending from the pronotum to the apex of the abdomen. It is liable at first sight to be confounded with *D. striatellus* and *pellucidus*,—but see remarks on those species.

ii. Frons dimidio fere longior quam sub ipsis oculis latior.

17.—*Delphax discolor*, Boh. ?

I.—*Forma brachyptera*, ♂ ♀. Niger; abdominis segmenta testaceo marginata, vel saltem angulis posticis testaceis. Pronotum et scutellum fusco-testacea,—aliquando fere nigricantia. Frons nigra, carinis pallidis. Hemelytra abdomini dimidio longitudine æqualia, hyalina; costa undique pallida. Pedes testacei, femoribus tibiisque fusco lineatis, tarsis 4 anticis, posticorum articulo ultimo, fuscis.

II.—*Forma macroptera*, ♀. Hemelytra abdomine longiora, hyalina, nervis pallide brunneis subtilissime punctatis; costa circa membranam nigricans. Cætera ut in præcedente. Long. ♀, 1½ lin.

Boh., Handl., 1847, p. 61. Flor, R. L., 2, p. 63. Stål, Öfv., 1854, p. 195.

A single ♀, taken in Darenth Wood, appears to answer the descriptions of authors. The pronotum and scutellum are nearly black; but to this character little importance can be attached. As certainty is unattainable without more specimens, the name is left for the present with a query.

At this point I am forced, from scarcity of material, to leave the genus *Delphax*. Two or three individuals of other species are in my possession, which I have hitherto failed to identify. But, until an exhaustive comparison of published descriptions shall have proved them to be true, I am unwilling to risk any possible additions to the existing mass of synonyms.

(*To be continued.*)

EXTRACT FROM M. ALLARD'S PAPER ON SITONES, &c.

BY E. C. RYE.

(*Concluded from page* 232.)

S. REGENSTEINENSIS, Schön. This insect, found commonly on broom and furze, is exceedingly variable in size, some specimens being quite twice as large as others; the smallest are often apterous, with rounded shoulders, and more pointed apex to the elytra. It varies also somewhat in colour, its rather sparse clothing of scales being either brownish or greenish-grey; nevertheless, its almost globular thorax, convex elytra, delicate (but very distinct) hairs, and "straggling" legs will serve to distinguish it readily from all other British species.

S. CAMBRICUS, Stephens. The robust build, prominent eyes, strongly dilated and rounded sides of the thorax, coarse punctuation, and scanty scales of this insect separate it at once from its congeners. Like the other *Sitones*, it varies somewhat in size, the largest specimens being as bulky as full-sized *puncticollis*; and, owing perhaps to its

habitat, it often exhibits considerable differences in colour,—being usually almost scaleless, black, and somewhat shining; though when freshly disclosed its lower surface is thickly covered with whitish-grey scales, and its elytra clothed with a very short, depressed, delicate golden-brown pubescence, variegated with small patches of dark brown or black. The coarse punctures of the striæ can, however, always be seen.

It occurs mostly in marshy places, damp meadows, and sand pits, but is never common. In the London district it has been found at Plumstead, Lee, Charlton, Shirley, Hampstead, and Barnes Common; I have also received it from the neighbourhood of Hythe, Kent (Rev. W. Tylden), and Messrs. Sharp and Henderson have found it in Scotland.

S. CINERASCENS, Schön. The characters of this species, of which one of the localities given by M. Allard is "Angleterre (coll. du Muséum)," are given in our last No., p. 256.

S. PUNCTICOLLIS (Kirby) Stephens. The only species with which this insect is likely to be confounded is *S. flavescens*, from which it differs in having its elytra longer, more parallel-sided, and less suddenly contracted at the apex; it is also larger, with longer legs. It varies somewhat in colour, but is usually brownish-grey, with a slightly green reflection; the thorax, generally reddish-brown, has a pale central line, on each side of which are three light spots at the anterior margin, one in the middle, and one (often indistinct) at the base; next to these is a pale lateral line, with a small white spot outside. The head has two pale spots on the vertex, with the thoracic lines continued indistinctly. The elytra have each two interrupted, irregular, elevated and dark coloured ridges.

It is not so common as *flavescens*, but occurs not unfrequently in Kent, and elsewhere in the south and middle of England.*

S. LINEATUS, Schön. The difficulty is to name a place where this pest does *not* occur: from the earliest spring days, when the first really warm rays of the sun tempt hybernating insects to take to the wing, down to the foggiest and dampest autumn evenings, *Sitones lineatus*, in a more or less abraded and otherwise disguised state, intrudes itself upon the irate Agriculturist and Coleopterist alike. The latter, despite its often scaleless body, may know (and to know is to avoid) it by its

* *S. gemellatus*, Schön., has occurred in central France, and *might* be found in the south of England. It resembles *punctilollis*, but is shorter, with its elytra more suddenly rounded, and its eyes more prominent. It is dull black, with scattered grey pubescence, and three white spots, one at the scutellum, the others at the base of the second and fifth interstices.

very parallel long elytra, generally cylindrical shape, slender antennæ, and thin, light coloured, tarsi and tibiæ. When in good condition its surface is very smooth, with three light lines on the thorax, and the suture and alternate interstices also pale. Its ground colour also varies from ashy-brown to ochreous or greenish-grey; varieties occur in which the light stripes are absent, or very indistinct; and sometimes darker specimens are to be found, with a light spot at the scutellum and shoulders.*

S. HISPIDULUS, Germar. The elliptic form, flattened eyes, strong and remote punctuation, and short, stiff grey bristles of this insect, readily separate it from all our other species. It is almost as abundant as the preceding; and, when quite fresh, is very prettily marked, its thorax having a slightly metallic reflection, and its elytra being variegated with small patches of brown or black.†

S. MELILOTI, Walton. Allied to *S. humeralis* and *S. lineatus;* differing from the former, which it most resembles in size and shape, in its darker colour, less strongly grooved head and rostrum, more finely punctured thorax, and longer elytra; which are, moreover, suddenly contracted at the apex. From *lineatus* it may be known by its larger size, more robust and less parallel elytra, narrower head, less prominent eyes, darker colour, and less distinctly punctured striæ. The freshest specimens are but scantily clothed with ashy-brown scales, variegated with indistinct and rather lighter coloured markings.

It seems to be very uncommon, and occurs on the *Trifolium officinale*, a straggling, bushy, yellow flowered trefoil, in Yorkshire, and at Charlton Sandpits, in June and July. Recently it has been taken on the same plant in Hammersmith Marshes by Messrs. S. & J. Stevens, and myself.

S. HUMERALIS, Stephens. This pretty species is common in the south of England, especially on the chalk. It abounds in vetches at Mickleham, and is found freely in sandpits near Croydon; unlike most of its congeners, it occurs on oak, birch, and hazel, and M. von Heydon has taken it in Germany on willow.

It has but a slight resemblance to any of our other species, owing

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* *S. cylindricollis*, Schön., taken in Europe, as far north as Paris, is like *lineatus*, but is slightly smaller, with its eyes less prominent, its thorax less dilated at the sides, almost cylindrical, and its elytra contracted at the apex. In colour it is yellowish-grey, variegated with white and brown spots.

† *S. tibiellus*, Schön., found in temperate Europe, is (according to M. Allard) generally confounded with *hispidulus*, from which it differs in its uniform dark grey colour and smaller size, and in having its thorax wider and more rounded at the sides. The tibiæ and tarsi are redder, and not so hairy, and the femora only darkened in the middle, and that in a less degree. The bristles, also, are closer and more numerous.

to its narrow head, somewhat broad, flattened, and "shield-shaped" elytra, which have the entire back dark brownish, and a broad l ght coloured outer band on each side, commencing from the shoulder, reaching to the apex, and gradually getting less distinct in outline. These outer bands sometimes extend considerably over the elytra, and are sometimes only conspicuously lighter near the shoulders (the outer part of which is always dark), and at the apex. The legs seem to be always reddish-testaceous, with the femora slightly darker, but the entire insect varies in colour from yellowish-brown to greenish-grey.*

It will be seen from the above that we have fourteen species for certain in this genus, besides two that require further evidence. I have added notices of eleven others, which are the most likely, from their recorded localities, to occur here; it is, however, somewhat improbable that any of these latter have hitherto escaped notice.

Of our fourteen species, no less than seven were first described by British Entomologists; and it is an agreeable change from the usual suppression of English names to find that M. Allard makes no question as to their priority or sufficiency.

284, King's Road, Chelsea, S.W.

Rhyssa persuasoria.—Seeing that Mr. Dorville has recorded, at page 262 of "The Magazine," the capture of a single specimen of this large *Ichneumon*, I am reminded that, when I was at Bournemouth two years ago, I took twenty-eight specimens of it, and could have taken more if I had tried.

They were flying about some fir poles, in which were evidently the larvæ of one of the *Sirices*. Two of the females, which I secured, had their ovipositors so far in the wood that they could not withdraw them:—"rather a fix!!"

They are certainly queer looking things when flying about the timber.—Fred. Bond, Cambridge, *April 3rd*, 1865.

Occurrence of Gonioctena affinis, Gyll., a species new to Britain.—Among some British *Coleoptera*, belonging to Mr. Cocking, of Norfolk, I have found one specimen of a *Gonioctena*, which agrees with Gyllenhall's description of *affinis*, and which, Mr. Cocking informs me, he found among some sweepings belonging to Mr. Winter.

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* *S. discoideus*, Schön., found in temperate and southern Europe, is often confounded with *humeralis*, according to M. Allard, but is always distinguishable from that species by its head being narrower, especially at the base, which causes the eyes to seem more prominent. The forehead and rostrum are more deeply furrowed, the humeral callus is a little more prominent, and there is a little white callus at the extremity of the fifth interstice.

M. Allard describes another species, *S. biseriatus*, from two specimens, one taken by himself near Paris, which he states to be closely allied to *S. discoideus*, but to differ from it chiefly in having short, fine clear grey silky hairs; which, on the second half of the elytra, form two distinct series on each interstice.

S. inops, Schön., taken in Austria and France, bears great analogy to *S. humeralis*, from which its narrower elytra and thorax (the latter of which is more contracted in front and more finely punctured), its smaller size, and less closely planted scales, will serve to distinguish it.

The latter does not remember having taken this insect, but has no doubt that it was captured by himself, with *Leptura sanguinolenta* (also in Mr. Cocking's box), in the Norfolk fens, as he had not collected elsewhere.

C. affinis resembles 10-*punctata*, but is easily distinguished by its black thorax, which is also less contracted in front, and by the interstices of the elytra being destitute of punctures. There appears to be a variety with the tibiæ and sides of the thorax reddish.—C. O. Waterhouse, British Museum, *March 4th*, 1865.

Notes on Micro-Lepidoptera (*extracted from an unpublished paper read before the Cambridge Entomological Society in February*, 1865).

Xanthosetia zœgana.—This is common in the marshy field over the "cutter," among *Centaurea nigra* (Black Knapweed), where I took several fine specimens at the end of August last; among them were two beautiful varieties—the *Xanthosetia ferrugana*, of Haworth (figured in Wood's index). I also took two of this species in Kent, the first week in July, on a chalk hill; these specimens are very small, compared with those which we get here, neither are they so brilliant in colour.

Xanthosetia hamana.—This is also common in the same localities as the last-named. I first noticed its appearance last year in May, when I took a small one in the field over the "cutter." I took an *albino* variety in Kent, and the ordinary forms were common enough. This species, unlike *zœgana*, was generally very large in Kent. The last specimen I took was in September, thus showing great irregularity in its time of appearance in the imago state.

Chrosis tesserana.—This was in abundance in Kent in the first week in July. I took a fine series, ranging in colour from light lemon-yellow to deep chestnut red. It flies freely in the sunshine, and has much the same habit as *Sericoris conchana*, small specimens of which it much resembles when on the wing. It is a very lively insect, and even when in the net, the chances are almost equal that it gets away, as it is so difficult to box.

Tinea simplicella.—A single specimen of this scarce species, I beat from a hedge of hazel in Kent, the first week in July. I am of opinion that this species feeds either in birds' nests or on rotten wood.

Tinea nigripunctella.—I found a fine and strongly marked specimen of this in my photographic room in July.

Adela rufimitrella.—Two specimens taken at rest, in the lane leading to Chesterton Church, at the end of May. I saw one flying in the sunshine, which seemed greatly attached to a plant of *Sisymbrium officinale*, on which it repeatedly settled; and on my trying to capture it, it flew off for a short distance, but returned, again and again, and settled on the same plant. This may prove to be the food-plant, as the larva is unknown. On my again visiting the same place, the grass—and with it, of course, the *Sisymbrium*—had been mown, so that I could ascertain nothing further concerning its economy.

Swammerdamia lutarea.—I captured one of this rare species in Kent. I have two others which I met with in the New Forest three or four years ago.

Depressaria ——— ?—I took two very fine specimens of a *Depressaria*, flying at dusk on a hill-side in Kent; they may prove to be either *D. nanatella* or a distinct species.

Depressaria arenella, propinquella, subpropinquella, Alstrœmeriana, purpurea, applana, ciliella, chærophylli, heracleana, albipunctella, and rhodochrella.—These were all beaten from thatch, March 25th, 1864, at Cherry-Hinton, Granchester, and Chesterton. This was a good day's sport, as *rhodochrella* is only lately introduced into the British list, and has, I believe, only been taken by Mr. Bond and myself. This species is at once distinguished from *subpropinquella*, which it closely resembles, by its black head and thorax; a peculiarity which is very prominent when the insect is alive.

I may here make a few remarks on the flight of the various species of *Depressariæ* when beaten out of thatch.—*Arenella* flies, or rather floats, lazily for a few yards, and then comes to the ground, where it is is easily boxed, making no attempt to escape; *propinquella* looks out for itself, and has to be caught with the net; the same with *subpropinquella*, which, however, sometimes flies rather high, but comes down after a little time to be caught, as an agreeable moth should do, when it is wanted; *Rhodochrella*, so far as my experience, which is very limited, goes (having taken but three), mounts high in the air directly it is dislodged, and, after a few rounds, comes leisurely within reach; I cannot say how it behaves on the ground, as mine were all caught on the wing; *Alstrœmeriana*, on leaving the thatch, quickly settles on the perpendicular walls of the barns, &c., when the best way to catch it is to hold your net beneath it, and to touch it gently, when down it goes into the net; otherwise it is an artful little dodger; *purpurea* dodges about, and the sooner it is boxed the better, being rather small and difficult to find; *ciliella* floats gently to the ground; and as it is easily disturbed, the best way is to kick it up, and then catch it with the net; *chærophylli* is the most artful dodger of the whole; as soon as it is dislodged it darts to the ground, and if not carefully marked down, is difficult to find; when found, it is best to get it to take to flight again, if possible, so as to catch it on the wing, as it has a bad habit of shuffling to the roots of the grass, and spoils itself, if an attempt is made to box it on the ground; *heracleana* flies very high, sometimes mounting out of sight, but comes down again in time to be caught.

During the past summer, I also bred *albipunctella* and *chærophylli* from *Chærophyllum temulentum*. The larva of the latter was abundant all round Cambridge last year; it should be looked for the third and last week in June.

Hypercallia Christiernana.—I took seventeen specimens of this insect in Kent, the first week in July. Having taken two specimens there in July, 1857, I determined to pay the locality another visit the first opportunity; on the 4th of July last, I gave myself the promised treat, and within three quarters of an hour of my leaving the railway station at Shoreham, I captured a fine specimen in exactly the same spot where I had found the two in 1857. Most of those who read these pages will be able to imagine my intense delight, so that it is unnecessary for me to relate the extempore dances I performed, nor the various capers I cut, nor the way in which I threw up my hat into the air; however, I do not think I was observed by any one, or I might have been deemed an escaped lunatic. I then regularly set to work to find the insect; and after five days' work, I had the satisfaction of seeing seventeen specimens on my setting boards. Their flight is sharp, and generally straight ahead; they are not difficult to net, but when in the net, you must be very careful in boxing them, for the moth sits quite still on the side of the net, and, as

you may think, perfectly unconscious; but just as you are going to put the box over it, with a jump and a jerk it is gone! and woe betide you if there is the smallest hole in the net. I lost two in this way, to my no small chagrin. As I purpose, if possible, having a search for the larva this next summer, I hope to be able, at a future date, to give further particulars.

Coleophora niveicostella.—I took three specimens in Kent by sweeping.

Coleophora argentula.—I found some hundreds of the larvæ feeding on the seed-heads of yarrow, last October, at Chesterton. From these I hope to be able to breed enough for self and friends.

Batrachedra pinicolella.—Of this I took a long series in Kent, by beating fir trees.

Phyllocnistis suffusella and saligna.—Both bred freely, from poplar and willow leaves repectively.—W. Farren, Cambridge.

Offer to distribute pupæ of Glyphipteryx Haworthana.—I shall be glad to send pupæ of this insect to any one in want of them, on receipt of box and return postage.—Chas. Campbell, 111, Travis Street, Ancoats, Manchester.

Another singular instance of parasitism.—The other day, an instance came under my notice of *Pieris rapæ* emerging from the pupa with two of the little yellow cocoons of *Microgaster glomeratus*, containing pupæ, rolled up in the wings. Excepting that the wings never attained their full size, the butterfly was otherwise perfect. Having seen a notice of a similar occurrence in the "Entomologists Monthly Magazine," I think this account may interest the readers of the same.—L. M. S. Pasley, The Craig, Windermere, *March* 10th.

[At our request, Miss Pasley has kindly furnished the following additional information:—"There were no protuberances or any external appearance denoting "the presence of *Ichneumon* cocoons in the pupa. I watched the butterfly coming "out of the chrysalis skin, and did not perceive the cocoons till the insect was quite "free from the said skin. I kept the butterfly alive for some days, hoping the "*ichneumon* flies would appear; a vain hope, as I suspect they were dead. I can-"not imagine how the *Ichneumon* larvæ could have formed their cocoons inside the "chrysalis without injuring the butterfly more than by merely disabling the "wings." This instance of parasitism is very extraordinary, but may, perhaps, be explained in the following manner:—It is well known that, as a rule, the female *Microgaster* deposits a large number of eggs in one larva, and it is probable that a larva, once attacked, is freed from further molestation; the parasites knowing instinctively that the larva could only nourish a certain quantity to maturity. Possibly, therefore, the *Microgaster* attacking the above larva was disturbed after having laid but very few eggs, and the produce of these was not sufficient to destroy the *Pieris* larva. If the parasites had not escaped previous to the transformation of their victim into the pupa state, they would naturally be unable to force their way through the hard pupa skin; and, as it seems, would form their cocoons inside, and be dragged out by the struggles of the butterfly to escape.—Eds.]

Vanessa Ichnusa.—In answer to Mr. Wilson's note on this form in the April No. of the Entomologist's Monthly Magazine, I beg to refer him to Standinger's remarks on *V. urticæ* and *Ichnusa*, translated in Ent. Ann., 1854, pp. 98, 99. In

my paper on the geographical distribution of European *Rhopalocera* (Ent. Trans., 3rd series, vol. 1, pp. 481—491), I have said, in classifying groups of forms, "A SUB-SPECIES is a permanent variety, linked to its nearest ally by intermediate forms, but which entirely replaces the type in the localities in which it occurs. A sub-species is not a true species, but, under favourable circumstances, it may become so in time, as the varieties intermediate between itself and the parent or cognate species die out." "Corsica and Sardinia. These islands contain 30 species [of recorded butterflies]. Three of these are peculiar species, and several of the others are sub-species, which are not yet sufficiently developed to be raised to the rank of species, although some of their larvæ differ from those of the parent species."

"*Urticæ* has a Corsican sub-species, *Ichnusa*, attached to it; but slight as the difference between them is, it is correlated in the larva, although an intermediate variety occurs in Italy and Turkey. It would be interesting to know whether the larva of the intermediate variety agrees with either *urticæ* or *Ichnusa*."—W. F. KIRBY.

Dianthæcia albimacula.—Permit me to add my testimony to the perfect genuineness of Mr. Lacy's capture of *D. albimacula*.

I myself observed the insect on the wing, but his was the lucky net to bag it; I saw my friend make the capture, and stood by while he pinned and boxed it.

I may add, that we have determined to thoroughly hunt up the locality, during the coming season, for the insect in all its stages, and are very sanguine of success. —HENRY STEPHENS, National School, Alverstoke, Gosport, *March 2nd*, 1865.

A new locality for Micra ostrina.—It was in the month of July, a few years since, that I captured, on the sand-hills at Pembrey, South Wales, a pretty little insect whose identity I have, until lately, been utterly unable to establish. The spot at which I secured it was rather barren and sandy, in a sheltered situation; an abundance of dwarf sallow grew in the vicinity, and also, as far as I remember, thistles, bedstraw, wild thyme, and a short kind of grass, from which latter I expect that I disturbed it; at any rate, the insect was flying low over the barren sand when I caught it. The day was showery, with occasional gleams of sunshine, during which *H. Semele* and other butterflies were on the wing.

During one of these gleams I took the insect, and seeing that it was something I did not know, boxed and pinned it at once. The recollection of the capture is very fresh in my mind, owing to the pleasure of the expedition and the difficulty I have had in getting the insect named.—JOHN T. D. LLEWELYN, Ynisygerwn, Neath.

Tineæ feeding in birds' nests.—I have seen it recorded somewhere, that *Tinea semifulvella* has been bred from birds' nests. Hoping, therefore, to get hold of it, I collected, last winter, a lot of nests of the chaffinch and other birds that use wool and hair, and kept them until the summer.

I was disappointed of *semifulvella*, but bred from the nests, besides a few *T. rusticella* and *fusci punctella*, upwards of two hundred *T. ganomella* (Llapella). Preserving them all was out of the question, and, indeed, it was no easy job to secure them; since they all came out within a week, and when the box was uncovered, from twenty to fifty specimens at a time running as *Tineæ can* run, put

one's agility to the test, especially as wool-eating (?) *Tineæ* can hardly be considered desirable things to set at liberty in-doors. Some that did escape were found *in cop.* on the ceiling about ten or eleven o'clock at night.—Chas. G. Barrett, Haslemere.

Gratuitous offer.—I have the following species, in good order, in duplicate, which I am willing to distribute. If anything is sent in return, I will willingly pay postage one way, otherwise I shall expect applicants to bear the double postage. A written application must, in all cases, precede the sending of a box.

L. Adonis, ♂ ♀. *L. Agestis*, ♂ ♀. *Liparis dispar*. *M. furuncula* (south coast form). *L. testacea*. *C. curtula*. *M. galiata*. *E. cervinata*. *P. stratiotalis*.—F. Lovell Keays, 4, Harringay Villas, Green Lanes, Tottenham, N.

Variety of the larva of Taniocampa gracilis.—To those who know the larva of this species only in its more usual bluish-green, or yellowish olive-green coat, the following description, given me by Mr. Buckler, of a variety sent him from Epping, will seem strange; but there can be no doubt as to the moth which was bred from it.

The ground colour of the larva was *deep brown* tinged with pink, the slender dorsal and sub-dorsal lines of the same, but showing rather paler; along the region of the spiracles, and reaching half-way down the anal prolegs, a broad stripe of pale dingy pink, sharply edged above with a fine blackish line; belly and legs of the ground colour: the usual dots appeared dark brown within paler rings, and the back was slightly freckled with the paler tint.—Rev. J Hellins, *February 23rd*, 1865.

Food of Boarmia abietaria.—Last summer, Mr. D'Orville bred a very large, light-coloured, ♀ specimen from a larva, which he captured and fed up on whortleberry, *Vaccinium myrtillus*; and the year before, I bred some fine dark moths from three or four larvæ sent me by Dr. Knaggs in 1862, which from the first fed on birch by choice, eating leaves when they were to be had, and during the winter of 1862-3, nibbling the bark of slender twigs whenever the weather was mild.—*Id.*

Hybernation of the larva of Pseudopterpna cytisaria.—I have lately been much interested in watching some little larvæ of this species, which I had turned out when first hatched (July, 26th, 1864) on a large plant of broom in my garden. I looked for them first on 2nd December, and after a little search found several sitting about, stiffly stuck out like little spurs from near the base of the larger green shoots of the broom: they sat still through rain, and snow, and frost, sometimes being themselves well crusted over with hoar-frost; but the furious wind of January 14th seemed to disturb their placidity, for on looking at them a day or two afterwards, I found they had, for the most part, shifted themselves on to the lee side of the stouter and older brown branches.—*Id.*

Entomological Society of London, *April 3rd*, 1865.—F. P. Pascoe, Esq., F.L.S., President, in the Chair.

Capt. W. S. Rooke, of the Scots Fusilier Guards, R. S. Schofield, Esq., of the Junior Carlton Club, and Dr. Jules Sichel, of Paris, were elected Members; and Stephen Barton, Esq., of Bristol, was elected a Subscriber to the Society.

The President exhibited a species of *Bolbocerus*, sent by Mr. Odewahn, from Gawlior, in Australia. Mr. Odewahn mentioned that he had found this species in the ground of the hard road, and that it made a noise (as he thought) by rubbing the tarsi and coxæ together. The President said that he had found the European species, *B. gallicus*, in hard limestone rock, into which it burrowed for a considerable distance. Professor Westwood thought that Mr. Odewahn must have been mistaken as to the manner in which it caused the sound.

Mr. Moore exhibited a box of diurnal *Lepidoptera*, captured by Capt. Lang in the North-Western Himalayas; among them was a new species of *Lycænidæ*, an *Anthocaris*, closely allied to *A. cardamines*, and the European *Pieris Daplidice*. Mr. Moore also exhibited two species of *Heterocerous Lepidoptera*, attacked by *Sphæroid* growths; these were found by Mr. A. E. Russell at Darjeeling.

Mr. Janson exhibited a large collection of insects of all orders, captured by Mr. Russell in the Himalayas, principally in the neighbourhood of Darjeeling; among them were many beautiful new species of *Geometridæ*.

Mr. Saunders exhibited seven different kinds of galls, collected by Mr. Lowne in Syria; some of these were very peculiar, and he had not been able to satisfy himself that all of them were really the production of insects. They were on species of *Acacia*, *Atriplex*, *Tamarix*, *Ærua*, *Ræmurea*, and a kind of grass.

The President mentioned, that last summer when crossing Monte Moro, he found numerous little circular holes in the snow, at the bottom of which there was invariably some species of insect in a dead or torpid condition, and occasionally a piece of peat. He concluded that the insects had flown or fallen on the snow, and had formed these depressions by the radiation of heat from their bodies.

Professor Westwood made some observations on the "*Chigoe*" or "*Jigger*," with special reference to a memoir just published by Dr. Carsten, of Moscow. He added, that although this paper was most elaborate in its anatomical details, it added no information on the most important point, viz., the larval state of the insect, and that on this subject we were as much in the dark as ever. The Professor commented very strongly on the generic name employed by Dr. Carsten, viz., *Rhyncoprion* of Oken, which is in reality only a synonym of a genus of *Acari*, and had no connection with the insect in question, more than the fact that the "*Jigger*" was once considered an *Acarus*. This was less excusable, because he had himself formed the genus *Sarcopsylla* for the reception of the species, in the transactions of this Society in 1840; and Guérin-Méneville had also employed the term *Dermatophilus* for the same insect.

Mr. Bates said that he had frequently suffered from the attacks of the "*Jigger*," but could say nothing about the larval state. The popular opinion was that the abdomen of the female burst in the flesh, and that the larvæ fed in the wound; he could not, however, confirm this.

Mr. Bates read a memoir on the species belonging to the *Geodephagous* genus *Agra*, found in the Amazon region, comprising 47 species, of which he had himself taken 42, 31 of them being new. Mr. Bates remarked that these insects possessed crepitating powers, the explosion not being audible, but capable of being distinctly felt, and leaving a stain upon the fingers.

END OF VOL. I.

THE

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T. BLACKBURN. R. McLACHLAN, F.L.S.
H. G. KNAGGS, M.D. E. C. RYE.
H. T. STAINTON, F.L.S.

VOL. II.

"The aspect of external nature, as it presents itself in its generality to thoughtful contemplation, is that of unity in diversity, and of connection, resemblance, and order, among created things most dissimilar in their form—one fair harmonious whole. To seize this unity and this harmony, amid such an assemblage of objects and forces,—to embrace alike the discoveries of the earliest ages and those of our own time,—and to analyze the details of phænomena without sinking under their mass, are efforts of human reason in the path wherein it is given to man to press towards the full comprehension of nature, to unveil a portion of her secrets, and, by force of thought, to subject, so to speak, to his intellectual dominion, the rough materials which he collects by observation."

Alexander Von Humboldt.

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REVIEWS.

The Record of Zoological Literature, 1864, Vol. I. 166
Coleoptera Atlantidum 214

ERRATA.

Page 20, line 22—for "transparent" *read* "transverse."
,, 20 ,, 25— ,, "diverges" ,, "diverge."
,, 20 ,, 37— ,, "first" ,, "feet."
,, 23 ,, 13— ,, "Ramptee" ,, "Kamptee."
,, 70 ,, 22— ,, "prothorax" ,, "metathorax."
,, 116 ,, 10 (from bottom)—for "Rail" *read* "Kail."
,, 141 ,, 8 ,, — ,, "capsule" *read* "cupule."
,, 161 ,, 3 ,, — ,, "Oxford" ,, "Orford."
,, 164 ,, 4—for "*fluctuosa*" *read* "*duplaris*."
,, 168 ,, 12 (from bottom)—*dele* "genera."
,, 205 ,, 21—for "*paripes*" *read* "*flavipes*."
,, 207 ,, 14 (from bottom)—for "*Scolopostelpus*" *read* "*Scolopostethus*."
,, 208 ,, 11—for "*alternata*" *read* "*liturata*."
,, 208 ,, 17— ,, "*pellucidus*" ,, "*limbatus*."
,, 241 ,, 2— ,, "AND OF" ,, "AND ON."
,, 241 ,, 7 (from bottom)—for "*Montandouii*" *read* "*Montandonii*."
,, 242 ,, 1—for "*excavatum*, Allibert," *read* "*exaratum*, Allibert."
,, 261 ,, 6 (from bottom)—for "*Scopulæ alpinalis*" *read* "*Stenopteryx hybridalis*."

THE

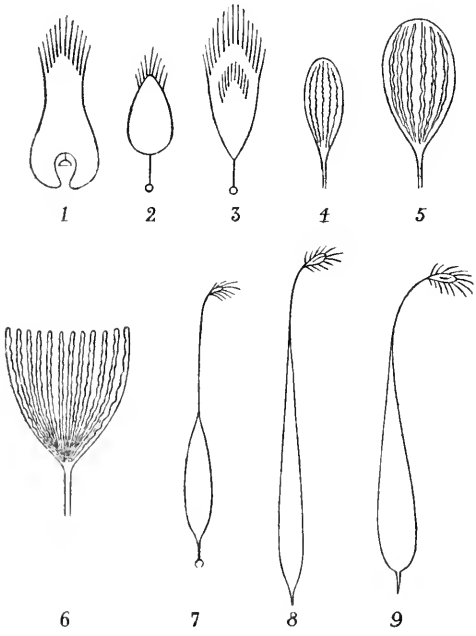
Entomologist's Monthly Magazine

VOLUME II.

ON THE MICROSCOPICAL EXAMINATION OF THE PLUMULES, &c., OF CERTAIN DIURNAL *LEPIDOPTERA*, AS A MEANS OF SPECIFIC DIAGNOSIS.

BY JOHN WATSON.

The plumules are found only in the male sex, and appear to be hollow balloon-like bags, well adapted to act as air vessels; they lie between and under the rows of the ordinary scales, which they may raise, when inflated, at the will of the insect, and thus give greater buoyancy. Each plumule is attached to the wing by a peduncle and bulb, through which air may be communicated to the nervures; the opposite end possessing *cilia* calculated to act as in the spiracles of insects.*



1. Pieris napi
2. Pieris cratægi
3. Anthocaris cardamines
4. Lycæna Corydon
5. Lycæna Ægon
6. Lycæna argiolus
7. Erebia Blandina
8. Argynnis Aglaia
9. Satyrus Megæra

It is specific, not generic, distinction which seems to be established by an examination of these plumules; for although a generic type may apparently sometimes occur, it blends into others; and, like any single character of a genus, is not absolutely trustworthy. The specific distinctions, however, are manifest and decided.

* For further information on this interesting subject, the reader is referred to a paper (also by Mr. John Watson) "ON CERTAIN SCALES OF DIURNAL LEPIDOPTERA," published in the second volume of the third series of Memoirs of the Literary and Philosophical Society of Manchester, 1861-2.—EDS.

In every (male) specimen of a species the plumules are the same; while the differences between those of different species are such as to prevent any difficulty in identification: hence they are very useful in determining whether any given insect be worthy of the rank of a species, or whether it be merely a variety.

In the genus *Picris* the plumules of *P. rapæ* and *napi* have long been known and figured. An extended examination of this genus proves that each species possesses its own characteristic plumule, by which it can be identified with even greater certainty than by other appearances. In the *Pieridæ* there are generic types in great variety, besides that of *Pieris;* and thus in *Anthocaris*, *Thestias*, *Euterpe*, *Eronia*, *and Hebomöia*, somewhat similar plumules are found; that of each species having its own identifying form.

A different type is found among some genera of the *Heliconidæ*, each species again with its own.

Among the *Nymphalidæ* several groups are furnished with plumules: the connecting links between the *Nymphalidæ* and *Heliconidæ*, viz., *Eucides* and *Colænis* having plumules similar to, and yet distinct from, those of *Heliconia: Agraulis* exhibits a very singular plumule; and it is especially interesting to observe the specific differences in those of the large group *Argynnis;* while, strange to say, plumules have not been detected on any species of the genus *Melitæa.* A similar apparent inconsistency exists in the closely allied genera *Neptis* and *Athyma*, the former being without plumules, and the latter possessing them.

The *Satyridæ* are, in some genera, abundantly clothed with plumules, but it is remarkable, that while some species of a genus (*Erebia*, for instance,) display these tests, many others are without them; so it is with *Satyrus*, in which the plumule of *S. Janira* has long been used as a microscopic test-object.

Among the *Lycænidæ* the genus *Lycæna* possesses the so-called "battledore scales," long known to microscopists, but not before mentioned as affording any trustworthy test between species. These, and the plumules of the *Pieridæ*, are certainly the most interesting of these organizations. The closely allied genus *Thecla* has not been found to possess plumules. In the great family *Papilionidæ*, and in the *Danaïdæ*, none of these plumules have yet been discovered; but the subject (one which will repay any Naturalist who will pursue it,) has only lately been entered into with zest.

The delicate beauty of these objects, their various forms, and their affinities, afford an endless interest, heightened by a consideration of the physiological fact that Creative Power has revelled in so great a variety of these minute atoms; though, in all cases, with the same apparent end in view.

Bowdon, April 6th, 1865.

OBSERVATIONS ON THE GENUS *DORYLUS*, AND UPON A NEW GENUS OF *APIDÆ*.

BY FREDERICK SMITH, V.P.E.S.

The Entomologist's Monthly Magazine will no doubt contain a report of the meeting of the Entomological Society on Monday, the 1st of May, in which will be noticed Dr. Jerdon's discovery of the workers of the genus *Dorylus;* but I think this claims something more than the simple record of the fact. For many years the males only were known of the remarkable genus; such had been the case since the time when Linnæus described the type, *Dorylus helvolus*, placing it in the genus *Vespa;* here it continued until Fabricius formed the genus *Dorylus* for its reception; this was in 1793, but it was not until 1858 that another sex was discovered. The affinities of the genus long occupied the attention of Hymenopterists, and, at length, appeared Shuckard's most able monograph on these insects, in which the connection between the genus *Labidus* (the *Dorylus* of the new world), and the genus *Typhlopone* was suggested, a genus consisting of workers only, but, as shown by Shuckard, possessing so many analogous points of structure, as to induce him to consider them to be the females of the genus *Labidus*.

In 1858, the Hon. Walter Elliot discovered nests of *Dorylus* near Madras; he states, that they live after the manner of ants, under stones, &c., and their varieties are very numerous. Dr. Jerdon's account accords precisely with that of the Hon. Walter Elliot, but unfortunately neither of these gentlemen discovered the female; on some future occasion I hope to receive all the sexes, Dr. Jerdon promising to use every exertion to obtain them. The *Dorylidæ* now consists of four genera, *Dorylus*, *Rhogmus*, *Labidus*, and *Ænictus;* they are genera of social species, and must, in my opinion, be placed at the end of the group. We have much to learn in order to complete our knowledge of these genera; of *Dorylus*, twelve species are described, and I am acquainted with three or four undescribed ones; *Rhogmus* only contains a single species; but twenty-one are known of the genus *Labidus*, and four of the genus *Ænictus*. Only twelve species of the genus *Typhlopone* have been discovered, so that the workers of twenty-six species are unknown.

In the report, to which I have previously alluded, will be recorded the reading of a short paper on some Australian *Hymenoptera*, and, probably, allusion will be made to a most remarkable species of bee, named *Thaumatosoma Duboulayi*, taken on the Swan River by F. du

Boulay, Esq I stated that this was the first instance in which a species of bee had been discovered having true capitate antennæ, exactly resembling in general form those of a species of *Argynnis*. So truly are they papilionaceous in form, that the whole of the joints, from the second to the eleventh, are exceedingly slender and filiform, the two terminal ones forming a black knob or club. This I characterized, as being the most remarkable deviation from the normal form of the antennæ of a bee with which I was acquainted; only a single instance at all approaching this singular construction being known to me; this is in a species of the genus *Melissodes* from Rio, being one of the long-horned bees (*Eucerida*), of Brazil. In this species, however, it is only the apical joint that is enlarged and compressed, the three sub-apical ones being slender; the rest are of the usual form. I therefore concluded that the Australian bee, *Thaumatosoma Duboulayi*, was an unique and beautiful instance of the endless variety of forms, with which, by degrees, we are becoming acquainted. Great then was my surprise when Professor Westwood acquainted us that he had long ago described a bee with antennæ "much more like those of a butterfly" than the one before him; more like they could not possibly be; indeed, they are so like, that a Lepidopterist seriously asked me whether I really had not stuck a butterfly's antennæ on. That a species of bee should have been described by a brother Hymenopterist, a bee too of so remarkable a character, I may indeed say, not only took me by surprise, but convicted me of an unpardonable degree of ignorance, having published what I had put forth as a complete list of described species; this, in itself, was bad enough, but it did not end here; Mr. du Boulay's discovery *lost all claim to novelty!*

My first aim and endeavour naturally was to obtain a clue to the whereabouts of this antecedent butterfly-horned bee, and also a knowledge of the work in which it was described, the results I will presently show; but I must here state the object of these observations; it is to correct an erroneous conclusion which many will probably arrive at, namely, *that I have not described a great novelty.* Should this be the case, what follows will remove such an opinion. I still claim for Mr. du Boulay's discovery *all the novelty and interest* to which I originally deemed them entitled.

The insect described by Mr. Westwood, eight or ten years ago, belonged to the Entomological Society, having been presented by the Rev. Mr. Kirby. It is now in the British Museum, having been presented, together with all type specimens, to the National Collection by the Entomological Society; it is a species of *Nomia*, a genus which

contains the *Halicti* of the tropics; it is from Brazil, is about seven lines long, and of an uniform brownish-black, with brown wings; its intermediate femora are enormously swollen, and compressed into a semi-dentate process beneath; the posterior tibiæ are also very curiously developed, and compressed into a large sub-triangular mass, with a tooth at its inferior angle; altogether, it is a bee of remarkable form; but, instead of possessing antennæ resembling those of a butterfly, they are exactly *the counterpart of those of several of the males of species of the genus Megachile*, which have antennæ of the ordinary type of form, excepting the apical joint, which, as Mr. Kirby remarks, "is compressed," which gives them some resemblance to those of a *Papilio;* the species is named *Nomia Kirbii*.

It is a matter of satisfaction to feel assured that one's memory is not quite so treacherous as I began to fear it was becoming, for the monograph of the genus *Nomia*, in which Mr. Westwood described *N. Kirbii*, although certainly begun ten years ago, has not yet been published; it is satisfactory also to find that I have not been so negligent of the labours of a brother Hymenopterist as I feared I might have been; and, also, that it will not be necessary to make any alteration to the introductory remarks to the paper on Australian *Hymenoptera*, which I had the honour of reading at the last meeting of the Entomological Society.

OBSERVATIONS ON THE LARVA OF *DEILEPHILA*.

BY J. BOSWELL SYME, F.L.S.

If, as our best authorities tell us, a severe winter be favourable to the development of insect life, we may, this season, hope for a larger list of captures than that which has been afforded by the few last summers: and to hear of the re-appearance of some of the rarities which gladdened our hearts in years gone by. Among the *Lepidoptera* of which we have had to lament the disappearance, one of the most conspicuous is *Deilephila galii*, of which it was my good fortune to procure numerous specimens during the years 1856—1862; and, in the hope of its re-appearance, I now propose to say a few words on its habits, which I trust may prove useful to those who may be on the look out for the larva of this handsome moth; and which may also possibly furnish hints to those who may find themselves in localities where the lost *D. euphorbiæ* might be expected to occur. That this latter has not been recently found is no proof that it is really extinct,

until the coast, from Lancashire to Hampshire, has been thoroughly examined: not for a week or fortnight only, but during the whole of August and September at least, if the larva of *D. euphorbiæ* be as irregular as that of its near kinsman, *D. galii*.

In 1855, Mr. Frederick Smith found a few larvæ of *D. galii* on the sand-hills at Deal, about the middle of August. In 1856, I went to Deal on the 29th of August, and a few days later, had the satisfaction of being called by Mr. P. Bouchard to see a nearly full-fed larva which he had found. Shortly after I found one myself; and I continued to hunt for them successfully until the end of September, having by that time taken about a couple of dozen.

In 1857, I was at Deal again, but not till September; and I found no larvæ until the end of the month, when they began to appear, and continued to do so until the beginning of November.

In 1858, though I examined the old localities throughout September and October, I was able to procure only three—in the early part of the latter month.

In 1859, I visited Deal in the second week in August, and found that, even then, I was too late for the greater portion of the brood, as the very numerous patches of dried "frass" testified; nevertheless, during the remainder of August and the early part of September, I took about forty or fifty specimens in this, the great *galii* year.

In 1860, I was at Deal for a fortnight in the end of August,—and in 1861, for about as long, in the end of September; but on neither occasion was I able to find either larva, or "frass" to indicate that there had been any; and in 1862, in the end of August, I took the last three *galii* larvæ which I have seen, as I could find none in 1863 and 1864.

From these statements, it will be seen that this larva may appear from the beginning of August to the end of October: so that we can have no certainty of meeting with it, even if we be in the right locality, unless we are able to make a protracted residence in the spots where it is expected to occur.

The larva is not only irregular, but very local—capricious, one would be apt to say. I have hunted all over the sand-hills from Deal to Sandwich; but never found it, except from the first Battery southwards as far as the large sand-hills extend, and from the sea westward for two or three hundred yards.

In 1857, and in this year only, the larva was taken by Mr. S. Stevens and myself, on the shingles from Kingsdown to the vicinity of the butts for rifle-practice to the south of that village,—a little more than three-quarters of a mile.

The food-plants at Deal are *Galium verum*, or yellow ladies' bedstraw, and *Galium elatum* (*Mollugo*), or great white ladies' bedstraw; though I found the larva would eat *Galium saxatile*, or smooth heath bedstraw, but refused *Galium palustre* (marsh bedstraw) and *G. Aparine* (goosegrass). It seems to prefer the scrubby to the very luxuriant plants, as comparatively few were found on the latter: one reason for this, no doubt, is that, on the sand-hills, at least, the very luxuriant plants are those which have been covered up with blowing sand, and so probably were not visible at the time the egg was deposited.

The larvæ are almost always in pairs; and when I came upon one, I was seldom disappointed of finding another within the distance of a few yards.

It may seem strange that it should be difficult to notice a larva so large and so brightly coloured as that of *D. galii*, when full fed; especially as it feeds quite exposed: but I can only say that on the sand-hills it is so,—much more there than on the shingle, the grey colour of which seems better than the yellow of the sand for throwing up the olive of the larva, which, on the sand-hills, is generally found only on plants growing on loose sand, without any covering of moss or herbage. On the sand-hills, indeed, nineteen out of twenty larvæ were traced from the frass, which catches the eye much more readily than the larva itself. The frass of small larvæ may be known from that of *Macroglossa stellatarum* (which is commonly found with it), by being less of one size, owing to the more rapid increase in bulk of the larger larvæ.

On seeing "frass," observe the direction in which it increases in size and in freshness. The latter is easily ascertained in dry weather; but after dew or rain, it requires an experienced eye to enable one to pronounce on this point with certainty. When the direction in which the larva has moved (rarely more than a yard or two) is discovered, it is generally easy to find it, if it has not spun up, when it is mere chance, as it usually moves some distance after ceasing to feed. I only twice found the pupa.

When young, the larva is generally exceedingly like that of *Macroglossa stellatarum* of the same size, being pale or dark green, with a white lateral stripe; but the horn is not blue at the apex, as in that species; the yellow spots sometimes do not appear till the last change of skin, but generally become apparent at the second cast. When full fed, the larvæ of the males are paler than those of the females; at least, on isolating a number of the paler larvæ, I found they produced male moths.

In looking for *D. euphorbiæ*, the distribution of its food-plant, *Euphorbia paralias* (sea spurge), must be attended to. On the east coast it is very rare, though it grows on the Sussex coast, as well as at Shoeburyness, in Essex. In the Isle of Wight it is not native, but was sown by the late Dr. Bromfield a few years ago at St. Helens and Norton Spits. It grows sparingly in a few spots in Kent and Sussex. It is abundant about Hayling Island, and occurs on most of the sandy beaches in the south-west and west of England, as far north as Maryport, in Cumberland.

Euphorbia portlandica, on which it is also said to feed, is still more a western plant, usually growing with *E. paralias*, but reaching north to Wigtonshire.

E. cyparissias has so little claim to be considered indigenous, that its localities need not be mentioned; but I have little doubt that, if our south-western sandy coasts were properly hunted, *D. euphorbiæ* might again be found as plentifully as in the days of Mr. Raddon.

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THE *NEUROPTERA* OF MADEIRA.

BY DR. H. A. HAGEN.

[The following paper was drawn up for Mr. Wollaston, who intended that it should form part of a second volume of his "Insecta Maderensia": having, however, given up the idea of publishing this volume, he has placed Dr. Hagen's paper in my hands for publication here. The M.S. is in French, and in translating it, I have endeavoured to do so as literally as possible. Descriptions of the new species only are here given, with the exception of a few instances (*e. g.* the two species of *Myrmeleon*), in which, previous descriptions being imperfect, the author has requested that his own may be published in detail. The numbers correspond with those borne on the pins of the type specimens; these are now in the collection of the British Museum.—R. McLachlan.]

TERMITIDÆ.

Genus Calotermes, Hagen.

C. præcox, (Wollaston, M.S.) Hagen, Linn. Ent., 12, p. 51.

Madeira. I have seen two specimens, in bad condition.

This species is allied to *C. affinis*, a succinic insect. It belongs to the group of *C. castaneus*, of Burmeister, and differs from *C. affinis* in its broader head and thorax, the latter more dilated posteriorly, the sides more convex; also by the impressions in the anterior angles.

Nos. 1 and 2.

Genus Termes, L.

T. lucifugus, Rossi.

Very common in Madeira.

Common in all the countries bordering the Mediterranean. Its habits have been observed by Bassinet, Bobe-Moreau, Joly, Lespés, and others. *Vide* details in Linn. Ent., 12.

Nos. 3, 4, and 6.

PSOCIDÆ.

Genus Psocus, Latreille.

P. marmoratus.

Albescens; fronte thoraceque fusco-maculatis, antennis albidis, pedibus albidis, femoribus basi fuscis; alis hyalinis, omnibus fusco-nebulosis.

Long. cum alis 2 *millimetres; exp. alar.* 4 *mill.*

Head with the eyes little prominent, milk white; front brown, bordered posteriorly with black; vertex with a brown spot on each side near the eyes, and clouded with brown behind the ocelli. Antennæ white, slightly hairy. Mesothorax brown, the three elevations encircled with white. Legs pale, the thighs brownest at the base. Wings hyaline; the superior with the pterostigma oblong, the cell on the posterior margin open, slightly curved, three slightly interrupted transverse brown bands, one at the base, one at the middle, and the third at the base of the pterostigma, broadest on the posterior margin; besides these, there is a brown cloud before the apex; the bands follow slightly the course of the veins they cross; posterior wings hyaline, with two brown clouds on the anterior margin, and two on the posterior.

Madeira.

P. marmoratus belongs to the group of *P. fuscopterus* of Latreille, but it is smaller, the posterior cell bordered by a less curved nervure, the head white. By the markings of the wings and the size it comes near *P. pupillatus* of Dale, but this last is darker, and the posterior cell is altogether wanting. Finally, *marmoratus* differs from all allied species by the dark clouds on the posterior wings.

No. 7.

P. pupillatus, Dale; Walker, Cat. Brit. Mus., p. 493, 40.

Fusco-piceus, occipite maculato, pedibus pallidioribus; alis cinereis, maculis anticorum magnis fuscis albo marginatis.

Long. cum alis 2 *mill.; exp. alar.* 4½ *mill.*

Small, brown, two darker spots on the occiput, the sutures of the thorax paler. Legs (especially the posterior) slightly paler. Neuration

singular, because the posterior areole is altogether wanting; pterostigma bordered by an elongated curve. Anterior wings ash-coloured, with some large round brown spots in the areoles, bordered with white, which causes them to appear pupillated.

Madeira, England, Prussia.

The colour of the wings, and the absence of the posterior areole, render this species easily recognizable.

No. 8.

P. ADUSTUS.

Fusco-piceus, occipite lineis incurvis, fronte rectis, albidis; pedibus testaceis; tarsis et tibiarum apice fuscis; alis pallide cinereis, anticis pterostigmate angusto, ovali, fusco, utrinque oblique flavido marginato.

Long. cum alis 5 *mill.; exp. alar.* 10 *mill.*

Rather smaller than *P. affinis* of Rambur. The male with the eyes rather large, the facets almost tuberculose. Colour very dark, of a brownish black; on the occiput there are indistinct orbicular whitish lines, and on the forehead there are eight straight lines (and some others rudimentary) of the same colour. Antennæ 6 millimetres in length, hairy and blackish. Thorax pitchy, with a pale band in the middle beneath, the sutures yellowish. Legs dull yellowish, the tarsi and the tips of the tibiæ becoming brownish. Wings pale ash-colour, the veins black, the radius brown; pterostigma narrow, elongated, bordered by a much flattened curve, blackish-brown, terminated on each side by a yellowish line. Neuration as in the group of *P. lineatus*, excepting that the pterostigma does not form a triangle, but an elongated oval, a structure which is seen in some succinic *Psoci*.

The female resembles the male, but the eyes are smaller, with the facets not prominent, the forehead larger, the antennæ less pilose. One specimen (No. 11) appears to be immature, the whitish colouring of the head predominating over the dark. On the middle of the occiput, near the eyes, and round the ocelli, there are some interrupted blackish lines, formed by elongated points. The markings of the wings form ill-described circles in the middle, with a larger ash-coloured spot. It seems to me that the forehead is still larger in No. 11 than in No. 12, but otherwise both are so similar, that I cannot discover any specific differences.

Madeira.

P. adustus belongs to the group of *P. lineatus*, but it differs by its pterostigma and by its colours from all living *Psoci*, and resembles the fossil *P. ciliatus*.

Nos. 10 ♂; 11 & 12 ♀.

P. PERSONATUS.

Fusco-piceus; occipite fasciis, fronte lineis incurvis, niveis; antennis articulo primo niveo, flagello pallido, apice obscuriore; pedibus testaceis, femoribus subtus niveis; alis pallide cinereis, anticis pterostigmate angusto, ovali, fusco, utrinque pallide marginato.

Long. cum alis 3-4 *mill.; exp. alar.* 7-8 *mill.*.

Resembling *P. adustus* and of the same group, but smaller. The eyes of the male smaller, head darker, almost blackish, with the snow-white lines very conspicuous. These lines are arranged as follows: above on each side there is a broad straight band, slightly excised interiorly near the ocelli, and interrupted a little in front, bent outwards on the occiput in order to go near the eyes, where they are bifurcated; between these bands there are two small lines of the same colour behind the ocelli, and a point in front of them; the tubercles of the ocelli dotted with snow-white; forehead with six lines curved outwardly, the last on each side trifurcated on the outside. Antennæ very slightly pilose, yellowish, brown at the tips; the basal joint snow-white, the second brown. Thorax with a line above and the sutures whitish, abdomen spotted with the same. Legs dull yellowish, the tarsi brownish, the thighs whitish beneath. Neuration and colours of the wings as in *P. adustus*, but the pterostigma is bordered with white on the sides, and opposite to it on the posterior margin there is a little brown clouding.

Madeira.

I know no similar living species. In the female, which is slightly the largest, the two bands on the head are less remarkable, narrower, and the branches on the occiput enlarged. The lines on the forehead are rather less curved. Otherwise I find no difference from the male.

Nos. 9 ♂; 61 ♀.

(*To be continued*).

DESCRIPTION (NOT HITHERTO PUBLISHED) OF *CEUTHORHYNCHIDEUS MINIMUS*, WALTON.

BY E. C. RYE.

I am enabled, by the kindness of Mr. G. R. Waterhouse, to bring forward a description of this insect, which has hitherto been "*vox et præterea nihil*," and is now not represented by any known example.

The late Mr. John Walton, in a letter to Mr. Waterhouse, dated 9th September, 1860, thus characterizes the species in question:

"C. MINIMUS, or rather AMALUS MINIMUS (Walt. in litt.), M.B.—"Of this insect there were two examples, supposed to have been placed "in the national collection by the celebrated Dr. Leach, which have in "all probability been mixed with the small *Ceuthorhynchi*, among which "I imagine you will find it. It may be distinguished by having the "body beneath, the pleura, sides, and the breast, densely clothed with "white scales; the thorax above variegated with five spots of white "scales, two on each side, and one at the base before the scutellum. "*Antennæ* ferruginous or piceous; club black. *Elytra* deeply striated, "punctate-crenate; interstices narrow, rugulose, variegated with white "and fuscous scales; apex muricated; suture clothed with white scales, "interrupted in the middle with fuscous scales; two white spots on the "disc of each elytron on each side, like *Cœliodes didymus;* an elongate "stripe of minute white scales on each side of the scutellum, and a "transverse band of white scales upon the interstices on each side, near "the apex. *Pygidium* exposed. Legs with the femora piceous, denticu-"lated; *tibiæ and tarsi rufous*, the former armed with an acute external "tooth near the apex. Funiculus of the antennæ six-jointed. (Length "$\frac{3}{4}$-1 lin.).

"In form it resembles *C. floralis*, from which it may immediately "be distinguished by having the thorax and elytra above beautifully va-"riegated with white scales, and by its sides, front, and under-surface "being densely clothed with silvery-white scales."

I certainly know of no species of *Ceuthorhynchideus* or *Amalus* to which this description would apply; and I may add, that the specimens therein mentioned are not now to be found (if they ever were placed) in the collections of the British Museum, as both Mr. F. Smith and Mr. Waterhouse have searched for them carefully in all likely directions without discovering them.

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Capture of Elmis cupreus, Müller; a species new to Britain.—I have recently taken this species near Edinburgh, and think it not improbable that it is confounded, in British collections, with *E. nitens;* from which it appears to differ by being rather smaller, with oblique impressions on the thorax, the posterior angles of which are not so much directed outwards; the striæ of the elytra are also more strongly punctate, and the alternate interstices elevated. Mr. G. R. Waterhouse refers the *E. cupreus* of Stephens to *E. nitens;* the description in Manual (No. 637), however, certainly refers to the species now being recorded.—D. SHARP, 12, St. Vincent Street, Edinburgh, *May*, 1865.

Capture of Olophrum fuscum, Grav.; a species new to Britain.—On the borders of a pond, close to Edinburgh, I have found several examples of a species of *Olophrum* distinct from the common *piceum*. Compared with it, they present the following differences:—they are smaller, and considerably narrower; darker in colour, and much flatter; the basal joint of the antennæ is lighter in colour than the others; the thorax is not so transverse, and is less rounded at the sides, especially behind, with the punctures smaller and more numerous; and the elytra gradually get broader from the shoulder to the apex in a much more marked degree than in *piceum*.

These differences, it will be observed, agree with those pointed out in Erichson and Kraatz as characterizing *O. fuscum*, Grav.; so that I have no doubt the specimens above referred to belong to that species.—*Id.*

Further remarks on Anommatus 12-striatus.—Mr. Wollaston's note (vol. I., p. 245) induces me to add what I have observed respecting the habits of this species; which, I believe, I took in larger numbers than anyone, after it had been lost sight of for many years in England. I first detected it under a board in a kitchen-garden at Coaver House, Exeter, in different parts of which I laid down similar traps; but I scarcely found any specimens, except under boards laid between rows of strawberries, where I took as many as I required: I could not, however, trace any further connection between the strawberries and the beetles. The peat soil referred to by Mr. Wollaston had certainly nothing to do with the production of the insect in this case, for no peat was used in the garden. I am convinced that *Anommatus* is nocturnal in its habits, from the fact of my never finding any specimens after the first or morning search; although, for some time, I hunted over the boards at different times in the day. A certain degree of humidity seems necessary to the well-being of the insect, for I found no specimens adhering to those boards which had become partially dry by the circulation of air beneath, through not having been pressed close to the damp soil. It is possible that the greater degree of damp during the night may have some effect upon the beetle, for it remains without motion in its hiding place during the dry day-time; in any other way it seems difficult to understand how, being eyeless, it can distinguish between the day and night.—Edward Parfitt, Devon and Exeter Institute, *4th April*, 1865.

Capture of Hypulus quercinus.—About a fortnight ago, Mr. Edwin Wheeler, of Clifton, captured this species in a stump at Leigh Woods, from which we have since taken a few more specimens; the insect, however, is by no means common there.—John Barber, Clifton Dispensary, Bristol, *20th April*, 1865.

Capture of rare Coleoptera in London.—On a warm day at the end of last month, I took (amongst other insects) *Calodera umbrosa* and *Trogophlœus tenellus*, flying in the court-yard of the British Museum, where I have also recently captured *Ocypus fuscatus*. The first of these is certainly anything but a common species, and the *Trogophlœus* has only recently been added to our lists by my brother, Mr. Chas. O. Waterhouse, who found it at Kingsbury. It is astonishing to what a distance *Coleoptera* travel; as instances of this fact, I may mention that we have

found *Cicindela campestris* and *Dendrophilus punctatus* in the above court-yard, and that Dr. Power last year took a specimen of *Anchomenus scrpunctatus* on the pavement opposite the Museum.—E. Waterhouse, British Museum, 6*th May*, 1865.

Ants'-nest beetles at Scarborough.—On the 28th April, I made my first essay at examining some nests of *Formica rufa*, which are plentiful in woods near this place, and soon found several species of their beetle-tenants, some of which were in abundance. I send a list of their names, thinking it may be of interest to some of the readers of "the Entomologist's Monthly Magazine," as showing the northern prevalence of our southern forms.

Thiasophila angulata. Dinarda Märkellii. Oxypoda formiceticola. Oxypoda hæmorrhoa. Homalota flavipes. Homalota anceps. Homalota parallela. Leptacinus formicetorum. Monotoma angusticollis.

I also met with other species which are not peculiarly ants'-nest beetles.—T. Wilkinson, 6, Cliff Bridge Terrace, Scarborough, *May* 12*th*, 1865.

Note on Thyamis dorsalis and Phloiophilus Edwardsi.—The former insect is now to be taken at the Burning Cliff, Weymouth; and the latter was out at Glanvilles Wootton, soon after Christmas last.—C. W. Dale, Glanvilles Wootton, *May*, 1865.

Re-occurrence of Bembidium Fockii.—On the 8th of this month I secured five specimens of this rarity. I regret that I can add nothing more to its history than that this is the third year of its occurrence in the same place, "beneath stones on the sands near South Shields."—Thomas John Bold, Long Benton, *May* 16*th*, 1865.

Singular habit of a Nova-Scotian Arachnidon.—Mr. Trimen's observations on "*the imitative habits of a spider at the Cape of Good Hope*" [vol. i., p. 52] reminded me of a very similar fact I had observed some years ago in Nova Scotia, whilst naturalizing in the neighbourhood of the Grand Lake.

One of the most common plants in that locality is the ox-eye (*Chrysanthemum leucanthemum*), which grows profusely on railway banks and waste ground, and, from its abundance, proves very injurious to grass land.

Its flowers attract numbers of *Coleoptera*,—amongst others, that elegant Longicorn, *Leptura chrysocoma*. Whilst engaged searching for these, my attention was frequently drawn to the tangled remains of small flies, &c., attached by a web to the flower-centres; though by what means they came there was a mystery to me at that time.

However, one day, on looking into them more narrowly than usual, I detected a spider of a pure milky white colour, and slim elongated form, resting on one of the outer florets, which (of course?) it closely resembled, and so placed as nowhere to project beyond the margin. Here, then, was the solution of the enigma: the creature was doubtless lying in wait for any insect that might be attracted by the yellow discs.—Bernard Piffard.

Occurrence of the female imago of Clöeon under submerged stones.—In the course of a few days after the middle of April, I chanced to meet with three or

four of the female imago of *Cloëon Rhodani*, under stones which were lying partially exposed in a stream near Cambridge. When lifted up into the air, they crawled down again to the surface; and those which were closely observed, after feeling about with their fore-legs, voluntarily entered the water.—A. E. Eaton, Little Bridy, Dorset.

[The above observation by Mr. Eaton is most valuable and interesting. The presence of females only, under the stones, points significantly to the reason which induced them to seek such a position.—R. McLachlan.]

Capture of Xylina conspicillaris near Worcester.—On the 7th inst., I took a very good specimen of this insect, at rest on a small oak, in a wood near here.

I took a specimen in the same wood some years ago; and I noticed then, as now, that the moth prefers resting on a part of the tree where the bark has been removed, probably because it is of the same colour as itself.—Rev. E. Horton, Lower Wick, *May 9th*, 1865.

New locality for Depressaria rhodochrella.—This species (as well as several others of the same genus), has been found at the Land's End, by beating stacks of heath turf put up to dry.—C. W. Dale, Glanvilles Wootton, *2nd May*, 1865.

Remarks on leaf-rolling.—In "*Kirby and Spence's Introduction to Entomology*," in allusion to the power possessed by certain larvæ of drawing together leaves or portions of leaves, the following passage occurs:—"The little caterpillar first fixes "a series of silken cables from one side of the leaf to the other. She next pulls at "these cables with her feet, and when she has forced the sides to approach, she "fastens them together with shorter threads of silk." (vol. i., page 454.)

Now, from what I have observed, there appears to me to be another reason for the approximation of the portions of leaves spun together, namely, the *contractile power of the recently spun web itself*, which certainly shrinks very considerably in a short space of time; and this must be of (at any rate) great assistance to the leaf-rolling larva.

That this contractility does exist, can be made evident by the following experiment:—Having attached a small piece of paper to one extremity of a newly spun thread a few inches in length, suspend it by fixing the other end of the thread to a firm object, and mark off the exact position of the lower end of the piece of paper. After a short time, it will be found that the paper has been raised, in a very appreciable degree, above the mark at which its original position had been indicated.—Bernard Piffard.

Note on the ovipositing of Boarmia cinctaria.—Having again reared this species from the egg, I supplied the impregnated females with the catkins of sallow for their nourishment, and common heath (*Calluna vulgaris*) and the bark of willow for the reception of their eggs; the eggs, however, were deposited most freely, and almost exclusively, in the sallow catkins. Perhaps this may serve as a hint to some of your readers.—George Gibson, 55, Chalk Farm Road, *May*, 1865.

Offer of larvæ of Clostera anachoreta.—Should any Entomologist still be in want of this species I shall be most happy to supply him with larvæ.—*Id.*

Notodonta carmelita at West Wickham.—On the evening of the 26th inst., I had the pleasure of taking a pair (♂ and ♀) of this insect off the Bishop's palings; they were at rest within an inch of each other, and, from their fine condition, had evidently just emerged from the pupæ. The same evening, my brother took *P. lacertula* in the wood.—Wm. Cole, Tottenham, *April 29th*, 1865.

Singular variation of the larva of Lydia adustata.—The bright green or light apple-green variety of this larva I have seen described once or twice; but the descriptions do not all give the same number and position of the red markings. Some larvæ figured and described by Mr. Buckler, last autumn, had—in addition to the brown head, red legs, and lateral blotches mentioned (after Guenée) in the Manual—on the anterior part of each of the sixth, seventh, eighth, eleventh, and twelfth segments, a bright red elongate spot, bordered on either side by a black and then a white line; they had also thread-like sub-dorsal and spiracular white lines.

But the following variety, captured here by Mr. D'Orville, I have never seen mentioned before; in fact, at first we took it to be a new species. Ground colour above is a grey brown; a broad ochreous yellow dorsal stripe, widest in the centre of each segment, and contracted at the segmental divisions; very thin sub-dorsal and spiracular white lines; on the front of each of segments four, five, six, and seven, are two dorsal white spots, and on each segment ten black dots; belly and sides, for first five segments, are of same colour as the back, but for the remainder are ochreous yellow. The lateral blotches on segments five, six, and seven, are dark brown, followed by smaller spots on the hinder segments; the head, also, has a dark brown spot on each lobe.—Rev. J. Hellins, *April 6th*, 1865.

On some varieties of the larva of Hybernia leucophœaria.—In February, 1863, Mr. H. Doubleday kindly sent me a batch of eggs; these were at first light green in colour afterwards changing to a bluish-black-green. The larvæ were hatched on March 28th, being then dark dingy green in colour, and short in figure; they fed inside buds of oak, which I partially opened for them with a pin, and by the 14th April they had become about a quarter of an inch in length, and were furnished with a few bristles; all their dark colour was gone, and they were now of a very pale whitish-green. As they grew bigger, their skin seemed to grow harder, as though to fit them for feeding exposed, and at last there appeared about four varieties. These Mr. Buckler has kindly figured, together with some other larvæ captured at different times.

When full grown—about the end of May or beginning of June—they had somewhat of a square-built figure, being stoutish, and of uniform size throughout; in fact, they can by no means be called elongate, although most of their congeners are well described by that word.

The variety most commonly met with has the ground colour of a very pale yellowish-green, or very pale olive-green, with a yellowish dorsal line, double, but almost running into one at the segmental divisions, and a sub-dorsal line rather paler; some specimens have, in addition, numerous dots of pale yellowish-white. This seems to be the variety described (from Guenée) in Stainton's Manual.

The variety coming nearest to this, is one which I never saw except in the

batch bred from the eggs sent me by Mr. Doubleday. It had the ground colour of a pale pea-green, with dorsal and subdorsal lines like the last, only on each of the fifth, sixth, seventh, eighth, and ninth segments, it had a longish dash of dark brown immediately below the sub-dorsal line.

The third variety was also peculiar to the brood from Epping. It had the ground colour of a very pale drab, dorsal and sub-dorsal lines pure white; on each side of second segment, behind the lobes of the head, was a blotch of dark brown; down the back, in the centre of each segment, was a dark brown triple wedge-shaped mark, and at each segmental division a black spot; the sub-dorsal line bordered below, throughout its length, with dark brown dashes.

One might indicate several more varieties, but I shall include the rest under one, as they have the same markings, and differ chiefly in depth of colour.

Ground colour yellowish-green, full green, sometimes dark olive; dorsal and subdorsal lines varying also with the ground colour, in the darkest specimens becoming much suffused, and interrupted at the segmental divisions by a dark brown transverse band; second segment with the two large round dark spots; on the back of each of the other segments a dark brown mark, compared by Mr. Buckler to two leaves pointing forward, with a short stem between them, and preceded by two black dots; sub-dorsal lines bordered below with dark dashes.—*Id.*, 13*th April*, 1865.

Offer of Zenzera Æsculi.—Having about a couple of dozen duplicates of this insect in fair condition, I shall be happy, on receipt of a suitable box and return postage, to supply (until my stock is exhausted) any Entomologist who may be in want of the species.—J. B. Lynch, 6, Leighton Crescent, Camden Road, N.W., *May*, 1865.

Larva of Cœnonympha Davus.—Through the kindness of Mr. Joseph Chappell, of Hulme, near Manchester, I have received three fine healthy larvæ of *Cœnonympha Davus*, feeding on *Aira* ——— ?. They are from 10 to 11 lines in length; grass green, with dorsal vessel darker green, bordered on each side by a yellowish-white line; and with slender yellowish-white sub-dorsal and spiracular lines; the bicuspid caudal prolongations are in a line with the sub-dorsal lines, yellowish-white at the sides, but tipped with pink; the head is green, but dull and lustreless, with much the appearance of the head of a saw-fly larva; the belly, legs, and prolegs are green.

When examined through a lens, the entire surface of the body is seen to be dotted all over with extremely minute white dots.

The movements of the larvæ are extremely slow and deliberate.—H. T. Stainton, Mountsfield, Lewisham, *May* 17*th*, 1865.

Further notes on thatch.—Great part of the last summer has been so hot, with bright sunshine day after day, that I have been quite unable to obtain as much knowledge of the summer thatch-frequenting *Lepidoptera* as I should probably have done had there been more cloudy or stormy weather. I have, however, devoted a great deal of time to collecting from thatches, and, in the latter part of the season with very fair success.

In the middle of April, when *Laverna decorella* was getting over, *L. sub-bistrigella* made its appearance (also hybernated), and continued to occur through May, in which month *L. epilobiella* also appeared, and occasional specimens of *Micropteryx Thunbergella*, *Acrolepia pygmæana*, *Perittia obscurepunctella*, and *Ornix guttea*. But these appear to be only chance visitors, and not regular inhabitants. The same may be said of *Odontopera bidentata*, *Hemerophila abruptaria*, *Cidaria suffumaria*, and several other *Geometræ*, which occasionally tumbled into the net; but *Cidaria silaceata* evidently has a preference for the thatch, as, although not a common species here, I beat it out repeatedly.

At the end of May, the first brood of *Coriscium Brongniardellum* made its appearance.

In June, thatch-beating was lost labour. I have no record of anything obtained in that month, except *Melanippe unangulata*, and, of course, the long-lived *Depressaria arenella* and *propinquella*, which seem resolved to see their offspring on the wing before they die. From furze stacks, however, I beat *Acidalia subsericeata*, *Coremia pectinitaria*, *Mamestra anceps*, and other common *Noctuæ*, and *Gelechia diffinis*.

In July, *Œcophora fuscescens* was excessively abundant among thatch composed of dead heath and broom, on which it seems likely that its larva may feed. *Œ. minutella* occurred along with it. From ordinary thatches, I obtained *Gelechia affinis*, *rhombella*, *domestica*, *tricolorella*, chance specimens of *Elachista nigrella*, and the black variety of *Prays Curtisellus*, *Eudorea mercurialis* in abundance, and *Amphypyra tragopogonis* pretty frequently. Towards the end of the month, *Depressariæ* began to appear; *costosa*, *albipunctella*, and *chærophylli* being the first.

In August, *Triphæna janthina* was not uncommon, and *orbona* and *pronuba* were quite a nuisance, kicking and fluttering about, and disturbing the small things, which are generally active enough without any provocation. The second brood of *Cidaria silaceata* also occurred, faithful to the habits of its parents, and *Eudorea muralis* and *Crambus falsellus* only sheltered where, in all probability, they had fed as larvæ. *Gelechia domestica* and *tricolorella* were not over, and were joined by *G. diffinis*, *Lyellella*, and *gemmella*. *Cerostoma costella* occurred very seldom for so common an insect,—a matter that deserves investigation, seeing that *C. radiatella* is, perhaps, without exception, the commonest species in thatch. The *Depressariæ* came out this month in great force: *Alstrœmeriana*, *purpurea*, *ciliella*, *albipunctella*, *chærophylli*, *nervosa*, and *heracliana*, in abundance; *arenella*, *propinquella*, and *applana*, in swarms; while *carduella*, *conterminella*, *ocellana*, and *Yeatiana*, were rather scarce. All these, with the exception of *conterminella*, continued to appear throughout the autumn, as did *Coriscium Brongniardellum* (2nd brood), in plenty. At the end of this month, my old favourite, *Laverna decorella* made its appearance with *L. epilobiella*.

In September, the two last-named species were common, as was *L. sub-bistrigella*; and *Depressaria umbellana*, *atomella*, *subpropinquella*, *pimpinellæ*, and the novelty, *olerella*, made their appearance. *Tinea cloacella* and *rusticella* found it convenient, this month, to seek the protection of thatch, along with *Theristis caudella*, *Gelechia costella*, *Gracilaria stigmatella*, *Coriscium cuculipennellum*, and even *Pterophorus punctidactylus*. *Hadena protea* occasionally tumbled into the net; *Phyllocnistis saligna* was common at one farm in the midst of a wide extent of

waste land; and on the 23rd of the month, I was not a little surprised at beating out a fine *Dipterygia pinastri*. He was evidently out of his reckoning, and found that September weather necessitated a warm hiding place. At the end of the month, *Cidaria miata* and *psittacata* appeared; the former commonly, and showing a special preference for faggot-thatch.

In October, most of the September species continued to occur, and *Depressaria pallorella* made its appearance, finishing up the season in a satisfactory manner.

As will be seen, I cannot confirm what I said in my former paper, respecting *Depressaria umbellana* and *ocellana*. I *have* beaten both species from thatch, but by no means often, in proportion to the commonness of the species.

I hope none of my friends, who know as much as I do about thatch, and probably a great deal more, will imagine for a moment that I wish to arrogate to myself any superior or exclusive knowledge on the subject. Indeed, had it not been that one of them, when on a visit here, noticed the abundance of old thatches, and urged upon me that I should work them, I should most likely have known no more now than I did then. These notes are only designed to stir up some of those who may similarly require it.—Chas. G. Barrett, Haslemere.

Hybernation of Cidaria miata.—Observing remarks made relative to the hybernation of *C. miata*, it occurred to me that my own observations respecting this species may interest your readers. I have not met with a hybernated one this season; but in March, 1864, I captured a most perfect specimen (without doubt a hybernated one) upon the bole of a poplar. I have frequently taken the larva; also numbers of pupæ, at the base of poplars and willows, lying at the top of the earth, generally fastened with threads at the apex to roots of grass, to moss, or bits of rubbish. They are covered with a delicate bloom. As far as my experience goes, the moth always emerges before winter, and I never knew an instance of the pupa lying over until the ensuing spring. I bred about fifty last autumn, from larvæ and pupæ taken as already stated.

I found under one willow upwards of twenty pupæ, thirteen only of which were alive; but strange to say, although I searched at the roots of a great number of other willows in the same locality, not another pupa could I find. I used to take *C. miata* commonly, many years ago, in a timber yard that was surrounded by willows. Very early in the season, they were resting on the palings, having, no doubt, crept out from their winter quarters. In March, 1864, as I was passing along one of our streets, a coal cart was being unloaded, and upon one of the large pieces of coal a very perfect *C. miata* had seated himself,—no doubt having been taking a ride. I was not in need of the passenger, and therefore did not climb into the cart to make a seizure, knowing, at the same time, if I had done so, black looks from the coal carriers would inevitably have fallen to my lot.—Abraham Edmunds, The Tything, Worcester, *March*, 1865.

Hybernation of the larva of Hadena rectilinea.—I find some of my friends have lost their hybernating larvæ of *H. rectilinea*. I am glad to say that mine are alive and doing well, though much reduced in size after their long winter's fast. Mr. Cooke, of Liscard, kindly sent me some eggs on the 16th July last; but the larvæ were hatched upon their journey, and only thirteen survived. They fed well until

September 28th, when eleven went under the moss, and the remaining two continued feeding until October 14th, and then retired for the winter. Judging from their present diminished size, they must feed again for their transformation to be a successful one as regards their dimensions. They fed upon sallow, and would frequently eat decaying leaves, although well supplied with fresh ones.—*Id.*

Description of the larva of Hadena rectilinea.—On the 23rd of last September, Mr. Doubleday most kindly presented me with several nearly full-grown larvæ of this species; and subsequently Mr. N. Cooke obliged me with another variety, reared from the same batch of eggs, which he obtained from a ♀ taken at Rannoch last summer.

They continued to feed well, as long as any sallow (the plant upon which they were feeding when I received them) could be procured for them; and, about the end of October, one individual retired to a slight hollow on the surface of the earth, and spun itself over with a semi-transparent web, in which, now (at the end of March,) it is still coiled up and visible.

One or two of the others died in February: the rest are still attached to the top of their cage, and, during the last few weeks, have occasionally crawled about a little, but apparently without feeding on any of the various leaves and willow shoots supplied to them; they have now lost much of their sleekness, and the segmental divisions appear contracted. The following is a description of their condition at the end of September.

Larva slightly tapering towards the head, with a transparent ridge or hump across the back of the twelfth segment. The dorsal and sub-dorsal lines grey, and very thin, edged with blackish; and the inner edges of the sub-dorsal, at the front of each segment from the fourth, diverges, thus forming a dusky oblique streak on each side of the segment, pointing behind to the centre of the back at the segmental division. The colours of the back are of rich dark browns, others of chestnut browns, and others of ochreous and orange browns. On the back of each segment, from the fourth to the twelfth inclusive, are paler wedge shaped streaks on each side, viz. :—a short one on each side anteriorly, pointing backwards, and a long one on each side posteriorly, pointing forwards; thus giving somewhat of a diamond form to the darkest brown of the back. Ordinary spots pale, each containing a central black dot, and placed more on the anterior portion of each segment than is usual with the *Noctuina* in general. A broad deep brown stripe along the sides, mottled and streaked, and slightly edged below with darker colour, and along this are placed the very small white spiracles which are edged with blackish. Above the first is a rather broad lateral stripe, commencing next the head with a pale ochreous or cream colour, blending gradually at the fourth segment into a grey-brown, and re-appearing, similarly of the same tint, on the twelfth and thirteenth segments, and sides of the anal pro-legs.

Belly dusky-brown. Head blackish-brown and iridescent.

The sides of these velvety looking creatures are clothed with an excessively fine and soft pubescence, which, more or less, includes the ventral pro-legs, and assumes the most delicate tints of bright azure, according to the angle of reflected light in which they are seen.—W. Buckler, *March*, 1865.

Captures at Bournemouth.—During a fortnight's stay, from the 13th to the 27th July, at Bournemouth, I captured a few *Lepidoptera*, a short account of which may interest some of the readers of the Magazine.

I met with no butterfly worth mentioning; but it is perhaps worthy of remark, that I readily succeeded in procuring eggs from *L. Ægon* and *H. Semele* by the process mentioned in my "Notes" of last month, namely, by placing the females together with a sprig of heather under a glass shade, to which the air and sun's rays had access.

Lithosia helveola.—Several fluttered from the fir trees responsive to the thud of "le maillet;" on reaching the ground they generally shammed death, and were boxed without further difficulty: all my captures of this species were males; the females, probably, seek some other mode of concealment.

Orgyia fascelina.—One afternoon I found a female sitting at the summit of a dead heather twig, evidently "calling;" when placed, later in the day, in a muslin-topped box, several moths, probably males of this species, flew swiftly past, but did not wait to pay their addresses.

Ellopia fasciaria.—Contrary to the case of *L. helveola*, the captures of this species, though obtained by the same method, were all females; they laid readily enough in captivity, the eggs hatching early in August.

Boarmia repandata, var. conversaria.—I met with a lovely specimen of this variety; the typical form was abundant, and, like its congeners, very skittish, frequently darting from its situations on the trunks and lower branches of the firs on the mere approach of danger.

Gnophos obscurata.—A nearly black variety of this species was by no means scarce—flying up from the heather, not unfrequently, by day; it laid eggs readily enough in captivity.

Pseudopterpna cytisaria.—This species was in profusion among the heather on the west side of the town, in company with *Eubolia palumbaria;* both used to start up, fly a few yards, and then settle again.

Nemoria viridata.—I took just sufficient to swear by, viz., one not over fine specimen of this species; I was evidently too late for it.

Acidalia inornata.—This insect was not unfrequent, sitting by day upon the boles of firs, and flying towards dusk; from having on previous occasions found the species amongst *Clematis*, I had been inclined to consider it the natural food, but this is evidently not the case, for the plant does not, to my knowledge, occur in this neighbourhood; as usual, it deposited eggs without difficulty, but having once succeeded in rearing the long-lived larva of this "wave," I feel sufficiently satisfied not to try again.

Macaria liturata.—Common enough, some individuals being much worn, others in fine condition; I procured ova.

Pachycnemia hippocastanaria.—Also common, flying after dusk among heather, and occasionally kicked up, whilst walking, in the day-time.

Thera firmata.—Two or three specimens occurred; one at once detects it on the wing, the silvery hind-wings being so much more conspicuous than those of *Th. variata*, which, of course, was also present.

Leucania littoralis.—Pretty common, but wild in flight, and did not show any partiality for sugar; it often settled on the tufts of *Ammophila arenaria*, a grass which is abundant in this locality, and from which, I am informed, the insect may be dislodged by day.

Trachea piniperda.—Not scarce in the larval state, dropping, now and then, by a thread from the fir-boughs, having been jerked therefrom by the action of my mallet.

Hyppna costæstrigalis.—Two specimens flying at dusk, from one of which I obtained a few eggs laid strung together, after the manner I have noticed in some other *Pyrales;* these eggs I sent to Mr. Hellins, who informs me that, upon hatching, the young larvæ coated themselves with lichen! *

Aylossa pinguinalis.—An old familiar friend, common in houses, here as elsewhere, but its occurrence in this locality was, to me, unexpected.

Aventia flexula.—Some half-dozen specimens of this turned up; I much regret that I failed in an attempt to obtain eggs, the more so, that an intimate acquaintance with the forms and structure of its several stages might fix this anomalous creature's ordinal position.

Endotricha flammealis.—Abundant, as usual, over the brake fern; one handsome dark variety which I secured I have placed in Mr. Bond's cabinet.

Crambus pinetellus.—This lovely *Crambus* was not uncommon among the pines.

Anerastia lotella.—Flying at dusk, not scarce; although much resembling a *Crambus*, it is at once detected from the members of that genus by the absence of the long palpi, a very convenient structural peculiarity, which enables the collector to recognise it in the net, even in the dark.

Phycis abietella.—One specimen kicked from a young fir tree was a prize, as I had never previously met with the species in nature.

Pempelia palumbella.—Rather common amongst heather at and after dark, occasionally also putting in an appearance by day; I had hoped, at the time, that my captures of this would have turned out "something new," but in this I am disappointed.

Melia sociella.—I mention this rather common species because the males taken in this locality have the fore-wings decidedly more unicolorous than is the case with those which occur in other districts.

Sericoris bifasciana.—Abundant, for a wonder! among *Pinus maritima* (*?*); flying before dusk in company with *Retinia sylvestrana*, which is also abundant: I cannot make up my mind that this is not a true *Retinia*. It was my intention to have distributed this species, but the ants have already spared me the trouble and pleasure.

Retinia Buoliana and *pinivorana* both occurred among the pines, and *Mixodia Ratzburghiana* was by no means scarce.

Of the few captures of *Tineina* which I made, that of *Œcophora lambdella* was undoubtedly the best, but even of this I was unable to secure more than one specimen (at rest upon a fir-trunk), though I subsequently, under advice, worked vigourously wherever I could find dead gorse or heather; with one specimen of a "plume," which I make out to agree with *Pt. plagiodactylus* (of which I possess a pair), and which occurred in one of the 'chines' west of the town, I terminate this meagre list of captures, which, with one or two exceptions, were made on the *east* side of the town, and during the last week of my stay; I have, of course, omitted the very common and generally abundant species.

No doubt, at a different (later?) season of the year, or in a more entomologically prolific year than this (1864), Bournemouth would yield its share, but, so far, my limited experience of its Lepidopterous resources is anything but satisfactory.—H. G. Knaggs, 72, Kentish Town Road, N.W., *September*, 1864.

* Unfortunately these interesting little fellows subsequently died.

Eupithecia pulchellata bred.—On the 10th of the present month (May) I had the pleasure of breeding *E. pulchellata*, taken last summer off foxglove flowers in this neighbourhood. A few days before, I bred *E. fraxinata* from a pupa taken under loose bark of ash.—Geo. Baker, 47, Keddleston Street, Derby.

Notes on the habits of two Indian insects.—Batocera Rubus.—This beetle is found at Saugor, C. I., rather common, making its appearance towards the end of the rains, in October; during the day they are found in the cracks and hollows of the wild fig tree. The largest I have captured measures $2\frac{1}{8}$ inch long, the smallest $1\frac{5}{8}$ inch length of body. When disturbed or alarmed they make a loud creaking noise, their head and thorax being in continual motion at the time; I have found as many as five in one hole. The larvæ, I think, live on the wood and bark of the tree mentioned; I hope to find out during the year if this is a fact. Two specimens were captured at Ramptee, Nagpore, by Dr. Rawes, 4th L.C., on the wild fig tree also.

Diopsis Indica.—Described in Donovan's Insects of India, page 92, pl. 58. This dipterous species is abundant here during the months of July and part of August. I have caught them on the flowers of the cucumber and Indian marrow; and also in my house on the window panes.—Capt. F. M. Alexander, 8th Madras Light Cavalry, Saugor, Central India, *March 22nd*, 1865.

Entomological Society of London, *May 1st*, 1865.—H. T. Stainton, Esq., F.L.S., Vice-President, in the Chair.

F. Du Cane Godman, Esq., F.L.S., of Godalming, W. H. Grover, Esq., of 19, Claremont Square, and J. T. D. Llewelyn, Esq., of Ynisygerwn, South Wales, were elected Members; and Edward Clift, Esq., of Lewisham, C. B. Clarke, Esq., of Queen's College, Cambridge, and W. Farren, Esq., of Crescent, Cambridge, were elected Subscribers to the Society.

The Secretary read a notice from the Journal of the Society of Arts respecting the cultivation of *Attacus Polyphemus* in America; one cocoon had been found to contain 1,500 yards of strong silk.

Mr. Stevens exhibited a species of Indian *Cassididæ* belonging to the genus *Pronopterus*; this he had found alive in Covent Garden, after having unpacked a case of orchids, in which it had no doubt been imported.

Mr. Smith exhibited the males and workers [the latter having been described as a separate genus (*Typhlopone*),] of the genus *Dorylus*, recently received from India from Dr. Jerdon.

Dr. Jerdon stated that this species had very much the same habit as *Termes*, undermining wooden buildings, &c.; he had not been able to find the female, and was of opinion that this sex might be apterous, never coming out of the nest.

Professor Westwood said, that judging from analogy, he doubted whether the female of *Dorylus* were apterous.

The Chairman exhibited a singular thread-like web, formed by some gregarious *Lepidopterous* larva; these were found on a beech tree near Marlborough; he was quite unable to imagine to what species the larvæ belonged, as they were very young.

Professor Westwood called attention to a statement in Mr. Waterton's "Wanderings" respecting the "Jigger." Mr. Waterton stated that the larvæ hatched in the sore, and fed on the flesh.

The Rev. Hamlet Clark commented on a passage in Mr. Cameron's "Travels in Malayan India," in which he mentioned that the fire-flies appeared to have a habit of exhibiting and extinguishing their light contemporaneously. Mr. Clark said that he had observed a similar habit in the fire-flies (species of *Lampyridæ*) in Brazil; all the flies appeared to shine simultaneously, and then darken their lamp for a short time, and shine again.

Mr. Bates, Mr. Saunders, and M. Sallé (who was present as a visitor), all of whom had had frequent opportunities of observing these insects, said that they had never noticed this habit; the *Lampyridæ*, as observed by them, were seen threading their way amongst the low shrubs in different directions, and did not exhibit and suppress their light alternately.

Mr. McLachlan suggested that this apparent phenomenon might be caused by slight currents of air, which occasioned the flight of the insects to assume a different direction, and thus, by altering the position, shut out the light-producing organs from the observer's view.

The Rev. Hamlet Clark mentioned that a lady had applied to him for some remedy against the number of *Onisci* which swarmed in some peat used for horticultural purposes. Mr. Clark wished to know if there could be any connection between the peat and the *Onisci*, a query which Mr. Saunders was disposed to answer in the negative, excepting that the peat consisting entirely of decaying vegetable matters, was very likely to be frequented by the wood-lice.

Mr. Weir said that he had observed similar swarms of wood-lice in a cucumber frame in which peat was used.

Mr. Smith read a paper on "New species of *Hymenoptera* from Australia," collected by Mr. Du Boulay. These consisted of various new species of *Thynnus*, *Elurus*, *Rhagiogaster*, *Paragea*, and a singular insect with clubbed antennæ, allied to *Megachile*, for which he proposed to found a new genus under the name of *Thaumatosoma*.

Professor Westwood mentioned that he had long since described a bee with clubbed antennæ.

The Rev. Hamlet Clark read a paper on various new species of *Phytophaga* from Western Australia, also collected by Mr. Du Boulay.

Mr. Bates read a paper on four new species of *Agra* from Mr. Saunders' collection.

The Chairman called attention to a paper by Mr. Walsh on the insects frequenting the species of willow-galls observed in Illinois; this paper was published in the last part of the proceedings of the Entomological Society of Philadelphia. Mr. Walsh had called attention to the fact that, in addition to the actual gall-makers, various insects lived in the galls, and fed on the parts of the gall; thus, no less than seven species of *Micro-Lepidoptera* had been bred from these galls, three of which had been described by Dr. Brackenridge Clemens as belonging to the genus *Gelechia*; the four others belonging to the *Tortricina*, viz., two species of *Hedya*, one *Peronea*, and one *Crœsia* (?).

The Chairman expressed a hope that the attention of Entomologists generally would now be more directed to the insects obtainable from galls.

THE *NEUROPTERA* OF MADEIRA.

BY DR. H. A. HAGEN.

(*Continued from page* 11.)

EPHEMERIDÆ.

Genus Cloë, Burmeister.

C. DIPTERA, Linn., Pictet.

Pallide rufescenti-cinerea, segmentorum marginibus fuscescentibus, setis fusco-punctatis, alis hyalinis, costa (♀) flavescenti-fusca, albo-marmorata, posticis nullis.

Long. corp. 9-11 *mill.; exp. alar.* 24-26 *mill.; long. setar.* 12-13 *mill.*

Female imago. Rosy fawn-coloured; eyes blue. Vertex and prothorax with small reddish spots. Mesothorax with three slender lines of the same colour. Each abdominal segment with three spots above. Caudal setæ whitish, pointed with black. Feet whitish; the anterior with a red spot on the thighs, and with the tips of the tarsi blackish. Wings transparent, with the posterior margin slightly brownish, and all the costal region greenish-yellow, marked with small white spots. The posterior wings altogether wanting.

Madeira.

The female (No. 71) is of the ordinary size; the head, thorax, and the basal portion of the wings wanting. No. 72 (♀) is smaller, but I possess similar examples from various localities. This species is found everywhere in Europe, but I do not know the male with certainty, which differs considerably from the female according to M. Pictet.

Nos. 71 & 72 ♀.

C. MADERENSIS.

Oculis nigris; thorace nigro-fusco, nitente; abdomine luteo, apice obscuriori; setis luteis, vix annulatis; pedibus luteis, anticis nigro-fuscis; alis hyalinis, apice antice paulo infuscatis; alis posticis minimis.

Long. corp. ♂ 5½-6½ *mill.*, ♀ 6½ *mill.; exp. alar.* ♂ 12-13 *mill.*, ♀ 13 *mill.; long. setar.* ♂ 12 *mill.*, ♀ 10 *mill.*

Head with the antennæ of a blackish-brown. Eyes with the turban black, perhaps reddish during life, for the margins seem to be slightly reddish. Thorax entirely of a brilliant blackish-brown, without spots. Abdomen fawn-coloured, the apex slightly darker, brownish. Caudal setæ fawn-coloured, the articulations brown, but so slightly as to appear scarcely annulated. Feet fawn-coloured, the anterior pair blackish-brown. Anal appendages of the male arched. Wings perfectly trans-

parent ; neuration brown, the pterostigmatical portion slightly smoky, with about six transverse irregular veinlets, anastomosing in the middle.

The female has the thorax paler and the abdomen darker, entirely brownish.

The female sub-imago entirely cinereous.

Madeira.

This species is allied to *C. Rhodani*, but the colours are different. It is very difficult to describe the *Ephemeridæ* with certainty from dry specimens, but it appears to me that the male No. 64, and the female No. 67 from Santa Cruz, are certainly the same species. The males Nos. 62, 63, & 65, and the females No. 68 from Arribenteo & No. 66, are I think also the same species, at least Nos. 63 & 66 ; No. 65 has the neuration rather more prominent, but the male, No. 62, is well intermediate. Thus I think that all form one species.

Nos. 62, 63, 46, & 65 male imagos ; Nos. 66 & 67 female imagos ; No. 68 sub-imago.

Note.—The male numbered 69, and the female sub-imago No. 70, belong to a species very closely allied, but probably distinct ; any way, I think it more prudent to leave them for the present, for the male has lost its head and abdomen. It is larger and darker, especially the thorax, feet, setæ, apex of the wings, and the pterostigmatical region ; the latter has five transverse, oblique, regular nervules, not anastomosing in the middle. The female sub-imago belongs probably to the same species, but it is necessary to know the female imago to be certain. In any case one should have several specimens to say with any degree of confidence if they form a distinct species or not.

ODONATA.

Genus Libellula, Linn.

L. rubella, Brullé.

L. Fonscolombii, Rambur, Selys ; *L. erythroneura*, Schneider.

Madeira. No. 15, ♂.

M. Brullé's name has the right of priority. This species is found almost everywhere in Europe, except in the northern and eastern parts ; towards the latter it is not found further than Mecklenburgh. I have seen it from Asia Minor, Syria, Egypt, Cape of Good Hope, and Sengal, and also from Java, if the label be correct. M. Brullé cites it from India.

L. STRIOLATA, Charpentier.

L. striolata, Selys "Revue," with the synonymy; *L. vulgaris* of 'l'Histoire des Isles Canaries.'

Madeira. I have seen several examples.

This species is common in almost the whole of Europe, excepting the east and north.

No. 13 ♂; 14 ♀.

NOTE.—*L. erythrea*, Brullé,=*L. ferruginea* of 'l'Histoire des Isles Canaries,' p. 82, is cited from the Canary Islands by M. Brullé. It is very possible that this species is found there, but I have never seen a specimen from thence.

L. Olympia of 'l'Histoire des Isles Canaries,' p. 83; I doubt much if this species (*L. cœrulescens*, Selys,) be found there. It is probably a neighbouring species, which I possess from Teneriffe, viz., *L. chrysostigma* of Burmeister; perhaps synonymous with *L. barbara* of Selys.

I have not seen the *Gomphus* taken by M. Hartung in Madeira, and deposited in the collection of Professor Heer; it is probably *G. simillimus*.

Genus ANAX, Leach.

A. FORMOSA, Van der Linden.

Madeira. I have seen both the sexes.

Common in all Europe and Africa, as far as the Cape of Good Hope. See Selys "Revue," p. 394, for notes on the artificial introduction of this species into Sweden.* Perhaps it may have been introduced into Madeira?

Genus AGRION, F.

A. PUMILIO, Charpentier.

Madeira, and almost the whole of Europe.

The female variety is orange-yellow, with a spot on the epistoma, a transverse band on the middle of the head, a longitudinal band on the pro-thorax dilated posteriorly, an anterior narrow band of the same

* The following is a translation of the notes referred to (R. McL.):
Dr. Hagen possesses the following anecdote from Dr. Burmeister, on the actual presence of *A. formosa* in Sweden. "A professor of Stockholm has assured him of the presence of *A. formosa*, "for many years in one locality in Sweden. A Frenchman dwelling in the country near a large "pond, regretted not hearing the croaking of the frogs of his country. He had sent to him in the spring- "time masses of eggs in marshy earth. By this means he introduced *Rana esculenta* into the Swedish "fauna, and that pond has remained the sole place where this amphibian is to be met with. At the same "time, without doubt, the eggs or young larvæ of *A. formosa* were brought from France, for this pond "is the only locality in Sweden where it is to be found. This narrative (adds Dr. Hagen) seems fabulous, "but I have been able myself to verify in Sweden an analagous instance, having found in 1839, near "Upsal, in the garden of Linnæus' country-house, living *Helix pomatia*; now we know with certainty "that Linnæus caused this species (which is absent from the Swedish fauna) to be introduced."

breadth throughout, a humeral line, and the under-side of the abdomen on the posterior three-quarters of the third segment, all bronzy-green.

I do not know the *Agrion Maderæ* of De Selys Longchamps.

Nos. 17 ♂; 18 ♀; 19 ♀, var.

(*To be continued*).

NOTES ON BRITISH *FORMICIDÆ*.

BY FREDERICK SMITH, V.P.E.S.

The present communication will probably be regarded as being very nearly allied to an advertisement; it has, however, a definite entomological object in view, that of seeking to increase our knowledge of the British species of the *Formicidæ*.

In the year 1851, our list of ants numbered eighteen species; the list has since that period been swelled to nearly double that number, it having increased to thirty-two. I feel confident that several additions may be made, if Entomologists living in distant localities can be induced to collect sets of ants during the present season, at such times as the winged sexes are observed in the nests. The discovery of an additional species the other day at Sandown, near Deal, induces me to appeal to brother Entomologists, and to request that they will be kind enough to collect some of these insects at such times as I have indicated above; particularly the smaller species; always being careful to keep each species separate, and carefully labelled as to the situation in which they were found, with the date of the month, &c. Any one visiting Scotland would be sure, I believe, to add to our list by attending to my suggestions. Many, I dare say, imagine that we have only one species of hill ant—by which I mean ants that erect nests composed of bits of stick, leaves, straws, &c., like those of the well-known wood ant; I take three species from such nests, and we may expect to find at least three others. There are also two or three species that will probably be found under bark, or in the dead stumps of trees, and others that do not construct nests of their own, but are found living in perfect harmony in the nests of other species; these are usually minute insects; two are found in the nest of the wood ant on the Continent, we have only as yet obtained one of them in England. A good plan for finding them is to soak an old rotten board in water, and then to place it against an ant hill; if occasionally examined, the little parasitic ants may be expected to be found beneath the board, attracted by the moisture. Myrmecophilous *Coleoptera* will also be occasionally found.

I subjoin a list of the British ants, indicating the situation of the nest, the date when the species usually swarm, and the localities known for some of the rarer species.

SPECIES.	Situation of Nests, &c.	Date of Swarming. E end. B beginning.	Localities—G D Generally Distributed
Formica rufa	Woods. Erected on ground	May—E	G D
congerens	Ditto ditto	August—B	Bournemouth, Loch Rannoch
sanguinea	In banks, trunks of trees, &c.	August	Croydon, Weybridge, Hawley Hants
exsecta	Open commons, pastures, &c. Built on the ground	July	Bournemouth
cunicularia	In banks, particularly if of clay; in stumps	July	G D
fusca	In the ground, banks, &c.	August	G D
fuliginosa	In decaying trunks of trees, rarely in banks	May—E	G D
brunnea	In the ground	Unknown	Deal
nigra	In the ground	August—E	G D
aliena	In the ground	August—E	Deal
umbrata	Raises little hillocks of earth	August—E	G D
flava	Ditto ditto	August—E	G D
Tapinoma erratica	In the ground	Unknown	Weybridge, Bournemouth, Coombe Wood
polita	Unknown	Unknown	Bournemouth
Ponera contracta	In the ground, under stones, &c.	Unknown	G D
punctatissima	In houses, bakehouses, and hot-houses	Unknown	London
Myrmica ruginodis	In the ground, stumps of trees	September	G D
scabrinodis	In the ground, &c.	September	G D
lævinodis	In the ground	September	G D
sulcinodis	In the ground	September	Scotland
lobicornis	In the ground	August	Dover, &c.
Tetramorium cæspitum	On the ground, in tufts of grass, &c.	August	Lowestoft
lippula	In the nest of F. fuliginosa	Sept. and Oct.	Highgate
Leptothorax acervorum	Under bark, &c.	August	Shirley Common, &c.
Nylanderi	In stumps of trees, &c.	August	G D
similima	In hot-houses	Unknown	Dorsetshire
unifasciata	In dead wood, &c.	Unknown	Isle of Wight
Stenamma Westwoodii	In nests of F. rufa	Unknown	Weybridge
Diplorhoptrum fugax	Under ground	September	Southend
molesta	In houses	August	London, Brighton, &c.
Pheidole lævigata	In hot-houses	Unknown	Exeter,—The Borough, London
Myrmecina Latreillii	Unknown	Unknown	Isle of Wight, and near London

*** The fresh addition to the list, is the *Formica aliena*, Foerster, a species very closely resembling *F. nigra*, but retained as distinct by Foerster, Mayr, and Roger; Nylander does not sink the species, but questions whether the slight differences between it and *F. nigra* are sufficient to constitute a species. The differences consist in its being always smaller, and usually of a paler colour; and in the antennæ and legs being devoid of the long hairs always found on those parts in *F. nigra;* the head of *nigra* is also wider. As *F. aliena* does not appear in the winged state before the latter part of August, I only obtained workers; the species is not at all rare on the sand-hills near Deal.

British Museum.

ON THE OCCURRENCE OF *SYSTELLONOTUS TRIGUTTATUS* (A HEMIPTEROUS INSECT) IN COMPANY WITH *FORMICA FUSCA*.

BY J. W. DOUGLAS.

This species, which is not accounted rare throughout Europe, has seldom been found in England. There were one or two in the collections of Mr. Stephens and Mr. Curtis, and Mr. Dale has taken one or two, but all are males; the female has not been seen in England, and but rarely on the continent, being sub-apterous it has doubtless been overlooked. The males have dark brown elytra, with two broad, snow-white bands across them, sharply defined as if inlaid, like the markings in the fore-wings of some species of *Lithocolletis;* the females have only rudimentary elytra.

The beauty of the creature had impressed me, and ever since I began to collect *Hemiptera*, I have been on the look out for it, searching often under heath, where it is said to occur, but with such want of success that I almost despaired of getting it. However, on the 7th instant, at Weybridge, the sun shining brightly, I turned up a branch of a small plant of broom that was lying close to the bare ground, and I was electrified at the sight of a living beauty. After a diligent search under the small broom bushes I got 50, of which 20 were females.

In the ground under the bushes, colonies of *Formica fusca** had made their burrows, and numbers of the ants were running about. *Systellonotus* (male, female, and pupa,) were running with them, and in like manner, in most tortuous courses, never resting for an instant. I had thought that an ant ran quicker than any other insect, but *Systellonotus* ran absolutely faster. *Myrmedonia* and *Salda* may be accounted the Olympic runners of Insectdom, but they would stand no chance in

* For the name I am indebted to Frederick Smith, Esq.

a race with ants, and these would be beaten by *Systellonotus*. The males were very unwilling to fly, but I found they could be provoked to take wing. To see the bugs was not now so difficult, but to catch them was, I think, the most arduous task I ever had. For, consider, the creatures were not only incredibly swift, and (except the males) so like the ants with which they were mixed, in form, size, and colour, that it was nearly impossible to distinguish them, but they were also so delicate that they could not be touched; therefore, the only method of capture was to put the quill of the collecting-bottle over them as they moved!

I believe that neither heath nor broom has any connection with the bugs, except so far that these plants shelter the ants, and although the association of the bugs with the ants has not been recorded, it seems to me there can be no doubt that the species is myrmecophilous, for where there were no ants there were no bugs. Are they not also myrmecophagous? This, I think, is indicated by the extreme similarity to the ants of the larva, pupa, and, in the female, the imago, which would enable them to pass uninterrupted into the burrows; and it is an interesting question that some Hymenopterist who will search in the month of May may be able to answer.

Lee: 10*th June*.

AN ESSAY TOWARDS A KNOWLEDGE OF BRITISH *HOMOPTERA*.

BY THE REV. T. A. MARSHALL, M.A.

(*Continued from Vol. I., page* 275).

Gen. ARÆOPUS, Spin.

Separated from *Delphax* by Spinola (Ann. de la Soc. Ent. de Fr., t. 8, p. 336), upon the following grounds:—(1.) The antennæ are inserted at the base or commencement of the sub-ocular cleft, whereas in *Delphax* their origin is in the centre of the fissure. (2.) The first joint of the antennæ (see Generic Synopsis) is longer than the second, compressed, pubescent, and not granulated; in *Delphax* it is shorter than the second, nearly cylindrical, and more or less distinctly granulated.

1.—*Arœopus crassicornis*, Fab.

♂. Testaceus, alatus. Pronoti margines laterales nigri. Hemelytra albohyalina, corpore dimidio longiora. Scutellum, abdomen, utrinque plus minus infuscata. Hemelytra medio linea nigra notata, quæ a basi ad medium usque ducta, in hamum desinit. Maculæ tres

apicales, quarum maxima, in apice ipso, lunata, marginem posteriorem tantum obsidet: pone hanc duæ minimæ, lineares. Long. lin. $1\frac{3}{4}$.

Fab., S. R., p. 83, No. 2 (*Delphax*). Flor, R. L., 2, p. 88. *Asiraca pulchella*, Curt., B. E., 445 fig.

♀. Apterus, elytris immaculatis, abdomine brevioribus. Long. lin. $2\frac{1}{2}$.

Asiraca dubia, Curt., B. E., 445, text, No. 2.

This species is the largest, and apparently the rarest, British representive of the minor group of *Fulgorina* typified by *Delphax*. It has occurred in Sweden, several parts of Germany, France and Italy. Spinola mentions it as rare in the neighbourhood of Genoa. Curtis discovered it in the Isle of Wight, at Black Gang Chine, on rushes; and the present writer took two in a similar situation, ♂ ♀, in a ditch about two miles from Sandwich, on the Ramsgate Road, in September, 1863.

Gen. ASIRACA, Latr.

Another section of *Delphax*, equal in value to *Arœopus*, and exhibiting, together with that, two of several divisions which must ultimately be marked out on similar principles. The first joint of the antennæ is more than three times as long as the second, and rather more than twice as broad,—a character which serves at a glance to distinguish the genus from either of the two preceding. Our only species is—

1.—*Asiraca clavicornis*, Fab.

Ferruginea vel ochracea. Scutellum nigricans, limbo tenuiter pallido. Frons inter carinas inferius nigricans. Sternum medio, femora basi, tibiæ anteriores et mediæ apice, albida. Pedes antici dilatati, compressi. Hemelytra flavo hyalina, apice brunneo vittata, fortiter nervosa, nervis breviter setosis, nigro granulatis. ♀. Long, lin. $1\frac{1}{2}$.

Fab., S. R., p. 83, No. 1 (*Delphax*). Coqueb., 1, pl. 8, fig. 7. Germ., Mag., 3, p. 205, No. 4. Spin., Ann. Soc. Ent. de Fr., t. 8, p. 337. Curt., B. E., 445 text, No. 1. Cuv., R. Anim. Ins. Atlas, pl. 97, fig 8.

This pretty species is not uncommon in grassy places, clover fields, &c., in spring and summer. Curtis mentions Henstead, Suffolk, as one locality, and I observed them more than once during a visit to Sandown some years ago. Unfortunately, I then took but a single specimen; from which circumstance I am unable to give any description of the male in the present paper. Mr. Rye has taken it in June near Dartford.

Gen. ISSUS, Fab.

This genus leads to the *Membracina* and *Cicadellina*, by no more abrupt transition than is necessitated by the paucity of our indigenous forms, each one of which frequently typifies an extensive group, rendering any attempt at a rational linear arrangement peculiarly embarrassing. It stands here at the end of the British *Fulgorina*, or that section of *Homoptera* characterised by the insertion of the antennæ beneath, instead of between, the eyes. The true position, however, of the whole of the *Fulgorina* has yet to be determined; for it would seem, as well from their facial characters as the peculiar articulation of the hind femora and tibiæ (which show a constant tendency to bend, or geniculate forwards), that they approximate more to the *Sternorhyncha*, *Psylla*, *Coccus*, &c., than to the true *Cicadellina*, and therefore should stand at the end of the *Auchenorhyncha*. The analogy which exists between the insects of the genus *Cicada* (properly so called) and *Psylla*, *Trioza*, &c., is certainly far more striking than that between the two latter and *Eupteryx*, with which they are at present conterminous. The genus *Issus*, even as at present restricted by Spinola, contains many species; but one only has been found to inhabit Great Britain.

1.—*Issus coleoptratus*, Fab.

Is too well known to need description here. A fine variety is figured in Curtis' British Entomology, to which we refer. The usual colour is testaceous, but some varieties are much darker than others, and the black mark in the centre of each hemelytron is liable to be more or less diffused over the entire surface.

Var. *a*. *Cercopis coleoptrata*, Germ., Mag., 3, p. 44. Panz., Fn., 2, tab. 11.

Var. *b*. *Fulgora gibbosa*, Oliv., Enc., t. 6, p. 576.

Var. *c*. *Issus coleoptratus*, Curt., B. E., 449.

Var. *d*. *Issus Lauri*, Ahr., Fn. Ins. Eur., Hft. 2, tab. 19.

It is common on grassy banks, and on shrubs and trees in woods, throughout the season. The young larvæ, less than a line in length, were especially numerous, at the close of last autumn, in Epping Forest; and the same brood were to be found, hardly increased in size, two months ago. Many of the Homoptera, as *Delphax*, *Ledra aurita*, and even *Eupteryx*, appear to pass the winter in this state.

ii. Antennæ inter oculos et frontem insertæ. Ocelli vel in fronte vel vertice, siti.

* Pronotum postice productum, scutellum apice suo plus minus obtegens.

II.—MEMBRACINA.

Gen. CENTROTUS, Fab.

The pronotum is produced into a horn on either side, and into a long ensiform process behind, which arches over, but does not conceal, the scutellum, and reaches nearly to the apex of the abdomen.

1.—*Centrotus cornutus*, Lin.

Piceus, pube brevi aurea adpressa vestitus. Hemelytra fusco hyalina, nervis tantum pubescentibus. Caput, pronotum, scutellum, ruguloso punctata. ♀. Long. lin. 3½-4.

Lin., S. N., 5, p. 454, *Cicada cornuta*. Flor, R. L., 2, p. 104. Curt., B. E., 313, No. 1 (text). Cuv., R. Anim. Ins. Atlas, pl. 98, fig. 5.

This insect has a wide range, and has been observed through Europe, from the Ural mountains to France, and from Sweden to the Mediterranean. It is far from uncommon in woods in this country, but I have never seen a ♂, nor does any notice of that sex appear in the authors I have examined. It is said to frequent willows and thistles.

Gen. OXYRRHACHIS, Germ.

Pronotum laterally angulated, but not prominently cornuted as in the preceding. The posterior process is shorter than in *Centrotus*, not arcuated, and it entirely conceals the scutellum.

1.—*Oxyrrhachis genistæ*, Fab.

Precedente quintuplo minor; piceus, punctatus, aureo-pubescens. Hemelytra flavo-hyalina. Long, lin. 1¼.

Curt., B. E., 313, fig., *Centrotus*. Fab., S. R., p. 19, *Centrotus*. Flor., R. L., 2, p. 106.

Rare; inhabits *Genista tinctoria* (Lin.) My specimen was taken at Purfleet, in August. This is, perhaps, the only European species of the genus; the rest are thinly distributed over Asia, Africa, and South America. I possess one other nearly allied form, which I took on the lesser Atlas, in Algeria.

(To be continued.)

*** The writer of the above article will have great pleasure in naming collections of British *Auchenorhyncha*, for those Entomologists who think it worth while to take up the study. He will also gladly impart duplicates to the extent of his resources, and will be thankful for assistance in the shape of new species.

DESCRIPTION OF A FOURTH NEW SPECIES OF *TRICHOPTERYX*, TAKEN BY MESSRS. CROTCH IN THE CANARY ISLANDS.

BY THE REV. A. MATTHEWS, M.A.

When my former paper on the discoveries of the Messrs. Crotch was published, I had reserved a few specimens of this family for further examination, and among these have found three examples of a species differing from any known form in so many essential characters, that I feel no hesitation in describing it as new.

From its deep black colour, unusual in the group to which it belongs, I have named this species "*anthracina*." The other differential characters are mentioned at the end of the following description.

TRICHOPTERYX ANTHRACINA, n. s.

L. c. vix $\frac{5-6}{16}$ lin. Sub-ovate, convex, deep black, very shining, sparingly clothed with grey hair; head large, somewhat prominent, thorax convex, dilated posteriorly, covered with rather large tubercles arranged in sinuated rows, with the interstices alutaceous and shining, the posterior angles much produced; elytra narrower than the thorax, much attenuated posteriorly, especially in the male; antennæ pitchy-black, legs bright yellow.

Head very large, rather prominent, covered with tubercles in transverse rows; eyes large and prominent; antennæ rather short, pitchy-black.

Thorax very convex, much dilated posteriorly, with the sides slightly rounded and strongly margined, covered with large tubercles in sinuated rows, with the interstices alutaceous and shining, the posterior margin slightly depressed, and sinuated, with the extreme edge yellow, and the angles much produced.

Scutellum moderate, triangular, elongate, faintly asperate.

Elytra convex, much attenuated posteriorly, especially in the male, narrower than the thorax, and rather longer than the head and thorax united, with the sides almost straight; moderately asperate in remote, curved, transverse rows, apex slightly rounded, narrowly pale, with the extreme edge white; the posterior part of the suture slightly elevated.

Abdomen moderately exposed.

Legs moderate, bright yellow.

Under-parts black, with the abdomen paler: mouth, coxæ, and apex of the metasternum bright yellow.

This species is the smallest I have seen with the thorax largely dilated towards the base, and the posterior angles much produced; it may be known from all the rest of that group by its small size, deep black colour, almost black antennæ, and by the superficial sculpture of the thorax and elytra. It was found in the Canary Islands by the Messrs. Crotch, but appears to be rare.

Gumley: *June*, 1865.

NOTES ON INDIAN *LEPIDOPTERA*.

BY CAPT. H. L. DE LA CHAUMETTE.

Lycæna, sp.?—This is the only species I have yet caught here (Saugor), hovering about the hedges of *Lawsonia*, and settling occasionally on the leaves of *Poinciana glaberrima*. Plentiful in September, October, November, and December.

Callidryas Pyranthe and *C. Phillipina*.—Abundant all over India, and, I may say, almost the whole year round. They both feed in the larva state on *Cassia tora* and *C. occidentalis*, and I saw them all the way from Bombay to Saugor. Of *C. Phillipina*, I found the larva on the 13th September on the 'Kasoonan' (*Cassia occidentalis*). Length 1½ inch, cylindrical, elongated, attenuated at both ends, rough, covered all over (particularly on the sides) with black slightly raised spots, forming, on the upper side of the broad pale yellowish lateral line, a dark border. Dorsal artery plainly visible. The back strongly transversely ringed on each incision with deep furrows, giving it rather a crested appearance. Abdomen, head, anus, and prolegs pale dull green. Body above, grass green, dark. Thoracic legs pale yellow. Head spotted like the rest of the body, spiracles cream colour. Slow in its movements. It went into chrysalis on the 14th September, 1864. Chrysalis, very delicate green, with a narrow straw-coloured lateral line from the anus to the eighth segment. After eight days the marginal pinkish spots of the imago were distinctly visible under the wing covers. Came out on the 24th September, 1864. Egg spindle-shaped, perfectly white, fastened by one end to the under surface of the leaf; several on one leaf, placed apart.——*C. Alcmeone* and *C. Hilaria*.—These are both frequenters of gardens at Saugor, and are very fond of flying about the outside branches of the 'Babool' (*Acacia arabica*). On the wing from July to November. *C. Alcmeone* is common all the way from Bombay to Saugor.

Eronia Valeria.—On the wing from July to September. Frequent between Dhootia and Mhow. [Rare in Oudh, but abundant in the copses in the neighbourhood of Calcutta.]

Thestias Marianne and *Th. Pyrene*.—Both very common in Oudh, Calcutta, and from Bombay to Bhilsa.

Pontia Nina.—Found in great abundance in Calcutta, flying very softly about, as if blown by the wind. March, April.

Colias Neriene.—Captured between Malligaum and Dhootia in July, 1864.——*C. Edusa*.—Taken at Lucknow.

Terias Hecabe, *T. Sari*, *T. lætu*, and *T. venata*.—Captured these four in Oudh. *T. venata* being the least common. *T. Drona* at Calcutta, common. At Saugor the first four are abundant from July to December. They all fly about together, in and out of hedges.

Pieris Mesentina.—Very common at Saugor, and all the way from thence to Bombay. I reared this in great abundance on the *Capparis pyrifolia* at Lucknow. ——*P. Coronis*.—I have caught this all the way from Bombay to near Saugor; also in Oudh and Calcutta. On the wing from June to September.——*P. Eucharis*.—Is just appearing (December 16th), and is very common at Saugor; also in Oudh, Calcutta, and from Bombay to Saugor. It flies from December to August.

Papilio dissimilis.—Reared from the larva at Lucknow.——*P. Diphilus*.—This is not a very common species at Saugor, yet by no means rare. Larva reared on *Aristolochia*. Flight slow and heavy. Taken also in Oudh and Calcutta.——*P. Polytes* and *P. Pammon*.—I saw quantities of *P Polytes* on my march from Bombay to Saugor, but not one *P. Pammon*. In Oudh, Calcutta, Benares, and Allahabad plenty of both. At Saugor *P. Pammon* is scarce, *P. Polytes* common, but the season is late.——*P. Romulus*.—Captured at Calcutta, flying round the *Convolvuli*.——*P. Erithronius*.—Everywhere, and at all seasons of the year.

Danais Limniacæ.—Frequent, on the road from Bombay to Saugor. Not common. At Saugor, Oudh, and Calcutta.——*D. Plexippus*.—Common almost throughout the year. Frequents fields, gardens, and woods alike.——*D. Chrysippus*.—The common insect of India. Found all the year round. Larva feeds on *Calotropis*.

Euplœa Core.—Obtained all along the road from Bombay to Saugor; also in Cawnpore, Oudh, Allahabad, Benares, and Calcutta. Flies usually in the vicinity of the Oleanders; flight easy, not moving its wings much, but soars about, never flying about 10 feet from the ground.

Telchinia Violæ.—Extremely abundant at Saugor, though I did not see one during the whole journey from Bombay. August to November. Flies close to the ground, not swiftly, but rather lazily, settling for a short time on a flower, moving afterwards to another, and so on. Also at Lucknow, Allahabad, and Calcutta.

Pyrameis Cardui.—Plentiful at Saugor.

Junonia Lemonias, *Onone*, *Orithyia*, and *Asterie*.—Common everywhere, and appear on the wing the greater part of the year.——*J. Almana*.—Calcutta.

Atella Phalanta.—Plentiful at Saugor, Oudh, Calcutta, and Bombay. Its rapid flight makes it easily known; it does not bounce about like a true *Argynnis*, but it is very restless. Larva reared on *Flacourtia sapida*.

Ergolis Coryta.—Captured only at Calcutta, where it is common.

Diademo Bolina.—Very common nearly the whole year.——*D. Auge*.—Also very common at Saugor, and is fond of woods and gardens. I found the larva in my compound feeding on the 'Makhuya' (*Rostellaria procumbens*.)

Cyllo Leda and *Banksia*.—At Saugor, *C. Banksia* is the more common of the two. They fly at sunset under the Neem trees, resting for a long time motionless on the ground, and will not move until you almost tread upon them, when they will fly away in great haste and return to the same spot, chiefly some favourite stone.

Mycalesis Polydecta and *M. Drusia*.—These have something of the habits of the former, but confine themselves more to woods and jungle. Widely dispersed in the Central Provinces; also in Oudh and Calcutta.

Ypythima Baldus.—Taken only at Calcutta.

Hypanis Ilithyia.—Captured at Malligaum on 21st July, 1864. I also found its larvæ, but had no time to describe or rear them. They were feeding on a climbing plant, with palmate leaves, and there were several imagos flying in a small confined place.

Melanitis undularis.—Very common at Calcutta, settling on the trunks of the *Corypha*.

Taxila Echerius.—Very common at Saugor in October and November, skipping about the garden at twilight.

HESPERIDÆ.

Pyrgus superna.—Very common, being found at all times of the year.

Ismene Ladon.—Lucknow, but not common.

SPHINGIDÆ.

Sesia Hylas.—Has just made its appearance (March 3rd, 1865), flying in the day-time around the flowers of *Delphinium*.

Macroglossa Passalus.—Always about, flying as much by day as by twilight.

Acherontia Styx.—Larva reared at Saugor on *Sesamum indicum*.

Sphinx Colvolvuli.—Larva on *Convolvulus purpureus* at Saugor.

Daphnis Nerii. —Very common at Saugor. Larva feeding now, March 3rd, on *Tabernæmontana coronaria* and *Nerium Oleander*.

Zonilia morpheus.—Tolerably common at Saugor in September, October, and November.

Deilephila Celerio, *Deil. alecto*, and *Deil. Thyclia*.—Plentiful at Saugor by twilight.

Chærocampa Lycetus.—Very common. Larva feeds on Balsam.

BOMBYCIDÆ.

Hypsa Ficus.—Captured in September at Saugor.

Digama Hearseyana.—Captured in October at Saugor.

Utethesia pulchella.—Plentiful at Saugor in March.

Euproctis Gamma.—Very common now (March) at Saugor.

Spilosoma suffusa.—Saugor, September, October, and November.

Taragama Ganesa.—Larva found on the Babool (*Acacia Arabica*) at Saugor.

NOTES ON COLLECTING, MANAGEMENT, &c. (*LEPIDOPTERA*.)

BY H. G. KNAGGS, M.D.

THE CATERPILLAR STATE (*continued from Vol. I., page* 268).

Many an Entomologist who has of late years devoted both time and energy to 'breeding,' as it is termed, will bear me out in the statement, that it is perhaps the most deeply interesting of all the charming occupations to which the student of Entomology is liable—for, whether we regard it in an instructive point of view—

or pursue it from the simple love of contemplating Creation's wonders, or whether we have an eye merely to quantity and quality of 'specimens,' it is in either case an equally profitable employment.

MANAGEMENT—*Cages*.

The first thought which probably strikes the collector is that Nature herself must be the best nurse, and that to follow her will therefore be the *summum bonum* of breeding; but, though for truthful natural histories and accurate records of the œconomy of insects Nature undoubtedly presents the proper field for observation, experience demonstrates how few individuals (comparatively to the number of eggs), under ordinary natural surrounding conditions, attain the perfect or even chrysalis state; for it must be borne in mind that to an all-wise end Nature destroys just so many as die, directly or indirectly, from atmospheric causes, such as cold, heat, wet, drought, wind, &c., as well as from the attacks of natural enemies and the rest; so that the natural state then, even if it were applicable, would be disadvantageous for the purposes of the larva-rearer.

Of the semi-artificial plans, that which comes nearest to the natural state of things is, perhaps, the adoption of a green-house, or other apartment, in which our cares feed openly on growing plants, and thus, if sashes and doors be kept well closed, many enemies, such as birds, mice, wasps, and large Ichneumons, are kept at bay, though centipedes, woodlice, spiders, Acari, earwigs, Tineæ, ants, small Ichneumons, parasitic Diptera, and other plagues, still gain admittance; besides—the chances of wandering larvæ meeting with death by starvation, mutilation, or suffocation are, to say the least, very considerable, the temperature must, in many cases, be objectionable: and, owing to want of accuracy, this plan must be all but useless for descriptive purposes. For such larvæ, however, as are large and stick closely to their food, it affords the most agreeable and convenient means for observation, short of the natural state itself.

Another attempt to follow nature is to confine the larvæ, together with a bunch or branch of the growing food, within a sleeve of gauze or leno; but, however perfect in theory the plan may appear, in practice the ill effects of a shower of rain or storm of wind are very painfully perceptible, in addition to which nothing—absolutely nothing is gained, facility of observation is all but lost, the trouble of feeding is not overcome, and security is not attained, for the cage so formed is pretty sure to be rent by inevitable rotting and decay, torn by the wind or by the collector in the changing process, gnawed by mice, earwigs, or even by the enclosed larvæ themselves, to say nothing of the whole concern being carried off bodily by inquisitive or acquisitive biped.

Cages, or prisons which, while they more or less restrict the liberty of the occupants within, also serve to protect them from the attacks of enemies without, &c., are the more confessedly artificial appliances which come under our consideration; of these I here enumerate a few of the more prominent, glancing at the principles involved in their construction.

First, the old-fashioned safe-like breeding cage, composed of a wooden framework, and having the top, sides, and doors covered with either muslin (canvas), wire-gauze, glass, perforated zinc, or a combination of two or more of these, at the option of the proprietor. This cage is certainly susceptible of much improvement

and modification, and may be useful enough in its way; but the difficulty of manipulation, added to a want of cleanliness, which, however expert and attentive the breeder may be, can hardly fail to exist, are the chief drawbacks.

Hat boxes, children's toy and other boxes, the lids being covered with gauze, form useful and handy cages, when better are not obtainable; into these the food-plant, plugged into a phial of water, or stuck into a juicy potato, may be inserted, and the larvæ placed thereon; in the case of flat shallow boxes, however, it is evident that the food, in its water vessel, would not stand upright; this difficulty is at once overcome by attaching a loop to one end of the back of the box, and by this hanging it to a nail on the wall.

A favourite plan of rearing, with many, is an air-tight process of feeding, by which the food is kept fresh for a considerable length of time. It is usually effected by grinding the lip of a jam-pot so that it may be accurately fitted with a piece of smooth glass, and into this receptacle the food and larvæ are placed; but the close unhealthy atmosphere, which, in spite of every caution and attention, must in greater or less degree be engendered, seems to me to render it unfitted for general purposes, though I can strongly recommend it (as well as air-tight feeding in a closely stopped bottle) for accommodating very young larvæ, until they have attained sufficient size to be removed to a more appropriate cage: with this *proviso*, however, that both cage and food be dry, otherwise many of the young larvæ will be 'found drowned' in the moisture which is apt to condense on the sides of the too readily heat-conducting material of this cage: great care, also, should be taken that the temperature be not raised by the heat of the hand, or by the admission of sun-rays.

Lamp-chimneys, cucumber-glasses, &c., fitted at their open extremities with bungs, are sometimes employed, as also are tin boxes. These latter, however, have the further disadvantage of being opaque, and so preventing observation. The chief use of air-tight feeding comes into play when the larvæ of *Micro-Lepidoptera* are the subjects of attention.

Another contrivance is carried out by suspending the food, the cut off ends of which have been securely plugged into a phial of water, within a wide mouthed bottle or jar; the chief drawback is that any hapless larva which chanced to drop would find itself much in the position of Daniel—barring the lions.

A flower-pot, with the hole at the bottom stopped, and the top covered with gauze or leno, kept in place by a piece of 'elastic,' offers an exceedingly cheap and simple cage, which, though laying no claims to perfection, the breeder will do well to think of in the hour of need.

A method, which has long been followed by my friend, Mr. Doubleday, consists in the use of a glass cylinder, the upper end being fastened over with muslin, the lower resting on a pan of damp sand, which latter, in the case of juvenile larvæ, is covered with thick writing paper. The cylinder being lifted off, the cut ends of the plant are stuck into the damp sand (through perforations in the paper when the latter is used), and the larvæ having been put on their food, the cylinder is replaced, thus, in a simple manner, producing a cage which offers the advantages of admitting light and air, security, free observation, and not only keeps the food fresh, but readily allows of the operation of 'changing' when necessary. If it be desirable to economize, a flower-pot filled with mould (into which the cut food,

or, better still, the growing plant should be inserted) may be substituted for the pan of sand, and as for the cylinders, old lamp shades, broken tumblers, and other make-shifts may be used, though the neatest, cheapest, and most transparent cylinders are certainly the cut-off bottoms of glass shades, which can be procured at the warehouses, at prices varying from a penny upwards, according to size.

With a view of getting rid of the damp sand, which seemed to be objectionable, I sometime since suggested the use of an unglazed earthenware plate, perforated at the centre for the food plant to pass through into a jam pot, containing water, beneath, the gauze-topped cylinder above resting on the rim of the plate, but it was soon found that the porcelain was too good a conductor of heat to suit the prolegs of such larvæ as might pass a night upon its surface; a piece of muslin was therefore strained from the centre perforation, where it was fixed, by means of a sail-eyelet (nautically termed a 'thimble'), to over the circumference wherein it was pasted firmly down, and thus a non-conducting floor of muslin was formed, which permitted the passage of air *underneath* the cylinder, thereby giving a considerable amount of ventilation without draught.

A still further improvement, by making the floor of the cage slope downwards from the centre to the circumference, so that frass, &c., are thrown from the centre, and larvæ, which may have left their food, have to crawl up-hill to regain it, has been achieved by my friend, Mr. Horn; it is carried out as follows:—

(1.) Take a piece of book-muslin, and from its centre-part cut out a circular aperture of the diameter of the small end (bottom) of a jam pot; force the latter nearly through the aperture, and then tie the muslin firmly (underneath) to the groove which is under the lip of the jam-pot.

(2.) Fix the bottom of the jam-pot, by means of elastic glue, to the centre of an inverted lid (wooden) of a round box, and strain over and fasten the muslin, before mentioned, to the hoop of the lid.

(3.) Insert a moveable water vessel in the jam pot above alluded to, and fit the latter with a bung which is to be perforated for the purpose of allowing the ends of the food to pass through into the water vessel below.

(4.) Place the gauze-topped cylinder on the muslin stage and the cage is complete.

By means of a little decorative ingenuity, a really handsome ornament may be made of this breeding cage, and that, too, at an incredibly small outlay.

Having disposed of the cages suitable for ordinary feeding purposes, it will be well to say a few words on those contrivances which are appropriate for larvæ when about to prepare themselves for assuming the pupa state.

For those which go to earth, the old safe-like cage may be fitted with a trough of zinc or tin for holding the soil;* or a flower-pot may be used, its porous composition being far preferable to the metals above named, the presence of which is decidedly objectionable. But if neatness be desired, a modification of the cylinder cage (either with or without the muslin stage) will be found both useful and ornamental.—When the muslin stage is used, instead of being tied to the groove of the jam pot, the borders of the central aperture are stitched on a ring of wire, having a diameter of, say, two inches more than the jam pot, and supported by radiating

* The different kinds of soils, &c., suitable for the purpose, will be mentioned hereafter.

wires, secured from the groove of the jam pot to the wire ring. A propagating seed-pan, or other suitable vessel must, of course, be substituted for the inverted lid. Larvæ will be found to find their way to the soil readily enough through the interstice which is left between the wire ring and the jam pot.

With a few remarks on the 'breeding house' I close this chapter on 'cages.' The **breeding house,** or apartment to be used for the purpose, should, of course, be constructed, or chosen, with a view to the health of the occupants, and the following conditions should be taken into consideration. *Aspect.*—One side facing the east, at any rate, should be provided with a window, in order that the rays of the early morning sun may gain admittance: this, with many larvæ, is a condition of paramount importance. *Ventilation.*—This should be complete, but so managed that thorough draught be avoided, at the same time that the apertures, by which it is effected, are sufficiently small to prevent the ingress of 'natural enemies' to our nurselings; for bringing this about, the free employment of finely perforated zinc in the construction of the breeding house is of the utmost utility. *Temperature.*—This ought never to be too high, a roofing of Portland cement (flat tiles being embedded in it for the purpose of 'tying' it together), being nearly white when dry, affords the greatest protection against the vertical rays of the sun, but, in addition, when the weather is excessively hot, watering the floor and ground adjacent to the breeding house may be employed with advantage. *Space.*—As much room as possible should be allowed; the more the better. *Light.*—It is rather a disputed point whether a large or small amount of light is advantageous in a general way: my own impression is that some larvæ thrive best with plenty of light, others in comparative darkness, and I think it may be taken as a criterion that if the perfect insects are day flyers (such as butterflies for example), their respective larvæ will be found to thrive best with a more or less abundant supply of light; while if they shun light (as the majority of the *Noctuæ*), their larvæ will probably get on better in a darkened situation, &c.; the apartment should therefore be constructed with a view to this, and the cages arranged accordingly.

(To be continued.)

Notes on Micro-lepidoptera occurring near Haslemere.—The following list of *Tineina*, captured in this neighbourhood during the last season, may possibly be of interest. I omit, of course, those that have appeared in former communications.

Xysmatodoma melanella.—Occurred in the middle of June, on an old fence, on which I had also found the cases in the spring.

Micropteryx calthella.—Where there are no flowers of *Caltha palustris*, or buttercup, this species frequents those of *Cardamine pratensis*, and even stitchwort and spurge. I have also observed it commonly running over hazel leaves in the copses.

M. aruncella.—In marshy places in the early part of July, running over the leaves of *Epilobium angustifolium.* I have also found it in hedges among beech bushes.

M. salopiella.—Among birch bushes on the side of a wooded hill.

M. Sparmannella seems to prefer low birch bushes on the heaths.

I have now taken all the known British species of *Micropteryx* in this neighbourhood.

Nemotöis cupriacella.—In open woods, among low brushwood and flowers, but generally flitting among, or settled on, dry grass or small birch bushes.

N. minimella.—In company with the last named, and with similar habits. One female, however, I noticed on a flower of *Stachys*, and the males danced over the bushes on sunny afternoons. Although *Scabiosa succisa* was plentiful, I did not see either species about it.

Yponomeuta plumbella and *cognatella*.—Both common in a lane where there are a few spindle bushes.

Ypsolopha sylvella, *alpella*, and *lucella*.—All these occur among oak bushes in the woods.

Psoricoptera gibbosella.—Rather common on oak trunks in August, but exceedingly difficult to see, on account of their similarity to the bark, arising from the raised scales on the fore-wings.

Gelechia senectella.—On hedge-banks in August, among dry grass.

Gelechia similis.—I found several specimens in the windows of a house on one of the heaths. The people of the house believed that they were brought in with the "bavins" (faggots composed of hazel).

G.———n. sp. ?.—A pretty species allied to *Hübneri*, but with white ground colour a few specimens occurred on oak trunks.

G. dodecella.—On fir trunks on the heaths.

G. ligulella.—Flying in the sunshine among grass in marshy places.

G. vorticella.—In damp places among furze.

G. atrella.—Beaten from overhanging banks in the woods.

G. bifractella, *inopella*, and *paupella*.—All bred from seeds of *Inula dysenterica*; the first in plenty.

G. gemmella.—On oak trunks in August, sitting with its head raised, and, from its colour, it looks curiously like a miniature of *Anaïtis plagiata*.

G. ericinella.—Plentiful among heath.

Anarsia spartiella.—Among furze on a boggy heath.

Perittia obscuripunctella.—Not uncommon among bushes under which honeysuckle grows. It also flies sometimes in the sunshine.

Tinagma sericëella.—As this species is abundant here, I have noticed its habits a little, but cannot find that it has any great partiality for oak. It certainly is equally common among birch and hawthorn, and even flies around, and settles in abundance on furze in the woods. One day I saw it flying, by swarms, in and around some small blackthorn bushes in a hedge.

Colcophora Wockëella.—Flying in the afternoon, among long grass in wood paths.

Chauliodus Illigerella.—Damp places in woods, in June, and again in the beginning of September.

Laverna Raschkiella.—The larva of this species appears to feed up very rapidly, as I have been almost too late for it two seasons in succession, although frequently in its localities. I have, however, bred a few specimens.

L. subbistrigella.—I found this species on the trunks of some spruce firs, in the beginning of September, almost before it had begun to appear in thatch.

Elachista magnificella.—One would think some insects knew how beautiful they are. I saw this species exhibiting itself after the style of *Chrysoclista Schranckella.*

E. zonariella and *gangabella.*—Flying over long grass in wood paths.

Lithocolletis roboris.—Among oak, but I cannot yet find the mine.

Cemiostoma spartifoliella. One afternoon in July, some old broom bushes were studded with hundreds of specimens of this species. The effect was very pretty.

Bucculatrix aurimaculella.—Among *Chrysanthemum leucanthemum*, flying in the afternoon.

B. Demaryella.—Among birch in woods.

Trifurcula atrifrontella.—On oak trunks in August.

T. pulverosella.—On trunks of apple trees in May.—CHARLES G. BARRETT, Haslemere, *April*, 1865.

Trochilium chrysidiforme.—On Tuesday last, the 6th of June, I captured a fine specimen of *T. chrysidiforme*, at Folkestone, near the end of the tram-way in "the Warren." When first seen, it was flying slowly, but it soon settled on some plant, which, in my anxiety to secure the insect, I regret, I failed to take note of. The sun did not shine very brightly at the time, as misty clouds which were floating about rather obscured it.—H. NICHOLLS, 2, St. Peter Street, Essex Road, Islington, 12*th June*, 1865.

Xylomyges conspicillaris and Acronycta alni at sugar near Worcester.—In the October number of the "Magazine," Mr. Blackburn says, "Sugaring is so poor a method of collecting, that it ought soon to become unfashionable." As this must tend to damp the ardour of young collectors, (of whom I am one), who rather require to be stimulated, I should like a notice of the capture of these species to appear in the pages of "our monthly."

I have captured a specimen of *X. conspicillaris* and one of *A. alni* at sugar. Of the commoner things, *Hadena genistæ* has been abundant, and I have taken several specimens of *H. adusta, H. thalassina, H. suasa, M. anceps, L. comma*, &c.; indeed, Lepidoptera swarm at sugar this year.—GEORGE J. HEARDER, Powick, near Worcester, *June* 2*nd*, 1865.

Food of the larva of Cœnonympha Davus.—In the last number of the Magazine, I stated (at p. 17) that I had received larvæ of *Cœnonympha Davus* feeding on *Aira* ——— *?* I have since ascertained, by the kind assistance of my valued botanical friend, Mr. Inchbald, that the food of these larvæ was really *Rhynchospora alba*, and that I simply betrayed my ignorance in mistaking it for an *Aira*.

Mr. Inchbald has, on two previous occasions, had the food-plant of *Davus* sent to him for determination, and in each case it proved to be the beak-rush (*Rhynchospora alba*).—H. T. STAINTON, Mountsfield, Lewisham, *June* 14*th*, 1865.

Another locality for Depressaria rhodochrella.—When in town a short time since, I heard of a new *Depressaria*, the description of which ("resembling *sub-propinquella*, but having a dark thorax," and called, if I rightly remember, "*rhodochrella*") appeared to answer a *Depressaria* that had puzzled me for some years.

I enclose one of my specimens, and shall be glad to hear about it. The species occurs on our coast, along with *costosa*, *Yeatiana*, *badiella*, *ocellana*, *sub-propinquella*, &c., &c., in August, and it hybernates.—JOHN T. D. LLEWELYN, Penllergare, Swansea, S. Wales.

[The specimen enclosed is undoubtedly *D. rhodochrella*.—EDS.]

Larentia salicaria and Camptogramma fluviata in South Wales.—I have met with two examples of the former insect in this neighbourhood,—one in the present year, on some mountain land near here, the other on a previous occasion, at light. They do not appear to differ from the Scotch specimens.—On the 24th of May last, I found a male *Camptogramma fluviata* dead, in a room where light had been exhibited on the previous evening, and by which I presume it must have been attracted.—*Id.*

Cannibalism of Thecla quercus.—Having received, through the kindness of my friend, Mr. Mercer, half-a-dozen larvæ of this species, I placed them on a growing food-plant, and securely covered them over with a square glass shade. On making an examination a few days afterwards, to see what progress was being made, I was greatly "nonplussed" at finding my stock of larvæ *two minus*. Feeling satisfied that the missing ones could not have escaped from their cage, I resolved to keep a close watch on the movements of the remaining larvæ.

On the 27th of May, one had changed to chrysalis in a corner of the shade, and I observed a larva attached to the tail end of it, and evidently very busily engaged. Fearing the purport of his manœuvres, I disturbed him, and found that he had not only eaten off the end of the chrysalis, but had cleaned the contents of it right out; and what still more astonished me, was that, after being disturbed, he returned resolutely to the attack, and finished up the greater part of the pupa-shell. A second chrysalis, which I have removed from the shade, has, I believe, been bitten, for there are marks on its back where it has evidently bled. The other larva, on leaving its food, went prowling about as if in search of a suitable spot to perform the operation of changing; but he might have been looking out for a nice fat pupa.

I have somewhere heard that the larva of *Th. w-album* has similar cannibal propensities; but still the above may possess sufficient interest to find a place in the pages of the Magazine. It would be interesting to know if *Thecla* larvæ are given to such habits in their natural state, or whether they assume them only in captivity.—JAMES L. COURTICE, 22, College Street West, N.W.

Note on another curious instance of non-destructive parasitism.—Yesterday, whilst examining my breeding cages to note the progress of some Lepidopterous pupæ, I discovered a fly (*Tachina consobrina*) walking about in one of the cages; and as I thought it just possible that it might have come out from a cocoon of *Saturnia Pavonia-minor*, which had not produced an imago, I cut the case open, and found the pupa-skin of the fly with the full-sized chrysalis of the moth, which had

unfortunately died from want of moisture. This seemed rather a curious circumstance, but Mr. Smith tells me that he has frequently bred *Tachina* with Longicorn beetles. I have the whole of the contents of the cocoon in my collection.—A. G. Butler, British Museum, 14*th June*, 1865.

Capture of Thyamis suturalis on the coast of Northumberland.—This, almost the rarest of the genus, occurred to me in the early part of September, 1864, on the sands near Whitley. Not recognizing it at the time, I only secured a very few specimens, and these were taken seated on the bare sand. A fearful gale of wind was blowing, and the drifting sand was perfectly blinding. The poor creatures were sitting with their heads to the blast, and holding on with all their strength to prevent themselves being blown into the sea. Of course, when the time comes, I must carefully work the adjoining banks, whence they no doubt had come.—Thos. Jno. Bold, Long Benton, *May* 15*th*, 1865.

Capture of Schistoglossa viduata in Northumberland.—In the early part of October last, I caught a single specimen of an obscure looking "Staph," which my good friend Rye tells me is *Schistoglossa viduata*, Er., an insect, I believe, of considerable rarity in collections, and one which is new to our local fauna.—*Id.*

On the occurrence of Gonocerus venator, a rare British Hemipteron.—Twice, at a long interval, during fifteen years, I have taken a single example, by beating the box-trees on Box Hill, in May; but, although I have beaten about the bush nearly every May, and also in other months, these two were all that rewarded my diligence. Still, it would be hazardous to say that the insects have not been there during any of those seasons, knowing, as we do, how many fortuitous circumstances must often happen together to enable an entomologist to find some particular species. Be this as it may, it is certain that, on the 23rd inst., I was lucky enough to get eight ♂ and eight ♀ of this coveted beauty. They affect the shoots that stand out from the bushes, and are fond of sitting on the top of them, in the bright sunshine, and taking short flights from one to another; and when one is in the net, you are not sure of him, as he has a strong propensity to fly out of it.

Fieber gives oaks and hedge-roses as the habitat of this species; with us it is exclusively found on the box.—J. W. Douglas, 7, Kingswood Place, Lee, 31*st May*.

Aulax sabaudi, one of the Cynipidæ, bred from a gall on Hieracium boreale.—When I was in Scotland last summer, I observed that the stems of *Hieracium boreale* were not unfrequently distorted by a hairy gall, about the size of a cherry. Sometimes it occupied the top of the stem, and was slightly foliaceous; sometimes it was embodied in the stem itself. It was usually ruddy in colour, and more or less shaggy with hair, like some of the melocactuses. I gathered several, but the larvæ were immature, and perished. Subsequently, I met with the same gall in Harwood Dale, near Scarboro'. This was in October, when the larvæ were nearly full fed. At the close of May—the 29th—they began to swarm. One gall—a large one—has given forth between twenty and thirty tenants. It is a pretty little *Cynips*, and is thus described by Hartig:—"*Aulax sabaudi*, Niger; antennis fusco-rufis, apice obscurioribus, articulis 1-3 nigris; abdomine pedibusque rufis; abd. dorso, coxis, trochantibus femoribusque basi nigris. ♀ coxis anterioribus plus minus rufis. Antennæ ♂ 15-articulatæ; ♀ 14-art. Long, lin. 1¼.

In conclusion, I should remark that *Hieracium sabaudum* is a continental species, which *H. boreale* closely resembles, if it be not identical with some of its forms.—Peter Inchbald, Storthes Hall, near Huddersfield, *June 8th*, 1865.

Capture of Notodonta bicolora and other Lepidoptera in Staffordshire.

I have recently been on a successful Entomological tour to Burnt Wood, Staffordshire, accompanied by my friend, Mr. Charlton; amongst our captures may be enumerated the following, viz., *Thecla rubi*, *Notodonta bicolora* (6 specimens), *N. chaonia*, *Lithosia mesomella*, *Hepialus velleda*, *Acronycta leporina*, *Aplecta tincta*, *Cymatophora duplaris*, *Angerona prunaria*, *Eurymene dolobraria*, *Ephyra pendularia*, *Asthena luteata*, *Macaria notata*, *Numeria pulveraria*, *Melanippe hastata*, *Platypteryx lacertula* and *falcula*, *Hypæna crassalis*, *Phycis carbonariella*, and a number of other insects.

Coleoptera were scarce; we found, however, one specimen of *Calosoma inquisitor*, running as nimbly as a *Cicindela*; *Cryptocephalus lineola* on birch; and a few *Silpha quadripunctata* feeding on dead larvæ of *H. defoliaria*, a species which was in millions, stripping the trees of their foliage, and making that part of the wood, as far as the eye could reach, desolate as winter; the larvæ were dying of starvation, and, at the base of some of the trees, I could have collected a quart of dead ones; they hung against the trunks, and from the branches, by silken threads so thickly, as almost to cover us if we attempted to penetrate into the densest parts of the wood.—Joseph Chappell, 18, Sheffield Street, Hulme, Manchester, *June*, 1865.

Entomological Society of London, *June 5th*, 1865, F. P. Pascoe, Esq., F.L.S., President, in the Chair.

Lieutenant R. C. Beavan, of Nagpore, India; W. Borrer, Esq., M.A., F.L.S., of Cowfold, Horsham, Sussex; G. R. Crotch, Esq., B.A., of 8, Earl Street, Cambridge; W. S. Dallas, Esq., F.L.S., of the Museum, York; and T. G. Rylands, Esq., F.L.S., of Heath House, Warrington, were elected Members; and Benjamin Cooke, Esq., of 49, Ardwick Place, Manchester; J. P. Ransome, Esq., of Ipswich; and Mr. T. Brunton, of Glenarm Castle, Larne, North Ireland, were elected Subscribers to the Society.

The Rev. Hamlet Clark stated that, since the last Meeting, his attention had been called to a passage in Southey's Madoc, in which reference was made to the instantaneously intermittent flashing of the light of fire-flies; and Mr. Frederick Smith observed that Mr. Gosse, in his Natural History of Jamaica, had quoted the lines of Southey, without any indication that the poetic statement was at variance with fact.

The Rev. Hamlet Clark read the concluding portion of his paper on the *Phytophaga* of South Australia.

The Rev. Hamlet Clark had brought, for distribution among the Members, some specimens of one of the *Elmidæ* (forming a new genus), collected by Captain Bowker at the Cape. The insects had been found clinging to stones near waterfalls.

The Rev. Hamlet Clark read a letter he had received from Bahia, from Mr. Edwin Reed, who expected to proceed to Valenza early in May.

The President read a letter he had received from the Azores, from Mr. Brewer, who had already collected 150 species of Coleoptera at St. Michael.

Mr. Frederick Smith, exhibited a specimen of the rare *Apate capucina*, captured by his youngest son, Edgar, in Bishop's Wood, where it was crawling on felled timber, recently barked.

Professor Westwood remarked that Sir Thos. Pasley had formerly obtained a number of this insect from oak timber in Pembroke Dockyard; and Mr. Smith observed that he once found, in looking through Mr. Hope's extensive collection, a box in which were five or six specimens of the insect, labelled as captured in Longmynd Forest, Shropshire.

Mr. F. Bond exhibited the specimen of *Dianthœcia albimacula*, the second known British specimen, taken at Gosport, and which had been already noticed in the pages of "The Entomologist's Monthly Magazine."*

Mr. Stainton exhibited some galls on the leaves of *Quercus Ilex* (?), collected by the Rev. H. Burney, during the past winter, at Mentone, in the south of France.

The President exhibited a *Dorcadion*, which was apparently a new species, from Alicante.

Professor Westwood called attention to a mode of preserving larvæ which had been adopted in Dr. Burchell's collection, now at Oxford. The contents of the bodies of the larvæ had been squeezed out by subjecting them to pressure, and the empty skins had been then rapidly dried,—preserving the colour and markings of the larvæ, though, of course, the form was flat instead of being cylindrical.

Mr. F. Moore read a paper, with descriptions of six species of *Saturnia*, viz.: *Cidosa*, *Grotei*, *Huttoni*, *Lindia*, *Sherwilli*, and *Pyretorum*.

The President informed the Members present that the Council had accepted the invitation of Mr. Saunders, to spend the day with him at Reigate, on Friday, the 23rd instant.

The President much regretted to have to intimate to the Society the death of one of its Honorary Members, M. Léon Dufour, at the age of 88. A valuable paper from his pen had just just appeared in the Annals of the French Entomological Society.

The President also called attention to a passage in the "Pall Mall Gazette," intimating that an Exhibition of Insects was about to be held in Paris. It would consist of—insects producing silk, honey, and wax; insects used in dyeing; insects used for the table; insects used in medicine, and insects destructive to cereals.

The Rev. Hamlet Clark then adverted to the proposition, now exciting some attention, of establishing Museums in various parts of London; and Professor Westwood wished to know if the Surrey Music Hall could not be converted into a Museum. Mr. Grut said that several meetings on the subject of a South London Museum had lately been held at the "Horns," Kennington.

Mr. F. Smith called attention to the species of *Bombus* which Dr. Sichel had lately endeavoured to show were identical with the *Bombus montanus* of St. Fargeau. Mr. Smith doubted himself whether the *montanus* of Dr. Sichel were truly the *montanus* of St. Fargeau, and noted the extreme variety in the form of the head in the specimens reputed by Dr. Sichel to be all one species.

Professor Westwood called attention to a passage in the "Gardener's Chronicle" of the previous Saturday, in which mention was made of eggs being deposited by worker-bees.

Mr. F. Smith promised to bring to the next Meeting of the Society a paper on wasps, which he had received from Mr. Stone.

* See Vol. I, pp. 237 and 282.

COLEOPTERA AT RANNOCH.

In the early part of last June we made a short collecting expedition to the Black Forest at Rannoch, Perthshire (accompanied by Mr. McLachlan, on boreal *Trichoptera* intent; and subsequently joined by Mr. Hislop), and selected the "fortuitous concurrence" of "Shanties," politely termed the village of Camachgouran (pronounced "Camhouran") as our head quarters. Here we found abundance of good-will from the inhabitants, and of insects; but a paucity of food, save oatmeal and skim-milk.

The *Geodephaga* were not abundant, either specifically or individually, the few worth mentioning being stray *Carabus glabratus* on pathways; *Patrobus clavipes* and *septentrionis* under stones on Cross-Craig (where the snow still lay, in spite of the continued and excessive heat); *Anchomenus ericeti* (black var.) on the moss; *Trechus rubens* in wet places near pine logs at Dall; and *Bembidium prasinum* and *tibiale* on the stony shores of the Loch.

Our pursuit of *Hydradephaga* was limited to fishing in shallow pools on the grouse-frequented moor; here we found *Colymbetes bistriatus, Agabus arcticus, congener, Sturmii, chalconotus*, &c., *Ilybius angustior*, and the ordinary northern *Hydropori*, viz., *nigrita, melanocephalus, angustatus, obscurus, erythrocephalus, var. deplanatus*, &c.

The *Brachelytra*, as usual in Scotland, were plentiful; the following being among the best:—*Autalia puncticollis*, Sharp, in cow-dung, in open parts of the forest; *Homalota velox* under stones near water running into the Loch; *H. tibialis* and *Schistoglossa viduata* under stones on the hill sides; *Leptusa analis* under fir bark, with *L. fumida* and *ruficollis; Gymnusa brevicollis* by sweeping wet moss; *Tachinus elongatulus* by beating alder branches, &c., never in dung; *T. proximus, pallipes*, and *flavipes*, in sheep and cow-dung; *Euryporus picipes*, two specimens in thick wet moss at the side of a burn; *Bolitobius inclinans* in dead leaves; *Quedius xanthopus* and *lævigatus* under fir-bark, and exceedingly active (but less difficult to secure if a net be held under the log whilst the bark is stripped off); the former being very rare, and the bent yellow pupæ of the latter often to be seen in the damp sub-cortical mould; *Q. umbrinus, fulvicollis*, and *lateralis; Staphylinus latebricola*, basking on a hot stone; *Philonthus puella*, common in dung; *Xantholinus tricolor*, the type, with base of thorax dark, in dung, and under rejectamenta of the Loch; *Dianöus* in running water; *Bledius subterraneus*, common among stones on the Loch shore; *Anthophagus testaceus, Geodromicus nigrita*, and *Lesteva pubescens; Deliphrum*, abundant in

dung; *Anthobium minutum* plentifully, by sweeping in wet places; and *Phlœocharis subtilissima* under bark. Of the *Necrophaga* we found *Necrophorus ruspator* in a dead rabbit, one moderately small male having the clypeal impression and reflected hind trochanters *intermediate* between the type form and var. *microcephalus*, Thoms.; *Sphærites glabratus* (in a dry dead sheep, almost at the top of Cross-Craig; and part of a specimen in cow-dung in the forest); *Anisotoma dubia* and *ovalis*, only mentioned for their queer localities, the former being under a stone at the banks of the Loch, and the latter *in* running water, both "flukes," of course; *Liodes glabra* in little families, often 20 at a time, in and about the black powdery residuum of fungus on old stumps, and (more sparingly) in the decayed damp black mould under bark; *L. castanea*, rarely accompanying *glabra*, but oftener found with *humeralis*, in wet leaves and fungoid growth under felled logs; *Agathidium nigrinum* and *rotundatum* in bark mould; *Omosita depressa* in dead rabbit; *Epuræa angustula*, Erichs. (in Germ. Zeits., f. d. Ent., IV., 270, 16), under fir-bark at Dall —new to Britain, and whose narrow parallel form, dark colour, and posteriorly almost right-angled thorax, readily distinguish it from its allies; *Ips quadripustulata*, not uncommon on freshly cut stumps, especially burrowing in the join of the bark and wood; *Atomaria Hislopi* in roe and cow-dung, local, but usually in groups of 3 or 4 when found; two species of *Cerylon;* and *Morychus æneus* very sparingly, under stones on the sandy bank of a mountain stream.

In the *Philhydrida*, *Elmis* was represented by the pigmy *parallelopipedus* and voluminous *Volkmari*, accompanied by *Hydræna gracilis*, *Parnus auriculatus*, &c. The lowland streams, however, must be more congenial to these insects; for, in a small burn running into the Firth near Aberlady, we found the rough stones at a little waterfall tenanted on their under-surface by *hundreds* of *Elmis sub-violaceus* and *æneus*, with many *cupreus*, a few *Volkmari*, and several *Limnius*.

Of the *Lamellicornes* we took *Cetonia ænea* flying (the thistles not being in bloom); *Aphodius Lapponum* (if our *Lapponum* be *Lapponum* at all) of all sizes and colours, and in great numbers, in dung, with *depressus* and *putridus;* *Ægialia sabuleti* in a sand-pit, and *Sinodendrum* in old birch.

Several of the *Elateridæ* were plentiful; *Diacanthus impressus*, especially, occurring on the boughs of fir-trees, under rotten fir-bark, on freshly-cut stumps, and flying in the hot sunshine; *Corymbites cupreus* (the semi-testaceous variety and the sedentary female being uncommon) was most abundant, being on the wing every day, and often settling on fern tops; whilst sweeping in damp places produced

C. tessellatus (usually broken) and *C. quercûs; Elater nigrinus* and *balteatus*, and *Sericosomus brunneus* coming rather freely from young birches, and the large *Cratonychus castanipes* reposing in the rotten layers under bark Turning over stones on a sandy spit at the shore of the Loch, discovered the jerking little *Cryptohypnus dermestöides* in plenty, accompanied, though very rarely, by the larger *maritimus*, which (and especially the male) seems to delight in basking on the tops of stones, in the hot sun, and runs with great quickness.

The *Malacodermi* were largely represented; *Atopa* (nearly black); *Helodes marginata*, in all degrees of suffusion, and chiefly on *Caltha; Cyphon coarctatus, variabilis, pallidulus*, and *padi*,—the penultimate by beating sallows, and the last from the firs; *Telephorus obscurus, discoideus, elongatus, paludosus, limbatus*, Thoms., and *testaceus* (= *ochropus*, Step., whether a distinct species or no) being all more or less common; the four latter, with the 21* sp.———? of Wat. Cat. (and which is certainly not *T. assimilis*, Pk.), being obtained by sweeping in very wet places, among *Sphagnum* and the sweet bog-myrtle. Under fir-trees, three or four species of *Malthodes*, yet unexamined, were found; one, very small, being possibly distinct from *brevicollis*; and if so, new to us. *Dictyopterus Aurora* (with an occasional *Clerus formicarius*) was in numbers, either crawling on the lower sides of cut logs, or sluggishly *in eop.* among the pine chips beneath them; twice, also, this lovely insect was taken flying in the forest, towards evening. *Pytho* was only just out, but its larvæ were not rare under bark.

A single specimen of *Orchesia minor* was beaten from the flowers of the mountain-ash. Thomson's description of *Clinocara tetratoma* accords very well with this insect; so that his trivial name will probably have to be suppressed, in favour of the well-known and older appellation, *minor*, Walker.

In hard *Boleti* among birch-trees, on Cross Craig, the recently-detected *Cis lineato-cribratus* was not uncommon; and the neat round drills of *Hylecœtus* in the solid fir-wood were often seen, but only twice was the beetle-tenant discovered, in spite of the help of a woodman's axe.

The *Rhynchophora* were chiefly represented by *Hylobius* and *Pissodes pini* which (with their larvæ, and the pupæ of the latter) occurred on every felled stump; *Otiorhynchus* being the only other prevalent genus, of which *maurus* was found under stones on the hill-sides, in moss, and crawling on the road; *rugifrons* and *monticola* occurred under stones on the layer of turf topping stone walls, and *septentrionis* was beaten

out of birch, and found in dry cow-dung. The heather produced *Ceuthorhynchus ericæ* in abundance, and ripping off bark often disclosed *Rhyncolus chloropus*. A small *Anthonomus*, like *rubi*, but constantly much smaller, and with livid elytra (certainly not immature, the specimens being mostly old and broken), was found by sweeping in places where was no vestige of any *Rubus*.*

The elegantly marked *Xyloterus lineatus*, oftener seen than captured, reposed in neat round burrows in the solid wood of felled pines, warily keeping watch, and retrograding to an indefinite depth on the approach of the knife.

As might be expected, *Longicornes* and their traces were easy to see. All our species of *Rhagium* (*indagator* certainly the rarest as well as prettiest) often settled on felled trunks; the sluggish *Asemum* (mostly in couples) could nearly always be found on freshly-cut stumps; and the long-horned *Astinomus* (*Gaelicè*, "timber-man")†, whereof the male is frequently broken, owing to his excessive appendages and pugnacious propensities, was to be seen on logs or flying in the open glades. The large holes of its larva may often be observed here in fir stumps; where the pupa, also, may be easily detected by the coarse frass with which the entrance to its nidus is closed. The larva appears to be full-fed at the beginning of the summer, and, after remaining two or three weeks in the pupa state, changes to the perfect insect, staying as such in its nest until the following summer.

Only a single *Lamia textor* was found by us, the species appearing to have been nearly exterminated from the willows.

Donacia aquatica, of every colour, was particularly common on *Sphagnum* in very wet places, brassy specimens being the most plentiful. This is, however, also a metropolitan species, having been taken by us under similar conditions at Wimbledon.

To our surprise, the *Cryptocephali* were comparatively not rare; *C. lineola* being found on dwarf sallow, growing very close to the ground in wet places, and one or two intermediate specimens clearly showing the specific identity of *C. bipustulatus* with this insect. On the same plant, also, we found *C. 10-punctatus*, Linn. (Syst, Nat., Faun. Suec., 560); Gyll. (Faun. Suec., iii., 619, 15), new to Britain, a most elegant and variable species, rather larger than *C. Morœi*.

* We have since ascertained pretty certainly, from Mr. Henderson, of Glasgow, that this insect comes off the same species of sallow as the *Cryptocephalus* 10-*punctatus* hereafter mentioned.

† [Linnæus (Faun. Suec., 189, 1761) remarks that this beetle occurs commonly in Sweden, coming out of the logs with which the country people build their houses; and that the children call it "Timberman, i. e. Ædilis;" a name (inspector of buildings) well applied, as the insect walks about planks with its horns held like an extended pair of compasses. It is odd that precisely the same name should be used in localities so widely separated as Sweden and Perthshire, and after a century's interval. The German "Zimmermann" (Carpenter) is probably the connecting link.—E. C. R.]

The type form (here represented only by females) seems to be black, with the five basal joints of the antennæ, the legs (except a black spot on the femora), the mouth, a heart-shaped mark on the head, the anterior margin, and a medial posteriorly-dilated blotch on the thorax, orange-yellow; and the elytra clear yellowish-white, with five large rounded black spots upon each. The extreme varieties are almost entirely black, having often only the cordate mark on the head; and the intermediate specimens, chiefly males, have orange-coloured elytra, with transverse black bands, varying in extent in different individuals, and sometimes assuming a maculated form. It was not until some time after the capture of the first specimen (taken by Mr. McLachlan, when sweeping for *Phryganidæ*), and when very hard work in different localities, and trying every variety of tree, &c., had produced but very few specimens, that the fact of Mr. Sharp's being out without his net one day caused him to detect the food-plant of this insect: *then* it was comparatively child's play, stalking the wary little beauties; an operation, however, not so easy as it seems, for they dropped into the thick moss, &c., on the approach of even a shadow; and one's nerves are apt to get excited at the idea of a new *Cryptocephalus*.

Thyamis holsatica and *Phyliotreta tetrastigma* were the only decent members of the *Halticidæ* to be seen; and *Coccinella 5-punctata* occurred rarely, among *Lotus*, on the same bank as the *Cryptohypni*.

On our way back, a hurried rush across country to Clova, in the Grampians, produced *Elaphrus lapponicus*, *Carabus glabratus*, *Calathus nubigena*, *Bradycellus collaris*, *Gymnusa variegata*, *Tachinus elongatulus*, *Anthophagus alpinus* (male), &c. The *Elaphrus* (accompanied by *uliginosus* and *cupreus*) was exceedingly rare, and appeared to haunt very wet mossy plateaux, formed by the percolation of watersheds from the mountain Lochs (Brandy, &c.).

The above list, of course, includes only such species as a hurried examination enables us to name out of a great mass of specimens.

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July, 1865.

AN ESSAY TOWARDS A KNOWLEDGE OF BRITISH *HOMOPTERA*.

BY THE REV. T. A. MARSHALL, M.A.

(*Continued from page* 34.)

** Pronotum postice simplex, nequaquam scutellum obtegens.

III.—CICADELLINA.

¶ Pronotum lateribus foliaceis, in auriculas elevatis.

Gen. LEDRA, Fab.

1.—*Ledra aurita*, Lin.

Cicada aurita, Lin., S.N. 2, 706. *Ledra*, Fab., S.R., 24, 1. Cuv., Règne Anim. Insectes, Atlas, pl. 98, fig. 7. Curt., B.E., 676, fig. Burm., Gen. *Ledra*, fig. Germ., Mag., 4, 54; &c.

Need not be described here. The imago is excellently figured by Burmeister and Curtis, *ll. cc.*, and the larva in Westwood's Introd. vol. II. The latter feeds upon the oak, and I have found it more than once both in the London and midland districts, but failed in the attempt to rear specimens. It leaps feebly, and does not* protect itself within the same frothy discharge as some of the following insects. One nearly adult larva was found by me near Cheltenham, while digging at the roots of an oak, in January, showing that, like many other *Homoptera*, it hibernates in this imperfect condition. It represents in our latitude the extensive group typified by the genus *Scarus*, and if we except *Cicada montana*, Scop., is the largest of British *Homoptera*. It is far from common, although widely distributed: the best locality for it near London is the pleasure-ground called "Botany," belonging to the hotel at Purfleet.

¶¶ Pronotum lateribus simplex.

Gen. TRIECPHORA, Am. et Serv.

Separated from *Cercopis* in the "Suites à Buffon," Hémipt., p. 561, upon the following grounds:—Pronotum emarginate behind; head larger, less elongate, and more rounded anteriorly, with three carinæ on the frons. The species which remain after this restriction are all exotic, belonging to Java, China, and Australia.

1.—*Triecphora sanguinolenta*, Lin.

Atra, nitida, punctata; abdominis incisuræ et apex, et hemelytrorum maculæ tres magnae, sanguineæ. ♂ ♀. Long. 3-4, alar. exp. 9 lin.

Cicada sanguinolenta, Lin., S.N., 2, 708. *Cercopis id.*, Fab., S.R. 92. Cuv., Règne Anim., Insectes, Atlas, pl. 99, fig. 1. *vulnerata*, Rossi, F.E. 2, 350. Germ., Mag. 4, p. 45, No. 15. *vulnerata* and *sanguinolenta*, Curt., B.E. 461, 2 (fig.), and 1. *dorsata*, Ahr., Fn. 1, 21.

* Curtis, B E. 678, expresses himself doubtfully upon this point in the economy of *Ledra*. I think I am correct in stating that only two genera, *Ptyelus* and *Aphrophora*, in this country, produce the secretion in question.

Varieties occur in the south of Europe with the abdomen and knees more or less sanguineous, and the spots on the hemelytra differing in size and distribution. Burmeister, Signoret, and others are of opinion that these forms are all referable to one and the same species; and this view of the case is here adopted, as being in the highest degree probable, if we consider the great inconstancy of colour which prevails throughout the family. The southern variety taken by me in Piedmont differs only from the English in being a trifle smaller, in having the abdomen more broadly red, as well as the knees, while the spots on the hemelytra are narrower and shorter; the hindmost spot is not lunulated as in the British insect, but takes the form of a straight transverse fascia. Structural differences there are none. The species is found rather commonly upon shrubs and trees in woods throughout the southern and central parts of England; and I have taken it as far northwards as Shropshire.*

Gen. PTYELUS, Lep. et Serv.

A section of *Aphrophora*, Germ., formed in the Encycl. Méth. to embrace those species in which the sheath of the rostrum is two-jointed, and extends only as far back as the middle coxæ. They are further distinguished by wanting the medial longitudinal carina of the vertex and frons, and by having the ocelli more widely separated than the eyes. The size of the largest British species is only 3 lin. (*Pt. spumarius*, Lin.), while that of the genus *Aphrophora* is 5 lin. and upwards. We have only three species in this country, as far as is known at present, although a fourth (*Pt. campestris*, Fall.) may be looked for as very likely to occur, being common in the north of Europe.

* Vertex dimidia sua inter oculos latitudine longior, pronoto fere longitudine æqualis ..... *Pt. lineatus*, Lin.

** Vertex dimidia sua inter oculos latitudine non longior, pronoto triente brevior.

(1) Femora postica femoribus intermediis longiora ..... *Pt. exclamationis*, Thunb.

(2) Femora postica femoribus intermediis breviora ..... *Pt. spumarius*, Lin.

1.—*Ptyelus lineatus*, Lin.

Fusco-testaceus, abdomine plus minus nigro. Frons plerumque transversim nigro striata. Verticis, pronoti, margo reflexus, mesoster-

* Common in Swanscomb and Darenth Woods upon Alder.—EDS

num medio, nigricantia. Hemelytra a corii basi ad medium, vel ultra, nigro unistriata. Pedes testacei, unguibus nigris. ♂ ♀.

Long. $2\frac{1}{4}$-$3\frac{1}{4}$; alar. exp. 6 lin.

Cicada lineata, Lin., S.N. 5, p. 463. *Pt. lineatus*, Flor, R.L. 2, p. 123. *Cercopis abbreviata*, Fab., S.R. p. 96. Fall. Hem. 2, p. 20. *Aphrophora abbreviata*, Germ., Mag. 4, p. 54; &c.

At once distinguished by its superior size from *Pt. exclamationis*, and by the greater length of the vertex both from that and from *Pt. spumarius*. It does not vary much in colour, and always shows traces of the characteristic black dash upon the hemelytra It is very abundant upon plants in hedges, gardens, and woods, but perhaps less obtrusively common than *Pt. spumarius*.

2.—*Ptyelus exclamationis*, Thunb.

Nigro-fuscus, subtilissime punctulatus, sericeus: subtus cum pedibus fusco-testaceus. Frons transversim nigro-striata. Hemelytrorum costa ad medium usque, cum macula magna laterali (nonnunquam geminata,) albo-pellucida: margo apicalis anguste niger, nigredine in maculam parvam albam intus desinente. ♂ ♀. Long. $1\frac{3}{4}$-$2\frac{1}{4}$; alar. exp. $3\frac{1}{4}$ lin.

Thunb., Act. Ups. 4, p. 24, No. 40. Fall., Hem. 2, p. 21, No. 8. Flor, R.L. 2, p. 124. Zett. Fn. Lapp 1, p. 517, No. 4, and Ins. Lapp. p. 287. *Aphrophora lateralis*, Germ., Mag., 4, p. 54, No. 9. *Tettigonia pubescens*, Curt., M.S., Guide.

The smallest British species, nearly invariable in its markings, and somewhat local. It seems to prefer fine dry grasses in elevated situations. My specimens are from Swithland Slate Quarries, Leicestershire; and Wimbledon Common.

3.—*Ptyelus spumarius*, Lin.

De coloribus, ultra modum variantibus, nihil dicendum. Tantum ex alarum nervis, verticis femorumque posticorum brevitate, discrimen petendum. In alæ apice nervus longitudinalis tertius (a margine externo) bifurcatus in costam excurrit, qui in speciebus 1 et 2 simplex est atque indivisus. Corpus totum breviter sericeum. Subtilissime punctulatum. ♂ ♀. Long. $2\frac{1}{2}$-$3\frac{1}{2}$; alar. exp. $6\frac{1}{4}$ lin.

The following eleven Fabrician species represent the leading varieties of this insect. The whole of the copious synonymy may be seen in Flor, R.L. 2, p. 126-130, and in the list of Brit. Mus. Homopt. by Mr. Walker.

Var. 1. Flavo-fuscus; hemelytra utrinque maculis 2 lateralibus albidis. (*Cercopis spumaria*, Fab.)

Var. 2. Niger, capite thorace hemelytrorum margine albis. (*C. marginella*, Fab.)

Var. 3. Niger, oculis tantum pallidis. (*C. leucophthalma*, Fab.)

Var. 4. Niger, capite pronotique basi pallidis. (*C. leucocephala*, Lin., Fab.)

Var. 5. Pallidus; pronotum, scutellum, et hemelytra medio, longitudinaliter nigro unistriato. (*C. lineata*, Fab.)

Var. 6. Supra cinereus, vitta atra. (*C. vittata*, Fab.)

Var. 7. Niger, hemelytris latere albis. (*C. lateralis*, Fab.)

Var. 8. Niger, hemelytris extus ad latera albido bimaculatis. (*C. gibba*, Fab.)

Var. 9. Niger, pallido maculatus; hemelytris fuscis, puncto marginali albo. (*C. biguttata*, Fab.)

Var. 10. Nebulosus, vertice punctis 2, abdominisque basi, atris. (*C. Populi*, Lin., Fab.)

Var. 11. Cinereus, scutello basi atro; hemelytris apice fuscis. (*Issus præustus*, Fab.)

This abundant and familiar insect has been noticed throughout the whole of Europe, northern and central, and as far south as Malaga. I have myself seen it at Cette and Marseille, and also in Corsica, where it was very large. The imago is found from June till October, upon low shrubs and herbage. The frothy excretion in which the larvæ reside, and which is common to this and the following genus, has been often described. [See especially Griffiths, Animal Kingdom (Cuvier), Supplement on *Homoptera*.]

Gen. APHROPHORA, Germ.

The sheath of the rostrum in this genus is three-jointed, and extends to beyond the hind coxæ. The vertex and frons have a distinct medial carina, and the frons is also transversely furrowed. The ocelli are closely approximated, and situated between the eyes. We have apparently two species, of which one is rare. They are both much larger than any *Ptyelus*, and are found upon alder and willow trees.

* Hemelytra flavocinerea, maculis 2 albidis, fasciisque 2 transversis fuscis .....*A. Alni*, Lin.

** Hemelytra flavocinerea, immaculata .....*A. Salicis*, Degeer.

1.—*Aphrophora Alni*, Lin.

Supra flavocinerea, subnitida, punctulata. Hemelytro ad costam,

ante medium, macula magna alba utrinque fusca marginata; macula altera pone medium costæ obscurius albescente. Abdomen nigrum; nonnunquam brunneum. Pedes flavocinerei; tibiarum apices, tarsorumque articuli apice, fusci. ♂ ♀.

Long. cum alis $4\frac{1}{4}$-$5\frac{1}{2}$; alar. exp. $8\frac{1}{2}$ lin.

Flor, R.L. 2, p. 135. *Aphr. spumaria*, Germ., Mag., 4, p. 50. Amy. et Serv., Hémipt., p. 566, &c.; *Cercopis bifasciata*, Fab., S.R. p. 98. Panz.; &c.

Several authors appear to have confused this species with *Ptyelus spumarius*, Lin., var. 1, to which it bears some slight external resemblance. The synonymy is therefore difficult, and many of the citations commonly given must be viewed with caution. The insect is common upon various trees, but especially affects the *Alnus glutinosa*, Lin. It occurs throughout Europe, even in the south.

2.—*Aphrophora Salicis*, Deg.

Præcedenti simillimus; distinquitur fronte planiore, hemelytris longioribus, immaculatis, unicoloribus. ♂ ♀.

Long. cum alis $4\frac{1}{4}$-$5\frac{1}{4}$; alar. exp. $8\frac{1}{2}$ lin.

Cicada spumaria Salicis, Degeer, Ins. 3, p. 116; *Aphr. salicina*, Am. et Serv., Hémipt., p. 566; *lachrymans*, Eversmann, Bull. de Moscou, 1842, p. 797.

I have never taken this species, but some individuals are in my father's and Mr. Douglas's collections. It is found on the continent upon willows, and is widely distributed, although nowhere common.

Gen. ULOPA, Fall.

This group is very limited in extent, and is characterized by having the tibiæ devoid of spines. The head is broader than the pronotum, and the vertex, instead of being angularly produced, is rounded in front, biconcave between the eyes, and faintly emarginate in the middle of its anterior edge. Eyes very large, projecting on either side of the head. Ocelli placed near the posterior edge of the vertex, and capable of being covered by the pronotum. Pronotum transverse, medially carinated, and with a semi-annular or horse-shoe-shaped depression on each side. Hemelytra oval, longer than the abdomen, conchiform when closed, depressed near the scutellum, and deflexed laterally; the nervures coarse and prominent, with large pentagonal punctures between. Wings none. Abdomen short, pointed. Hinder legs scarcely longer than the others. Our only species is—

1.—*Ulopa obtecta*, Fall.

Flavo-brunnea, pallida; abdomen nigricans, lateribus pallidis. Vertex medio longitudinaliter albidus, antice in ipsa acie plerumque brunneo binotatus. Pronotum pallido varium. Hemelytra crassissime (ut et totum corpus) punctata; nervi elevati inter fascias elevatas p. p. infuscati. Pedes flavobrunnei, fusco lineati, ♀.—♂ minor, obscurior.

Long. $1\frac{1}{4}$-$1\frac{3}{4}$ lin.

Fall., Hem., 2, p. 66. Flor, R.L. 2, p. 140. Germ., Mag., 4, p. 55. *U. ericetorum*, Lep. et Serv., Encycl. Méth. *Cercopis ericæ*, Germ., Fn. 3, 24. *Cercopis reticulata* (*?*) Fab., S.R. p. 98; Ent. Syst. 4, 57, 46.

Note 1.—Curtis suggested that *C. reticulata*, Fab., must belong to his genus *Megophthalmus*. The Fabrician description is as follows: "C. pallido ferrugineoque varia, elytris pallidis, disco nigro re-"ticulato."

Note 2.—The insect figured in Cuvier, Règne, Anim. Insectes. Atlas, pl. 99, fig. 2, as *U. obtecta*, Fall., is *Ptyelus* (*Lepyronia*) *angulatus*, Fab.

Common in many places at the roots of heath, on which it feeds. It lurks in the crevices of the ground, is very sluggish, and from its small size not easily detected. I have found it, even in winter, near London, at Darenth Wood, Esher, Weybridge, and Epping Forest. Also in the midland district; Bardon Hill, and Bradgate Park, Leicestershire.

(*To be continued*).

THE *NEUROPTERA* OF MADEIRA.

BY DR. H. A. HAGEN.

(*Continued from page* 28.)

HEMEROBIDÆ.

Genus Micromus, Rambur.

M. aphidivorus, Schrauck.

Hemerobius angulatus, Steph.; *intricatus*, Wesm.; *villosus*, Zett.; *tendinosus*, Rbr.; *lineatus*, Goszy.

Madeira, and all Europe; Sweden, St. Petersburg, Germany, England, Sardinia; common everywhere, and easily recognisable.

Brullé cites *Hemerobius hirtus* as found in Madeira. Can this be *M. aphidivorus?*

Nos. 25, 26, ♂; 27, 28, ♀.

Genus HEMEROBIUS, Linn.

H. HUMULI, L.

Madeira.

At first I was not certain whether this specimen would not form a distinct species, closely allied to *humuli*. Now, I find it impossible to separate it. The colours, *facies*, and markings are absolutely identical. The differences consist in that the Madeiran example possesses four sectors in the anterior wings, while *humuli* has only three. But this difference should lose its value, because one finds in allied species (*e. g. H. nervosus*) similar variations. Also the first series of gradate nervules is interrupted at the commencement, as in *H. maculatus* of Wesmael. Having compared M. Wesmael's type, which is only a variety of *humuli*, this difference becomes of little importance; besides, *H. humuli*, being common in all Europe, and even in Asia, frequently offers very remarkable varieties.

No. 29.

H. NERVOSUS, Fabricius.

Madeira.

I had suspicions that these specimens would form a distinct species, allied to *H. nervosus;* especially because the wings are shorter, broader, and more rounded at the apex. I think it more prudent, however, to refer them to *nervosus;* which species, being very widely distributed in Europe, varies much, even in the shape of the wings; for I possess similar examples from different countries, and even from Prussia. Any way, it will be necessary to have a greater number of specimens in better condition, to enable me to be sure of the identity.

Nos. 30, 31, and 32.

Genus CHRYSOPA, Leach.

C. VULGARIS, Schneider.

Madeira.

The partition vein at the base of the wings, ending before the adjoining cell, strongly marks this species, which is found in all parts of the world.

I do not know the species indicated in "l'Histoire des Isles Canaries" by M.M. Barker, Webb, and Bertholet; these are *C. albus* and *C. flaviceps* of Brullé; the latter is spotted with black, but the determination is impossible.

Nos. 20-24.

Genus Myrmeleon, Linn.

M. alternans, Brullé, Hist. Isles Canar. Entomol. pl. 3, fig. 4.

Parvus, fuscus. Capite luteo; fronte fusca; occipite fusco-maculato; palpis luteis; antennis luteo-fuscis; thorace fusco-luteoque variegato; pedibus luteis; abdomine fusco, segmentorum dimidio basali flavo; alis hyalinis, venis fuscis; posticis fuscis, flavo-stictis.

Long. cum alis 28 *mill.; exp. alar.* 52-56 *mill.*

Smaller than *M. formicarius*, brownish; front entirely blackish-brown; occiput fawn coloured, spotted with brown, viz., two median geminated linear spots in front, two quadrangular spots on each side near the eyes, and two median linear geminated spots behind; antennæ rather short, obscure reddish, paler at the base, the apex moderately thickened; mouth yellowish fawn coloured; labial palpi longer than the maxillary, the third joint strongly thickened, but slender at the tip; pro-thorax short, traversed by two channels, rounded in front, slightly excised in the middle, yellowish fawn coloured, the middle broadly brownish, with a brown line on the sides; meso-thorax dark brown, with a yellowish line on each side, and a point near the base of the wings; abdomen long, thin, dark brown, the basal half of each segment pale yellow, the yellow extending slightly on the apical margin of the preceding segment; the body scarcely hairy; legs short, slender, fawn coloured; anterior tibiæ faintly spotted with brown, the spurs on these tibiæ a little shorter than the first joint of the tarsi; wings rather long, narrow, slightly acute at the apex, hyaline, slightly greyish, the neuration brown, finely varied with yellowish, especially on the longitudinal veins; pterostigma obsoletely marked with whitish.

Madeira.

This species agrees, in its neuration and legs, with the group of *M. capensis* of Rambur. This latter species is synonymous with *M. fasciatus* of Burmeister, and perhaps also with *M. alternans*. The difference consists solely in the darker and more varied coloration of *M. capensis;* in the place of brown there is black, with the palpi and legs spotted with the same colour, and less yellow on the abdomen. It is possible that these differences may be owing to the type of *capensis* being more mature. It is not at all impossible that *M. caninus*, F., from Guinea, may be identical with *alternans*.

Nos. 34, 35.

M. catta, Fabricius; Brullé; Walker, p. 406, 199 cum synon.

Fusco-niger; ore flavo; occipite flavo-maculato; antennis flavo-macula-

tis; thorace flavo-variegato; abdomine segmenti antepenultimi basi utrinque flavo-maculato; pedibus villosis, luteis, femoribus apice, tibiis apice, medio, basique, tarsi apice, nigro-maculatis; alis hyalinis, nervis fuscis flavostictis; linea obliqua ad marginem posteriorem aliaque apicali fuscis.

Long. cum alis 43 *mill.; exp. alar.* 70 *mill.*

In its size and coloration so much resembling *M. tetragrammicus*, that it is possible to confound the two species; but sufficiently distinct. Blackish-brown, with slight griseous pubescence; head small; front black; mouth yellow; labial palpi black externally, the terminal joint much swollen before the apex; antennæ longer than the thorax, moderately clubbed at the apex, black, the apex of the joints narrowly ringed with yellow, the basal joint yellow beneath; occiput swollen, yellow, with two rows of quadrangular black points, which anastomose and form two transverse lines; two geminated spots in the middle near the pro-thorax; pro-thorax broadly excised in front, greyish-brown, with a line in the middle, and a band on each side (separated into two) yellowish; meso-thorax similarly marked; the bands are interrupted on the thorax, and in a way separated into spots; abdomen long, thin, brown, with a yellow spot on each side of the base of the antepenultimate segment, and probably also on the preceding segment; legs weak, very pubescent or ciliated with greyish-yellow, the apex of the thighs, the tibiæ at the base, in the middle, and at the apex, annulated with black; spurs of the anterior legs as long as the four first of the tarsal joints; wings long, narrow, hyaline, with the neuration veined with yellow and brown, especially on the longitudinal veins, a short oblique brown line on the posterior border of the anterior wings, where the oblique branch of the fifth longitudinal vein unites with the margin; a similar spot before the apex; pterostigma white, marked with brown internally; posterior wings without spots, the nervures visibly ciliated.

Madeira. I have seen four specimens, and also the Fabrician type in Banks' collection.

M. catta pertains entirely to Rambur's group of *M. tetragrammicus*. Brullé (l. c. p. 83) cites *M. lituratus* of Olivier as found in Madeira, and suspects the example to be a variety with the abdomen more obscure, and the spots on the wings much less marked. But *lituratus*, Oliv., from the south of France, and from Greece, is probably a distinct species, equalling *M. nemausiensis* of Scriba and Burmeister.

Lastly, *M. hyalinus* of Olivier figured on pl. 3, fig. 5, as found in Madeira, is to me totally unknown. The figure is bad; perhaps it will belong to the group of *M. distinguendus* of Rambur.

No. 33.

(*To be concluded in our next.*)

Capture of a new British Malthodes.—I caught two specimens of a *Malthodes* at Gibside in July last year, which I have since determined to be *Malthodes mysticus*, Kiesenw., Thomson, Skandinaviens *Coleoptera*, Vol. VI., 199, 3; and which is, I believe, new to the British Fauna. It has much the look of *M. dispar;* but differs in being darker coloured, and in having the thorax and elytra proportionately shorter. The sub-quadrate thorax, also, is distinctly margined, and the ventral segments in the male are very different. One of the specimens has dark-coloured unspotted elytra, whilst the other has the usual yellow tips.—Thos. Jno. Bold, Long Benton, Newcastle-on-Tyne, *June* 21st, 1865.

Note on Stenolophus derelictus, Daws.—Mr. J. F. Dawson has sent me his unique example of this insect; which, apart from its extremely dark colour, differs from any *S. dorsalis* that I have seen (although I possess one of the Wimbledon varieties of that species, identical with the ordinary metropolitan exponents of *derelictus*) in being larger and wider, with its thorax broader, not straightly narrowed behind, but somewhat rounded, and *with the basal foveæ quite unpunctured:* in fact, it very much more resembles a rather small specimen of *S. elegans* (from which, however, it is distinct) than anything else. Mr. Dawson informs me that he never saw the insect sent to Dr. Schaum as *derelictus;* and that the sender never saw his (Mr. Dawson's) unique type of that species.—E. C. Rye, 284, King's Road, Chelsea.

Corrections in the genus Ceuthorhynchideus.—The insect described by me as *C. Poweri* (Ent. M. Mag., Vol. I., p. 137) appears to be the *Rhynchænus pumilio* of Gyllenhal (Ins. Suec., IV., app., 578, 66, 67). Having gone through the species in the sub-genus *Ceuthorhynchideus* of Dr. Schaum's last European Catalogue, and found that we possessed them all in Britain, I naturally imagined that this distinct insect was new to science: it seems, however, that several species of *Ceuthorhynchideus* are erroneously included among the *Ceuthorhynchi* in that Catalogue; hence my mistake. It may not be generally known (and was first pointed out, as Mr. Crotch tells me, in M. de Marseul's Catalogue) that the insects known to us as *Ceuthorhynchus horridus*, *troglodytes* (including the cognate species made at its expense by the French Entomologists), *pygmæus* (Guyon in litt.), and *quercicola*, are all true *Ceuthorhynchidii*, having but six joints to the funiculus.

Thomson (Skand. Col., Tom. 7, Häft. 1, 255, 2) makes the *cochleariæ* of Gyll. (Ins. Succ., III., 144, 66) one of his section with ten-jointed antennæ (=*Ceuthorhynchideus*, Du V.), and gives *pulvinatus*, Gyll., and *pyrrorhynchus*, Marsh., as synonyms of that species. From Gyllenhal's description, however, there can be no doubt that the insect (a true *Ceuthorhynchus*) known to us as *cochleariæ* is correctly so named, and that it has nothing to do with Marsham's species. Gyllenhal likens *cochleariæ* to *contractus* and *floralis*, stating that it differs from the former in its more convex thorax and *sparingly* pubescent elytra with rounded shoulders, and in having the *base* of the suture and the breast thickly clothed with white scales; and from the latter in the more deeply punctured striæ of its elytra, which are more convex, more scantily pubescent, and with rounded shoulders. It is evident that *pyrrorhynchus* cannot be confounded with this insect, to say nothing

of the improbability of so acute an observer as Gyllenhal intending the descriptions of his *cochleariæ* and *pulvinatus* to refer to the same species. Marsham's name stands, being anterior to Gyllenhal's *pulvinatus*, with which it is specifically identical.—*Id.*

Occurrence of Calosoma inquisitor near Burton-on-Trent.—In a wood near here I was fortunate enough, early in June last, to take about 30 specimens of this insect; and could have taken more. I found several in the hot sunshine; and also just at dark, moving about freely on the stems of the oak trees; but did not observe many during the day-time high up on the branches, as described by Mr. F. Plant in "The Zoologist," some years back.—J. T. Harris, 31, Lichfield Street, Burton-on-Trent, *July 3rd*, 1865.

Capture of Sitones Waterhousei.—I was fortunate enough to meet with the above insect last autumn in the Isle of Wight, in which locality it has not, I believe, hitherto been recorded as occurring.—T. Blackburn, *June*, 1865.

Cœnonympha Davus (from the German of Prof. Zeller, in Stett. Ent. Zeit., xxvi., *p.* 29*)*.—"Of the larvæ of this species, common on all the bogs and peaty places of Mark Brandenburg, of Silesia (at Glogau), and of the province of Posen, no published information is known to me, except that given by Zetterstedt at p. 905 of his "Insecta Lapponica" (overlooked by Wallengren in his excellent "Skandinaviens Dagfjärilar"),—"larva glabra, lucida, teste D. Boisduval." In Boisduval's works, as far as I possess them, I find no description of it, so I do not know where Zetterstedt got his information.

The larva, which lives exposed, and rests rather high on the grass-leaves, is tolerably easy to observe, but easier to capture with the net; but that nothing concerning it has been made known, is, doubtless, because the collectors leave unobserved butterfly larvæ, since they obtain the imagos much more easily by the net than by breeding.

I found, on June 25th, when the butterflies were already flying in abundance, in an open bog, two tolerably grown larvæ, resting on the long narrow leaves of a bog *Carex*, growing in tufts. They were on such a sod that, although the leaves had to be cut, it could easily be kept fresh, and fed on it for more than three weeks. They fed by day, resting on the leaves; yet they immediately dropped into the moss on being disturbed, where they remained lying rolled up for some time. The first, after remaining quiet and stretched out on a stalk for a few days (its ground colour becoming watery, and its markings paler, and several black dots appearing, as if it had been pricked), hung itself up by some silk on the 12th of July, and became a pupa on the 13th. In the second the change followed the first on the 20th of July. The butterfly from the first appeared on August 2nd, before five o'clock in the morning, and that from the second on August 11th, later in the morning, in rough weather; both are very small females. That they appeared so late, especially as there is scarcely a well-worn ♀ to be seen in the free state, is doubtless owing to the larvæ and pupæ being kept on the north side, in front of the window.

Larva. Length 1″-1″2‴. Body not hairy, but studded everywhere, except on the head, with extremely fine, yellow, little warty dots (Punktwärzchen). Ground colour yellowish-green, the rounded head pale green. Mouth yellowish, on the inner margin of the mandibles brown. Dorsal line narrow, dark green, bordered on each side with a sharp, narrow, whitish-yellow line. The upper lateral line is slender, rather yellower, edged above with dusky; the lateral line in which the spiracles are placed is broader, pale yellow, very distinctly defined. Legs very short, only the anal prolegs pale rose-coloured. Anal points not long, pointed, clear green, rose-coloured at the extremity, or entirely of the latter colour.

The freely-suspended pupa has quite the form and colour of *C. Pamphilus*. It is 6‴ long, completely naked, pale green, on the thoracic shield more transparent than on the wing-cases, on the abdomen more whitish, and quite opaque; the inner margin (margo dorsalis) of the fore-wings is bounded by a fine whitish line, and outside by a still finer brown line; the abdomen, on the first six segments is very finely wrinkled smooth on the hindermost. The empty pupa-case is whitish, on the last segments dirty light greenish; the boundary line of the wing-cases distinct.

With respect to the perfect insects in this neighbourhood, I have only to say, that they never seem to occur with an entire white band on the underside of the hind wings; that the ground colour is here often strongly mixed with ochre yellow; that the pale transverse line on the underside of the fore-wings is often quite obsolete, and that a ♀ in my collection has here four ocelli: above the usual one a small one, under this a small round yellow spot without black; next, near the anal angle, a larger ocellus with a white pupil, and at the anal angle a smaller one without a black pupil. Such specimens as I received from Livonia, and described in Isis, 1846, p. 180, as *Hipp. Isis*, Zetterst., though only as a variety of *Davus*, do not appear to exist in our district. That these are not the typical form there, two of the ordinary Livonian *Davus* of my collection show. I have not yet seen the species in our neighbourhood so small as three genuine Lapland specimens of *Isis* ♂ (*Davus*, var.) in my collection, which are smaller than many South European *Pamphilus* (var. *Lyllus*, Esper. ?)."

The above description appears to me to belong to *C. Typhon*, Haw. I hope, now that the larva of one of this puzzling group of *Cœnonympha* has been well recorded, our collectors will be able to detect those of the various forms in this country, and inform us whether we have two or more species in our cabinets, mixed up under the name of *C. Davus*, or not. I may add, that the description of *C. Davus* given by Fabricius in his "Genera Insectorum," p. 259, is certainly applicable to the *Davus* of Haworth, and not to *Typhon*. The description in his "Mantissa Insectorum," ii., 33, n. 347, appears to belong to *C. Davus*. On the same page, n. 352, we find Esper's *Typhon* erroneously described under the name of *Hero*; but Staudinger cites both these synonyms as belonging to *C. Iphis*, W. V.—W. F. Kirby.

Description of the larva of Cœnonympha Davus.—On the 22nd of August, 1864, Mr. Newman kindly sent me two young larvæ of this species, which had been bred from eggs, obtained (and described as far as their second moult in the "Zoologist," No. 275,) by Mr. Samuel Hudson, of Epworth, and to whom I have been very

greatly indebted for information concerning them, and their locality, and also for a plentiful supply of roots of their food-plant, *Rhyncospora alba* (the beaked rush), which kept alive through the winter, though the young larvæ did not survive; but, thanks to Mr. Hudson, he again sought for the larvæ on the moors in the early spring and replaced my loss, having found several larvæ feeding, and one of which he once observed to eat a little of *Eriophorum* (cotton grass); but the beaked rush is evidently its proper food, from the fact of both larvæ and imago being always in the low lying boggy parts where the beaked rush most abounds; whereas, in the higher commons, which are covered with cotton grass, neither the larvæ nor butterfly have been seen.

The habits of the larvæ differ much from those of the allied genera in being particularly active and lively, travelling much over their food-plant: an all-wise provision, enabling them to escape the inundations to which they are liable. The larva does not differ much after the second moult; and, when full-grown, attains to an inch in length, the head being globular, and body tapering towards the anal forked extremity. It is of a bright green, with dark bluish-green dorsal line edged with pale lemon yellow; sub-dorsal and spiracular lines of the same pale yellow, but the sub-dorsal edged above with dark bluish-green; and between those two lines is an interrupted streak of darker, posteriorly, slightly tinged with reddish or pink, and the caudal fork tipped with pink.

On June 2nd, it was attached to a rush near the top, and changed to a bright green pupa, which, in a few days, showed brown streaks on the edges and centre of the wing covers, and at the tip of the tail; so remaining until the morning of June 20th, when it was wholly dark brown, and at noon the imago came forth, a fine dark specimen.—Wm. Buckler, *June 21st*, 1865.

Note on the larva, &c., of Acidalia rubricata.—On 28th July, 1864, Mr. F. Bond took nine specimens of this moth, and obtained some eggs, which he kindly sent to me. The larvæ were hatched on August 6th, and chose for their food *Polygonum aviculare, Lotus corniculatus, Medicago lupulina*, and *Trifolium minus*.

M. Carl Plotz, whose drawings of *Geometræ* and their larvæ are referred to by Mr. Crewe in this year's Annual, had figured *rubricata* as feeding on *Thymus serpyllum*, but I could not discover that my larvæ showed any liking for that plant. They continued feeding till some time in October, and had attained a length of rather more than $\frac{1}{3}$ inch before hybernation. About this time I discovered amongst them a very tiny larva of *Boarmia rhomboidaria*, which I believe must have been produced from an egg laid upon one of the food-plants before it had been potted for the use of *rubricata*. I fancy it must have been on the *Lotus corniculatus;* but whether this intruder in any way injured his fellow prisoners, I cannot tell (if he did, he met with a comical punishment afterwards; a larva of *Zygæna trifolii* took possession of him as he was stretched out stiff between two stems of the trefoil, and actually spun its cocoon upon his back!): however, during the latter part of October, and the month of November, from some cause or other, I lost six out of nine larvæ, which I had hoped to rear. The remaining three I nursed very carefully, on fine days exposing them in their glass cylinder to the sun and air, and on stormy days and every night putting them under shelter. They began to feed

again some time in March, from that time showing a decided preference for *Polygonum aviculare*; they changed skin for the last time about the end of April, and spun up during the latter part of May and beginning of June. On 29th June, a very perfect specimen emerged of the "bright purple" variety of the moth, puzzling me until I learned that the "dull brownish-red" of the Manual is not the constant uniform of *rubricata*; I can compare the colour of this specimen to nothing so well as to the beautiful tint on the hind-margin of the fore-wings of *Chœrocampa Elpenor*, only it is brighter.

The larva when full fed is not quite an inch in length; in shape rather slender, tapering towards the head; the head itself is notched, having the lobes rounded and swelling out wider than the second segment; the whole body is ribbed with transverse rings. The ground colour is grey or ochreous on the back—paler on the belly. The dorsal line is composed of two very fine dusky threads; there is a thicker and darker sub-dorsal line, commencing on each lobe of the head, and vanishing again after the fourth segment, and as far as this extends there is between it and the dorsal line a pale grey stripe; on the next five segments both these sub-dorsal lines re-appear only as light or black spots at the segmental divisions, while on the back of the same segments there are five elongated dusky lozenges faintly edged with black; the remaining segments are paler both in ground colour and in distinctness of lines. The spiracles are black, placed in a drab longitudinal ridge, which is bordered above by a fine black line, and below by a wider one.

All the dark lines and marks become much fainter as the larva approaches its final change.

The pupa is apparently placed in a slight cocoon under moss; but, as I am hoping to get out another moth, I have not disturbed the cage to describe it.

This larva is very similar in figure, tints, and habits to many others of the same genus (twisting itself when disturbed into almost a double coil); but the eye at once catches, as the chief point of distinction, the shape and colour of the head.

Through the kindness of friends, Mr. Buckler has now been able to figure the larvæ of thirteen species of *Acidalia*, and some other species are now feeding, more also being promised; but at present we see no chance of *ochrata*, *trigeminata*, *rusticata*, *straminata*, *strigilata*, *emutaria*, or *degeneraria*, and should feel very much indebted to any one who could spare eggs or larvæ of either of them.—Rev. John Hellins, *July 13th*, 1865.

Description of the larva of Toxocampa craccæ.—Larva (when full-grown) 1¼ to 1½ inch in length. When viewed from above, it tapers towards the head, and still more towards the posterior end; but when seen sideways, appears almost uniformly long and slender.

Its manner of walking is a partial looping of the first six segments: the first two ventral prolegs are very slightly shorter than the others, but to such an extent as to be scarcely noticeable, and it generally assumes an undulating posture in repose along the stem of its food-plant.

Along the back, commencing on the head, is a dark brown, very finely mottled, broad stripe, widest along the middle segment; and with an additional widening on the eleventh segment; in the centre of this is a thin, rather paler stripe, enclosing

the very dark brown dorsal line. The sub-dorsal stripes are double, brown, with a paler ochreous-brown ground, followed by a pale stripe of ochreous, enclosing a very thin brown line; the lateral lines double, dark brown, extending from the mouth to the anal prolegs; edged above with black at the anterior portion of each segment; the upper one widening below in the middle, along which are some black dots. Belly and legs brown. Within the dark portion of the back, on each segment, are placed four black dots in the usual order, and on the eleventh segment there is an additional black dot on each side, outside the dark region. Sub-dorsal lines, also, containing two black dots and a minute ring.

Went to earth on the 24th of June.—Wm. Buckler, Emsworth, Hants, *July*, 1865.

Notes on Toxocampa craccæ.—On the 4th of May I received, through the kindness of Mr. Horton, three little larvæ of this species. They were from ¼ to ½ inch in length, and of a slender figure, using only two pairs of their ventral feet.

One of these larvæ soon perished from a bite he had received during his journey from one of his companions; and another died not long afterwards, as I believe, from my neglecting to supply it with *young tender* shoots of vetch; whilst the third, after dwindling for a while, soon recovered its health when furnished with food tender enough for its taste.

As I could not procure *Vicia sylvatica*, Dr. Knaggs told me that *Orobus tuberosus* and *Vicia sepium* would replace it; but I found that the young shoots of the last named plant were most approved of.—Rev. J. Hellins, Exeter, *July*, 1865.

Capture of Erastria venustula.—This insect has again made its appearance at Epping Forest. On the 5th ultimo I was at Loughton, and took a single specimen, beaten from a low beech bush: a few specimens were also taken by other entomologists on the same day.

It has not, I believe, been uncommon this year; as at least two dozen have been taken to my knowledge.—S. A. Davis, Jun., Seven Sisters' Road, N., *July 14th.*

Depressariæ, &c., in the Isle of Wight.—Affected, perhaps, by a longing for retirement, I made most of my Entomological expeditions away from the coast; and, my captures among the *Depressariæ* being good, had no reason to be dissatisfied with the result. At Niton, a little hamlet near St. Lawrence, the fine old thatches produced *D. purpurea, arenella, Alstræmeriana*, and *applana*, in great numbers, *heracliana* commonly, and a few specimens of *chærophylli, albipunctella, ciliella*, and *nervosa*. Occasionally an excited farmer would remonstrate on the dilapidation of his cow-house roofs, and urge, with unanswerable logic, that his property *was* his and not mine; but deferential politeness disarmed the fiercest native, and the baited naturalist, feigning a perfectly excessive tenderness in tapping the extreme edges of the thatch as long as the farmer, gratified by this impressive manifestation of care, was in sight, would fall to his work again sturdily, free from attack.

At Ventnor, which yielded fewer species than any other place I visited, there occurred a single specimen of *capreolella*, and a pair of *liturella*, together with an

abundance of *arenella*, *sub-propinquella*, *Alstræmeriana*, and *applana*. On the summit of St. Boniface Downs, above the town, I took long and beautiful series of *umbellana* and *costosa*, the former from the stacks of dry heath, the latter from the growing heath itself. In this latter situation too a few *purpurea* occurred.

When, at last, I grew tired of getting the same species over and over again, I thought of the neighbourhood of Appuldurcombe, the beautiful mansion of Mr. Williams, lying inward. Accordingly, I set out thither one morning, and remained till late in the day, till every box, indeed, contained a specimen. To commence operations I climbed over a high stone wall, and dropped into the spacious farm-yard on the other side. Desirous of losing no time, I assailed a neatly thatched building with prompt and energetic thumps. What I beat out emerged on the other side, and peeped at me confidentially round the corner of the wall. My first capture might have been a shapely pig, and this advanced *sus*, giving the word of command, led out a perfect regiment of shrieking brethren, who ignoring rank and file, pressed headlong to the van and fled. Unabashed by this remarkable demonstration I tried again, and was delighted to recognize *Yeatiana* and *badiella*. With them came indiscriminate showers of *costosa*, *arenella*, *sub-propinquella*, *Alstræmeriana*, *purpurea*, *applana*, *nervosa*, and *heracliana*. I believe I counted as many as nine species from one application of the beating stick, and among these there were certainly a dozen *purpurea*. This latter certainly favours Appuldurcombe. Among the hosts of *sub-propinquella* I secured *propinquella*.

At Shanklin, among miscellaneous examples of the same genus, I met with about ten specimens of *nanatella*, a very pretty little insect. These were all, I believe, from one haystack.

In the lovely landslip, I beat specimens of *Gracilaria semifascia*. Here too an example of *G. phasianipennella* and several *Cerostoma costella* and *sylvella* occurred. On the shore, near Ventnor, was *Laverna epilobiella*, and close to Bonchurch my brother, by some mysterious monopoly, which I was equally unable to interrupt or explain, lighted upon four specimens of *Ochsenheimeria Birdella*.—J. B. Blackburn.

Lepidoptera in the neighbourhood of Woodchester.—As this locality is comparatively little known to Entomologists, it may be well to state that I have found it rich in very many species, and I have no doubt it would be found still more so by any one who is more master of his time than I am; for, on the average, I am prevented from giving more than one afternoon in the week to collecting, and my health at present will not allow me to go out at night. However, during the past year, besides most of the commoner species, I have taken,—

A. Galathea, *G. C-album*, *N. Lucina*, *T. rubi*, *P. alsus*, *A. trifolii*, *H. dominula*, *N. plantaginis*, *G. rubricollis*, *D. mendica*, *B. glandifera*, *L. Comma*, *C. cytherea*, *P. flavocincta*, *X. rhizolitha*, *A. aprilina*, *C. verbasci*, *C. umbratica*, *H. arbuti*, *P. pulchrina*, &c., &c., together with many among the *Geometræ*, *Pyralidina*, &c.—Rev. B. Peter Mackey, Woodchester, near Stroud, *June*, 1865.

Macroglossa stellatarum.—This species has been extremely common here this summer, chiefly delighting in the flowers of the Sweet-William. I found it also flying in some numbers up and down the hedge-rows on the Chilterns.—R. Tyrer, Weston Turville, Tring.

Macroglossa stellatarum.—A specimen has recently been taken in the court-yard here, and two others were also observed in the same place.—E. Waterhouse, British Museum, *July*, 1865.

[This species seems universally abundant this year; we observed about a score at one time flying along a stone-wall at Worthing.—Eds.]

Insects of different genera taken in copula.—"M. Künckel exhibited an example of coupling, not between individuals of allied species, but between individuals belonging to different genera, a fact elsewhere related of certain Lepidopterous insects. In this case it concerns two Longicorns, viz., a male of *Strangalia melanura*, found at Zermatt, coupled with a female of *Leptura livida*. This fact is worthy of being mentioned only because the coupling was most complete." (Translated from the 'Annales de la Société Entomologique de France,' 4me trimestre 1864, bulletin p. 49.—R. McLachlan.)

Non-destructive parasitism.—"M. Guérin Méneville presented a cocoon of *Attacus Bauhiniæ* from Senegal (constituting his sub-genus *Faidherbia*), in which, by the side of the perfect insect which died without emerging, was found a Hymenopterous parasite, also perfect and dead; probably new and undescribed."—*Id.*, page 52.

On sound-producing Lepidoptera.—Above thirty years since, De Villiers remarked the curious fact, that one of the tiger-moths (*Chelonia pudica*) found in France, when flying in the evening, produced an audible sound, and he shewed that the insects possessed a vesicle on each side of the prothorax, filled with air, and supposed that the sound was produced by muscles acting on this vesicle, and compressing the enclosed air. Other explanations were afterwards given by various observers, and very recently M. Guenée noticed the existence of more developed vesicles in the species of the genus *Setina*, and hinted (*vide* Annales de la Société Entomologique de France, 1864, pp. 399-401; Ent. Mo. Mag. vol. I., pp. 223-225,) that the only plausible explanation he could suggest was, that the insect possessed the faculty of alternately partially emptying and filling these vesicles, and thus producing the sound by *froissement*. Dr. Laboulbène, so well known as an entomological anatomist, has turned his attention to the subject, and in an elaborate memoir in the Ann. Ent. Soc. de France, 1864, pp. 689-704, he records the results of his investigations. Having procured fresh examples of *C. pudica*, he satisfied himself that there is no apparent tracheal connection between the vesicles and the interior of the body, and no internal instrument that could act on them in any way. The external surface he found to be slightly clothed with scales, when the insect first emerged, in the same manner as the wings of *Sesia fuciformis* and *bombyliformis*; on the anterior edge there are numerous little raised striæ to the number of 16 or 20 in the male, and 8 to 10 in the female. He remarked that the posterior thighs seemed formed in an admirable manner to act on these vesicles. On pressing the insect between the thumb and finger an audible sound was produced; but in repeating the operation, having in the meantime disengaged the posterior legs, the insect remained mute. Again, when the vesicle was pierced, and the contained air liberated, no noise was heard. He arrives at the conclusion, therefore, that the secret of the song consists in the pressure of the posterior legs on the vesicles.

As to *Setina*, he mentions, that as far as he knows, the first entomologist who asserted the existence of a sound-producing organ in this genus was Haldemann, in Silliman's Journal for 1848. The vesicle is very highly developed in all the species,

and, as is stated by M. Guenée, is divided internally into two parts, with the external surface perfectly smooth. He considers that the sound is produced in a perfectly analogous manner to that of the *Chelonia*, viz., by the action of the posterior thighs.

The memoir throughout shews most profound research, and should be carefully studied by all who take an interest in something more than the forming of collections; indeed, it proves most strongly how a collection should be subservient to higher purposes, and not be admired only for its extent.

The paper winds up with some considerations on the natural position of *C. pudica*, and the author advises the separation of the species from its congeners, on the same grounds that separate *Setina* from *Lithosia*, proposing the generic term *Tympanophora*.—R. McLachlan, Forest Hill, *July 4th*, 1865.

Flower-frequenting spiders.—I have lately taken more notice of these. A white species is very common on the flowers of the 'ox-eye,' and sometimes frequents the wild roses; another I saw on an orchis, but it hid between the blossoms.

They often had hold of a large fly, or even of a bee, which they had surprised at the flower; and one day noticing on a flower of one of the yellow vetches an example of *Vanessa urticæ*, with its wings spread out, which did not seem to move on my approach, I looked more closely, and found that it was held by the head by a large bright yellow spider, of almost exactly the colour of the flower.—C. G. Barrett, Haslemere, *July 2nd*.

Exeter Naturalists' Club.—At a meeting of this useful society, held at Exmouth on the 24th June, Mr. D'Urban read some Entomological notes, which we present to our readers in a condensed form.

With reference to the record of the capture of a single specimen of *Rhyssa persuasoria* near Exeter, by Mr. D'Orville (Ent. Mo. Mag., vol. I., p. 262), Mr. D'Urban mentioned that he had met with the species in fir plantations near Strete Raleigh, and that it was common at Newport. In connection with this, he exhibited two Canadian species of *Rhyssa*, measuring six inches in length. These were *R. necator* and *R. lunator*. The first is common near Montreal, and he had caught many females which were fixed, through having driven their ovipositors so far into the wood that they were unable to withdraw them. In many trees these hair-like instruments might be seen sticking out from the trunks, the insects having either broken them off in their efforts to escape, or they had been left when their owners had been seized by birds, &c.

Chrysophanus dispar. A specimen was exhibited which was picked up dead amongst sedges at Slapton Lea, by Mr. Wentworth Buller.

Argynnis Lathonia. Several examples (one of which was exhibited) were captured about twelve years since at Bystock, also by Mr. Buller.

Mr. D'Urban also exhibited a specimen of *Sphinx ligustri*, with pollen masses of an Orchid attached to its right eye.

Entomological Society of London, *3rd July*, 1865.—F. P. Pascoe, Esq., F.L.S., President, in the Chair.

Sir W. V. Guise, Bart., of Elmore Court, near Gloucester; Dr. Hugh Colquhoun, of Glasgow; Dr. Battershell Gill, of 5, Cambridge Place, Regent's Park;

A. D. Carey, Esq., of The Paragon, Hackney; R. Borthwick, Esq., of Alloa, N.B.; A. Mercer, Esq., of Barnsbury; W. S. M. D'Urban, Esq., of Newport, near Exeter; G. F. Mathews, Esq., F.L.S., of Pilton, near Barnstaple; H. D'Orville, Esq., of Alphington, near Exeter; J. Linnell, Jun., Esq., of Reigate; A. G. Latham, Esq., of Manchester; J. E. Fletcher, Esq., of Worcester; W. Cole, Esq., of Tottenham; and A. E. Eaton, Esq., of Little Bridy, Dorsetshire, were elected Members of the Society; and Messrs. E. Meek, Evan John, A. E. Hudd, and Morris Young, were elected Subscribers.

Mr. Dunning moved, and Mr. Stainton seconded, the proposition that a cordial vote of thanks be passed to Mr. W. Wilson Saunders for the pleasant excursion and entertainment to which he had invited the members on the 23rd ultimo. This was carried by acclamation.

Mr. Bond exhibited a fine series of bred specimens of *Eupithecia campanulata* and *E. pulchellata*, and also three beautiful specimens of *Toxocampa craccæ*, which had been bred by Dr. Knaggs from eggs sent to him by the Rev. E. Horton.

Mr. Stainton exhibited the singular flattened cocoons of *Pyralis glaucinalis*; these had been sent to him by Mr. E. Brown, of Burton-on-Trent.

Mr. Stainton brought for distribution a large supply of the larvæ of *Cemiostoma lotella*, received from Mr. Thomas Wilkinson, of Scarborough.

The Rev. Hamlet Clark read a letter, received from Mr. Alexander Fry, respecting the simultaneous flashing of the lights of tropical *Lampyridæ*. In this letter Mr. Fry stated that he had particularly noticed this habit in a species of *Aspidosoma* found near Rio.

The Rev. Hamlet Clark exhibited a series of small *Coleoptera*, received from India from Lieut. J. Hobson.

The Secretary read a letter from the Rev. Douglas Timmins on the *Lepidoptera* of the neighbourhood of Cannes, in the south of France. In this letter, the writer remarked that all the specimens of *Vanessa Antiopa*, caught in that locality, had the border of the wings pure white.

Dr. Armitage brought for exhibition a case of a species of *Oiketicus*, containing the female still apparently in the pupa state. Into the extremity of this case, no less than three males had inserted their long abdomens at the same time, and had been killed in that position.

Mr. Evans read a letter received from his son, Mr. W. T. Evans, resident at Belize, respecting the luminosity of *Fulgora laternaria*. Mr. Evans stated that a live *Fulgora* had been brought to him, which lived about a day, and was decidedly luminous. As the letter did not give any particulars as to the portion of the body emitting the light, several members strongly urged Mr. Evans to obtain further information from his son.

Mr. Bates read an extract from a letter received from Mr. B. D. Walsh, of Illinois, stating that the young larvæ of various species of North American *Limenitis* hybernated in a case made of a piece of leaf, which they fastened to the twigs by silken threads. Mr. Stainton remarked that Dr. McLean had recorded a similar habit in our *Limenitis Sibylla*, vide "Zoologist," 1861, p 7,564.

Part 1 of Vol. IV. of the third series of the "Transactions" was on the table.

OBSERVATIONS ON THE HABITS OF THE ANT-LION *(MYRMELEON FORMICARIUS)*.

BY R. M'LACHLAN, F.L.S.

Towards the middle of August, 1864, I visited my good friend, Mons. Berce, at Fontainebleau, and spent a day with him in the magnificent forest which surrounds the town. My primary object was to make personal acquaintance with the ant-lions which are known to abound there; nor was I disappointed, for, at the base of some of the numerous immense blocks of rock with which the forest is strewed, I soon found the objects of my search; the sand in some places being literally full of their pitfalls, of all sizes, from those constructed by infantile larvæ, to the really considerable and funnel-shaped depressions formed by those of full growth. I was not long in discovering that it was impossible to seize the occupants by trying to pick them out of their holes, as they made a wonderfully quick retrograde and lateral movement on the approach of danger. The only plan, therefore, was to thrust the hand in an oblique direction under their pits, and they were generally to be found feigning death in the mass of sand brought up. In this way I collected two or three dozen, and placed them in a box with sand, and eventually brought them to London.

It is not necessary for me to enter into a lengthened description of the manner in which they form their pitfalls, this operation having been long since described by numerous old authors, such as Réaumur, Percheron, Bonnet, &c., and more recently by Brauer and Westwood, the latter having published (in the Magazine of Natural History for 1838) an account of some larvæ which he brought from France, from one of which he reared a single imago.

On arriving home, I found that at least one half of my larvæ had been destroyed by their companions, through too many having been confined in a small space. However, I still had more than a dozen; and these were placed in a large box, filled with fine sand to the depth of nearly three inches, with a piece of gauze stretched over the top. In their natural state, their food doubtless consists of ants, small beetles, spiders, and other creatures, either apterous or possessing small powers of flight; but I fed mine chiefly on house-flies, varied by an occasional blue-bottle, soft-bodied beetle, &c. It was necessary to partially disable the flies before dropping them into the pits, otherwise they would fly out before the creatures had time to seize them. The house-flies and other small insects were usually dragged partially or wholly under the

sand, whilst blue-bottles and similar bulky creatures were feasted upon on the surface. When all the juices had been extracted, the carcases were jerked out of the holes, in outward appearance none the worse for the operations performed upon them. In the day-time, I never saw more of the larvæ than their exposed mandibles; but, during the night, they would frequently make backward peregrinations over the surface, as the long tracks left in the sand would testify. They had a great aversion to moisture; and once, when some water was accidentally spilled into one end of their cage, they one and all deserted that portion, nor did they return until it was thoroughly dry. The damp sand would of course impede their progress, and could not be shaped into pitfalls, or be thrown up to bring down any escaping prey. In this way I fed them at the rate of about a fly a day to each, until these were no longer obtainable, and then put them by to take their chance for the winter.

About the end of March, they having fasted fully five months, I found them again shewing signs of activity, almost before I could procure food for them, and appearing to have actually increased in size in the interval. Two or three had died since they were first placed in their cage, probably from the attacks of their fellows; but the survivors, nine in number, were fed as in the autumn (occasionally undergoing a compulsory fast for several days), and by the middle of June, most of them had formed neat globular cocoons of silk and sand,* and about the 5th of July the first imago emerged; since then I have bred six others, the last emerging on August 4th. But one larva was still unchanged, though evidently full grown, and one day I found that an imago had its abdomen drawn into the sand, and its juices being extracted by this larva: being in want of an example for alcohol, I killed it. It would appear probable that these larvæ live nearly two years in that state, as several of them were half grown when found.

The imagos are very sluggish, and in the day-time they are induced to move with much difficulty; but as night approaches they become restless. Indeed, M. Beree told me, and Réaumur states the same, that, although the larvæ are abundant in the localities they frequent, one scarcely ever sees the imago.

In the "Entomologists' Annual" for 1858, p. 19, Dr. Hagen states that we may assume, as almost certain, that at least two species of

* De Romand once found a pupa on the surface of the sand, the larva having apparently formed no cocoon (*Vide* Ann. Soc. Ent. France for 1850); but I think it probable that this pupa had come out of its cocoon rather prematurely, and had worked its way to the surface. Usually the exuviæ of the pupa are to be seen half in and half out of the cocoon.

Myrmeleon will be found in these islands; but I think we may pretty surely assert they are at any rate absent from England, and I doubt if we can lay the slightest claim to including them in our fauna; but the matter can scarcely be considered as settled until the south-west coast of Ireland has been thoroughly explored. Any way, I have no doubt they could be easily naturalised among us, if the larvæ were turned loose in a suitable locality, such as Weybridge or Bournemouth.

Many of the ant-lions do not make pitfalls. The number of described species known to inhabit Europe is about twenty-seven, belonging to five or six genera, and it is probable that the total number of species equals nearly three hundred.

In conclusion, I would remark that these interesting creatures have afforded me endless amusement and instruction, and I would earnestly recommend any entomologist visiting their native haunts, to bring over a supply, and become personally acquainted with their doings as I have done.

Forest Hill, London, *7th August*, 1865.

THE *NEUROPTERA* OF MADEIRA.

BY DR. H. A. HAGEN.

(*Concluded from page* 62.)

PHRYGANIDÆ.

Genus LIMNEPHILUS, Leach.

L. CINCTUS, n.s.

Rufo-fuscus, fusco-villosus; antennis fuscis, pallide annulatis; pedibus testaccis, nigro-spinosis, anticis tibiis tarsisque nigro-annulatis; alis anticis ochraceis, margine postico et apicali latius dense fusco sparsis, disco parce fusco-maculato, pterostigmate parvo fusco; alis posticis nigro-cinereis, margine antico paulo infuscat, venis partim nigris.

Long. cum alis, 13 *mill.; exp. alar.* 21 *mill.*

Head of an obscure red, ciliated with brown, yellow in the vicinity of the eyes, a little elevated in the middle; tubercles as in *L. impurus;* antennæ blackish brown, annulated with fawn colour; palpi fawn-coloured; thorax dark brown; legs fawn colour, with black spines, the anterior tibiæ, and the base of the joints of the anterior tarsi, annulated with black; wings almost as in *L. impurus* (Rbr.), but the apex less broad and less obliquely truncated, neuration almost similar, the fourth apical cell slightly narrower at the base; in the posterior wings the

cubitus forks at the same height as the sector of the radius; the colours similarly placed, but the brown is darker; anterior wings yellowish, marked with numerous brown atoms, which are more or less confluent, especially towards the apex, the anal angle, and posterior margin, but fewer on the disk, where they leave a large pale space about the anastomosis, and a quadrangular spot nearer the base; pterostigma formed of several brown spots; the nervures with brown hairs at the base, and on the posterior portion; posterior wings smoky cinereous, the anterior border, and especially the pterostigma, brownish; the nervures in the anterior portion pale yellowish, blackish in the anal portion. (Abdomen wanting.)

Madeira.

The description remains incomplete, wanting that of the appendices. *L. cinctus* is allied to *L. impurus*, but is smaller.

No. 38 ♂, 39 ♀.

Genus Stenophylax, Kolenati.

S. oblitus, n.s.

Pallidus; vertice, thoraceque fuscis, antennis rufis, vix annulatis; abdomine pallide flavo; pedibus pallide flavis, nigro-spinosis, anticis paulo obscurioribus; alis anticis infuscatis, parce-fusco villosis, maculis parvis pallide flavis sparsis, venis fusco flavoque alternatim pictis; posticis hyalinis, venis ciliisque flavescentibus.

Long. cum alis 12-16 *mill.; exp. alar.* 21-26 *mill.*

Resembling *S. aspersus*, Rambur, but much smaller; pale yellow. Antennæ reddish, with the articulations slightly paler, as if annulated, basal joint slightly darker on the sides. Head elevated in the middle, and darker, ciliated with brown, two small tubercles between the antennæ in front, two other oval ones in front of the ocelli on the inner side, and two more on the occiput; in the middle, posteriorly, are two slightly elevated ridges, curved somewhat outwards. Meso-thorax brownish above. Legs yellowish, the anterior somewhat brownish. Wings elongated, the anterior dilated before the apex; of a reddish-grey, a colour which is produced by a brown shade, dusted with very numerous small pale irrorations; neuration brown, spotted with yellow; anal parts in the female with two triangular acute appendices; vulvar scale quadrifid, with the two intermediate divisions narrower; superior appendices in the male short, rounded at the apex, which is a little concave internally; inferior appendices forming a broad scale, the superior apex curved inwards and forming a tooth; intermediate

appendices curved outwards, cylindrical, but furnished beneath with a rounded scale; penis cylindrical, curved upwards, and slightly excised at the apex, a hook on each side.

Madeira.

This species resembles *S. aspersus* in its coloration, but is smaller, and the appendices are arranged in a totally different manner, to which *S. alpestris* alone offers any analogy; besides, the vulvar scale in the female being quadrifid, it is impossible to confound it with any known species of *Stenophylax*.

It bears much resemblance, in size and coloration, to *Limnephilus hirsutus* and allies.

Nos. 37 ♂, 36 ♀.

Genus Hydroptila, Dalman.

H. atra, n.s.

Capite et thorace atris; antennis unicoloribus atro-fuscis; alis brunneis, fusco-pilosis, griseo-fimbriatis; pedibus fuscis, tibiis posticis griseo-fimbriatis.

Long. cum alis 2½ *mill.; exp. alar.* 5 *mill.*

The head slightly inflated, with two rounded tubercles close to the occiput. Antennæ slightly more distant than is usual in the species of this genus, stout, as long as the body. Wings very narrow, pointed. Legs rather strong, the posterior pair long. The colour is wholly of a uniform, rather dark, blackish-brown; the wings brownish, with brown pubescence, and with long greyish-brown fringes; the feet dark brown, with greyish hairs on the posterior thighs. (The individual has lost its abdomen, but is otherwise in fair condition.)

Madeira.

No. 41.

Genus Hydropsyche, Pictet.

H. Maderensis, n.s.

Nigra; vertice aureo-villoso; antennis fuscis, subtus pallide annulatis; palpis et pedibus anticis brunneis; tarsis intermediis et posticis, maculoque basali femorum posticorum, brunneis; alis anticis nigro-fuscis, dense aureo-maculatis; posticis nigro-cinereis, margine antico flavo.

Long. cum alis 10-14 *mill.; exp. alar.* 20-24 *mill.*

Body black. Head less broad than in allied species; eyes more prominent; the four tubercles flattened, the two posterior ones large and oval, the anterior smaller and uniform. Antennæ slender, as long

as the wings, slightly serrated towards the apex; brown, the upper side of the basal portion, and the whole of the under-side, annulated with whitish. Palpi long and brown. The upper side of the head and pro-thorax with golden yellow pubescence. The first pair of legs brown, the others yellowish, with brown tarsi; an indistinct brownish spot at the base of the posterior femora; the posterior tibiæ slightly ciliated externally; the intermediate tarsi of the female flattened, and slightly dilated. Anterior wings narrow, a little dilated towards the apex, which is oval; blackish-grey, sprinkled with rather brilliant golden-yellow quadrangular spots, which are often confluent; a series towards the costal margin, a broad maculated band before the apex, and a row of larger spots on the dorsal margin. Posterior wings grey, the basal two-thirds of the anterior margin yellowish. The superior appendices of the male soldered into a plate, which is bifid at the apex, roof-shaped, brown; inferior appendices long, turned upwards, biarticulated, basal joint long and straight, thickened towards the apex, the apical joint one-half shorter, curved, the apex slightly broadened and rounded; penis long, straight, cylindrical, slightly dilated beneath before the apex. In the female there are two quadrangular ciliated vulvar plates, and also two cylindrical appendices towards the apex.

Madeira.

I have seen fifteen examples (from Hartung's collection), males and females.

This species is apparently common. It belongs to the group of *H. atomaria*, and differs from allied species by the black colour of the body, and the brilliant golden-yellow of its spots.

Nos. 50-57 (55 and 56 ♀; the others males).

Genus Tinodes, Stephens.

T. cinerea, Hag. Stett. Zeit. t. 21, p. 283, 4.

Cinerea, luteo-hirta; corpore palpisque fuscis; antennis fuscis, anguste flavo-annulatis; penicillo inter antennas aureo; alis anticis cinereis, luteo-hirtis; posticis cinereis, cinereo-ciliatis; pedibus pallide flavis, tibiis posticis obscurioribus.

Long. cum alis 7 *mill.; exp. alar.* 12 *mill.*

Body brownish; vertex inflated; two rather large pyriform tubercles on the occiput. Head clothed with fawn-coloured hairs, golden between the antennæ. Palpi long and blackish-brown. Antennæ brown, annulated with fawn colour. Legs yellowish, the posterior tibiæ brownish. Wings narrow; the anterior clothed with yellowish

hairs; the posterior grey, with grey fringes. Anal appendices of the male pale; the superior long, narrow, straight, somewhat dilated at the base, and with long ciliæ; the inferior short and broad, in the form of an oval plate, with a thin and long superior branch, which is curved inwards; between the inferior appendices there are two supplementary appendices, long, forming a narrow plate, curved inwards at the apex; penis-cover triangular, roof-shaped; penis inflated beneath at the apex, with many rather long spines. Abdomen of the female ending in a triangular oviduct, which is acute and turned upwards.*

Madeira.

Nos. 45 and 46 ♂; 47 and 48 ♀.

T. GRISEA, Hag. Stett. Zeit. t. 21, p. 283, 5.

Cinerea, luteo-hirta; corpore palpisque fuscis; antennis flavis, fusco-annulatis; alis griseis, luteo-hirtis; posticis cinereis, cinereo-ciliatis; pedibus pallide flavis.

Long. cum alis 12 *mill.; exp. alar.* 20 *mill.*

Belonging to the same group as *T. cinerea*, and very similar to that species, but larger. Head slightly excised in front. Antennæ yellow; basal joint brown, second joint yellow, with a brown external basal spot, the remainder yellow, with the apical half of each joint brown. The oviduct as in *T. cinerea*. The hairs of the body are rubbed off. Notwithstanding the extreme resemblance to *T. cinerea*, I am convinced that it forms a separate species, for the size is too different, and the colours described justify a separation. It is necessary to see fresh specimens, especially of the male.

Madeira: one female.

No. 49.

Genus POLYCENTROPUS, Curtis.

P. FLAVOSTICTUS, n.s.

Nigro-fuscus, nigro-villosus; corpore supra nigro, subtus pallidiori; antennis palpisque fuscis; alis anticis nigro-fuscis, flavo-maculatis, posticis cinereis, cinereo-ciliatis; pedibus fuscis, posticis testaccis.

Long. cum alis 8 *mill.; exp. alar.* 17 *mill.*

Body blackish, pale beneath, ciliated with black, especially on the head. Vertex inflated, with two elongated, slightly curved, tubercles

(* This species is very closely allied to the British insect, that I consider *T. pusilla* of Curtis: so closely, indeed, that I do not feel sure if it be really distinct. In making a careful comparison of the appendices of the two species, I could not, however, find in *T. cinerea* the small inferior branch of the inferior appendage, to be seen in *T. pusilla*. The types of *cinerea* are gummed on card, and, from this cause, it is impossible to make so good an examination as could be wished; this may also partially explain the apparent darker colour of the wings.—R. MCLACHLAN.)

in the middle, and two larger pyriform and oblique ones on the occiput. Antennæ brown, slender, nearly as long as the wings. Palpi brown. Wings narrow, with the apex dilated and elliptical; the anterior bright blackish-brown, sprinkled with round golden-yellow spots; the posterior grey, with long concolorous fringes. Legs brown, the posterior pair fawn-coloured. Superior appendices in the form of a short oblong plate, with a tubercle at the base. Between these appendices there is a flattened plate, almost quadrate; inferior appendices in the form of a broader plate, slightly turned inwards, somewhat denticulate on the superior edge.*

Madeira.

This large species is darker and brighter coloured than any known species. The antennæ are longer, and in this respect approach the genus *Plectrocnemia* of Stephens, but they are more slender, and the wings narrower, than in the single known species of that genus (*P. conspersa*).

Nos. 58-60 ♂.

Genus Agapetus, Curtis.

Sub-genus. *Fœmina tibiis tarsisque intermediis non dilatatis; minus villosa; alis granulatis.*

A. punctatus, Hag. Stett. Zeit. t. 20, p. 163, 5.

Fuscus, fusco-hirtus; corpore nigro-fusco; antennis palpisque fuscis; alis cinereis, punctatis, anticis luteo-hirtis, posticis fusco-ciliatis; pedibus lutcis, tibiis, calcaribus, tarsisque fuscescentibus.

Long. cum alis 5 *mill.; exp. alar.* 9½ *mill.*

Body blackish-brown. Head and thorax with brown hairs, among which are several yellowish. Vertex inflated, two linear tubercles near the occiput, and two others which are punctiform, more in front near the ocelli. Antennæ as long as the wings, somewhat stout, pilose; the basal joint ovate, larger and stouter than the rest; the second orbicular, the others cylindrical. Palpi short, the third joint slightly dilated. Pro-thorax with a rounded tubercle on each side. Meso-thorax with two linear convergent tubercles above. Wings narrow, the apex elliptical; the posterior a third shorter than the anterior, and narrower, with long brown fringes, the anal field wanting; the membrane of the anterior finely punctated (the hairy clothing is nearly

(* *P. flavostictus* belongs to the first group of *Polycentropus*, as explained in the Ent. Mo. Mag. Vol. I., page 27; viz., that in which the discoidal cell is open in the posterior wings, with the two first *costulæ* anastomosing near the middle. The arrangement (but not the form) of the appendices is also similar to that found in the British species of this group.—R. McLachlan.)

rubbed off, and visible only at the apex of No. 43), Abdomen ovoid, slightly elongated in the form of a truncated cone. Legs yellowish; the tibiæ, spurs, and tarsi brownish, pilose externally; the intermediate legs not dilated.

Madeira.

This resembles the European species, but differs in the non-dilated intermediate legs of the female. *A. ciliatus* has also the membrane of the wings slightly punctated. The colours of the body are as in *A. ciliatus;* those of the wings as in *A. comatus,* but the hairs of the posterior wings are darker.

No. 42-44 ♀.

Königsberg.

DESCRIPTION OF A NEW SPECIES OF *MORPHO* IN THE COLLECTION OF THE BRITISH MUSEUM.

BY A. G. BUTLER, F.Z.S.

MORPHO THETIS.

Upperside. Front wings rich chocolate-brown, basal half glossed with blue-green; crossed in the middle by a broad, oblique, variable metallic blue-green band, narrower above the cell; a large, oblique, marginal white spot on the anterior margin, above the end of the cell; a sub-marginal row of six white spots along the outer margin, diminishing in size towards the anal angle, the second from the apex, much larger than the others.

Hind-wings rich chocolate-brown, crossed beyond the middle by a broad, oblique, variable, blue-green band, broader above than below, but, at its widest part, only two-thirds of the width of the band of the front wing; a small red spot, bordered with black, at the anal angle; cilia pale ochreous.

Body brown, head and pro-thorax spotted with yellow. Underside. Front wings dull chocolate-brown, interior margin broadly clay-coloured, glossed with violaceous; crossed beyond the middle by an oblique, irregular, deeply dentated, narrow band, pale ochreous above, brighter in the middle, violaceous near the anal angle where it terminates, beginning at the anterior margin, and strongly incurved just below the end of the cell, more disconnected from below the cell to the inner margin, intersected by the nervures; two irregular pale green bands within the cell, the outer one nearly crossing it; a single

circular tricoloured ocellus just below the angle of the central band; two sub-marginal bands along the outer margin, the outer one ferruginous; the inner one broader, white, varied with ochreous, intersected longitudinally by a wavy black line; four deep ochreous spots along the apical half of the front margin; base of front margin rufous.

Hind-wings dull chocolate-brown; several indistinct short greenish lines near the base; a reddish streak at the base of the costal nervure, and another on the abdominal fold; three small tricoloured ocelli placed obliquely from just below the base of the first submedian nervule to just above the anal angle; a very small green ocellus between the first and second sub-costal nervules, outer margin black, longitudinally intersected by two wavy lines of red, varied with yellow, and margined inwardly by a broad, pale ochreous, sub-marginal band, tapering to the anal angle; interior margin streaked with red and ochreous sub-marginal lines.

Habitat, Pará.

Closely allied to *Morpho Achilles*, Linn. (Amazons, &c.), but differs from it, above, in the broader central band; below, in having only one ocellus, the central one, on the front wings, but four as usual on the hind-wings; all the ocelli very small, about one-sixth the size of those in *M. Achilles*, the uppermost one on the hind-wing being little more than a dot.*

Zoological Department, British Museum.

AN ESSAY TOWARDS A KNOWLEDGE OF BRITISH *HOMOPTERA*.

BY THE REV. T. A. MARSHALL, M.A.

(*Continued from page* 59.)

Gen. MEGOPHTHALMUS, Curt.

Identical with *Paropia*, Germ., Silb. Rév. t. 1, p. 181 (1833). Curtis's genus first appeared in the Ent. Mag., vol. I., p. 174; and as the earlier portion of this vol. was published in 1832, the name *Megophthalmus* should stand. The *Paropiidæ* are represented in this country by a single minute insect, at once distinguished from all others by the remarkable transverse carinæ of the frons, resembling a recumbent letter X, in the angles of which are placed the ocelli.

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* This species may, of course, be only a good variety of *M. Achilles*, but it is much more distinct from it than many of the species of *Morpho*, for instance. How does *M. Helenor* differ from *M. Achillæna*? May not both these, and *M. Montezuma* also, be only varieties of *M Achilles*? The only point in which they seem to differ materially is in the width of the blue band, a variable character even in this genus, and one that would be scarcely taken into account in any other genus of South American Butterflies.—A. G. B.

1.—*Megophthalmus scanicus*, Fall.

Sordide ochraceus, punctulatus; fronte vel plus minus nigro-varia, vel concolore, carinis semper pallidis. Vertex et pronotum linea longitudinali communi nigra; inter hanc et oculos macula utrinque verticis nigra. Pronotum disco utrinque nigro lituratum; lituræ postice et intus bis triangulariter emarginatæ, interdum autem integræ. Scutellum nigrum, apicem versus albo binotatum. Femora nigro maculata, ♂.—♀ major, tota ochracea, sed iisdem cum ♂ signaturis sæpius colore saturatiore indicatis. Long. ♂ 1; ♀ 1¾ lin.

Cicada scanica, Fall., Handl. 1806, p. 113. *Ulopa scanica*, Fall., Hem. 2, p. 65. *M. bipunctatus*, Curt., Ent. Mag 1, p. 194. *Cælidia scutata*, Germ., Mag., 4, p. 79. *Paropia scutata*, Burm., Gen., 1 & fig. ♂. *Paropia pallidipennis*, Curt., Hardy, Tyneside Trans. 1, p. 430, ♀ cf.; Signoret, Bull. Soc. ent. France, 1854, p. 55.

The black markings of the ♂ are variable, predominating more or less over the whole surface of the head, pronotum, and scutellum. This insect is sufficiently common throughout the country, but will not be found any where without a somewhat rigorous search, as it conceals itself at the roots of thick tufts of grass, in crevices of the soil, and under stones. It has been noticed in Sweden, Germany, France, England, and Scotland. My specimens are from Leicestershire, where the species abounds. It seems less frequent in the London district, but is to be found at Esher. Mr. Curtis discovered his *bipunctatus* under stones in the Isle of Portland; and the ♀, or *pallidipennis*, Hardy, is from Berwickshire, and also the neighbourhood of Edinburgh.

Gen. TETTIGONIA, Geoffr.

An extensive exotic genus, of which we have one well-known representative, placed by Curtis in his genus *Amblycephalus*, which also includes *Euacanthus*, and was constructed without any reference to the foreign forms. In *Euacanthus* (with which alone in England *Tettigonia* can be confounded,) the frons is carinated in the middle, and the ocelli are placed nearer to the fore than the hinder margin of the vertex. In *Tettigonia* the frontal carinæ are wanting, and the ocelli are nearer to the hinder margin of the vertex than to the anterior.

1.—*Tettigonia viridis*, Lin.

Caput flavum, fronte transversim brunneo cancellata; vertex apice fusco, nigro bimaculatus. Pronotum viride, subcæruleum, antice fla-

vescens. Scutellum flavescens. Abdomen supra nigrum, subtus flavum. Hemelytra læte viridia, subcærulea, nervis saturatioribus, margine costali et membrana pellucidis. Alæ fuscæ, nervis fortibus nigerrimis. Pedes flavi, nigro lineati, ♀.

♂ differt abdomine subtus nigro, hemelytris nigro cæruleis, costa et membrana concoloribus. Paulo minor.

Long. ♂ $2\frac{3}{4}$-$3\frac{1}{2}$; alar. exp. $5\frac{1}{2}$: ♀ $3\frac{1}{2}$-$4\frac{1}{2}$; alar. exp. $6\frac{1}{2}$ lin.

Cicada viridis, Lin., S.N., 5, p. 466. *Tettig. viridis*, Cuvier, Règne Anim., pl. 99, fig. 6, ♀. Flor, R.L. 2, p. 145. Germ., Mag., 4, p. 72, and *Tettig. arundinis*, ibid, p. 71. *Amblycephalus viridis*, Curt., B.E., 572, text, No. 1.

Found on rushes and rank grasses in damp situations throughout the whole of Europe, and also in Siberia. The larva and pupa are exceedingly elegant while alive, but shrivel and lose their colours after death. The former is lemon-coloured, or very pale green, marked with longitudinal black stripes; and in its more advanced stages the two black spots of the vertex are also visible. The pupa has its rudimentary hemelytra marked with a large black stria.

Gen. EUACANTHUS, Germ.

* Hemelytra flavissima, longitudinaliter nigro bivittata ..... *E. interruptus*, Lin.

** Hemelytra fusco-testacea, pallida, cellulis p.p. infuscatis..... ..... *E. acuminatus*, Fab.

1.—*Euacanthus interruptus*, Lin.

Læte flavus, supra niger, subnitidus. Hemelytra abdomine longiora (♀), vel breviora (♀), vittis 2 atris elongato-triangularibus, quarum exterior paulo ante corii medium orta, in apicem sese latiorem effundit; interior a basi ad apicem usque clavi extenditur; clavi margo suturalis flava. Membrana nigricans. Pedes flavi; tarsi apice nigri. ♂ ♀.

Long. $2\frac{1}{2}$-$3\frac{1}{4}$; alar. exp. 5 lin.

Cicada interrupta, Lin., S.N. 5, p. 463. Panz., Fn., 32, 8 fig. Flor, R.L. 2, p. 149. *Amblycephalus interruptus*, Curt., B.E. 572, text, No. 2, &c.

This handsome insect is common on various plants, and well known in Kent for the injury it inflicts in the hop-gardens, by piercing with its rostrum the young and succulent shoots. It is called "Skip-Jack" and "Dolphin" by the farmers.

2.—*Euacanthus acuminatus*, Fab.

Præcedenti affinis; differt fronte planiore, medio carinata, ♂ ♀, (quæ in *E. interrupta* ♂ tantum carinam gerit); tum et coloribus distinctus. Sordide et pallide testaceus; vertex et pronotum nigro varia; hemelytrorum cellulæ hic illic infuscatæ, sutura costaque semper pallentibus. Pedes concolores; tarsi apice fusci. Long. $2\frac{1}{2}$-$3\frac{1}{4}$ lin.

Cicada acuminata, Fab, S.R., p. 76; *interstincta*, Fall., Hem. 2, p. 29. *Amblycephalus Germari*, Curt., B.E. 572, fig., and Ent. Mag. 1, p. 192. *Euac. acuminatus*, Flor, R.L. 2, p. 152.

Much less common than the preceding, with which it may be found associated, both in the Kentish hop-grounds and elsewhere. My specimens are from Darenth Wood. Curtis mentions Clifton and the London district. The figure in "British Entomology" is somewhat over-coloured, but still unmistakeable.

The rest of the genus *Amblycephalus*, as published in Curtis's work, consists of very far-fetched materials: No. 5, *maculipes*, and No. 6, *irroratus*, are doubtless *Acocephalus* (*Selenocephalus*) *agrestis*, Fall.; and No. 7, *nervosus*, is apparently *Iassus attenuatus*, Germ.

(To be continued.) 10

Epurœa diffusa; a species new to Britain.—I have for some time had in my collection an *Epurœa*, which I supposed to be new to science; but, on looking over Grenier's recent Catalogue of the *Coleoptera* of France, I find it has been there described by M. Ch. Brisout de Barneville, under the name of *E. diffusa*.

It is considerably like *E. 10-guttata*, but only half the size; the spots on the elytra being not nearly so well marked as in that species, and sometimes so confluent as to leave the elytra pale testaceous, with one or two ill defined darker patches of the normal ground colour. In the male, the basal joints of the tarsi are dilated; and the posterior femora, although stouter than the others, are simple, as are also the hinder tibiæ.*

I have only seen two specimens; one (♂) taken by myself at the oozing sap of a recently felled oak, the other (♀) obtained by me from Mr. Brewer.

"Normandy and Paris, in wounds of oak and elm." Bris., in Grenier's Cat. Col. Fr., Matériaux, &c., 46.—D. Sharp, Loudoun Road, St. John's Wood, *August*, 1865.

Note on Cryptocephalus bipustulatus.—I have recently taken a pair of this insect (all that I have known captured for several years) upon Chat-Moss, on

* Brisout states that the femora are simple with their *tarsi*, which is evidently a *lapsus calami* for *tibiæ*.—D.S.

Eriophorum (one of the *Cyperaceæ*), in a place where there is not a species of sallow to be found.

It is generally taken in the hot sunshine, flying from one tuft of *Eriophorum* to another, and is never accompanied by *C. lineola*, which, indeed, I have never taken upon Chat-Moss, nor do I know of its ever occurring there at all.—J. Chappell, 18, Sheffield Street, Hulme, Manchester, *August*, 1865.

[*** The above interesting note by my friend Mr. Chappell (who has most kindly ceded to me one of the pair mentioned therein) appears to me to prove with some certainty that the dark form *bipustulatus* is isolated from the type upon Chat-Moss; a circumstance not to be wondered at if there be truth in Darwin,—seeing that *Galeruca capreæ*, *Anchomenus ericeti* and others, *Gonioctena litura*, *Notiophilus aquaticus* and *palustris*, *Pterostichus cupreus* and *lepidus*, *Chrysomela lamina*, and other species, very frequently become black in colour when occurring on moss or marsh. On the Continent, from the time of Gyllenhal to Schaum's Cat., it has always been considered a variety of the protean *C. bipunctatus*, Linn.; and as that species feeds indiscriminately on such varied trees as hazel, beech, and sallow, an extension of its pabular range is not surprising.

The type form, *bipunctatus* (*dispar*, Payk.), has red elytra, with the entire margin, and a spot upon each, black: the next, *lineola*, Fab., &c., has the spot increased to a more or less broad longitudinal streak: this streak is so enlarged in a third var. as to make the bulk of the elytra black, leaving a narrow red rim, but with the margin itself still black: in a fourth, the elytra are black, with a somewhat crescent-shaped red spot at the apex, and another obsolete spot beneath the scutellum: in a fifth (*bipustulatus*, Fab.; *biguttatus*, Hbst.), the elytra are black, with a spot at the apex either round and yellowish-red, or angulated and red: and in a sixth they are entirely black.

According to Gyllenhal, the two first appear to be common, the remainder occurring sparingly. Both sexes are found of all the varieties, of which the three first have been seen indiscriminately *in copulâ*, though they have not been observed to mix with the three last (possibly on account of the latter being seldom seen at all, owing to their rarity); and the male *lineola* appears to be most frequently joined to the type form of the female.

Gyllenhal admits that the specific identity of the three last vars. with the three first is open to doubt, on account of their not having been found coupling; adding, however, that he has not been able to detect any distinctive mark beyond colour. I have often tried to hit upon some separating point of structure, but the increased powers of the microscope have failed in my hands to supplement the intuitive acuteness of the above author. I have never seen or heard of British examples of any but the vars. *lineola* and *bipustulatus*; certain Scotch specimens of the former of which (found on sallow) have the longitudinal stripe much broader than the ordinary southern hazel-frequenting examples, and *one* (taken at Camachgouran by Mr. Sharp in my presence) being so far advanced towards the latter var., that it could not have failed to suggest the idea of the two being specifically identical, even if such were not the generally received opinion. After seeing the vars. of *C. 10-punctatus*, the colour test for a species in this genus is valueless. —E. C. R.]

Capture of Trachodes hispidus.—Yesterday (in company with Mr. J. T. Harris, of Burton-on-Trent), I took this local species at its head-quarters, Buddon Wood, where I have found it in three different places. It appears in July, August, and September; but about the second week in August seems to be the grand time for it.

To shew that it requires careful hunting, I may mention that I have taken fifty whilst a friend with me only took one. It is found on the underside of semi-decayed branches of oak lying on the ground; the smaller branches, or even twigs, and those that have fallen during the spring or early summer, being the most productive. I have taken it in some instances upon rotten wood, but feel convinced that it is a loss of time to search for it there, as I found it upon almost every half-rotten twig I examined yesterday.

It affixes itself rather tightly to the bark, so as not to be easily shaken off, and its roughened surface and colour assimilate very closely to its lurking places. I intend to collect a bundle of the branches next month, and endeavour to rear the species, as I have little doubt but that it deposits its eggs on the fallen twigs. —Harry Holyoak, 42, Humberstone Gate, Leicester, *7th August*, 1865.

Note on Dyschirius extensus, Putzeys.—Mr. J. F. Dawson has sent to M. Putzeys a specimen of the *D. elongatulus* of the Geod. Brit. (kindly lent to me for that purpose by the Rev. Hamlet Clark, who took it at Deal), which has been returned to him as the *D. extensus* of that author, whose name stands through priority of date.

This synonymy (as mentioned in the Ent. Annual for 1863) was suspected long ago by Mr. Waterhouse, in spite of Dr. Schaum having brought over his supposed type of *D. extensus*, which did not quite accord with Putzeys' description, or with our insect; the fact being, I believe, that the specimen taken in company, and supposed to be identical, with Dr. Schaum's insect, and from which Putzeys described his species, was different from the individual retained by Dr. Schaum.—E. C. Rye, 284, King's Road, Chelsea.

Notes on Northern Coleoptera.—The following is a brief account, as regards beetles, of an entomological tour I made in the north of England in June and the early part of July last.

My work commenced in North Cheshire; where, however, I was able to devote only a limited amount of time to collecting insects. In this district the locality that yielded me best sport was on the banks of the river Bollin, a little below Ashley. Here I captured *Bembidium paludosum* commonly, as it ran about in deep hot sand amid the sunshine. Its rapid pace (the swiftest of any beetle that I know) was in singular contrast to the tardy movements of *Heterocerus marginatus*, found in its company, as well as in the stream. On the sand *Bledius subterraneus* was sprawling in great numbers, with frequent examples of *Amara fulva;* while, where the sand was washed by the river, *Tachyusa constricta* and *leucopa* occurred very commonly, and *Philonthus villosulus* sparingly. By sweeping adjacent herbage I obtained *Apion afer* and *Crepidodera rufipes*, and in the same neighbourhood, in ponds, *Hydroporus erythrocephalus*, var. *deplanatus*, and *vittula*, and *Helophorus arvernicus*.

Carrington moss yielded *Elater balteatus* in extreme abundance, beaten from young birch trees, with a sprinkling of *Corymbites quercûs* (black and testaceous vars.); and, at the roots of the heather, *Homalota sulcifrons*.

Among other species occurring to me in Cheshire were *Tachinus laticollis* (commonly) and *collaris*, *Telmatophilus caricis*, *Phyllobius maculicornis*, and *Donacia sagittariæ*.

About the middle of June I was joined by my friend, Mr. E. M. Geldart, and we then proceeded together to the Lake District. The long drought by this time began to tell on the insect world, whose representatives became rapidly scarcer. The following are among the species that I captured :—

Near Stock Ghyll Force I found a perfectly black var. of *Anchomenus lævis* under a stone; in the stream itself *Elmis æneus* (abundantly) and *subviolaceus*, and *Hydræna gracilis* in swarms; in moss, on its banks, *Geodromicus nigrita* and *Lesteva pubescens* and *punctata* commonly; under stones on its edge *Homalota currax* (commonly) and *tibialis*, *Quedius auricomus*, and *Dianöus*; and, by sweeping herbage in its vicinity, *Byrrhus fasciatus*, *Helodes marginatus*, and *Hydrocyphon deflexicollis*. Last year, in the same place, I captured *Homalota velox*.

In Stye Head and adjacent tarns *Agabus congener* (bright red vars.), *Gyrinus minutus* and *Orechtochilus* occurred; and near at hand *Carabus glabratus*, *Bolitochara lucida*, *Homalota occulta* and *triangulum*, *Schistoglossa viduata*, and *Aphodius lapponum*.

The most productive mountain of the district, in my experience, is Coniston Old Man. Near its summit I took about a dozen specimens of *Anthophagus alpinus* (at least half of them males varying much in the development of the frontal sexual characters), and several examples of *Patrobus septentrionis*, *Geodromicus globulicollis*, *Arpedium brachypterum*, *Phlœobium clypeatum*, and *Micropeplus porcatus*. *A. alpinus* appears to be *very* local. All my specimens were captured on a space of a few square yards' size, and I looked in vain for its occurrence elsewhere on the same, or any other, mountain. I obtained the species by shaking moss, &c., over paper, and, as three hours' hard work only produced about a dozen examples, I conclude it is not common even in its own peculiar *sanctum*.

On Helvellyn I captured *Bembidium tibiale*, *Agabus guttatus*, and *Corymbites pectinicornis*, *tesselatus*, *quercûs* (light and dark vars.), and *cupreus* (of which the only two specimens, curiously enough, were females of the semi-testaceous var.); in Langdale, in running water, *Hydroporus Davisii*, and, by breaking fungi on trees, *Epurœa deleta*; near Clappergate, in meadows, *Trechus obtusus*, *Cryptocephalus Morœi* and *labiatus*, and *Prasocuris aucta*; near Ambleside, in ponds formed by the Rothay, *Hydroporus* 12-*pustulatus* (abundantly); and near Grassmere, in wet places, *Geodromicus nigrita* and *Lesteva pubescens*, and, by sweeping the herbage, *Diacanthus holosericeus* and *Malthodes marginatus*.

On the whole, I know of no locality where the Southern Coleopterist can spend a pleasanter time than in the Lake District, if the weather be fine.—T. Blackburn, *August*, 1865.

Scotch Coleoptera.—I can record a new locality for *Autalia puncticollis*, Sharp, viz., the hills round Gareloch, on the Clyde. Although *A. rivularis* is common on

the low ground, I have never taken it in company with *puncticollis*. I have also taken, at the same locality, *Atomaria Hislopi*, *Hydroporus* 9-*lineatus*, and (at the summit of the hills) *Tachinus proximus* and *Stenus geniculatus*.—W. Henderson, 34, Hill Street, Glasgow, *July*, 1865.

Capture of Bledius subterraneus, Erichs.—On the 9th of this month I had a hunt on the banks of the "Devil's-Water," a small stream which falls into the Tyne, a little below Hexham, and there found this species in some plenty.

It burrows in the damp sand, not far from the water's edge, much in the manner of other species of the same genus, and its lurking places are betrayed by the thrown-up sand becoming dry. In some places, it was in such abundance that hundreds might have been captured in a short time.—Thos. Jno. Bold, Long Benton, Newcastle-on-Tyne, *June 20th*, 1865.

Coleoptera in Japan.—Some of the *Coleoptera* about now are interesting. The Niphon *Cossus* is hard at work, fattening after winter-fast. Its sappy diggings produce the eastern types of *Homalota cinnamomea* and *Cryptarcha imperialis* in great abundance. A large *Ips* also is now and again drawn forth from his rancid habitat. Another fine thing is a *Soronia*, closely allied to, but larger and broader than, *punctatissima*. A little *Carpophilus* is amusing, so active is he on the wing. *Geodephaga* are scarce. Two species of *Cicindela* abound. *Brachelytra* are wonderfully on the "*qui vive*," but are generally species of ordinary English genera, *Philonthus*, *Quedius*, *Stenus*, *Xantholinus*, &c. A *Necrodes* occurs in dead kites, but is a very small fellow, as compared with the *littoralis* of the Thames. Fungus-feeders, as usual, keep too close, but may be obtained by brushing towards evening. *Mycetophagus* (*multipunctatus*-like) is a pest; and from puff-balls I have taken *Lycoperdina*. Many elegant and extraordinary forms of *Pselaphidæ* and *Scydmænidæ* are found in moist places. *Curculionidæ* are rare, and mostly large species. *Baridius* is a favoured genus, but *Bagöus* seems left behind in the swamps of China. *Longicornes* are pretty plentiful: from the middle of April to the present time I have 33 species, but only having a knowledge of English genera, I am unable to mention their names. *Platysoma* is abundant under the damp rotten bark of firs; and in the dryer portions, with *Nitidula*, *Pediacus*, and *Silvanus*, four or five *Læmophlæi* occur. Of *Necrophorus* there are two black species, separated, as at home, by black or red club to the antennæ. *Hispa* is abundantly represented here, in three species. With a black tree-ant, allied to *Formica fuliginosa*, a dark-coloured *Myrmedonia* may be taken; but ants'-nest beetles on the whole seem rare.—Geo. Lewis, Nagasaki, 22*nd May*, 1865.

Occurrence of the larva of Eupithecia plumbeolata.—On the 15th of this month I had the pleasure of taking the larva of *Eup. plumbeolata* feeding on the stamens of *Melampyrum pratense*.

I think there can be no mistake about it, as, some weeks before this date, I took the moths sparingly, and having got a few eggs from them, reared one larva, which was just like those that I have taken since.—Geo. Baker, 47, Kedleston Street, Derby, *July 24th*.

Notes on the larva and food-plant of Eupithecia plumbeolata, Haw.—During the course of last summer, I had the pleasure of examining a very beautiful and carefully executed collection of drawings of various species of *Geometræ*, their larvæ and food-plants. These drawings were the work of a very painstaking Continental Entomologist, M. Carl Plotz. This gentleman figured the larva of *Eup. plumbeolata*, Haw., feeding upon the flowers of the purple cow-wheat, *Melampyrum arvense*, L. This plant is not very common in Great Britain; another species, however, *M. pratense*, L., is much more frequent. Finding that this latter plant almost invariably grew in some plenty in those localities where *Eup. plumbeolata* was most freely taken, it occurred to myself and several other entomological friends that the larva might very probably be found to feed upon its flowers. I am happy to say that our suspicions have proved correct. Towards the end of June, I received a few eggs of *Eup. plumbeolata* from Mr. Hodgkinson, of Preston; Mr. Barrett, of Haslemere; and Mr. George Baker, of Derby. The parent moths were all taken flying over or among *Melampyrum pratense*, and the eggs were mostly deposited upon sprigs of this plant. They hatched in about a week, and from the batch sent me by Mr. Baker I was fortunate enough to rear seven larvæ to full growth. Mr. Hellins, of Exeter, kindly supplied me with fresh flowers of *Melampyrum pratense* (which does not grow here) every three days. Mr. Buckler, of Emsworth, has, with his usual skill, taken some very accurate and life-like coloured drawings; and both he, Mr. Hellins, and Mr. Baker, have been fortunate enough to take the larvæ themselves on the flowers of the *Melampyrum* in their respective neighbourhoods. I cannot sufficiently thank these gentlemen, and Messrs. Barrett and Hodgkinson, for the kindness they have shown, and the trouble they have taken, in helping me to work out the economy of this interesting little insect.

I subjoin a description of the larva and pupa.

Somewhat short and stumpy; in shape resembling the larva of *Eup. isogrammata*, Tr. Ground colour pale dull yellowish-green. Central dorsal line broad, uninterrupted, dull purplish-red, enlarged at the centre of each segment into a somewhat pear-shaped blotch. Sub-dorsal lines narrow, sinuous, dull purplish-red. Spiracular line yellowish, very faint. Spiracles blackish. Head yellowish, suffused with purplish-red. Central dorsal and sub-dorsal lines sometimes merged, leaving the back and sides suffused with purplish-red. Dorsal and lateral segments thinly sprinkled with slender yellowish hairs. Belly naked, pale, dull, greenish-yellow. Central ventral line wanting. Sub-ventral lines narrow, purplish-red. Feeds on the flowers of *Melampyrum pratense*, L.; when quite small on the stamens alone, but afterwards on the whole corolla-tube. Full fed from the middle of July to the middle of August. Reared from eggs sent me by Mr. George Baker, 47, Kedleston-street, Derby, who took the parent moths on Breadsall Moor, near Derby.

Pupa either enclosed in a slight cocoon on the surface of the ground, or in a dry corolla-tube of the *Melampyrum*. Ground colour golden-yellow, abdominal divisions and tip red.—H. Harpur Crewe, The Rectory, Drayton-Beauchamp, Tring, *August 4th*, 1865.

Food, time of appearance, &c., of Ypsipetes elutata, &c.—In Buckland Wood, and on the other wooded parts of Dartmoor, in Devonshire, I have long known that

this insect appeared at least a month before it was to be met with in its more lowland haunts, in the lanes near Teignmouth; and this year, whilst entomologizing on the Lickey Hills, I think I have found the reason of this apparent anomaly. The full-fed larvæ were there abundant, on *Vaccinium myrtillus*, on the 22nd of May, when the larvæ on nut and sallow, in the lanes around Birmingham, were only half-grown. The first specimen of the perfect insect appeared from these bilberry-fed larvæ on the 20th of June, and on the 26th of June they were coming out abundantly, six specimens emerging on that day. In the Dartmoor Woods, the moth swarms in the early part of June. I can detect no difference, either in the larval or perfect states, from the nut or sallow-fed specimens. Curiously enough, the bilberry-fed larvæ of *L. quercus* on the Lickey stay longer in this condition; and are, in fact, the var. *callunæ*, if variety it is to be called. I am trying the experiment of feeding a large brood of these on oak.—R. C. R. Jordan, M.D., Edgbaston, Birmingham.

Notes on Phorodesma bajularia.—*Eggs* laid by captured female in pill-box, June 23rd, 1864; large in proportion to the size of the insect, oval, brownish, finely reticulated: hatched July 11th.

Food—oak.

Larva at first brownish, mottled, hairy; four bunches of green and white atoms along each sub-dorsal line, and a bunch on anal segment, the gnawings of oak. Until I had ascertained, by watching a young larva emerge from the egg, that it came out naked, I could scarcely believe that these ornaments were not part of itself, as every individual was so adorned, though apparently only just hatched. The one of whose birth I was an eye-witness was immediately removed to a separate box, and supplied with the petal of a rose, from which, in a few minutes, it made up nine rosy "favours," and fastened them one by one, with perfect regularity, upon its back. I then restored the rosy-favoured to its green-and-white-favoured companions, and it very soon joined them in gnawing away at the oak leaves, for nourishment now, having *first* satisfied the (shall I not say?) natural craving for dress. They fed on slowly till the cold weather began, when they fixed themselves to the underside of the oak twigs, in a doubled-up posture, and looked like little round tufts of vegetable debris. I kept them through the winter in an arbour open to the air, and did not lose one. In April, I put into their flower-pot some fresh twigs of oak, and split some of the buds. April 18th they began to bore round holes in the buds that had *not* been split, and to clean out the inside, seeming quite to despise my rough endeavours to help them. When they were nearly full-fed, I made the following description of one of them, having stripped off the tufts on one side for the purpose:—Body flattened, attenuated towards head, which is of the same colour as the body, reddish-brown. Dorsal line and wavy sub-dorsal line fuscous, a row of dark fuscous spots underneath the spiracles. On each segment from five to nine (both inclusive), is a pair of dark brown papillæ, one outside each subdorsal line, with a dark spot on the apex, furnished with a single hooked bristle (easily seen through a good glass), and also a pair on the twelfth segment, to which the gnawings are attached with silk. Being very curious to know how this was done, I put the half-undressed individual

just described into a box covered with glass, together with an oak bud, just bursting into leaf. After surveying his new abode, previous to eating, he firmly fixed himself by his claspers (anal pro-legs) to the bottom of the bud, took hold of one of the brown scales encasing the bud by the top with his jaws, and drew it with some force towards him, with the intention of pulling it off, if loose (as some which he afterwards tried were); but as it was still firmly fixed at its base, after two or three strong pulls, he began to gnaw it off at the base; having effected which, he took it between his legs, turned it invariably with the convex side towards him, which he overlaid with silk, and then, taking it in his jaws, turned back his head, and fixed it by the convex side to one of the naked papillæ, not contented with hooking it on, but winding silk about it at the point of connection. After putting on two or three pieces, he refreshed himself by eating for a few minutes. The new piece was not always put on a vacant papilla, but sometimes fastened with silk to another piece on a papilla already covered. The larva, at this stage of its existence, used almost exclusively the brown scales of the buds, probably as being so easily detatched, but did not seem to care whether they were long or short, rounded or pointed; consequently, the "*tout ensemble*" had certainly a ragged and untidy appearance, compared with the neatly-cut and symmetrically arranged habiliments of earlier life. The time, too, taken by the full-grown larva over dressing was much greater than that required by the active infant. Although it had only one side to dress, it took some hours about it. I began my experiment about 6 p.m., and the dressing was not over at 10; but next morning I found all the papillæ covered.

Every time the larva changed its skin, the dress of course was changed with it; and when, on May 25th, it changed to pupa (of the same colour as the larva), it was enclosed in a very loose network, formed of the bits that covered it as a larva, fastened together with silk, and attached to the underside of a twig.

The first imago came out on June 20th.—Rev. E. Horton, Powick, near Worcester, *July*, 1865.

Sterrha sacraria near Worthing.—This afternoon, Master W. J. Wilson, one of my nephews, when walking with me in a lane at West Tarring, near this place, captured a rather damaged female of *S. sacraria*, which is now engaged in depositing eggs.—R. McLachlan, Worthing, *August 19th*, 1865.

Capture of Sterrha sacraria near Brighton.—On July 18th my brother Alfred captured a specimen of this rarity in the salt marsh at Hove.—W. F. Kirby, *July 29th.*

A remarkably small example of Lycæna Icarus [*Alexis*].—At the above-mentioned locality I have taken a specimen of *L. Icarus* ♂ smaller than *L. Alsus*. I thought at first it was *L. Sebrus*, but I found that it did not apparently differ from *Icarus*, except in size.—*Id.*

[The alar expanse of this pigmy (which has been submitted to us) is $8\frac{1}{2}'''$. The smallest example of the species in Mr. Bond's cabinet measures $9\frac{1}{2}'''$, and his largest rather more than double that of Mr. Kirby's insect, namely, an inch and a-half.—Eds.]

Capture of Acronycta strigosa, &c., in Wicken Fen.—On the 8th of June last I went to Wicken Fen and stayed there two nights, capturing at sugar (among other insects) *Ac. strigosa* (3), *Ap. advena* (2), *Had. atriplicis* (abundantly), *H. suasa* (6), *H. genistæ* (8), &c.—Rev. Charles Grinstead.

Eupithecia campanulata bred.—I have this season bred *Eup. campanulata*, H.S., somewhat freely from the larvæ, which I found last autumn on *Campanula trachelium*, and described in the Ent. Mo. Mag., Vol. I., p. 142.—Rev. H. Harpur Crewe.

Occurrence of Eupithecia campanulata in Worcestershire.—Mr. Crewe's prophecy in the last "Annual," that, "wherever its food-plant grows, this insect will be found to be common," has been fulfilled as to Worcestershire.

I looked for it the other day, for the first time, in a wood not far from my house; and in almost every dry corolla-tube of *Campanula trachelium* that I gathered I found one or more larvæ. I soon found it unnecessary to disturb the capsules to look for them, as the empty egg-shells still adhering to the inner edges of the calyx became a sufficient guide to their whereabouts.

On some calyces of flowers, still in bloom, I found the ova unhatched. *Campanula trachelium* is very common here in the woods and lanes.—Rev. E. Horton, Powick, near Worcester, *August 8th.*

Variation of the larva of Cidaria immanata.—On June 18th, I took a long, elegant-looking, grass-green larva, without any perceptible lines or markings, on a blade of grass, among various plants, including bilberry, heath, fern, and perhaps wild strawberry.

It seemed to eat bilberry as long as I had any to give it, and afterwards took decidedly to birch, on which it fed up to August 3rd.

It came out a fine full-sized *C. immanata.*—*Id.*

Occurrence of Eupithecia subciliata in the south; with notes on its probable food.—On the 27th of July last, accompanied by my friend Mr. McLachlan, I started for Saltwood, near Hythe, where three years previously we had met with a few (6 or 7) examples of this local pug amongst old maple trees, the trunks and branches of which were coated over with lichen. At that time we felt uncertain whether it was the maple itself or its parasitic lichen which afforded food to *E. subciliata*, though we felt pretty sure that it was one of the two.

On alighting at Westenhanger, a spot in the opposite direction to that from which we had approached Saltwood on our previous visit, a 'short cut' was pointed out by one of the aborigines; but, as might have been expected, it took us to anywhere but where we wanted to go, and resulted in our finding ourselves, after a lengthened peregrination of Sandland Park, "somewheres about Pedlinge." From hence another short cut brought us to a 'bottom,' in which the sensitively organized auditory nerve of my companion speedily detected the rustling murmur of a running brook, for which he, bent on *Trichoptera*, quickly went a-head. Here soon meeting with the primary object of our journey—the *Eupithecia*—now, as before, amongst maple, that tree naturally became the subject of our delicate attentions, and, during the short time we spent there, yielded us about 30 speci-

mens, of which six were females. These latter were, of course, permitted to die a natural death; my three, though well supplied with maple, in a well ventilated cage, unfortunately doing so without laying. Mr. McLachlan, however, was more successful, and obtained about half-a-dozen eggs, which he duly forwarded to the Rev. H. Harpur Crewe; and I trust that fortune may enable that gentleman to tell us all about it on a future occasion.

Respecting the food of *E. subciliata*, both my friend and I are convinced that it is maple (either flowers, seeds, or leaves), and not lichen, for the following reasons:—*Positive.* It is invariably found amongst maple, occasionally where lichen is not present. *Negative.* If lichen were the food, the insect would have been found amongst other trees and shrubs, which are, in this locality, equally clothed with, apparently, the same species of the parasite; but this has not been the case.

On the 2nd of August I made a solitary pilgrimage to the locality, and secured six more specimens, all of which were, unluckily, males; and, on the 4th, a similar visit produced *nil*.—H. G. Knaggs, *8th August*, 1865.

Description of the larva of Leucania putrescens.—On October 7th, 1864, I received three larvæ from Mr. Johns, of Babbicombe; who on subsequent days continued, as weather permitted, to search for more in the neighbourhood of Torquay, and succeeded in securing another; unfortunately, from casualties by ichneumons, &c., only one healthy larva went to earth (12th of October), retiring half-an-inch under the surface, close to the roots of a tuft of a common grass (*Poa annua*), on which it had previously fed, and spinning a cocoon with particles of mould.

To-day, the 3rd of August, 1865, the moth of the above-named species has come forth, a well marked specimen.

The larva was of a pale greyish ochreous tint generally, striped longitudinally after the manner of its congeners. The head mottled with dusky-grey and ochreous, with a black streak bordering the front of each lobe, followed by a white streak on each side of the central portion. Dorsal line whitish, conspicuous only on the second, third, and fourth segments, afterwards nearly obliterated by the dusky edging enclosing it; and on either side a dorsal broad stripe of mottled greyish-ochreous, followed by a pale ochreous stripe, and a greyish-ochreous darker stripe. The sub-dorsal line whitish, very finely edged above and below with dusky greyish-brown, followed by a broad stripe of mottled ochreous, then a lateral whitish line, finely edged with dark greyish-brown; below this a broad greyish-brown stripe, the spiracles being situated along its lower edge, the belly and legs pale ochreous. The ordinary spots and spiracles black. The shining plate on the second segment dusky between the lines.—Wm. Buckler, Emsworth.

Coleophora inflatæ.—Four or five weeks ago, I brought home from Croydon a few seed-capsules of *Silene inflata*, as food for some larvæ I had been taking, and when I reached home, was agreeably surprised at finding a case of *C. inflatæ* attached to one of the capsules.

I think, if I had observed it whilst on the collecting-ground, I might have taken more, as the plant was very abundant.—J. L. Courtice, 22, College Street West, London, N.W., *August 10th*.

Offer of the larva of Gastropacha quercifolia.—Having many more of these larvæ than I require, I shall be happy to supply, as far as my stock lasts, any entomologists who may be in want of them, on receipt of a box and return postage.—*Id.*

Cynips lignicola in Lancashire.—I have this season bred *Cynips lignicola*, and its parasite, *Callimome devoniensis*, from galls found at Rivington, in Lancashire.—B. Cooke, 49, Ardwick Place, Manchester, 31*st July*, 1865.

Phacopteryx brevipennis.—I captured a female of this Trichopterous insect, near Bowdon, on the 18th of June last.—*Id.*

[This is the fourth British specimen: one was in Curtis's collection (now in Melbourne), and two are in my own cabinet.—R. McLachlan.]

Galls produced by various species of Cynips, &c.—Having for many years been an observer of the curious excrescences found on trees and plants, known as galls, I have been much interested in the notice of several kinds in the pages of the "Entomologist's Monthly Magazine." I have collected most of the British, and some American galls, during a visit to that country a few years ago, and am now preparing for publication a volume containing illustrations, with some attempt at a classification of them. Being desirous of making the work as complete as possible, I shall include a coloured drawing and description of every known gall, as far as my own observation extends, as well as of those described by others.

I would suggest that your readers should furnish, through your pages, any information as to galls not hitherto known or described, either found in our own country or elsewhere; or if not thought of sufficient interest or importance to occupy your space, I should be glad of any communication direct. I may say that I much want a specimen to draw from of the leafy gall found on *Genista tinctoria*, which I have seen described, but never met with; also the cottony gall of the oak.—Wilson Armistead, Virginia House, Leeds, *June*, 1865.

Entomological Society of London, *August 7th*, 1865.—F. P. Pascoe, Esq., F.L.S., President, in the Chair.

The Rev. Sir C. R. Lighton, Bart., of Ellastone, near Ashborne; the Rev. Joseph Greene, of Cubley Rectory, Uttoxeter; H. Blake-Knox, Esq., of Daltry, County Armagh; H. S. Gorham, Esq., of 18, Brighton Road, Clifton; and T. Parry, Esq., of Merthyr-Tydvil, were elected Members; and Mr. Wm. Rogers, of Lower Tooting, was elected a Subscriber to the Society.

Mr. McLachlan exhibited seven specimens of *Myrmeleon formicarius* (one alive), which he had recently bred from larvæ found at Fontainebleau in August, 1864, and also the larva and pupa in alcohol, and the cocoons.

Mr. Wilson Saunders exhibited a living specimen of a large exotic grasshopper, which Mr. Bates thought pertained to the genus *Steirodon*. Mr. Saunders had received several examples in an immature condition from Mr. Marshall, who had found them in a case of Orchids. They escaped in one of Mr. Saunders' hothouses, and the one captured had committed great depredations on a plant of *Cyanophyllum*. They fed only during the night, and in the day-time rested motionless on the leaves, with the wing-cases in a horizontal position, the hind-legs entirely out of sight, and the fore-legs extended in front of the head, parallel to the long porrected antennæ. They appeared to be very cleanly creatures, and the one exhibited was constantly engaged in cleaning its legs and antennæ by drawing them along its mouth.

Mr. Bates remarked that he had found numerous species of this family in South America, but in no instance had he met with one of nocturnal habits.

Mr. McLachlan, Mr. Weir, and others, alluded to the small species found in this country, commonly at night, on the sugared trees of lepidopterists.*

The President stated that, with reference to the sound produced by insects of the genus *Bolbocerus*, alluded to at the meeting on the 3rd April last, he had communicated with Mr. Odewahn, at Gawler, and he had received a letter from him, explaining that it was caused by the rotation of the posterior coxæ in the cotyloid cavities. This, he had no doubt, was the true explanation of the cause of the sound.

Mr. Edward Saunders exhibited a specimen of a rare British beetle, *Trachys pygmæus*; this he had captured in a marshy place near Lowestoft.

Professor Westwood distributed some circulars from Mr. Armistead, of Leeds, asking for specimens of, and information about, galls and gall-insects.

Mr. Sharp exhibited specimens of the new British *Cryptocephalus* (*C. decempunctatus*) recently taken by him at Rannoch. Amongst them were specimens of the black variety which Linnè had described as a distinct species under the name of *Bothnicus*. He also exhibited the larva of *Dictyopterus Aurora*, from the same locality.

Mr. Stevens exhibited a portion of a collection of insects, sent over from Santa Martha by Mr. Bouchard; and the Secretary read Mr. Bouchard's letter, detailing his experience of collecting in that locality.

The Secretary read a letter, from Mr. S. Stone to Mr. F. Smith, dated in April last, and remarking on the extraordinary abundance of female wasps at that time. Mr. Stainton, Mr. Saunders, &c., also spoke on the same subject, and alluded to the fact that, notwithstanding the great numbers of females seen in the spring, there were no wasps about at the present time; a fact which Professor Westwood thought might be owing to several very heavy showers of rain, which had probably drowned them. Mr. Saunders stated that at Reigate the rain-fall had been very small this season, and on no occasion had there been more than one inch in twenty-four hours.

Lieut. Beavan sent from Calcutta beautiful drawings of the transformations of the Tussch silkworm.

The Secretary read an extract from the Journal of the Society of Arts, recording the fact that *Bombyx Atlas* had been recently reared in France. Mr. Moore stated that he had last year bred this insect in London.

Mr. Dunning exhibited a singular example of *Fidonia piniaria*, captured by him on the 11th of June, 1850, in Yorkshire. This specimen, from the form of the abdomen and antennæ, was evidently a female, but the markings nearly approximated to those of the male.

Mr. Dunning made some remarks on the use of the terms "Hermaphrodite," "Pseudogynous," "Hemigynous," &c., as applied to insects, and a discussion ensued, in which Professor Westwood, Mr. Weir, and others, took part.

Mr. C. A. Wilson sent some notes on the *Buprestidæ* of South Australia.

Mr. Baly read "Descriptions of new genera and species of *Phytophaga*," describing two new genera and eighteen new species.

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* Mr. Bond informs us that he has very frequently found *Acrida viridissima* at sugar.—Eds.

DESCRIPTIONS OF NEW GENERA AND SPECIES OF *GALLERUCIDÆ*.

BY J. S. BALY, F.L.S.

LIST OF SPECIES.

Gen.—*Cneorane fulvicollis* ....India.
Doryida Mouhoti .....Siam.
Berecyntha tibialis .....Siam.
Clitena igneipennis..... .....India.
Bonesia Clarkii .....Sierra Leone.
Æthonea Murrayi .....Old Calabar.
Sarda tetraspilota .....New Hebrides.

Genus CNEORANE.

Corpus elongatum, convexum. *Caput* exsertum, perpendiculare; *antennis* filiformibus, articulo primo curvato, a basi ad apicem incrassato, secundo brevi, tertio primo longitudine fere æquali, cæteris tertio singulatim fere æqualibus; *palpis* maxillaribus apice ovatis; *oculis* integris prominulis. *Thorax* dorso non impressus, lateribus rotundatis. *Elytra* infra basin vix transversim impressa, confuse punctata. *Pedes* simplices; *coxis* anticis erectis, contiguis; *femoribus* posticis non incrassatis; *tibiis* omnibus apice spinâ acutâ armatis; *tarsorum* posticorum articulo basali duobus sequentibus fere æquali; *unguiculis* appendiculatis. *Prosternum* medio obsoletum.

Type, *Cneorane fulvicollis*, n.s.

Cneorane may be at once distinguished from any of the following genera by having all the tibiæ armed at the apex with an acute spine.

Cneorane fulvicollis.

Elongata, convexa, postice paullo ampliata, picea, capite thoraceque testaceo-fulvis, pedibus obscurioribus, tibiarum apice, tarsis antennisque piceis, his basi pallidis, articulis duobus ultimis fulvis; elytris crebre punctatis, obsolete elevato-vittatis, metallico-viridi-cæruleis. Long. $4\frac{1}{2}$ lin.

Hab.: India.

Genus DORYIDA.

Corpus oblongum, convexum. *Corput* exsertum, sub-perpendiculare; *antennis* gracilibus, corporis dimidio vix longioribus, articulo primo curvato, ad apicem vix incrassato, secundo brevi, tertio secundo duplo-quarto adhuc longiori; *oculis* sub-prominulis integris. *Thorax* transversus, disco non impressus, lateribus anguste marginatis, rotundatis.

Elytra thorace multo latiora, valde convexa, parallela, infra basin vix transversim impressa, confuse punctata. *Pedes* mediocres, simplices; *coxis* anticis non contiguis, prosterno vix altioribus; *femoribus* posticis vix incrassatis; *tibiis* posticis quatuor singulatim apice spinâ acutâ armatis; *tarsorum* posticorum articulo basali duobus sequentibus longitudine æquali; *unguiculis* appendiculatis. *Prosternum* elongatum. *Metasternum* antrorsum inter coxas intermedias in processum compressum obtusum productum.

Type, *Doryida Mouhoti*, n s.

Doryida Mouhoti.

Oblonga, convexa, castanea, nitida; antennis gracilibus, obscure fulvis; elytris sub-crebre punctatis; thorace maculâ discoidali, scutello, elytrisque singulatim maculis quinque, duabus infra basin, duabus prope medium, unâque inter medium et apicem transversâ, nigris. Long. $4\frac{1}{2}$ lin.

Hab.: Laos, Siam.

Genus Berecyntha.

Corpus oblongum, convexum. *Caput* exsertum; *facie* sub-trigonâ; *antennis* robustis, corpore brevioribus, articulo primo curvato, a basi ad apicem paullo ampliato, secundo et tertio brevissimis, æqualibus, cæteris crassioribus, plus minusve compressis, interdum sub-serratis, articulo quarto paullo longiori; *oculis* prominulis integris; *palpis* maxillaribus apice ovatis. *Thorax* transversus, lateribus leviter sinuatis, disco utrinque transversim impresso. *Elytra* thorace latiora, confuse biseriatim punctata. *Pedes* modice robusti, simplices; *coxis* anticis erectis, contiguis; *femoribus* posticis non incrassatis; *tibiis* posticis quatuor singulatim apice spinâ acutâ armatis; *tarsorum* posticorum articulo basali duobus sequentibus vix longiori; *unguiculis* appendiculatis. *Prosternum* fere obsoletum.

Type, *Berecyntha tibialis*, n.s.

Berecyntha tibialis.

Anguste oblonga, convexa, pallide flava, nitida; tibiis, tarsis antennisque (his basi exceptis) nigris; elytris fortiter sed confuse biseriatim punctatis. Long. $4\frac{1}{2}$ lin.

Hab.: Cambodia.

Front impressed with a deep longitudinal groove; eyes and apex of jaws black; three lower joints of antennæ concolorous with the body, the third stained on its basal half with piceous; the remaining joints, from the

fourth to the eleventh inclusive, slightly compressed, of equal width. Thorax twice as broad as long, sides narrowly margined, nearly straight and parallel behind their middle, obliquely converging in front, anterior angles thickened, slightly inflexed; surface smooth, the impressed groove on either side deeply punctured near its inner end.

Genus Mesodonta.

Corpus elongatum, fere parallelum, supra pube brevi adpressâ vestitum. *Caput* modice exsertum, perpendiculare; *antennis* corpore brevioribus, robustis, articulo primo curvato, a basi ad apicem incrassato, secundo brevi, tertio primo longitudine æquali, subcylindrico, ad apicem incrassato, cæteris compressis, modice dilatatis, quatuor ultimis latitudine paullo decrescentibus; *oculis* prominulis, integris; *palpis* maxillaribus ovatis, apice acuminatis. *Thorax* transversus, lateribus obtuse angulatis, postice parallelis, antice convergentibus; disco irregulariter excavato. *Elytra* thorace latiora, parallela, convexa, infra basin non transversim depressa, confuse punctata. *Pedes* robusti, subelongati, simplices; *coxis* anticis erectis, contiguis; *femoribus* posticis non incrassatis; *tibiis* intermediis apice spinâ acutâ armatis; *unguiculis* bifidis. *Prosternum* fere obsoletum.

Type, *Mesodonta* (*Clitena*, olim) *limbata*, Baly.

On examination, I have been compelled to separate this species from *Clitena*, and to place it in a separate genus, owing to the singular character presented by the intermediate tibiæ, the apices of which are armed by an acute spine, the anterior and hinder pairs being unarmed; this (as far as I have at present examined) is peculiar to the genus of *Gallerucidæ* before us. In all other known cases where a single pair of tibiæ are furnished with spines, they are attached to the hinder pair alone; in *Clitena* (of which *Clitena melancholica* must be considered the type) all the tibiæ are unarmed, the elytra are more or less dilated, and have a transverse depression below the basilar space. In my diagnosis of *Clitena*, I find that I have erroneously written "Caput thorace insertum;" it ought to read "exsertum."

Genus Clitena, Baly, Trans. Ent. Soc., 1864, p. 229.

Clitena igneipennis.

Purpurea, pedibus, capite thoraceque cæruleo-viridibus, antennis (basi excepta), obscure cæruleo-nigris, elytris crebre punctatis, pube sub-depressa brevissima obsitis, viridi-aureis, limbo vittaque suturali, hâc infra basin dilatatâ, viridi-cæruleis. Long. 5½ lin.

Hab.: North-Western India.

Head coarsely punctured. Thorax coarsely punctured, disc impressed with about seven large but somewhat shallow foveæ, which occupy nearly the whole surface; sides sinuate behind the middle, diverging from their base to beyond the middle, then converging to the apex; posterior angles obsolete. Elytra dilated posteriorly, convex, transversely excavated below the basilar space; surface closely covered with large deep punctures.

Genus Bonesia.

Corpus anguste oblongum, convexum. *Caput* exsertum, breve, perpendiculare; *antennis* robustis, ad apicem distincte incrassatis, corporis tertio vix longioribus, articulo primo curvato, a basi ad apicem incrassato, secundo tertioque brevibus, hoc illo fere duplo longiori; *palpis* maxillaribus apice globosis; *oculis* sub-prominulis, integris. *Thorax* brevis, transversus, lateribus medio angulatis, disco lævi, non impresso. *Elytra* oblonga, thorace latiora, sub-parallela, convexa, confuse punctata. *Pedes* modice robusti, simplices; *coxis* anticis erectis, contiguis; *femoribus* posticis non incrassatis; *tibiis* quatuor posticis apice spinâ acutâ armatis; *palporum* posticorum articulo basali duobus sequentibus paullo longiori; *unguiculis* appendiculatis. *Prosternum* fere obsoletum.

Type *Bonesia Clarkii*, n.s.

Bonesia Clarkii.

Anguste oblonga, pallide castanea, nitida; antennis extrorsum nigris; pleuris, abdominis maculis, femoribus posticis, tarsisque piceis. Long. $5\frac{2}{3}$ lin.

Hab.: Sierra Leone.

Genus Æthonea.

Corpus oblongum, convexum. *Caput* exsertum, perpendiculare; *antennis* corporis dimidio longioribus, sub-robustis, ad apicem paullo attenuatis, medio sub-serratis; articulo primo curvato, a basi ad apicem incrassato, secundo tertioque brevissimis, æqualibus, cæteris leviter compressis, singulis ad apicem in processum acutum antrorsum productis, articulo tertio elongato, paullo crassiori; *palpis* maxillaribus apice globosis; *oculis* prominulis, integris. *Thorax* brevis, transversus, lateribus rotundato-angustatis, disco lævi. *Elytra* oblonga, sub-parallela, convexa, confuse punctata. *Pedes* simplices; *coxis* anticis erectis, contiguis; *femoribus* posticis non incrassatis;

tibiis posterioribus singulatim apice spinâ acutâ armatis; *tarsorum* posticorum articulo primo duobus sequentibus paullo longiori; *unguiculis* appendiculatis. *Prosternum* fere obsoletum.

Type *Æthonea Murrayi*, n.s.

The serrate antennæ, nearly equal to the body in length, will separate *Æthonea* from *Bonesia*.

Æthonea Murrayi.

Anguste oblonga, convexa, fusco-fulva, nitida, antennarum articularum apicibus tarsisque infuscatis; elytris sub-crebre punctatis; mandibulis apice nigris. Long. 4 lin.

Hab.: Old Calabar.

Genus Sarda.

Corpus late ovatum. *Caput* exsertum, breve, perpendiculare; *antennis* corpore paullo longioribus, filiformibus, articulis cylindricis, primo curvato, ad apicem incrassato, secundo brevi, tertio elongato; *oculis* paullo prominulis, ovatis, integris; *palpis* gracilibus. *Thorax* transversus, lateribus antice fere rectis, parallelis, postice angulatis, disco lævi, utrinque obsolete tuberculato. *Elytra* ovalia, thorace multo latiora, lateribus anguste explanato-marginatis, dorso modice convexa, confuse punctata. *Pedes* mediocres, sub-elongati, simplices; *coxis* anticis erectis, contiguis; *femoribus* posticis non incrassatis; *tibiis* apice muticis; *tarsorum* posticorum articulo basali duobus sequentibus longitudine æquali; *unguiculis* appendiculatis. *Prosternum* obsoletum.

Type *Sarda tetraspilota*, n.s.

This genus stands in very close relation to *Adorium;* it is separated from it principally by the peculiar form of the thorax, which in *Sarda*, although transverse, is very narrow in relation to the elytra; the anterior two-thirds of its sides are straight and parallel, whilst the hinder third runs obliquely inwards towards the base, forming a distinct angle with the front portion.

Sarda tetraspilota.

Late ovata, modice convexa, fulvo-flava, nitida; antennis nigris, basi piceis, articulis duobus ultimis obscure albis; elytris sub-remote punctatis, singulatim plagis magnis duabus, una fere basali, quadrata alteraque oblonga, vix ante medium fere ad apicem extensa, nigris; tibiis externe nigro-lineatis. Long. $3\frac{2}{3}$ lin.

Hab.: New Hebrides.

AN ESSAY TOWARDS A KNOWLEDGE OF BRITISH *HOMOPTERA*.

BY THE REV. T. A. MARSHALL, M.A.

(*Continued from page* 85.)

Gen. MACROPSIS, Lewis.

This and the two following genera constitute a very natural group, distinguished by the great breadth of the head, and narrowness of the vertex, which is reduced to a mere line, when viewed from above. The ocelli are situated about the middle of the frons, equidistant from the vertex and the clypeus. The species are all arboreal in their habits, residing upon oak, willow, poplar, lime, and birch trees. There is only one species of *Macropsis* found in this country.

1.—*Macropsis lanio*, Lin.

♀ Læte viridis, vertice, pronoto, et scutello vel pallide rufescentibus, vel rufo-maculatis. Scutellum apice sæpe viride. Pedes virides; tibiæ apice tarsique cæruleo-virides; sed illæ interdum rufescunt. ♂ differt; totus rufo-testaceus, vel brunneus, vel etiam piceus, hemelytris clarioribus. Long. 3-3½; alar. exp. 7-7½ lin.

♂ *Cicada lanio*, N.S. 5, p. 464; Panz. Fn., 4, 23.
Iassus lanio, Curt., B.E., pl. 636 (text), No. 1.
♂ *Iassus brunneus*, Fab., Germ., &c.

Common on oak trees throughout the country. The larvæ betray their future sex at an early period, those of the ♂ being reddish, while the ♀ is always pale green. The species is noticed by numerous writers as occurring in most parts of Europe.

Gen. IDIOCERUS, Lewis.

Established in the first volume of the Transactions of the Entomological Society, to include those species of which the male * have, near the apex of the antennæ, a small, ovate, flattened, black lamina. They agree closely with *Macropsis* in other respects, but the membrane of the hemelytra has only four cells. *Pediopsis* and *Macropsis* have at least five. I am at present acquainted with only five British species, the discrimination of which is rather difficult. Three or four more may be expected to turn up when the resources of Scotland and Ireland shall have been explored. I am not even sure that I have exhausted the metropolitan district.

A. Frons et genæ lateribus subtiliter pilosæ. Hemelytrorum costa in ♂ nodulis 6-7 munita.

* Except the male of *I. tremulæ*, Estl.

1.—*Idiocerus varius*, Germ.

Flavus, abdomine supra, pectore inter coxas, nigris. ♂ vertex antice punctis duobus valde distantibus nigris. Pronotum leviter infuscatum, antice maculis nonnullis nigris transversim dispositis. Scutellum nigro-varium,—scilicet, basi utrinque macula triangulari nigra, medio linea nigra bifurcata, et punctis duobus nigris. Hemelytra flavo-hyalina, nervis fuscis, area lata, obliqua, interiore, hyalina; nervis sub-costalibus medio crassioribus, nigerrimis, costa ipsa 6-7-nodosa. Macula magna stigmaticalis læte citrina (quæ interdum deest). Nervi alares nigri. Pedes flavi, nigro varii. ♀ differt fronte infuscata, macula triangulari utrinque intra oculos fusca; costa haud nodosa; macula stigmaticali citrina nulla; hemelytrorum nervis medio non incrassatis, fuscis, minus distinctis. Long. $2\frac{1}{2}$; alar. exp. 6-7 lin.

I. varius, Germ.; Flor, R.L. 2, p. 166; Fab.? S.R., 55, 49; Ent. Syst., 4, 42 (non *Cercopis varia*, Fab., S.R., 94, 34).
Bythoscopus varius, Burm., Gen., figs. 1-2, ♂ ♀.
Byth. adustus, H. Sch., D. Ins., 144, 9.
Idioc. stigmaticalis, Lewis, Trans. Ent. Soc., 1, p. 48; Curt., B.E., 733, No. 1.

Closely resembles the following species, but is distinguished by the somewhat broader head and smaller size, the pilosity of the frons and genæ, and the black tubercular excrescences on the costa of the ♂. It is common both in the midland and metropolitan districts, upon willows and poplars; and, according to Flor, is found also upon the oak.

B. Frons et genæ nudæ, non pilosæ Costa in ♂ non nodosa.
a. Genæ clypeo arctè applicatæ, apicem ejusdem non attingentes.
† Costa ♂ margine membranaceo extus instructa. Nervi saturatiores quam cellulæ.

2.—*Idiocerus lituratus*, Fall.

Præcedenti persimilis. Minor, capite nonnihil angustiore. Costa ♂ non nodosa, sed in utroque sexu medio antice nigra. Frons prope verticem fascia transversa, irregulari, brunnea. ♂ ♀.

Long. $2\text{-}2\frac{1}{4}$; alar. exp. $5\frac{1}{2}$ lin.

Fall., Hem. 2, p. 60; Flor, R.L. 2, p. 168.
Bythoscopus lineolatus and *dorsiger*, Lep. and Serv., Enc. méth., t. 10, &c.

On willows, near Mousley and Thames Ditton, in August.

†† Costa ♂ margine membranaceo non (aut vix et prope basin tantum) instructa. Nervi et cellulæ concolores.

1. Hemelytra transversim pallido fasciata.

3.—*Idiocerus laminatus*, Flor.

Flavus; abdomen supra nigrum, segmentis flavo-marginatis. Pronotum medio infuscatum. Scutellum basi bis nigro-maculatum, medio infuscatum. Hemelytra nitida, brunnea; ante membranam fascia lata hyalina. Pedes pallide flavi, plus minus nigro lineati; unguiculæ nigræ. Valvulæ ventrales ♂ prælongæ, albidæ, supra et infra nigro marginatæ; subtus albo ciliatæ. ♂

Long. $2\frac{1}{2}$ lin.

I. laminatus, Flor, R.L. 2, p. 171.

In Mr. Douglas' collection.

2. Hemelytra non transversim pallido fasciata.

4.—*Idiocerus populi*, Lin.

Præcedenti similis, viridis vel flavus; pectore abdominisque segmentis supra plus minus nigris. Vertex punctis duobus prope oculos, late distantibus, fuscis. Pronotum plus minus infuscatum, antice punctis quatuor transversim positis, nigris. Hemelytra nitidissima, pellucida, flavo-brunnea, sub-aurata, nervis indistinctis. Pedes ut in præcedente. Velvulæ ventrales ♂ breviores, flavæ.

Long. 2-$2\frac{1}{2}$; alar. exp. 6-7 lin.

Cicada populi, Lin., S.N. 5, p. 463.

Iassus margarita, Enc. méth., t. 10, p. 612.

Iassus fulgidus, Fab., S.R., p. 87, n. 13.

Idiocerus sulphureus, *effulgens*, *unifasciatus* (?), and *æneus*, Curt., B.E., 733, n. 4-7.

This is a common and very elegant species, subject to much variation: the markings are often very pale; sometimes the entire insect is of a pearly white colour, perhaps because immature. The larva is pale green, with black transverse lines and many black dots. Inhabits *Populus alba* and *tremula*, and various species of *Salix*, throughout the country.

b. Genæ a clypeo disjunctæ, liberæ, apicem ejusdem attingentes.

5.—*Idiocerus tremulæ*, Estlund.

Flavo-testaceus, supra albidus, abdomine nigricante; verticis, pronoti, scutellique maculis nigro-brunneis; hemelytris albido-hyalinis, fasciis duabus aureo-brunneis. Clava antennarum in ♂ nulla.

Long. $2\frac{1}{4}$ lin.

Cicada tremulæ, Estlund, Handl., 1796, p. 129, tab. 5, fig. 3.
Iassus tremulæ, Zett., Ins. Lapp., p. 302-3.

Rather smaller than any of the preceding, and easily distinguished by the two brown transverse fasciæ of the hemelytra. I have never met with it; but specimens are in Mr. Douglas' collection.

(To be continued.)

NOTE ON THE LARVA OF *LAVERNA SUB-BISTRIGELLA*.

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

Since the history of the larva of *Laverna decorella* was worked out by the successive investigations of my friends Senator von Heyden, of Frankfort, and Mr. C. G. Barrett, of Haslemere, the larva of *Laverna sub-bistrigella* must have felt its day would soon come, and its place of concealment be pointed out to the public.

On the 4th of June last, Mr. Barrett, who had already been trying to worm out its secrets, wrote to me as follows:—"I feel puzzled about *Laverna sub-bistrigella*. To judge by the abdomen of the imago, the larva must be an internal feeder, and it certainly frequents the same places as *decorella*. I cannot find any signs of larvæ feeding in the roots of these small species of *Epilobium*, otherwise I should think they belonged to this species. However, I think it leaves its hybernaculum (and probably lays its eggs) later than *decorella*."

On the 30th of June, to my no little surprise, I received from my valued correspondent at Wiesbaden, Dr. Rössler, larvæ of the long-sought *Laverna sub-bistrigella*. Concerning these larvæ Dr. Rössler wrote as follows:—"I have now the pleasure of sending you some larvæ of *Laverna sub-bistrigella*, Haw. They live in the pods of *Epilobium montanum*, &c., and eat them from the tip downwards, without there being any external mark of their presence. I suspect, therefore, that they must penetrate through the base of the flower. The metamorphosis takes place on the earth."

I at once wrote to Mr. Barrett, and sent him one of the Wiesbaden larvæ, and a copy of Dr. Rössler's letter thereanent.

The larva I described as follows:—"Length 4 lines. Deep red, paler between the segments, especially anteriorly, where the prevailing colour is pale yellowish-white; head pale yellowish-brown."

It reminded me considerably of the larva of *Gelechia albipalpella*.

As I was leaving home very soon afterwards, I sent off to Mr. Barrett the remaining larvæ I had received from Wiesbaden.

On the 20th of August, Mr. Barrett wrote to me as follows:—"Your absence from home prevented me from forwarding you native larvæ of *Laverna sub-bistrigella*. I found them in plenty as soon as you told me how to look for them, and, as usual, now wonder I had not found them before.

"I cannot altogether agree with Dr. Rössler that there is no external indication of the presence of the larva in a seed-pod, since I could tell the infested pods at a glance, and collect them with ease without close examination. They are in nearly every case thickened and shortened, and generally curved or distorted in some degree, as you will see by two or three that I have enclosed. Those you sent had burst open, and I could not very well tell whether they were similar.

"The larvæ in this neighbourhood were by no means so forward as the continental ones; but they seem now to have all spun up, and one native specimen has come out. They appear to be sadly infested with ichneumons.

"The larva evidently eats its way up the pod, devouring the seeds right before it, and leaving the space filled with excrement behind it. When the pod is small, and does not contain sufficient food for it, it leaves the empty pod, and attacks a younger one, making scarcely any mark where it has entered.

"When full fed, it leaves the pod by a larger hole, and spins up—I expect on the ground.

"In this it differs from the larva of *decorella*, which makes its cocoon in the gall in which it has fed; this, however, is a necessity, as the seed-pods, even when empty, burst when dry in the same way as the full ones.

"*L. sub-bistrigella* seems almost confined to *Epilobium montanum*; I have only once found it on any other species, and that was *E. palustre*."

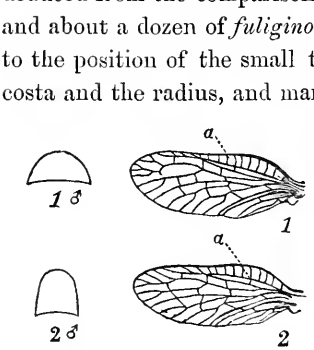
The pleasure I derived from the perusal of the above communication can be easier conceived than described.

SIALIS FULIGINOSA, PICTET; A SPECIES NEW TO BRITAIN.

BY R. M'LACHLAN, F.L.S.

In the beginning of June, I obtained at Camachgouran, Loch Rannoch, specimens of a *Sialis*, which I have identified with *S. fuliginosa*, Pictet, Brauer; thus we now possess both the European species of the genus.

It differs from the well-known and abundant *S. lutaria* in the much darker colouration of the membrane of the wings, which is most evident at the base; the neuration and the body also partake of this intensity, the latter being deep black, whereas in *lutaria* it may be called dark fuscous-black. The existence of structural specific characters in the arrangement of the nervures is perhaps doubtful, as no two specimens of either species agree precisely in this respect, and very frequently the right and left hand wings of the same individual present wide differences in the number of the apical forks, and of the transverse veins, and the positions of these latter; nevertheless, there is one character, deduced from the comparison of a large number of specimens of *lutaria*, and about a dozen of *fuliginosa*, which is apparently constant; I allude to the position of the small transverse vein placed between the subcosta and the radius, and marked *a* in the accompanying figures. In *fuliginosa* this vein is placed opposite to about the middle of the cell below it, sometimes rather nearer the apex. In *lutaria* the vein is placed much nearer the base, often almost at the point of furcation of the two veins forming the upper and lower sides of the cell, never approaching the middle. In insects in which the neuration is so very liable to vary, as in these two species, this character may perhaps be of little importance, but as far as I see at present, it seems trustworthy.



Other far more important characters exist in the abdominal appendices, but these are nearly lost in dry specimens, and as I neglected to place any in alcohol, I cannot now describe them fully. The form of the valve or lobe proceeding from the ventral surface of the penultimate segment of the male is widely different, and can be distinctly seen even in cabinet specimens. In *fuliginosa* this lobe is much smaller than in *lutaria*, shorter and sub-triangular, whereas in *lutaria* it is very large, the sides nearly parallel, and obtusely rounded at the apex, reaching almost to the extremity of the last segment. In both species this lobe

is articulated to the margin of the penultimate segment, and is capable of being extended downwards almost at right angles to the abdomen, but in repose it is horizontal.

S. fuliginosa was first described by Pictet in the "Annales des Sciences Naturelles" for 1836; afterwards by Burmeister in the "Handbuch der Entomologie," 2, p. 947; and subsequently by Brauer in "Neuroptera Austriaca," p. 52. Rambur ("Hist. Nat. Névrop.," p. 448) doubts the distinctness of the species from *S. lutaria*; he had probably never seen an example of the true *fuliginosa*. It is, perhaps, widely distributed on the Continent, but overlooked. I possess several examples from Prof. Zeller, including a type from Brauer. At Rannoch it frequented the moor-streams, but did not seem common; *S. lutaria* was not seen there, but was found at Pitlochry, thirty miles to the east of Camachgouran.

Fig. 1 represents an anterior wing of *S. fuliginosa*, and the ventral lobe of the male; fig. 2 the corresponding wing and lobe of *S. lutaria*.

Forest Hill, London, 12*th September*, 1865.

Mimetic analogy.—In reading Bates' "Naturalist on the River Amazons," I was much struck by the curious fact that a similarity of colouring exists between some of the *Heliconidæ* and butterflies of other families. It reminded me of what I had myself observed with regard to the allied family *Danaidæ*. In North America *Danais Archippus*, Fab., is exactly imitated by *Nymphalis Disippus*, Godt., and in Southern Africa the resemblance between *Danais Echeria* and *Papilio Cenea*, and that between *Danais Chrysippus* and the *female* of *Diadema Bolina*, is most striking. In the last case, even the larvæ of the two insects resemble each other, and, moreover, feed on the same plant, the Oleander, according to Boisduval. In British Kaffraria, however, I found that the larva of *Danais Chrysippus* fed on an Asclepiadaceous plant, *Gomphocarpus fruticosus*. I had no opportunity of observing the metamorphoses of *Diadema Bolina*, as it is scarce in Kaffraria; whereas *Danais Chrysippus*, notwithstanding that its beautiful larva is extremely subject to the attacks of Ichneumons, is one of the most abundant butterflies in the country. As is well known, the difference of colouring and marking between the ♂ and ♀ of *Bolina* is so great that they have been described as distinct species by Linnæus, Fabricius, Godart, &c., and there is not the least resemblance between the male *Bolina* and *D. Chrysippus*.

Numerous species of *Acræa* represent in South Africa the *Heliconiæ* of the New World, and like them they are sluggish insects, emitting a peculiar scent, which seems to render them distasteful to birds, &c.; but I do not know of any African butterfly which at all approaches them in appearance.—William Stewart M. D'Urban, Newport House, near Exeter, *September*, 1865.

NOTES ON COLLECTING, MANAGEMENT, &c. (*LEPIDOPTERA.*)

BY H. G. KNAGGS, M.D.

THE CATERPILLAR STATE (*continued from Vol.* I., *page* 42).

MANAGEMENT—*Food.*

Doubtless the rearer of *Lepidoptera* must often be perplexed as to what (in the event of the proper food being unobtainable) he shall provide for the sustenance of his larvæ. With a view to setting him on the tack most likely to yield success, the following few suggestions and lists may, it is to be hoped, at any rate serve to arrange his ideas upon the point.

As a matter of course, when the true food-plant is at hand, it should be used in preference to all others; should it not naturally occur in our neighbourhood it may, previously to its requirement, be potted or transferred to our garden-beds in readiness for future use; or it may be regularly transmitted at suitable intervals, secured in tins, when the locality in which it occurs is too far off to admit of our taking a series of journeys after fresh supplies of it. On the other hand, if the known food be not obtainable a substitute must be found.

Substitute food-plants may be divided into at least four classes, viz.:—Allied species (cultivated forms, &c.) of plants; allied genera (families may here be included); known substitutes (non-allied); generally favourite foods.

Allied species to the true food-plant will usually offer the best chances of success. By way of a few examples of this class of substitutes let me mention the following:—for aspen, poplar may be tried; for bedstraw, clivers; for bilberry, cranberry or cowberry; for bramble, raspberry; for campion, ragged robin; for Canterbury-bell, hare-bell; for sallow, willow; for sloe, plum or greengage; for primrose, cowslip; for rock-rose, gum-cistus; for sweet briar, rose; for vetchling, everlasting pea; for violet, heartsease; for weld, mignonette; for willow herb, rose-bay; for wormwood or mugwort, southernwood; besides many others, especially cultivated forms for wild ones, which might be enumerated.

Our second choice of food-plant lies between the species of *allied genera*, of which I subjoin a list of some examples (classed under the headings of the orders or sub-orders to which they belong), for the guidance of those whose acquaintance with botanical lore is, as in my own case, scanty.

SOME EXAMPLES OF ALLIED GENERA OF PLANTS.

RANUNCULACEÆ: *Actæa*, Baneberry.—*Aconitum*, Monkshood.—*Adonis*, Pheasant's-eye.—*Anemone*, Anemone.—*Aquilegia*, Columbine.—*Caltha*, Marsh marigold.—*Clematis*, Traveller's joy.—*Delphinium*, Larkspur.—*Helleborus*, Hellebore.—*Myosurus*, Mouse-tail.—*Nigella*, Devil in the bush.—*Pœonia*, Pœony.—*Ranunculus*, Crow-foot.—*Thalictrum*, Meadow rue.—*Trollius*, Globe flower.

PAPAVERACEÆ: *Chelidonium*, Celandine.—*Glaucium*, Horned poppy.—*Mecanopsis*, Welsh popy.—*Papaver*, Poppy.

ARABIDEÆ (CRUCIFERÆ): *Arabis*, Rock cress.—*Barbarea*, Winter cress.—*Cardamine*, Bitter cress.—*Cheiranthus*, Wall flower.—*Matthiola*, Stock.—*Nasturtium* Water cress.—*Turritis*, Tower mustard.

Brassiceæ & Sisymbreæ (Cruciferæ): *Brassica*, Cabbage, Turnip.—*Erysimum*, Treacle mustard.—*Hesperis*, Dame's violet.—*Sinapis*, Mustard.—*Sisymbrium*, Hedge mustard.

Alyssineæ (Cruciferæ): *Alyssum*, Alyssum.—*Armoracea*, Horse-radish.—*Cochlearia*, Scurvy grass.—*Draba*, Whitlow grass.

Lepidieæ & Thlaspeæ (Cruciferæ): *Capsella*, Shepherd's purse.—*Iberis*, Candy tuft:—*Lepidium*, Cress.—*Thlaspi*, Pennyeress.

Sileneæ (Caryophylleæ): *Agrostemma*, Corn cockle.—*Dianthus*, Pink.—*Lychnis*, Campion.—*Saponaria*, Soap wort.—*Silene*, Catchfly.

Alsineæ (Caryophylleæ): *Alsine*, Chickweed.—*Arenaria*, Sand wort.—*Cerastium*, Mouse-ear.—*Cherleria*, Cyphel.—*Polycarpon*, All-seed.—*Sagina*, Pearl wort.—*Spergula*, Spurrey.—*Stellaria*, Stitch wort.

Malvaceæ: *Althœa*, Marsh Mallow.—*Lavatera*, Tree Mallow.—*Malva*, Mallow.—*Alcea*, Hollyoak.—*Hibiscus*, Hibiscus.

Geraniaceæ: *Erodium*, Stork's-bill.—*Geranium*, Crane's-bill.—*Pelargonium*, Greenhouse geranium.

Vicieæ (Papilionaceæ): *Lathyrus*, Everlasting pea.—*Orobus*, Bitter vetch.—*Pisum*, Pea.—*Vicia*, Vetch.

Loteæ (Papilionaceæ): *Anthyllis*, Kidney vetch.—*Astragalus*, Milk vetch.—*Cytisus*, Broom.—*Genista*, Greenweed.—*Lotus*, Bird's-foot trefoil.—*Medicago*, Medick.—*Melilotus*, Melilot.—*Ononis*, Rest harrow.—*Trifolium*, Trefoil.—*Trigonella*, Fennygreek.—*Ulex*, Furze.

Hedysareæ (Papilionaceæ): *Astrolobium*, Joint vetch.—*Hippocrepis*, Horse-shoe vetch.—*Onobrychis*, Sainfoin.—*Ornithopus*, Bird's-foot.

Amygdaleæ (Rosaceæ): *Amygdalus*, Almond, Peach.—*Cerasus*, Cherry, Laurel.—*Prunus*, Plum.

Pomaceæ (Rosaceæ): *Cotoneaster*, Cotoneaster.—*Cratægus*, Hawthorn.—*Mespilus*, Medlar.—*Pyrus*, Crab, Service, Pear.

Dryadeæ (Rosaceæ): *Agrimonia*, Agrimony.—*Comarum*, Marsh cinquefoil.—*Dryas*, Mountain avens.—*Fragaria*, Strawberry.—*Geum*, Avens.—*Potentilla*, Cinquefoil.—*Rubus*, Bramble, Raspberry.

Sanguisorbeæ (Rosaceæ): *Alchemilla*, Lady's mantle.—*Poterium*, Salad burnet.—*Sanguisorba*, Burnet.

Onagraciæ: *Circœa*, Enchanter's nightshade.—*Epilobium*, Willow herb.—*Fuchsia*, Fuchsia.—*Isnardia*, Isnardia.—*Œnothera*, Evening primrose.

Umbelliferæ: *Ægopodium*, Gout weed.—*Æthusa*, Fool's parsley.—*Angelica*, Angelica.—*Anthriscus*, Beaked parsley.—*Bunium*, Earth nut.—*Carum*, Caraway.—*Chœrophyllum*, Chervil.—*Cicuta*, Cowbane.—*Conium*, Hemlock.—

Daucus, Carrot.—*Fœniculum*, Fennel.—*Heracleum*, Cow parsley.—*Ligusticum*, Lovage.—*Peucedaneum*, Hog's fennel.—*Petroselium*, Parsley.—*Pimpinella*, Burnet-saxifrage, Sium Skirret.

CAPRIFOLIACEÆ: *Linnæa*, Linnæa.—*Lonicera*, Honeysuckle.—*Sambucus*, Elder.—*Viburnum*, Guelder rose.—*Symphoricarpus*, Snowberry.

STELLATÆ: *Asperula*, Woodruff.—*Galium*, Bedstraw.—*Rubia*, Madder.—*Sherardia*, Field madder.

DIPSACEÆ: *Dipsacus*, Teasel.—*Knautia*, Knautia.—*Scabiosa*, Scabious.

CORYMBIFERÆ (COMPOSITÆ): *Achillea*, Yarrow.—*Anthemis*, Chamomile.—*Artemisia*, Wormwood.—*Aster*, Star wort.—*Bellis*, Daisy.—*Cineraria*, Flea wort.—*Chrysanthemum*, Ox-eye.—*Eupatorium*, Hemp agrimony.—*Gnaphalium*, Cudweed.—*Helianthus*, Sunflower, Jerusalem artichoke.—*Inula*, Elecampane.—*Petasitis*, Butter burr.—*Pulicaria*, Flea bane.—*Senecio*, Groundsel, Ragwort.—*Solidago*, Golden rod.—*Tanacetum*, Tansy.—*Tussilago*, Colt's-foot.

CYNAROCEPHALEÆ (COMPOSITÆ): *Carduus*, Thistle.—*Centaurea*, Knap weed.—*Cynara*, Artichoke.—*Lappa*, Burdock.—*Onopordon*, Cotton thistle.—*Serratula*, Saw wort.—*Silybum*, Milk thistle.—*Xanthium*, Bur weed.

CICHORACEÆ (COMPOSITÆ): *Apargia*, Hawkbit.—*Arnoseris*, Swine's succory.—*Cichorium*, Succory.—*Crepis*, Hawk's-beard.—*Helminthia*, Ox-tongue.—*Hieracium*, Hawkweed.—*Hypochæris*, Cat's-ear.—*Lactuca*, Lettuce.—*Taraxicum*, Dandelion.—*Picris*, Picris.—*Sonchus*, Sow thistle.—*Scorzonera*, Scorzonera.—*Tragopogon*, Goat's-beard.

CAMPANULACEÆ: *Campanula*, Bell flower.—*Jasione*, Sheep's bit.—*Phyteuma*, Rampion.—*Prismatocarpus*, Corn bellflower.

ERICACEÆ: *Arbutus*, Strawberry tree.—*Arctostaphilos*, Bearberry.—*Azalea*, Azalea.—*Calluna*, Ling.—*Erica*, Heath.—*Menziesia*, Menziesia.—*Rhododendron*, Rhododendron.

OLEACEÆ: *Fraxinus*, Ash.—*Ligustrum*, Privet.—*Syringa*, Lilac.

GENTIANEÆ: *Cicendia*, Cicendia.—*Chlora*, Yellow wort.—*Erythræa*, Centaury.—*Gentiana*, Gentian.—*Menyanthes*, Buckbean.—*Villarsia*, Villarsia.

BORAGINEÆ: *Anchusa*, Alkanet.—*Asperugo*, Madwort.—*Borago*, Borage.—*Cynoglossum*, Hound's-tongue.—*Echium*, Viper's bugloss.—*Lithospermum*, Gromwell.—*Lycopsis*, Bugloss.—*Myosotis*, Scorpion grass.—*Pulmonaria*, Lung wort.—*Symphytum*, Comfrey.

ATROPEÆ (SOLANACEÆ): *Atropa*, Belladonna.—*Datura*, Thorn apple.—*Hyoscyamus*, Henbane.

SOLANEÆ (SOLANACEÆ): *Solanum*, Bitter-sweet, Nightshade, Potato.—*Lycium*, "Tea" tree.

Rhinanthidæ (Scrophulariaceæ): *Bartsia,* Bartsia.—*Euphrasia,* Eye bright.—*Melampyrum,* Cow wheat.—*Pedicularis,* Louse wort.—*Rhinanthus,* Yellow rattle.—*Veronica,* Speedwell.

Antirrhinidæ (Scrophulariaceæ): *Antirrhinum,* Snapdragon. —*Digitalis,* Foxglove. —*Linaria,* Toad flax.—*Mimulus,* Monkey flower.—*Scrophularia,* Water betony.—*Verbascum,* Mullein.

Labiatæ: *Ajuga,* Bugle.—*Ballota,* Horehound.—*Calamintha,* Calamint.—*Clinopodium,* Wild basil.—*Galeopsis,* Hemp nettle.—*Glechoma,* Ground ivy.—*Lamium,* Dead nettle.—*Mellitis,* Bastard balm.—*Mentha,* Mint.—*Nepeta,* Cat mint.—*Origanum,* Marjoram.—*Prunella,* Self heal.—*Salvia,* Sage.—*Scutellaria,* Skull cap,—*Stachys,* Wound wort.—*Teucrium,* Germander.—*Thymus,* Thyme.

Primulaceæ: *Anagallis,* Pimpernel.—*Centunculus,* Chaffweed.—*Cyclamen,* Cyclamen. —*Glaux,* Sea milkwort.—*Hottonia,* Feather foil.—*Lysimachia,* Loose strife.—*Primula,* Primrose.—*Samolus,* Brook weed.—*Trientalis,* Chickweed wintergreen.

Chenopodiaceæ: *Atriplex,* Orache.—*Beta,* Beet.—*Chenopodium,* Goose-foot.—*Salicornia,* Glass wort.—*Salsola,* Salt wort.—*Spinacia,* Spinach.

Polygoneæ: *Oxyria,* Mountain sorrel.—*Polygonum,* Knot-grass, Persicaria.—*Rumex,* Sorrel, Dock.—*Rheum,* Rhubarb.

Euphorbiaceæ: *Buxus,* Box.—*Euphorbia,* Spurge.—*Mercurialis,* Mercury.

Urticaceæ: *Cannabis,* Hemp.—*Humulus,* Hop.—*Parietaria,* Wall pellitory.—*Urtica,* Nettle.

Betulineæ.—*Alnus,* Alder.—*Betula,* Birch.

Cupuliferæ: *Carpinus,* Hornbeam.—*Castanea,* Chestnut.—*Corylus,* Hazel.—*Fagus,* Beech.—*Quercus,* Oak.

Salicineæ: *Populus,* Poplar and Aspen.—*Salix,* Osier, Sallow, Willow.

Coniferæ: *Juniperus,* Juniper.—*Pinus,* Fir.—*Taxus,* Yew.

In the third place we may try a 'known substitute,' by which is meant a plant known, in the case of some other larva, to afford nourishment in the absence of its more accustomed food; thus, by way of giving an example or two, bilberry is the food of *Gastropacha ilicifolia,* but it will also eat sallow; *ergo,* it would seem reasonable to suppose that another species, the food of which is bilberry, would also eat sallow, and this in practice we find (very often, at all events) to be the case. And again, it is a curious fact, that all species which feed naturally on the ***Cruciferæ*** will also eat *Tropæolum,* as well as *Reseda,*—plants nowise allied to them or to one another. A reference to the following table, which I have endeavoured to condense as much as possible, will, I trust, sometimes assist the reader in selecting a substitute food-plant.

A FEW EXAMPLES OF KNOWN SUBSTITUTES (NON-ALLIED PLANTS.)

SUBSTITUTES.			EXAMPLES.
Apple	and	Ash	*Z. æsculi.*
,,	,,	Lime	*X. petrificata.*
,,	,,	Poplar	*S. ocellatus.*
Bedstraw	,,	Convolvulus	*A. emarginata.*
,,	,,	Epilobium	*C. elpenor.*
,,	,,	Fuchsia	*D. galii.*
,,	,,	Vine	*D. livornica.*
Bilberry	,,	Bramble	*H. rectilinea.*
,,	,,	Dogwood	*E. advenaria.*
,,	,,	Rose	*E. advenaria.*
Birch	,,	Beech	*T. consonaria.*
,,	,,	Hazel	*G. papilionaria.*
,,	,,	Spindle	*B. repandata.*
,,	,,	Whortleberry	*B. abietaria.*
Bramble	,,	Hazel	*Psy. calvella.*
,,	,,	Heath	*S. carpini.*
Broom	,,	Brake-fern	*H. pisi.*
,,	,,	Honeysuckle	*H. thalassina.*
,,	,,	Lilac	*T. gothica.*
,,	,,	Vetch	*D. obfuscata.*
,,	,,	Veronica	*H. pisi.*
Currant	,,	Hop	*Eup. assimilata.*
Honeysuckle	,,	Groundsel	*P. iota.*
,,	,,	Nettle	*P. iota.*
,,	,,	Privet	*P. syringaria.*

SUBSTITUTES.			EXAMPLES.
Honeysuckle	and	Rose	*A. derivata.*
Heath	and	Bog-myrtle	*A. menyanthidis.*
,,	,,	Hare-bell	*A. Ashworthii.*
Ivy	,,	Buckthorn	*L. Argiolus.*
,,	,,	Elder	*O. sambucaria.*
,,	,,	Holly	*L. Argiolus.*
Lime	,,	Elm	*S. tiliæ.*
Oak	,,	Ash	*S. illustraria.*
,,	,,	Elm	*S. lunaria.*
,,	,,	Lime	*P. monacha.*
,,	,,	Whitethorn	*H. thymiaria.*
,,	,,	Willow	*O. gonostigma.*
Sallow	,,	Bilberry	*E. advenaria.*
,,	,,	Birch	*D. falcula.*
,,	,,	Heath	*E. cribrum.*
,,	,,	Marjoram	*L. marginata.*
,,	,,	Oak	*O. gonostigma.*
,,	,,	Plum	*S. illunaria.*
,,	,,	Primrose	*T. fimbria.*
,,	,,	Yarrow	*N. zonaria.*
Stachys	,,	Clematis	*A. strigillata.*
Yarrow	,,	Marjoram	*A. gilvaria.*
,,	,,	Pink	*A. incanata.*
,,	,,	Vetch	*A. incanata.*

Fourthly and lastly, '*generally favourite foods*' afford a very likely group to choose from, especially for such larvæ as the true food remains undetected; indeed, for the rearing of previously undiscovered larvæ, particularly of the *Geometridæ* and *Noctuidæ*, this class of 'substitute foods' is invaluable. For the former, *Polygonum aviculare** undoubtedly holds the first place, followed by *Lotus*, *Glechoma*, &c., among low plants, with sallow and blackthorn among shrubs: for the latter, Plantain, Dandelion, Dock, Lettuce, Clover, Borage, and Goosefoot, will all be found very serviceable, and so also will Sallow, Birch, and Plum, in the case of such larvæ as may be suspected of feeding on taller vegetation, though it must be owned that the great bulk of "*larvæ unknown*" feed upon low herbs.

(*To be continued*).

Note on Phorodesma bajularia.—I read Mr. Horton's note on this species last month with great interest, and should like to add one or two observations of my own to his full and accurate account.

On 3rd July last Dr. Hearder kindly sent me some eggs, the larvæ from a portion of which were hatched on the journey, and came to me already dressed (oak leaves having been put in with them), but a few were still remaining in the egg, and gave me an opportunity of seeing them emerge in their nakedness; it happened that, on two occasions, a couple of larvæ were hatched in their pillbox whilst I was not at hand to put them at once on their food, and so great was the innate desire of dress, that each time I found one of the pair had killed his brother and stuck his carcase upon his own back! When, however, they had once tasted oak, I saw no more of this fratricidal wickedness. As to their re-adornment after a change of skin, I fancy, but am not quite sure, that they remain close by the cast skin, and pitch off from it their old bits of clothes, and stick them on their backs first, but, of course, as they grow bigger they add larger scraps.

About the middle of August one of my larvæ had so far outstripped the rest in growth that I sent him to Mr. Buckler, who, having first depicted him "*dressed*," with a great deal of trouble pulled off all his coverings, and took a second figure of him "naked;" after this there was no attempt to replace the lost dress, but, after feeding a few days longer, by the end of August the larva changed into a pupa, without any covering or fastening whatever. All the rest of my larvæ are now feeding very slowly, and will probably hybernate when about half-grown.

If the oak leaves supplied to them are tender I notice they are eaten in the usual way, but the harder and drier leaves are turned into skeletons, all the network of ribs and veins being left untouched.

I must conclude with saying that I cannot call the head of this larva *bifid*; in this point it differs from all the other British *Geometridæ*.—J. Hellins, *9th Sept.*

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* It is perfectly wonderful to note how universally this food is esteemed by the larvæ of *Geometridæ*. This fact was communicated to me some years since by my valued friend Mr Henry Doubleday, since which time I have invariably offered it to all such larvæ, concerning the food of which I had any doubt, and in almost all cases it was at once adopted.

Note on the food of Gnophos obscurata.—In Vol. III of the Weekly Intelligencer, there is a note on the larva of this species by Mr. Crewe, suggesting that *Poterium sanguisorba* and *Helianthemum vulgare* are its food-plants. In Vol. IV, p. 52, there is a note by Mr. Vaughan, giving *Helianthemum* as its only food. For years I have felt sure that there must be some other food-plants, because the perfect insect is rather common in this neighbourhood, whilst neither *Poterium* or *Helianthemum* grows within many miles of it; and this season I have been able to satisfy myself that my guess was correct. On the 1st and 2nd of May last I took eight or ten larvæ on or near plants of *Potentilla reptans*, one of them being in the act of feeding on the leaves. It is satisfactory thus to take the species on the food of its own choice; but of course I do not mean to say that it by any means follows that *Helianthemum* is not the favourite food-plant in other localities.—*Id.*

Capture of Sterrha sacraria at sugar near Exeter.—On the evening of the 5th or 6th inst. Mr. D'Orville captured, at sugar, in his garden a very perfect male specimen of this species. At first he took little notice of his capture, thinking it to be a very small *Aspilates gilvaria*, as he had noticed many stunted moths during the present hot season; but a day or two since, on removing the braces from its wings, he saw at once how lucky he had been. Next month, if no accident intervene, I hope to have more to say of this species.—*Id.*

Description of the larva of Agrotis ravida.—By the kind efforts of Mr. Doubleday, to whom I feel deeply indebted, I have had the great satisfaction of rearing and figuring larvæ of this species. They are to be found in soils congenial for their burrowing, just below the surface, chiefly at the roots of thistles and dandelion plants; being full fed from the beginning to about the 20th of May. I found them feed freely on the large milky leaves of dandelion, and change to pupæ in loosely constructed cocoons of earth from the 6th to the 20th of May. The larvæ presented three varieties of markings on the back, of a character such as I have never before met with.

Var. 1. Larva yellowish-brown, slightly tapering near the head, but almost of uniform thickness, and cylindrical; a thin dorsal line slightly paler than the ground colour, and running through a dusky V-like streak at the end of each segment after the fourth. At the commencement of the fourth segment, on each side, and close to the division, is a sub-dorsal ochreous yellow spot, which, on the fifth to the eleventh, inclusive, has an almost confluent yellow wavy curved streak, extending along two-thirds of each segment, becoming less curved towards the twelfth, on which they are straight, and slightly converging at the end of that segment, where they are margined above with dusky brown wedge-shaped streaks pointing forwards, and a dusky edging above to the curved yellow streaks, but gradually less intense towards the head on the other segments.

The sides and belly, with legs, brownish-grey; a paler greyish stripe freckled with dusky atoms above the feet; immediately above that are the spiracles, minute and dirty white in a dusky blotch, which emits an oblique dusky streak, extending to the sub-dorsal marking of the segment in advance. Head grey, mottled and streaked on the lobes and face with dusky brown; a dull brown plate on the second segment, with slight indications of dorsal and sub-dorsal faint lines through it.

Looking on the back of this larva, the yellow marks on each side are suggestive of a series of incompleted horse-shoe shapes.

Var. 2. Ochreous-brown on the back; the paler dorsal line after the fourth segment only visible at the divisions; the V-like streaks from them being longer and darker than in the first variety. The yellow spot on the anterior portion of each segment on either side the back, isolated from the yellow sub-dorsal streak by a very dark brown, rather broad, edging to the yellow streak, and extending with it along two-thirds of each segment after the fourth to the eleventh, and on the twelfth to the end of the segment, converging a little at the extremity; and on these the yellow marks are broad and straight, but those on the third and fourth segments are curved, and without the dusky brown border above. A dark brown plate on the second segment. Head pale grey, streaked and mottled with dusky brown. Belly and sides similar to the preceding.

Var. 3. Dingy ochreous-brown on the back, and darkest towards the head; the slender and slightly paler dorsal line hardly visible, and only at the segmental divisions.

On each side of the back, in the sub-dorsal region, at the anterior of each segment, and beginning at the fifth, a dingy ochreous spot and curved streak, becoming confluent at the eighth and three following segments (on the twelfth the streak only visible); each yellow curved streak edged above with a thin black streak, and extending two-thirds down each segment; the spaces on the middle of the back between the streaks being filled up with dark brown, and two minute dusky dots edged with paler in the upper portion of these somewhat square dark forms. The curved yellow sub-dorsal streaks slightly marked on the second, third, and fourth segments, and the yellow spots also on the fourth. Head dingy brown; the sides dingy brown, with a paler greyish stripe above the feet, anteriorly edged above with dusky, and oblique streaks above it, as in var. 1, but not so well defined. The anal segment in each of the larvæ plain dingy brown. The moths appeared on July 8th, 1865.—William Buckler, Emsworth.

Acherontia Atropos in Scotland.—Having observed in several English newspapers that the larvæ of *Acherontia Atropos* are plentiful this season in the south, I have to inform you that we, in the north, have also had a visit of them, as I have had ten larvæ brought me within the last week; and had it not been for the ignorance of the country people, who destroyed all they came across, in the belief (as one of them told me,) that they were "big Rail Worms," I should have collected a good number more.—Richard Borthwick, Alloa, Clackmannanshire, *Aug.* 22*nd.*

Unusual food of Acherontia Atropos, &c.—In the first week of this month three very fine larvæ of *A. Atropos* were discovered in a cottage garden in this village, feeding on the shrub commonly known as "Snowberry." One was unfortunately destroyed; the other two reached me in safety, and soon fed up on the above mentioned plant. I have never found this insect before in this locality, nor have I heard of it having been seen here. I suppose the season will prove generally, as it certainly has done here, one of the best for insects which we have had for several years.—Rev. Sir C. R. Lighton, Bart., Ellastone, Ashbourne, *August* 24*th.* 1865.

Remarkably small specimen of Satyrus Megæra.—On the 29th September, 1861, I took, near Basle, a specimen of *S. Megæra*, having an alar expanse of only 8½‴. All four wings, and the other parts of the body, are well proportioned.—Albert Müller.

Capture of Deilephila celerio at Brighton.—On September 8th I took a good specimen of *D. celerio*, which flew in at the window of a house I was sitting in at two o'clock in the morning. This is the second of this species that I have taken within the last two years.—John N. Winter, 28, Montpellier Road, Brighton, 13*th September*, 1865.

Captures near Dover.—Whilst insect-hunting along the coast between Dover and Sandgate, during the last fortnight in August, I captured the following species:

C. Edusa, commonly; (var. *Helice*, one specimen); *C. Hyale*, one ♂; *P. Adonis*, flying by hundreds, along with swarms of *P. Corydon* and *P. Agestis*; *A. ornata*, tolerably plentiful amongst thyme near Folkestone; *A. gilvaria*, commonly; *P. vitalbata*, three specimens; besides a great number of commoner insects not worth recording.—H. Ramsay Cox, West Dulwich, *September 4th*, 1865.

Note on Acidalia promutata, Gn.—Is this species double-brooded? On the 8th inst. I took a very fine ♀ at light, which is now busy depositing ova.

I have larvæ now feeding on *Potentilla reptans*, which are not nearly full-fed; these were *obtained from eggs laid in June*.—Alfred E. Hudd, Gloucester Row, Clifton, *September* 12*th*, 1865.

Second brood of Botys asinalis.— The second brood of *B. asinalis* is now out; I have seen several specimens this evening in the garden.—Alfred E. Hudd, Clifton, *September* 16*th*.

[A description of the larva of this species, with notes on its food, &c., from the pen of the Rev. John Hellins, will appear in our next.—Eds.]

Notes on the occurrence of Æschna borealis and other Dragon-flies at Rannoch.—During my stay at Camachgouran, Loch Rannoch, Perthshire, in the beginning of last June, I obtained three specimens (2 ♂, 1 ♀) of an *Æschna*, which I have since identified with *Æ. borealis*, Zetterstedt. This may be looked upon as a re-discovery of the species as British, its claim to a place in our fauna having rested on the authority of a single specimen, taken many years since in the North of Scotland by Mr. Wilson, and by him presented to M. de Selys Longchamps (*Vide* "Revue des Odonates," page 121). My examples were all taken on the steep fern-covered face of rocky hills, where their capture was most difficult; they never appeared to frequent the flat ground or moors. Two others were seen, but not taken.

Æ. borealis is allied to *mixta*, Latreille, and *affinis*, Van der Lind. (the latter not a British species), but the distinguishing characters are fully pointed out by M. de Selys and Dr. Hagen in the "Revue," and in the Entomologist's Annual for 1857, page 52; but, owing to a slight discrepancy between my insects and the published descriptions, I sent a male to Dr. Hagen, who tells me that it is

undoubtedly *borealis*. The discrepancy I speak of is this:—In the "Revue" it is emphatically stated that "*le secteur subnodal n'est pas bifurqué sous le pterostigma*, ce que se voit, au contraire, chez toutes les autres espèces européennes (excepté chez l'*irene*);" and in the "Annual" the same character is mentioned; yet Brauer, in his most useful work, "Neuroptera Austriaca," p. 20, states that this sector divides under the pterostigma, but that the upper branch is much finer than in other species; and this exactly tallied with my own examples. Dr. Hagen informs me that, in the specimen sent to him, the sector is furcate in the right fore-wing, and simple in the left (which I had not noticed); and that previously to 1858 he had seen no example in which the sector was furcate, but that he has since found that it varies in this respect. Another character mentioned by Brauer is not stable, viz., that between the upper branch of the sub-nodal sector, and the sector above it (*sector nodalis* of Brauer), there are two rows of cells, whereas, in other species, there is generally only one; I find both states to exist in my three examples.

Respecting the distribution of *borealis*, it may be mentioned that the species appears to be decidedly northern. Zetterstedt states that it is common in Lapland, and occurs in Sweden. It has been found, but rarely, in Silesia and Switzerland, and Dr. Hagen possesses it from Western Siberia and Russian America? (the example from the latter locality being *Æ. Sitchensis* of Hagen, and, as he informs me, probably identical with *borealis*.) Brauer includes it in the Austrian Fauna.

The other Dragon-flies that I found at Rannoch were few in number, the season being too little advanced. *Cordulia arctica* occurred not uncommonly on the spongy moors, but was difficult to follow without getting most unpleasantly bogged (this species, as British, has only been hitherto found here, and at Killarney, in Ireland); *Cordulegaster annulatus* was quite common in the same localities, and more easy to capture; *Libellula quadrimaculata* was found in some numbers about moor-ponds; *Agrion minium* occurred in the same situations, and *A. cyathigerum* was seen on the shores of the Loch. The beginning of June is undoubtedly too early for a locality in which, at that time, the snow still lies thickly on the tops of the hills.—R. McLachlan, 1, Park Road Terrace, Forest Hill, *September 8th*, 1865.

Monanthia humuli, Fieber; a mining Hemipteron.—Prof. August Menzel mentions in his "life of the late M. J. J. Bremi" ("Forscherleben eines Gehörlosen, Zurich, 1857," p. 29) the latter's discovery, that the larva of *Monanthia convergens*, Klug. (*M. humuli*, Fieber,) *mines* up to the time it casts its first skin, and that this is the only instance where we notice this habit amongst the *Hemiptera*.

Messrs. Douglas and Scott tell us, in their recent work ("British Hem. Heteroptera, p. 245), on the authority of Professor Burmeister, that the said insect occurs on *Myosotis palustris*, and I hope this note will induce some observers to verify Bremi's observation, and to give us further particulars about this singular fact. Perhaps it will also serve as a stepping-stone to the elucidation of the habits of other species of the genus.—Albert Müller, 2, Camden Villas, Penge, S.E., *8th September*, 1865.

Curious habit of Notoxus monoceros.—I recently picked up a dead specimen of one of the common *Proscarabæi*, which had been trodden upon in a dusty roadway near this place, and was somewhat surprised to find upwards of half-a-dozen of

Notoxus ensconced in its half-dried carcase. The insect is usually found at the roots of grass in hot sandy places; and it would be interesting to know whether other instances of such quasi-carnivorous propensities have been observed in this species or its allies.—Rev. W. Tylden, Stanford Rectory, Hythe, *August*, 1865.

Capture of Apion ononidis, a species new to Britain.—I have the pleasure of recording the capture of a new British *Apion*, the *A. ononidis* of Gyllenhal.

It is a large species, belonging to the yellow-legged group, and, at first sight, reminds one of *A. fagi*; but, on examination, appears more closely allied to *A. assimile*. The male may be distinguished from both of these species by its stout, almost subulate, rostrum, and by its longer antennæ: the female differs from *A. assimile* in its larger size, dull and very closely rugose-punctate thorax, and longer antennæ; and is easily distinguished from the same sex in *A. fagi* by its very strongly arched rostrum. All the femora are rufo-testaceous (the anterior coxæ and trochanters being also of that colour); the anterior tibiæ are very dusky-testaceous, and the other tibiæ black.

Gyllenhal (Ins. Suec., IV., App. 539, 19) says "*Habitat in Bahusiæ maritimis, prope Udwalliam; in ononide arvensi copiosè lectum.*" My specimens come also from the same plant (or, perhaps, *Ononis spinosa*), on the south coast.

There are several examples of the female of *A. ononidis*, Gyll., in the European collection of the Brit. Mus.; one of which, ticketed "*Bahusiæ maritimis*, Gyll.," was presented by the late Mr. Walton, who received it from Schönherr as a type of that species, agrees in every respect with the females of the insect the capture of which I have now recorded.—D. Sharp, 13, Loudoun Road, St. John's Wood, *September*, 1865.

Entomological Society of London, *September 4th*, 1865.—F. Smith, Esq., Vice-President, in the Chair.

Herr Schaufuss, of Dresden, was elected a Foreign Member; and the Rev. Sir C. R. Lighton, Bart., of Ellastone, Ashbourne; and H. T. Wood, Esq., of the Vicarage, Harrow, were elected Subscribers.

Mr. Bond exhibited varieties of *Fidonia atomaria*, viz., the male with the colouring of the female, and the female with that of the male; also females of *Gonepteryx rhamni* shewing traces of the dark coloration of the male; and beautiful varieties of *Ennychia angulalis*.

Mr. McLachlan exhibited both sexes of *Æschna borealis*, of Zett., taken in June last at Rannoch, this dragon-fly being hitherto known as British from a single example, taken many years since in Scotland, and now in De Sely's collection. He also exhibited *Sialis fuliginosa*, of Pictet, Brauer, taken at Rannoch, and new to Britain; and two new British Trichopterous insects, viz., a *Stenophylax*, which he proposed to call *infumatus* (from Rannoch), and a *Rhyacophila* allied to, or identical with, *R. ferruginea*, of Hagen (from near Edinburgh).

Mr. Stainton exhibited (on behalf of Mr. D'Orville, of Exeter) an example of *Caradrina cubicularis*, the under-side of the wings of which were infested with a considerable number of reddish *Acari*; he remarked that the parasites were placed in nearly equal numbers on each side, viz., seven on each anterior wing, and

thirteen on one posterior wing, and fourteen on the other. Mr. Stainton also called attention to the number of Chelifers he had found this autumn, attached to the legs of the house-fly, some flies having as many as three on one leg. He could not imagine for what purpose the Chelifers attached themselves to the flies, and dissented from Dr. Hagen's supposition that it was for the pursose of being transported from one locality to another, as, according to his observations, they did not quit the flies until the latter died.

Mr. Baly remarked, with respect to the recorded scarcity of wasps this autumn, that he had received information from Scotland stating that these insects were abundant there. The Secretary read a letter from Mr. Stone, confirming the accounts of their scarcity in England, and stating that the larvæ had been attacked by a disease, which destroyed them in large numbers. Mr. Smith also said that at Bournemouth last autumn wasps appeared in great abundance, whereas this autumn he had not seen a single one in the same locality.

Mr. Stainton exhibited pods of *Epilobium montanum*, received from Mr. Barrett, attacked by the larvæ of *Laverna sub-bistrigella;* and beautiful drawings, illustrating the larva and its mode of life.

Professor Westwood called the attention of the meeting to the exhibition of economic entomology, which he had lately visited at Paris, and made some remarks on some of the more interesting subjects contained therein, viz., old account books destroyed by *Termes lucifugus* from the South of France; nests of the South American honey-producing wasp, *Myrapetra scutellaris;* and the large collection of bee-hives, some of them of novel and interesting construction. He also called attention to the large collection of silks, exhibited by M. Guerin-Méneville, including the silk from the *Ailanthus* silk-worm, and remarked that the French silk merchants were commencing to import the Ailantine silk direct from China.

Mr. W. F. Kirby exhibited the remarkably small example of *Lycæna Alexis*, recorded in the last number of the Entomologist's Monthly Magazine, page 92.

Mr. Stevens exhibited a selection of *Coleoptera* from a collection received from Mr. Andersson, and collected in Damara Land, South Africa; these included fine species of *Eudicella*, *Cheirolasea*, *Manticora*, *&c.*

The Secretary read an extract from a letter of a correspondent of one of the daily papers, stating that, after the inauguration of the statue of the late Prince Consort at Cobourg, an alarm was raised that smoke was issuing fram the spire of Cobourg Cathedral, when a scaffolding was hastily erected and water taken up; the man who reached the spot was seen to be making singular motions, and, on descending, reported that the appearance of smoke was caused by a swarm of winged ants, which had completely covered him.

Mr. Wormald remarked that, on the previous Saturday, he had seen a similar swarm of ants on the top of the dome of St. Alban's Cathedral.

Professor Westwood called attention to a memoir by Mr. A. S. Packard, Jun. (an American entomologist), on a species of *Mymar* with the wings deeply divided into two portions; and remarked that he had a monograph in preparation on some Hymenopterous insects, one of which presented a similar peculiarity.

SYNOPSIS OF THE *PSOCINA* WITHOUT OCELLI.

BY DR. H. A. HAGEN.

Family PSOCINA.

Division 1. ATROPINA. Ocelli absent.

* Tarsi three-jointed.

Genus ATROPOS, Leach.

Meso- and meta-thorax united; antennæ with seventeen joints, thread fine; without wings; femora dilated; second joint of the tarsi short.

1.—*A. divinatoria*, Müller Prodr. 2179.

Ivory-yellow; the head darker, eyes black.

Female with a large oval egg-valve, covering the apex of the abdomen beneath Male with an oblong lobe at the apex beneath, on each side of which is a slender hook, acute and curved inwards at the tip. Head long, oblong. Abdomen transversely excavated above.

Long. 1½ millimetres.

Head sometimes yellowish-red, in which case the insect is darker.

Habitat: Europe, everywhere; Greenland.

It is *A. pulsatoria* of Westwood and authors (not of Linné), and *Liposcelis muscorum* of Motschulsky.

2.—*A. resinata*, new sp.

In gum copal (Animé). I possess one example, somewhat similar to the last. It is not situated in such a manner as to enable me to be sure of its identity; it will be necessary to examine several.

3.—*A. formicaria*, new sp.

Shining black; the antennæ and legs brown beneath.

Long. 1 mill.

Habitat: Prussia; near Königsberg in the nests of *Formica fuliginosa*. It resembles *A. divinatoria* in form.

4.—*A. fatidica*, Linné.

I do not know this species. Linné says that it is twice as large as *T. pulsatorium* (*Clothilla*), which species is larger than *A. divinatoria*; otherwise one would consider it to be the latter species. "*Ore pallido, oculis fuscis*" (Linn.).

Habitat: Southern Europe; in dried plants received from Rolander.

5.—*A. oleagina*, new sp.

Head maroon-brown; eyes small, black; meso- and meta-thorax,

and the basal half of the dorsal abdominal segments, brown; the rest pale; the palpi perhaps rather darker.

Head cordate, as long as broad, truncated behind. Antennæ rather stronger than in *divinatoria*, especially the thread. Anal parts as in *divinatoria*. Abdomen almost fusiform, convex above.

Long. $1\frac{1}{2}$ mill.

Received from Ceylon, from Mr. Nietner; it is imported there in English oilcake.

The insect is slender and much elongated, somewhat similar to an immature *Termes*. I have seen a number; also those immature, and even an egg with an embryo. It bears some resemblance to *Clothilla*, but I see no rudiments of wings.

Genus Clothilla, Westwood.

Meso- and meta-thorax separated; antennæ with 27 joints, the thread stout; superior wings rudimentary, without reticulation; femora dilated; second joint of the tarsi short.

1.—*C. pulsatoria*, Linné.

Pale yellow; eyes bright yellow or brown; head darker; antennæ brown, the base of the joints paler; abdomen with reddish elongated dorsal points.

Head cordate, as long as broad. Meso-thorax with rudiments of wings, in the form of oval coriaceous scales. Male with a double acute valve on the seventh segment beneath.

Long. 2 mill.

Habitat: Europe, in boxes of insects, &c. It is apparently the true *Termes pulsatorium* of Linné, and *T. lignorum* of De Geer. *C. studiosa* of Westwood, according to the type.

2.—*C. annulata*, new sp.

Similar to the last, but slightly shorter, and more quadrate. Livid brown; eyes brown; the last joint of the palpi also brown, as well as the head and sides of the thorax.

Pro-thorax widened posteriorly. Rudiments of wings varied with brown. The abdominal spots larger. Abdominal valve as in *pulsatoria*. Thighs at the apex, and the tibiæ at the base and apex, annulated with brown.

Long. $1\frac{1}{2}$ mill.

Habitat: Europe. I have found two examples in boxes of European insects. This species is apparently described by Geoffroy, t. ii., p. 602.

3.—*C. inquilina*, Heyden.

More or less dark brown, slightly hairy; labrum dark brown; eyes black, prominent; rudiments of wings hairy, scabrous, of the same colour as the body.

Long. $1\frac{1}{3}$ mill.

Habitat: Europe, in boxes of insects. It is *Lepinotus inquilinus* of Heyden, according to the types, from Vienna, Hungary, and the Tyrol, but M. von Heyden's description is incorrect.

It is also *Paradoxides* (or since *Paradoxenus*) *psocoides* of Motschulsky from Saxony and St. Petersburg; the latter *P. tuberculatus* Motsch. in litt. Motschulsky mistook it for a Coleopterous insect allied to *Drilus*.

4.—*C. picea*, Motschulsky.

Shining black.

Long. 1 mill.

Habitat: California (?). In boxes of insects received from California. Hag. Synopsis Amer. Neurop., p. 8.

Genus Psoquilla, new genus.

Meso- and meta-thorax separated; thread of antennæ slender; superior wings short, veined; femora slender; the apical joints of the tarsi short, equal.

1.—*P. margine-punctata*, new sp.

Head shining brown, cordate; eyes black, large and prominent; palpi grey, the terminal joint greatly swollen at the apex; thread of the antennæ fine, multiarticulate (broken); superior wings slender, slightly shorter than the abdomen, black, with white points on the margin; neuration imperfect, the middle vein forked near the base, with a branch on the anterior margin and a long fork near the elliptical apex of the wing, also with a superior and inferior branch, the post-costal vein curved and simple; the margins and the veins are conspicuously ciliated; the white points are found on the margin between the veins, three anterior, one apical, and four posterior; posterior wings absent or not evident; legs slender, yellow; posterior tibiæ annulated with grey; basal joint of the tarsi long, the two others short and equal; abdomen oval, brown.

Long. $1\frac{1}{4}$ mill.

Habitat: I know of only one example, in Winthem's collection, without ticket; perhaps from Hamburgh. The flattened form of the insect is perhaps not natural.

** Tarsi two-jointed.

Genus LACHESILLA, Westwood.

Male with superior wings; female apterous.

L. fatidica, Westwood, Introd. fig. 59, 16.

Unknown to me.

Habitat: England. Perhaps *Psocus lucifugus* of Rambur is the female of this species.

The above contains all I know at present of the *Psocidæ* without ocelli. Apparently new species will be discovered, but it is to be wished that those already known may be better examined. De Geer's description applies almost simply to *C. pulsatoria*, and also his remark on the copulation. The rudiments of wings are difficult to distinguish, and readily fall off. Neither De Geer nor Westwood have mentioned the wings, but I see them in a type received from Prof. Westwood himself.

Königsberg, July, 1865.

AN ESSAY TOWARDS A KNOWLEDGE OF BRITISH *HOMOPTERA*.

BY THE REV. T. A. MARSHALL, M.A.

(*Continued from page* 105).

Gen. PEDIOPSIS, Burm.

Distinguished from *Macropsis* by the membrane having only five cells, instead of seven or eight; from *Idiocerus* by the ♂ wanting the laminar excrescence near the apex of the antennary seta; and from both genera by the vertex being obtusangular, instead of broadly rounded.

A. Tibiæ anticæ et posticæ puncto extus prope basin nigro.
a. Lora a fronte disjuncta. Clypeus medio tumidus. Segmentum genitale ♀ subtus postice triangulare.

1.—*Pediopsis nassatus*, Germ.

♂ Pallide testaceus, plus minus brunneus, abdomine supra sæpe nigro. Caput nigro quinque-punctatum; sc. punctis 3 in vertice supra, duobusque majoribus in fronte inter antennas, nigris. Pronotum antice nigro obscure 5-punctatum. Scutellum maculis 2 triangularibus nigris. Hemelytra fusco-testacea, venis crassioribus, brunneis. ♀ differt colore

magis rufescente; hemelytra fasciis 2 nigris transversis interruptis, fascia apicali tenuiore, curvata. Pedes testacei, nigro varii.

Variat capite, pronoto, scutello, impunctatis.

Long. $1\frac{1}{4}$-$2\frac{1}{4}$; alar. exp. $3\frac{1}{2}$-5 lin.

Iassus nassatus, Germ., Fn., 17, 13.
Iassus impurus, Boh., Handl., 1849, p. 39.
P. nassatus, Flor, R.L. 2, p. 189.

Rather common on dwarf willows, young birches, and alders, in the London and midland districts. Especially frequent on Wimbledon Common, and in Jordan's Wood, Kent.

b. Lora cum fronte coalita. Clypeus planus. Segmentum genitale ♀ subtus postice rotundatum.

2.—*Pediopsis scutellatus*, Boh. ?

Præcedenti ita similis, ut non nisi structuræ discrimine levissimo (supra indicato) separari queat. ♂.

Iassus scutellatus, Boh., Handl., 1847, p. 53.
Bythoscopus diadema, Fab., S.R., 87, 14 (?); Ent. Syst., 4, 44, 74.
Iassus tiliæ, Germ., Fn., 14, 14 (?).

To this species I refer doubtfully two specimens taken, by sweeping, in a wood near Leicester. I am ignorant to what tree they were attached.

B. Tibiæ tantum posticæ puncto extus prope basin nigro.

a. Pronoti rugulæ transversæ. Ocelli verticis margini posteriori quam antennarum insertioni propiores. Color variat.

3.—*Pediopsis fruticola*, Fall.

De coloribus infra. Caput ruguloso-punctatum, lineis in fronte duabus glabris. Pronoti rugulæ antice subtiliores, punctis hic illic interstinctæ. Hemelytra ♀ plerumque opaca; ♂ sæpius hyalina, nervis crassis, fuscescentibus.

Long. ♂ $1\frac{1}{2}$-$2\frac{1}{4}$; ♀ $1\frac{3}{4}$-$2\frac{1}{2}$; alar. exp. $3\frac{1}{2}$-5 lin.

The varieties of this insect are numerous, and, as they exhibit differences in the form of the head (cf. var. 7, infra.), as well as in size and coloration, recourse can only be had to the slight but constant characters indicated above, in order to identify the species. According to Flor, the principal varieties of the ♀ are as follows:—

Var. 1. *rosæ*, Fab.—Flavus, abdomine supra nigro. Hemelytrorum pars tertia apicalis hyalina.

Var. 2. *pallens*, Zett.—Griseo-flavus, hemelytris totis hyalinis. Femora basi nigro lineata.

Var. 3. *flavicollis*, Lin.—Flavus, fronte infuscata. Hemelytra brunnea, maculis hyalinis ; clavi margo interior flavus.

Var. 4. *triangularis*, Fab. — Caput, pronotum, scutellum, brunnea. Cætera ut in var. 3.

Var. 5. *nigritulus*, Zett.—Totus fuscus v. nigricans, hemelytris hyalinis.

Var. 6. *obscurus*, Zett.—Caput, pronotum, scutellum griseo-flava, fusco-varia. Hemelytra hyalina, nervis nigris crassioribus.

Var. 7. *frontalis*, Flor. — Frons disco plano. Alii alias varietates coloribus referunt.

The ♂ is less subject to vary than the other sex, and for the most part agrees with var. 6, *obscurus*, Zett.

Iassus fruticola, Fall. ; Zett., Ins. Lapp., p. 302.
Bythoscopus flavicollis, pulchellus, ferrugineus, fenestratus, personatus, Curt., B.E., 636.
B. reticulatus, Curt., ibid, fig. ♂.
Iassus flavicollis, Lewis, Trans. Ent. Soc., 1, p. 50, fig.
Pediopsis fruticola, Flor, R.L. 2, p. 184, &c.. &c.

Common on birch trees, and less frequently on willows, throughout England, Ireland, and Scotland.

b. Pronoti rugulæ a margine antico basin versus oblique divaricantes. Ocelli antennarum origini propiores quam verticis margini posteriori. Color semper viridis.

4.—*Pediopsis virescens*, Fab.

Totus gramineo-viridis, parum nitidus ; vertex puncto nonnunquam apicali fusco. Hemelytra viridi-hyalina, nervis prasinis, apice pallidioribus. ♂ ♀. Long. $1\frac{3}{4}$-$2\frac{1}{2}$; alar. exp. 5 lin.

Cicada virescens, Fab., S.R., p. 79.
C. graminea, Fab., ibid , p. 77.
Iassus assimilis, Germ., Fn., 17, 15.
Pediopsis virescens, Flor, R.L. 2, p. 188.

On willows. Apparently very local ; the only place where I have met with it is Wimbledon Common, where it occurred sparingly, in company with *P. nassatus*, in July.

(To be continued.)

DESCRIPTIONS OF NEW GENERA AND SPECIES OF *GALLERUCIDÆ*.

BY JOSEPH S. BALY, M.D., F.L.S.

(*Continued from page* 101.)

Genus Iphidea.

Corpus ovato-elongatum, convexum. *Caput* exsertum, breve: *facie* perpendiculari, inter oculos convexiusculâ: *antennis* corpore vix brevioribus, gracilibus, filiformibus; articulo primo sub-elongato, curvato, basi ad apicem incrassato; secundo dimidiâ parte suâ vix breviori; tertio secundo dimidio longiori; sequentibus inter se fere æqualibus, singulis tertio paullo longioribus: *palpis* maxillaribus ovatis, acuminatis: *oculis* prominulis, integris. *Thorax* transversus, lateribus leviter rotundatis, vix marginatis, disco haud impresso. *Elytra* thorace latiora, subparallela, confusim punctata. *Pedes* graciles, elongati: *coxis* anticis fere contiguis: *femoribus* posticis haud incrassatis: *tibiis* omnibus apice spinâ acutâ elongatâ armatis: *tarsorum* posticorum articulo primo elongato, sequentibus conjunctim longiori; secundo primi tertiæ parti æquali; tertio brevissimo: *unguiculis* appendiculatis. *Prosternum* lineariforme, fere obsoletum.

Type, *Iphidea discrepens.*

The present genus is very closely allied to *Luperodes*, Motsch., from which it differs in its more parallel form and longer legs, and in the relative length of the second and third joints of the hinder pair of tarsi; in *Iphidea* the second joint being nearly twice the length of the third, which is very short, whilst in *Luperodes* both joints are short and equal. Both genera have the first joint very long, and also agree in having the apices of all the tibiæ armed with a long slender spine.

Iphidea discrepens, n. s.

Elongata, sub-parallela, convexa, pallide fulvo-fusea, nitida, subtus nigro-picea; antennis (*basi exceptâ*), *scutello, pedibusque nigris, genubus anticis obscure fulvis; elytris tenuiter sub-remote punctatis, limbo exteriori suturâque anguste piceis.* *Long.* 3 lin.

Hab.: Japan.

Face short; labrum and jaws black; encarpæ transverse, contiguous. Thorax more than one half broader than long; sides narrowly margined, straight and parallel, but converging in front, with the anterior angles armed with an obtuse setiferous tubercle; disc transversely convex, impunctate. Scutellum triangular, shining black.

Genus Astena.

Corpus elongatum, fere parallelum, postice vix ampliatum, convexum.

Caput exsertum: *facie* triangulari, perpendiculari: *antennis* corpore brevioribus, gracilibus, filiformibus; articulo primo curvato, basi ad apicem incrassato; secundo brevi; sequentibus cylindricis, fere æqualibus, singulis primo longitudine æqualibus: *oculis* prominentibus, semiglobosis: *palpis* maxillaribus crassis, apice ovato-rotundatis. *Thorax* transversus, modice convexus; disco haud impresso; lateribus sub-rectis, anguste marginatis; angulis anticis incrassatis, glandulâ setiferâ instructis. *Elytra* thorace latiora, sub-elongata, sub-parallela, postice vix dilatata; dorso convexa, infra basim non transversim impressa; confusim punctata. *Pedes* graciles, elongati; *coxis* anticis erectis, prosterno vix separatis; *femoribus* posticis haud incrassatis; *tibiis* omnibus apice spinâ acutâ armatis; *tarsorum* posticorum articulo primo cæteris conjunctis longitudine æquali. *Prosternum* lineariforme, fere obsoletum.

Type *Astena atripes*.

Astena may be known from *Iphidea* by the shorter basal joint of the hinder tarsi, as well as the much shorter and stouter spine at the apex of the tibiæ; the antennæ, also, are more slender.

Astena atripes, n. s.

Elongata, sub-angustata, convexa, fusco-fulva, nitida; antennis, ore, pedibusqae nigris; elytris basi apicem versus leniter dilatatis, medio infra basim leviter depressis, subtiliter punctatis. *Long.* 4½ lin.

Hab.: India.

Head exserted, face triangular; encarpæ sub-triangular, contiguous. Thorax two-thirds broader than long; sides narrowly margined, nearly straight, distinctly notched in the middle, slightly converging from base to apex; basal margin oblique on either side, distinctly notched in the middle; upper surface smooth, very minutely punctured. Elytra much broader than the thorax, sub-parallel, slightly dilated from the base towards the apex; convex, depressed on the suture just below the basilar space; finely but distinctly punctured.

(*To be continued*).

OBSERVATIONS ON THE ECONOMY, MOULTING, AND PUPATION OF THE LARVA OF *LYONETIA CLERCKELLA*.

BY CHARLES HEALY.

When this larva, which, it is well known, makes long serpentine mines in its various food-plants, is about to undergo its first moult, it lies in a quiescent state in its mine, and if closely examined with a lens a day or so afterwards, its body will be found to be dusted with a number of very minute dark spots; these spots enlarge, until at

length the whole surface of the larva's body has a dark brown spotted appearance; when this stage of its economy is reached, it is a sign that the time has arrived for the larva to throw off its old skin; on the skin splitting at the head, the larva gradually eats its way forward, and as it feeds with the under-side of its body facing the upper surface of its food, the dark horny legs on its second, third, and fourth segments, as they successively make their appearance out of the old skin, become very conspicuous; the larva's head is then very pale brown, and has a dark brown spot on each side, tip of mouth dark brown, the anterior part of the body dull green, the posterior portion still remaining in its old skin is not traceable, owing to the dull spotted state of the latter; at length, after feeding for ten hours, it entirely escapes from its old skin, and remains motionless for some time. When the larva quits its old skin, and continues its mine straightforward, it is difficult to detect the locality of the cast-off skin, owing to its being full of frass; but sometimes at the first moment of moulting the skin splits at the side of the larva's head, through which opening it gradually emerges. When this occurs, the old skin can readily be detected, as it then points in an opposite direction to that in which the larva is feeding. When the larva re-commences feeding the body becomes pale green, and the only part of the dorsal vessel discernable is the anterior portion, which is dark green; when the larva is nearly full fed the dorsal vessel is yellowish-green throughout its entire length; and when quite full fed it is no longer perceptible; the body is then pale green, excepting the ninth segment, which is yellow, seemingly as though the yellowish fluid, which had first previously traversed the dorsal vessel, had finally settled in that segment. The larva then quits its mine, and wanders about in search of a suitable spot on which to construct its ingeniously suspended cocoon. Immediately after the larva has completed its cocoon, it lies quiet therein for two or three days, after which it throws off its skin for the second time, and enters the pupal state, the cast-off skin remaining collected in a little heap outside the cocoon. The anterior and posterior segments of the pupa are white, and the remaining segments pale green; eyes colourless, the yellow tint observable on the ninth segment is still visible in the pupa. After some three or four days, the feet, and the tips of the antennæ, turn dark, the eyes become encircled with a pale green tint, which shortly afterwards retires, and then a minute black speck is faintly discernable in the centre of each eye; the specks slowly enlarge until they cover the whole expanse of each eye, turning them shining black. The posterior portion of each wing-case becomes blackish, and each of the second and third segments has a mark on its back; these latter marks sometimes assume a semi-circular form. About the ninth day the imago emerges from the pupa, and the empty pupa skin retains the dark marks at the localities where the imago's feet and tips of antennæ lay during its pupation.

DESCRIPTION OF A HEMIPTEROUS INSECT (*CAPSUS MINIATUS*) NEW TO SCIENCE.

BY E. PARFITT.

Vermilion red; antennæ setose-pubescent, testaceous red, the base and apex of the basal joint, a band in the middle of the second, and the apex, black (the third and fourth broken off).

Thorax with two blackish lines beginning directly behind the prominent eyes, and gradually growing wider backwards. These lines are continued along the hemelytra, interrupted only by the neuration, to near the apex. Scutellum with black lines on the edge of the base. Hemelytra: corium vermilion red, the cuneus rather paler, membrane dusky, the nerve in the centre forming a sharp angle, vermilion red.

Wings having a purplish hue, and beautifully iridescent.

Body, beneath, coloured as above, with a square black dot on the margin of each segment.

Legs coloured the same as the body, pubescent, the tips of the tibiæ and tarsi black.

Length 2‴; expanse of hemelytra 5‴.

The above beautiful species I took in Messrs. Veitch's nursery, at Exeter, June, 1851. I forwarded it some time ago to Messrs. Douglas & Scott, and it has just been returned to me as new to science. I have, therefore, much pleasure in making it known.

Exeter, *September*, 1865.

DESCRIPTION OF AN *ACIDALIA* NEW TO SCIENCE AND TO BRITAIN.

BY H. G. KNAGGS, M.D.

Acidalia Mancuniata, n. sp. Expansion of fore-wings 8‴-9‴. Pale ochreous white, dusted with exceedingly minute black atoms; fore-wings with five more or less distinct nearly parallel transverse lines, central dots either absent or barely perceptible; hind margins of all the wings at the insertion of the cilia most minutely but distinctly dotted.

This species appears to be intermediate between *A. subsericeata* and *A. straminata*, being more nearly allied to the former than the latter.

From *A. subsericeata* this insect is readily distinguished (1) by the less pointed apex of its fore-wing, (2) by the warmer ochreous tint of its ground colour, (3) by the less degree of silkiness, (4) by the very minutely but distinctly dotted margin (the margins of the wings of *subsericeata* are sometimes dotted, but not in the same *minute and distinct* manner), (5) by the number and arrangement of the transverse lines, &c., &c.

From *A. straminata* it is at once separated (1) by the paler ground colour of its wings, (2) by the absence of the conspicuous central dots, (3) by the marginal dots being so much smaller, (4) by the appearance of the transverse lines (in *straminata* these partake more of the character of shades), and (5) by a glance at the under-surface, which presents an abundance of striking characters; of these, two or three, being amply sufficient to dispel any doubts, will be enough for me here to mention. In *straminata* the central dots are strongly marked (in *Mancuniata* either faintly or not at all). In *straminata* the sub-terminal lines are crooked and strongly denticulated, so much so, as to give the appearance of their being formed of a chain of little dots (in *Mancuniata* they are uninterrupted and gently curved, not crooked). In *stramniata* the marginal border is very distinctly dotted (in *Mancuniata* the marginal border is rather indistinctly marked with an interrupted line, composed of dashes running at right angles to the insertion of the cilia), &c., &c.

The examples from which I have taken the above description consist of six bred specimens. These were sent up, together with other insects, to London by Mr. Batty, of South Street, Park, Sheffield, and were shown to me as *A. subsericeata*, when I at once saw that they were distinct both from that species and from *A. straminata*. How this neat little wave could have been passed over as the former I know not; certainly the resemblance is but slight. I have subsequently satisfied myself that it is abundantly distinct from any described species.

On the 16th October Mr. Doubleday, in answer to my request for his assistance in the matter (on which occasion I forwarded three examples each of *A. subsericeata*, *straminata*, and the insect under consideration, respectively), writes, "The first three are certainly *subsericeata;* the next three *straminata=marginepunctata* of Dale; the three on the other side of the box appear to be distinct from either of the others, although closely allied to *subsericeata*. I have a single continental specimen which appears to belong to the same species, but, unfortunately, it is not named; from the ticket on the pin, 'No. 4,' I should think it came from the late Mr. Gutch's collection, of which I purchased two or three drawers in Stevens' Rooms." * * * "I have two ♂ and one ♀, *A. byssinata*, from Herr Lederer; they are quite distinct from either of your insects. Herrich-Schœffer has figured a great many *Acidaliæ*, and perhaps you might find your species amongst them."

Herrich-Schœffer's work was accordingly carefully searched through without success: that of Guenée had, of course, been previously rigidly scrutinised: and subsequently the "Stettin Ent. Zeitung," the "Wiener Ent. Monatschrift," &c., have been duly consulted.

On the 16th October, also, Mr. Batty wrote to me as follows, in reply to my request for information respecting these specimens. "Of the six *subsericeata* you speak about, some I bred, some came from Manchester; a friend, who sent me a lot of eggs from Manchester, termed them *subsericeata;* I sent Mr. Hellins four larvæ, which were all he required, and he said at the time that *they were different looking larvæ from some* [of *subsericeata*] *he had had before.* I bred a goodly number of the perfect insect; the larvæ fed on knotgrass."

Kentish Town, N.W., 18*th October.*

Capture of Argynnis Lathonia at Dover.—On the 16th September, I captured in the garden of Mr. T. Clark, nurseryman here, a splendid *Argynnis Lathonia.* It settled on a bed of Zinnias, and I let the net fall perpendicularly over it, imagining it was either *Euphrosyne* or *Selene,* but the sight of the under-side of the wings at once removed all doubt, the largeness of the silver spots, and the row of seven brown rings with silver centres, giving the insect a truly queenly appearance. The specimen was very perfect, and did not seem to have suffered at all by its long flight, supposing it to have crossed the channel.

The specimen, which is a ♀, has laid three eggs since I caught her.—John D. Richardson, Conservatory Cottage, Charlton, Dover, Kent.

Vanessa Antiopa near Tenterden.—Whilst shooting at Rolanden, near Tenterden, Kent, on the 7th September, I saw a fine specimen of *V. Antiopa* flying over a hop garden.—Robert Mitford, Haverstock Hill, N.W., 17*th October*, 1865.

Chærocampa celerio at Southsea.—Yesterday I was greatly pleased at becoming possessed of a real live *celerio,* in fair, almost fine, condition.

It was captured by Mrs. Collins, a lady residing at Southsea. It seems that her house adjoins some gardens, and has a grape vine growing on its back wall. A bed room window near which the vine is trained was open, and as the lady entered the room, she discovered the insect on the toilet cover, and deftly clapped a tumbler over it. Knowing my taste for insects, she kindly sent it to me. I judge, from the extreme slenderness of the abdomen, and the appearance of the antennæ, that it must be a male.

Noticing that Stainton says that this insect is often attracted by light, I have induced Mrs. Collins to set up a carriage lamp in the room, with the window open after dusk, hoping thereby to attract more should there be any in the neighbourhood.—William Horn, Portsmouth, *September* 27*th*, 1865.

Capture of Chærocampa celerio at flowers of Geranium and Physianthus.—I have pleasure in reporting the capture of a specimen of *Chærocampa celerio*, fresh and in beautiful condition, on the 29th of last month, about twenty minutes past six o'clock, or just dusk. I took it with the net whilst hovering over the flowers of a bed of *Geranium* (Christine); this is the second specimen I have taken in the garden at Brantingham, ten miles from Hull.

I took one in 1846, fast by the proboscis in a flower of *Physianthus albicans*, the flowers of which are excellent insect capturers; these flowers are very sweet and attractive, and the stamens are so placed, that the slightest touch by the proboscis of an insect entering the nectary, causes them and the anthers to close firmly round it. I have seen this plant with dozens of insects upon it, *Plusia gamma* in abundance.—R. C. Kingston, Brantingham Garden, near Brough, East York, *October 4th*, 1865.

Description of the larva of Agrotis aquilina.—Larvæ of this species, more than half grown, were kindly obtained for me on the 15th May, 1865, by Mr. T. Last, a naturalist, of the Borough Road, Ipswich, who informed me they were taken under tufts of the common plantain, and advised their having the narrow-leaved plantain as a change of diet; and from a later communication I learnt that they would eat various low plants, such as poppies, chickweed, knot-grass, and even onions, and that no *Galium* existed within half-a-mile of their locality, and that in rearing them in captivity, a change and variety in food-plants would be essential to their doing well. The few I had, however, did remarkably well on clover and *Plantago lanceolata*; they burrowed after the manner of many of the genus, during the day, and crawled forth to attack their food at night, and were full fed by the 20th June, and the perfect insects emerged from July 24th to 29th, varying much in markings, no two specimens being alike, excepting in the general tint of warm brown, peculiar to this species.

The larva, when full grown, is an inch and a-half long, cylindrical, and rather shining. The head grey-brown, mottled with blackish; the back dingy brown, a dorsal line of rather paler grey-brown, the sub-dorsal line black, edged below with a thin line of grey-brown, and which, like the dorsal line, runs through the blackish plate on the second segment; to this succeeds a broad stripe of dingy blackish-green, then another thin line of grey-brown, followed by another broad stripe of dingy blackish-green, the black spiracles being situated along its lower edge; the belly and legs grey-brown, the warty spots dark brown and not very conspicuous; the general aspect of the larva very dark and dingy.—Wm. Buckler, *Sept.*, 1865.

Sterrha sacraria in the Isle of Wight.—I took this species, this year, in the Isle of Wight, nearly opposite to Hurst Castle. I was beating some furze and grass, when it flew out and settled a few inches from the spot.—J. C. Dale, Glanvilles Wootton, *October 5th*, 1865.

Sterrha sacraria at St. John's Wood.—I possess a fine male *sacraria*, captured two or three years since by a son of Mr. Hind, the astronomer: this example, which has not been previously recorded, was taken off a fence close by South Bank, Regent's Park.—H. G. Knaggs, Kentish Town, N.W.

Sterrha sacraria near Ryde.—A beautiful specimen of this insect was beaten out of brambles upon St. Helen's Dovor, Isle of Wight, on the 9th of September; but as it differs somewhat from any description I have seen, I send you the following account.

Front wings light straw colour, with a bright pink oblique stripe from the costal to the inner margin, and also *a pink stripe along the costal margin* from the baso more than half way along. The under-side of the front wings are *tipped with pink*, and the oblique stripe shows through of a purple colour. A second specimen has since been seen, but not captured.—Jas. Ingram, St. Helen's Schools, Nettlestone, Ryde, Isle of Wight, *September*, 1865.

[We have seen this beautiful example; the pink costal stripe is not unusual in continental specimens.—Eds.]

Description of the larva of Sterrha sacraria.—In the September No. of this Magazine, p. 92, Mr. McLachlan records the capture of a female of this species near Worthing on the afternoon of August 19th. That same day she laid seven eggs, which were forthwith entrusted to me, and I am happy to say I can now give a good account of six of them, one unfortunately having been crushed in the quill during its journey.

The larvæ were hatched August 29th, reached full growth and spun up between September 20th and 30th, and the six pupæ at the present date look lively and well.

The shape of the egg is singular—a very long narrow oval, with the under-side flattened, and when seen under an inch lens, it appears to be finely dotted all over, as well as ornamented with rows of hexagonal network; its colour when first laid is a pale greenish-yellow, changing in a day or two to a bright coral-red, and from that to a smoky-grey a few hours before the escape of the larva.

The larva on its first appearance is translucent and whitish, with a broad (that is broad in comparison to the bulk of the tiny creature) purplish-red lateral stripe, as pretty a youngling as I ever made the acquaintance of in my experience of *Lepidopterous* larvæ. At the end of a week the length was about $\frac{5}{16}$-inch; the white colour changed to a soft grey, the lateral stripe brownish-red, and comparatively narrower than at first. After another week the length was about $\frac{9}{16}$-inch, the lateral stripe gone, and the colour either a pale green or greenish-brown on the back, with the belly grey.

About the middle of the third week the last change of skin took place, and the larva began to put on its mature appearance.

When full grown, the length is a full inch. The shape slender, cylindrical, tapering very gradually towards the head; the skin smooth, with a few bristles, chiefly on the anterior and posterior segments: the head rather flat, and widish. When at rest the larva is not quite straight, the back being slightly raised; when disturbed it curls up spirally (like an *Acidalia*), forming about a coil and a half.

The colour on the back is either a full green or a blue-green—velvety, with the posterior segments more yellowish-green, the belly a delicate whitish-green, and the segmental folds yellow. The head pale brownish-red, on either lobe a pale stripe bordered above with brighter red, and below with darker brown: the very

fine dorsal line, paler than the ground, is bordered throughout more or less distinctly with lines of either a bright rust or deep red colour, which at each of the folds, after segment five, expand into a V, with the apex pointing forward, and enclose a three-cornered yellowish-white spot; the dorsal line becomes more distinct, and its borders of a stronger red after segment eight: the anal flap and ventral legs are tinged with purplish-pink; there are two very fine faint brownish-green and subdorsal lines; the region of the spiracles yellowish-green, becoming a more decided yellow stripe in segments two, three, and four, and eleven, twelve, and thirteen; and running down the anal pair of legs; the spiracles reddish.

From this account it will be seen that this larva varies greatly during its growth, the first and last stages being the most beautiful.

The pupa in shape is long, slender, and cylindrical, and very flexible; the head-case projecting and much smaller than the body, which is tolerably uniform in thickness; the wing cases distinct, widely separated from each other, and reaching halfway between the head and tail; the antennæ-cases reaching one or two segments further. Colour a pale yellowish-olive, head and wing-cases pale olive-green, finely outlined with black: the segmental folds and dots along the side of the abdomen are dark also; the tip of the anal segment and the short blunt spike horny and brown. Enclosed in an open fine network of dirty yellow silk, either between the stems of the food-plant, or against the sides or cover of the cage.

The food chosen was *Polygonum aviculare*, and the rate of growth plainly shows that it was eaten freely; no doubt there are other plants equally acceptable, and M. Carl Plotz, in one of his beautiful drawings, had figured this larva on a species of Chamomile.—John Hellins, *October 4th.*

Sterrha sacraria bred.—At the end of a fortnight, the pupæ referred to in my former note began to become more suffused all over with a pale brownish tint, and on October 15th, I noticed one which had changed to a smoky-black, the edges of the wing-cases showing a rich red stripe, and in the evening the moth emerged; since then two more have made their appearance, and by the end of this week, I expect the other three will have followed their example. The fore-wings are variable in tint—always very delicate and pretty; and I notice that the moth likes to rest with its wings roofed together at a very acute angle, after the manner of *Cilix spinula.*—Id., *October 18th.*

Description, &c., of the larva of Botys asinalis.—On 3rd last July I received from Mr. A. E. Hudd, of Clifton, some eggs of this species. These eggs were scale-like, being very flat, of a slightly oval form, deposited in little patches of ten or less on the sides of the chip box; in colour they were very slightly greenish, and very shiny, looking somewhat like spots of grease. On being examined with an inch lens after the larvæ were hatched, the shell appeared to be very thin, and most delicately reticulated.

By July 6th the heads of the larvæ could be seen—like a tiny black dot in each egg, reminding one somewhat of a patch of toad's spawn; and a few hours after, they began to make their debut, little tiny yellowish fellows with dark heads. Mr. Hudd had conjectured the food to be *Rubia peregrina* (madder), and it soon appeared that he was right; the larvæ at once fed freely on the flowers and young

seeds of this plant, and began to increase in bulk, growing paler in colour, but showing a dark line down the back. After a time they seemed to take to the leaves of the madder, eating out the thick substance of them from below, and leaving the upper skin quite perfect in large transparent blotches; I should have said that from the first they spun themselves little hammocks, with a hole at either end, after the custom of their tribe, in which they passed a great deal of their time. By 29th July they had attained some size, and had become translucent, of a shining light brownish colour, with brown dorsal markings. By 7th August they were grown as big as they intended to grow, and one or two showed symptoms of changing. At this time the length was about $\frac{3}{4}$-inch, the figure tapering towards each end, legs sixteen, the head small and flat, the segmental divisions strongly cut, a horny plate on second segment, the whole skin very translucent and shining, with a few bristles.

The colour was a yellowish-brown on the back, paler and more greyish below, the reddish-brown dorsal line rather interrupted, the sub-dorsal stripe broader, brownish, and containing within it two large black dots on each segment; a broad brown lateral stripe below again, with one black dot within it on the front of each segment, the spiracles black. On examination with a lens the colours appeared more pinkish.

August 8th, and following days, the eight or nine larvæ which I had succeeded in rearing, spun themselves up to the sides of their flower-pot in silk webs, and changed to rather slender bright red pupæ, with the antennæ and wing-cases reaching far down the abdomen, and ending in a projecting knob. August 31st, and two following days, there emerged five imagos, rather undersized, but very perfect. I suppose in nature this species cannot be double-brooded. Mr. Hudd has kindly supplied me with the following dates of its appearance.

This year he took the moths at the beginning of July, and could see no more after the middle of the month; however, within the last day or two, he has found in his garden (on madder growing there) two very young larvæ, and the eggs whence these emerged could not have been laid earlier than August 20th; in 1864 he took the moth on August 14th; and he tells me he once knew it taken at Ivy so late as the end of September, but it was then in a very worn condition.

I cannot conclude this note without thanking Mr. Hudd heartily for enabling me to work out the earlier stages of this moth so satisfactorily.—John Hellins, *September 6th.*

Achröia grisella.—I have the *débris* of a bee-hive swarming with this species, and shall be happy to supply any one in want of it.—E. Skepper, 13, Abbeygate Street, Bury St. Edmunds.

A new locality for Gelechia pinguinella.—Quite recently, whilst on a visit to Colchester, I had the pleasure of detecting half-a-dozen fine examples of this novelty in a box belonging to a gentleman who has lately taken up the study of Entomology. He informed me that the species had been abundant this season, and that he had bred specimens from pupæ found in decayed wood of poplars in the neighbourhood of the above-named locality. He could, he said, have collected at least a couple of hundred pupæ had he been so inclined.—F. Bond, 21, Adelaide Road, N.W., *October 10th*, 1865.

Note on the larva of Laverna sub-bistrigella.—I observe there is a trifling discrepancy between Dr. Rössler's notice of the habit of the larva (p. 105), and my own (p. 106). Dr. Rössler states that it feeds down from the tip of the pod. I do not think that it is at all the general rule, often indeed I have found the larva at the lower end, the upper part being full of seed. The position of the larva is generally indicated by the thickness and curve of the pod. By holding it up to the light, the small hole in the side through which the larva entered is often visible, when it cannot be seen otherwise.

I strongly suspect that when young the larva feeds only on one of the four rows of seeds contained in the pod, though when larger it certainly clears all before it, and I think it probable that after feeding along one row it turns round and feeds back on the next, since it empties the pod before leaving it.—C. G. Barrett, Haslemere, Surrey.

Bedellia somnulentella.—Last month the larva of this species, which is so notoriously uncertain as to the time of its appearance, occurred abundantly in the immediate neighbourhood of the Norwood Junction Railway Station.

It is now some seven or eight years since I last saw any of these larvæ; they were then plentiful both at Greenhithe and Addington Road, Norwood, close to the locality of their re-appearance. I have searched each season for them, but without success until the present.—Chas. Healy, 74, Napier Street, Hoxton, *Oct. 3rd*, 1865.

[The abundance of this species this year has been marked, not only in this country, but on the continent. At Frankfort-on-the-Main, to my surprise, I found it abundant on the garden convolvulus, *Ipomœa purpurea*; since my return home I have noticed it on the same plant here.—H. T. S., Lewisham, *October 9th*, 1865.]

A new British Pterophorus.—At Frankfort last month, I noticed in the collection of my friend, Herr Mühlig, a new plume, closely allied to *ochrodactylus*, bearing the name *dichrodactylus*. The following day I visited Dr. Rössler, at Wiesbaden, and again I saw the same insect, only with him it bore the name *ochrodactylus*, and for the other species a new name was proposed of *Bertrami*. Which is the veritable *ochrodactylus* will probably be a very nice question. Herrich Schäffer has no doubt figured *dichrodactylus* under that name, but the very faults which he finds with Hübner's figure would imply that Hübner had represented the other species.

I am also disposed to think that the *ochrodactylus* of Zeller is also *dichrodactylus*: for the present, and to avoid confusion, it may be advisable to drop the name altogether. We have in lieu thereof the two species *dichrodactylus*, Mühlig, and *Bertrami*, Rössler.

Dichrodactylus feeds on tansy (*Tanacetum vulgare*) in July, and the moth appears in August. *Bertrami* feeds on *Achillea ptarmica* early in June, and the perfect insect appears towards the end of that month.

To describe the insects one requires a series of bred specimens of both, whereas I have only a single bred specimen of *dichrodactylus*, this was bred from a pupa on tansy at Chudleigh, in June, 1850, and which appeared in the perfect state July 5th. Of *Bertrami* I have no bred specimens.

Dichrodactylus has the apex of the anterior wings more prolonged, more falcate than in *Bertrami*, and the brown scales on the hind margin of the third feather of

the posterior wings should be more distinct. The best character is, however, furnished by the hind legs: in *Bertrami* the tibiæ are slightly browned, but the tarsi are spotless whitish; in *dichrodactylus* the tibiæ are brown at the middle and apex, and there is a brown spot at the end of the first tarsal joint. These three dark spots have, in bred specimens, a very conspicuous appearance.

I believe the two species will be found mixed in most collections, though caught specimens will be of little use where the differences are so slight. Next year we shall probably all set to work to breed both species.

Herr Mühlig has described his *dichrodactylus* in the Stettin Entomologische Zeitung for 1863, p. 113. Dr. Rössler has described his *Bertrami* in the 8th volume (which I am sorry to hear is the last) of the Wiener Entomolog. Monatschrift, p. 53. —H. T. Stainton, Mountsfield, *October* 13*th*, 1865.

Note on the food of Pterophorus acanthodactylus.—I have occasionally taken in my garden a specimen or two of *P. acanthodactylus*, and not having any "rest-harrow" growing near, suspected some other food-plant. I have just bred two specimens from pupæ I found firmly attached by the tail end to the flower-stalks of a scarlet geranium growing in a pot. I had observed that the leaves were much eaten by some small larvæ, as were also the petals of the flowers, and the tips of the flower-buds, which induced the search. The pupæ were then but just spun up, and were of a lightish green colour, becoming darker as the development advanced.—H. D'Orville, Alphington, near Exeter, *October* 1*st*, 1865.

[Professor Zeller found a larva of this species on a *Pelargonium* obtained from a garden, July 20th, 1846. It bored into the buds, but he did not ascertain whether it attacked the leaves. This circumstance I had always thought accidental, till my attention was more directed lately to the polyphagous habits of this and the allied *punctidactylus*.

Professor Frey has lately begun in the pages of the "Mittheilungen der Schweizerischen Entomologischen Gesellschaft" a notice of the Swiss Micro-Lepidoptera, giving briefly their occurrence and habits, but without descriptions. We there read that *cosmodactylus* (our *punctidactylus*) occurs on the seeds of columbine *(Aquilegia vulgaris)*, and on *Geranium pratense*, and that *acanthodactylus* is unusually polyphagous, occurring on *Ononis spinosa* and *repens*, *Stachys speciosa* and *coccinea*, and the *Pelargoniums* of our gardens.—H. T. S., *Oct.* 13*th*, 1865.]

Captures in South Wales.—Towards the end of May my cousin was staying here, and we entomologised a good deal at the time. Amongst other and commoner things I took the following.

Sesia bombyliformis (in abundance), *Trochilium culiciforme* (a splendid specimen, sunning itself on a birch tree), *Procris statices* (commonly), *Grammesia trilinea* var. *bilinea* (four or five), *Selenia lunaria* (one), *Macaria notata*, *Eupithecia pulchellata* (two), *Melanippe galiata* and *Hydrelia uncana* (abundantly).

Others of less note were very acceptable to our cabinets, and amongst them *N. plantaginis*, which I hope some day to turn up in plenty.

I was also interested this year in lighting upon the head quarters of *Argyrolepia Baumanniana*, which I found, though exceedingly local, in considerable numbers. I had previously taken only two specimens of it.—John T. D. Llewelyn, Penllergare, Swansea.

Captures at light.—From the 11th to the 17th September, I took the following species of *Lepidoptera* off gas lamps in the neighbourhood of Charlton.

E. fuscantaria, 10 ♂ and 1 ♀. *C. verampelina*, 1 ♂. *C. fluviata*, 1 ♂ and 2 ♀. *A. citraria*, 1 ♂. *N. crassicornis*, 1 ♀, and *H. popularis*, 1 ♀, besides various others too common to enumerate.

Seven of the above *fuscantaria*, including the ♀, were taken on one night off lamps in the immediate vicinity of ash trees. The ♀ *fuscantaria*, and also one of the ♀ *fluviata*, deposited ova, the latter soon hatched, and are now in pupa.—Albert H. Jones, Eltham.

Note on the identity of two species of Aterica, a genus of Diurnal Lepidoptera.—I was much surprised, during a re-arrangement of the insects in the Museum Collection, belonging to the African genus *Aterica*, to find how very closely *A. Meleagris* seemed to be allied to *A. stictica*; yet a glance at the under-side of the two species showed at once how necessary it was, without further evidence, to separate them, especially as the colouring of the upper-side in *stictica* is much paler than in *Meleagris*, and the apical portion of the front wings is rather more produced; however, upon examining all the specimens in our Collection under the name of *A. Meleagris*, I found three intermediates, which will, I think, make it necessary to unite the two species. The first of these varieties is from Sierra Leone, and shows most of the white spots on the under-side, but not so distinctly as in *Meleagris*; the second, from the interior of South Africa, is rather paler below, with pale ochreous spots, many of them ill-defined; the third, from Abyssinia, resembles the preceding one, excepting that it has shades of a slightly darker colour on the inner-side of the central rows of spots, and the front wings are a little more produced at the apex.—A. G. Butler, F.Z.S., Zoological Department, British Museum.

Occurrence of an Atomaria new to the British list.—Last year, while overhauling some old Scottish captures, I found an *Atomaria* which was unknown to me. By its size and colour *A. ferruginea* was at once suggested. A closer scrutiny of its antennæ, however, revealed a three-, instead of a two-jointed club, as in the species just named. Some time afterwards, through the kindness of my friend Mr. Sharp, I had the opportunity of examining the plates and descriptions in Sturm's work. There I found my insect well delineated and described under the name of *A. diluta*, Erichson (Ins. Deutschl., iii., 380, 6). It belongs to the section in which the antennæ are closely approximated at the base, and somewhat resembles *A. umbrina* in shape, but has no short longitudinal depressions at the base of the thorax, which is very nearly as wide as the elytra. The entire insect is testaceous, shining, and rather depressed, with long robust antennæ; and is chiefly distinguished by the wide and fine punctuation of the thorax, of which the sides are but slightly narrowed in front, where they terminate in a slight but distinct and acute point.

I have seen a specimen taken this year by Mr. Sharp near Edinburgh, which is identical with my insect.—R. Hislop, Blair Bank, Falkirk, *October*, 1865.

Occurrence of a species of Scaphisoma new to Britain.—I captured, at Coombe Wood, during the autumn of last year, a single example of a *Scaphisoma*, which differs materially from our two recorded species of that genus, and which I am

inclined to refer to *S. assimilis* (Schüpp), Erichs., Ins. Deutsch., iii., 10, 3. While pointing out its characters, it may be of use to some of our readers if I briefly note also those of its allies; both of which are abundant in the fungoid growth on old stumps, &c.

S. agaricinum is generally deep black in colour, with the apical margin of the elytra narrowly testaceous; though varieties (possibly immature specimens) occur which are entirely pitchy-red, with the apex of the elytra testaceous. In shape it is oblong-oval; the regularity of its outline being only broken by the somewhat sudden contraction of the hinder half of its abruptly truncated elytra, which are rather closely and delicately (but usually somewhat sharply) punctured. Its antennæ (as in the other species) have the seventh, ninth, tenth, and eleventh joints thickened; the seventh being scarcely so wide as the three last, and the eighth very small, barely a third as large as the ninth joint.

The punctuation of the elytra alone does not always afford a safe diagnosis for this species, as it appears to vary somewhat in strength and closeness.

S. boleti is pitchy-red; with the thorax shorter and more contracted in front than in *S. agaricinum*, and the elytra rather wider in the middle, with the sutural striæ more evident, and the punctuation coarser and not quite so close. Its antennæ, also, have the seventh joint rather wider than the three apical joints, and the eighth more than half as large as the ninth.

S. assimilis, from Erichson's description (*loc. cit.*), appears to resemble *S. agaricinum* in size and shape, but to differ from that species in having its elytra more thickly punctured and pitchy-black, with the apical half and lateral margins reddish-brown: the coloration, however, seems sometimes to come very close to that of *S. agaricinum*.

The antennæ, also, have the seventh, ninth, tenth, and eleventh joints equal, and narrower and more attenuate than in that species; the eighth being scarcely shorter, and but a little thinner, than any of these joints.

From *S. boleti* it may be known by its narrower build, longer thorax, darker colour, and more thickly punctured elytra, which have the sutural striæ more distinct, and the suture itself broadly keeled; also by the seventh joint of its antennæ not being wider than the rest.

In colour, punctuation, suture, sutural striæ, and structure of the antennæ, my insect agrees with these characters of *S. assimilis;* but it is rather larger than *S. agaricinum;* and I fail to perceive any narrowness, as compared with *S. boleti*, beyond a slight flattening of the oval outline, between the hinder angles of the thorax and the middle of the elytra: the other points, however, are so marked as to leave little or no doubt in my mind as to its being *S. assimilis*.

Thomson (Skand. Col., iv.. 127, 2) states that the elytra of this species are "*minus crebre punctatis*," which is not in accordance with Erichson's diagnosis; and his remark (loc. cit., p. 128) that the *seventh* joint of the antennæ is scarcely less than its neighbours, is clearly meant to apply to the *eighth* joint.

S. limbata, Dahl., Er., not yet recorded as British, is considerably larger than any of the other species: and has the thorax more distinctly punctured. Its elytra, also, which are broadly margined with testaceous at the apex, are thickly and strongly punctured; and the eighth joint of its antennæ is of similar relative size to that of *S. assimilis* and *S. boleti*.

Although these insects soon go to pieces if kept in laurel, they are easy to set directly after being killed; care must be taken, in displaying their slender antennæ, to keep all the joints level, as the club is apt to turn in a different direction to the thin basal joints.—E. C. Rye, 284, King's Road, Chelsea, *October*, 1865.

Notes on the woolly gall of the Oak.—When looking for currant galls on the 16th of May, 1865, I found a gall on oak of a very remarkable character. After this date I continued to find the same kind of galls for a few weeks, and from an examination of these, I am enabled to give the following description. Nothing can give a better idea of this gall than a ball of cotton wool. When young the filaments are very white, and rather transparent; when the gall is more mature they change to whity-brown. In the first stage, their whiteness renders them very conspicuous objects; while in the latter, they are easily mistaken for pale oak apples, by which I always mean the gall of *Cynips terminalis*, and like the oak apple, they often have stipules at their base by way of calyx. I have never seen the woolly galls except in connection with the male catkins. Two small ones, found by me May 16th, were actually growing half-way down the catkin, in currant gall style, and many of the larger galls have the end of a catkin protruding from them. I am inclined to think, that it is always the male catkin stalk which is punctured, but that the gall, when full grown, often entirely hides the catkin. In the centre of the gall there is a cluster of cells; each appears to have its own shell, and is less united to its neighbour than in the well-known Bedeguar of *Cynips rosæ*. The wool is also composed of simple threads, while those of the Bedeguar have lateral projections. In "Insect Architecture," page 382, there is a gall described and figured very similar to the one in question, and I suppose my gall to be the same as that found on oak near Bath by Mr. C. E. Broome, exhibited at the meeting of the Entomological Society on the 7th November, 1864, by Mr. Stainton.

On the 3rd of June the first flies came out, after this I had swarms of them. The first parasite appeared on the 12th, they proved to be a species of *Eulophus*. The galls did not cease to produce flies till June 27th; these last were parasites. If you, or any of your correspondents, can furnish me with the name of this gall-insect I shall be greatly obliged.—Henry Waring Kidd, Godalming, *Sept. 18th.*

Galls on the oak.—I am very glad to see that Mr. Armistead proposes to publish a work upon Galls, as this subject has long possessed great attractions for me. I do not think that the mode in which the artichoke gall of the oak is formed is properly explained in Entomological works. Instead of being formed by the enlarged scales of a leaf-bud, I feel certain, from my own observation, that it is formed out of the morbidly developed bracts which are normally consolidated together to form the involucre or capsule at the base of the acorn. Moreover, the *Cynips*, which causes this malformation, cannot be said to form a "gall" at all, for I find, by examining a great number of specimens, that the larva lives within the minute abortive acorn, in the centre of the tuft of scales forming the artichoke.

I possess an interesting specimen, which I think clearly shows it is a flower-bud and not a leaf-bud, selected by *Cynips quercus-gemmæ*, in which to deposit her egg. It is a twig of the pedunculated variety of the oak, and at its extremity is an artichoke gall closely sessile by the side of two terminal buds. A little below this

is a long peduncle bearing an acorn and another artichoke gall, the latter being at its summit. I have another specimen, in which one of the round woody galls of *Cynips Kollari* (*lignicola*), and one of the leafy galls of *Cynips q.-gemmæ*, stand close together. I have also a specimen which beautifully shows the wonderful difference of effect which punctures made by different species of gall-fly have, not only upon the same plant, but also upon the same part of it. On a twig of oak, all closely adjoining, are two of the soft spongy galls known as "oak apples," and two of the hard round woody galls of *Cynips Kollari*. The two pairs stand at right angles to each other, each gall being opposite its fellow of the same kind. The "woolly gall" of the oak, formed by *Cynips q.-ramuli*, is common here in early summer; and if that is what Mr. Armistead means by "the cottony gall of the oak," I shall have much pleasure in sending him specimens next summer.—W. S. M. D'Urban, Newport, near Exeter, *September*, 1865.

Wasps in 1865.—It may be interesting to mention that when in Sherwood Forest, Nottinghamshire, in August, I saw wasps in abundance. I think I trod on seventeen in one pear. Here, however, in Gloucestershire there are none. The females in the spring were more numerous than I ever saw them, yet I have found no nest, where, in other years, I often found from twenty to thirty. Past experience makes me think that the dry weather prevented the females, either from forming the nests at all, or from progressing with them if formed. In Nottinghamshire the sand would would form no obstruction compared with our dry and hard clay. One hanging nest in our yard became *minus* all its inmates directly after the first brood was hatched.—Rev. E. Hallett Todd, Windrush, Burford, *October*, 1865.

Immense swarms of Aphides in Scotland.—I send you for inspection some specimens of a small four-winged insect, the name of which I do not know, but which has been a perfect pest for the last month, not only in this neighbourhood, but also in other parts of Scotland. They generally appear in greatest force about 5 o'clock in the afternoon, and in such numbers, that one cannot walk along some of the streets in the suburbs, especially in the southern district, without having to encounter swarms of them. They render one very uncomfortable by their numbers, especially when they get into one's mouth or eyes. The first time I saw them was in the middle of last month, when I happened to be passing through Elgin. I could hardly get along the street for them. On the east coast, also at Prestonpans and neighbourhood, and south again at Peebles, they have occurred in myriads. To-day, however, they seem to be decreasing, probably owing to the change in the temperature, the thermometer having fallen to 50°.—James Haswell, M.A., Edinburgh, 7*th October*, 1865.

[The insects are a small black *Aphis*, species of which have not unfrequently been recorded as appearing in immense numbers. We believe that this is one of the so-called "cholera flies," their appearance having been, by some kind of superstition, considered as precursory to the visitation of that scourge.—Eds.]

Case of extraordinary virulence in the bite of Stomoxys calcitrans.—Some weeks ago, a respectable veterinary surgeon of our village mentioned to me that he had several cows under his care which were suffering from the bites of flies. I showed him a set specimen of *Stomoxys calcitrans*, Linn., which he at once pronounced to

be identical with the cause of the mischief. Wishing to make sure of this being the case, I desired him to take some in the act of biting, and send them to me. This he did the next day, and the specimens sent were, beyond doubt, *Stomoxys calcitrans*. On seeing him to-day he tells me that he had at one time fourteen cows under treatment. The animals were generally bitten on the outside of the legs, on the shoulders, and, in rare cases, on the neck. In some of the severe cases the joints were so much swollen that the poor animals could not bend their legs to lie down; and in them the inflammation rose so high as to cause the loss of the outer skin and hair. The flies appeared to prefer the knees and upper portion of the foot in the cow, frequently crawling from thence to the hands of the veterinary, but on him their bite had no injurious effect. And the surgeon, to whom I mentioned the matter, told me that the shoulders of his carriage horses had lately been swollen by the bite of the same fly.—Thos. Jno. Bold, Long Benton, *October 16th*, 1865.

Entomological Society of London, *October 2nd*, 1865.—F. P. Pascoe, Esq., F.L.S., President, in the Chair.

Mr. McLachlan mentioned that he had received a letter from Mr. Stainton, dated Frankfort-on-the-Main, September 25th, announcing the death of Dr. Schaum, one of the Honorary Members of the Society.

Mr. W. F. Kirby exhibited the specimen of *Sterrha sacraria*, taken by his brother at Hove, near Brighton, as recorded in the Ent. Mo. Mag., p. 92.

Mr. Stevens exhibited part of a collection of Butterflies made by Lieut. De Crespigny in Borneo.

Mr. Weir exhibited several specimens of *Xylina petrificata* recently taken at Pembury, one of which approached *X. semibrunnea* in its dark coloration. Mr. Weir also mentioned that he had observed an example of *Labia minor* use its anal forceps for the purpose of unfolding its wings.

Mr. McLachlan exhibited some insects taken by the Rev. G. F. Browne in an ice-cave in the Swiss Alps. The entrance to the cave was hermetically sealed with a wall of ice, which had to be broken through, when the roof was found to be thickly studded with the insects. They consisted of two species of Caddis-flies (genus *Stenophylax*), and a large ichneumon (genus *Paniscus*). Mr. Browne asked how these insects could have got into the cave? and Mr. McLachlan suggested that, with respect to the Caddis-flies, the larvæ might, perhaps, have worked their way up an underground stream, of which there were indications, but this idea would not explain the presence of the ichneumon; he thought, therefore, that there must have existed some external entrance unknown to Mr. Browne.

Mr. Evans exhibited an example of *Vanessa Atalanta* presenting a malformation of the antennæ.

Mr. Saunders exhibited a bulb received from New Granada, which was infested with the patelliform species of *Coccus*, which caused great destruction to similar bulbs. He remarked, also, that all the individuals were females, and that he had never been able to find the other sex.

Dr. Wallace mentioned that a specimen of *Argynnis Lathonia* had recently been seen near Colchester.

Dr. Wallace also exhibited the various stages of *Bombyx Cynthia* (the *Ailanthus* silk-worm), and detailed what he had done at Colchester towards the culture of this insect. He had planted about half-a-mile of *Ailanthus* trees (2,000) on the railway

bank at Colchester, and this year, from 18,000 eggs, he had obtained 5,000 cocoons. They had been left without any protection whatever, save that of a boy to scare the birds, and were not particularly subject to parasites, except in some instances from the attacks of a species of *Tachina*. He had not yet made any attempts to wind the silk, but was of opinion that if this could be successfully effected, the culture of the *Ailanthus* silk-worm would become a lucrative occupation in this country.

These remarks caused a long and interesting discussion, in the course of which Professor Westwood said that the produce of silk, from *Bombyx Mori* in Tuscany, had been reduced by disease to one-tenth of what it was some years since.

With reference to the remarks made by Professor Westwood, at the last meeting, on the relative tenacity of the wood of the *Ailanthus*, oak, and elm, claiming a much greater degree for the former, Mr. Saunders mentioned that, according to his experience, the wood was of the most worthless description, breaking like a carrot, with none of the elasticity requisite in a wood that could be used for the same purposes as oak or elm, and remarked that tenacity was of no service where elasticity was absent.

Mr. Bond exhibited larvæ of various species of *Sphingidæ*, beautifully preserved by Mr. Baker, of Cambridge.

Mr. Walker communicated some notes on a species of *Chalcidæ* from Australia, which he described under the name of *Myrmecopsis nigricans*.

Mr. Scudder (of Boston, U.S.) exhibited a gigantic fossil species of *Ephemeridæ* from the Devonian rocks of New Brunswick; he remarked that several fossil insects have been found in this stratum, chiefly pertaining to the *Neuroptera*, and some of them were peculiar as having a neuration which was in a manner intermediate between that of the *Neuroptera* proper, and the *Pseudo-Neuroptera* of Erichson

Mr. Scudder also explained what had been done in America by Mr. Truvelot towards the cultivation of the silk-producing *Bombyx Polyphemus*.

Mr. S. S. Saunders exhibited many specimens of *Strepsiptera* in all their stages; they apparently pertained to *Hylecthrus*.

The Rev. Hamlet Clark called attention to some remarks of the *Times* correspondent, "S. G. O.," asking whether, as influences were at work causing the extensive destruction of cattle by the "rinderpest," and of human beings by cholera, these had extended to other animal life, especially to insects. Several members mentioned that, excepting wasps, insect life appeared to be particularly abundant this year, and that they had not noticed any want of vitality or development in these creatures. Dr. Wallace, however, mentioned that having caused a quantity of diseased potato-haulm to be heaped up under some of his *Ailanthus* trees, the silk-worms on these trees became sickly and died; an occurrence which Mr. Sharp considered would be likely to take place at any time under similar circumstances.

The scarcity of wasps was again a subject of remark, though several members stated that in some localities they were moderately numerous. Dr. Wallace had not seen one at Colchester.

Mr. C. A. Wilson, of Adelaide, communicated a continuation of his notes on South Australian *Buprestidæ*.

Mr. McLachlan read a paper on "New, or little known, genera and species of *Trichoptera* from Asia, Australia, New Zealand, and the Malayan Archipelago."

Part 2 of Vol. 5 of the 3rd series of the Society's Transactions was on the table.

AN ESSAY TOWARDS A KNOWLEDGE OF BRITISH *HOMOPTERA*.

BY THE REV. T. A. MARSHALL, M.A.

(*Continued from page* 126).

Gen. Acocephalus, Germ.

The disparity of the sexes in this genus, and their tendency to run into varieties, are a source of much difficulty. They have been a *crux* to the describers, who have, until recently, treated most of the varieties of either sex as specifically distinct. Fallén, in the Hemipt. Succiæ, seems to have perceived their true relations, and his remarks, with the addition of those of Flor, and my own partially successful observations, form the groundwork of the present sketch. The genus is an extremely natural one, characterised by the flattened vertex, more or less triangularly produced between the eyes (except in *A. agrestis*),—by the ocelli, situated nearer to its anterior than its posterior margin,—by the linear and flattened clypeus,—and by the imperfection of the marginal nervure, which receives the extremities of the longitudinal alary nervures. This deficiency is probably connected with weakness of flight, and will easily be understood by comparing the same organs in the more active and aërial tribes, *Iassus*, *Micropsis*, and *Idiocerus*. The males of *Acocephalus* are smaller than the females, and frequently adorned with dark fasciæ; the vertex of the former sex is also less produced. The females are generally brown, more or less irrorated with black, but without distinct fasciæ; and to them the difficulty of specific discrimination is chiefly limited.

A. Valvula ventralis maris occulta. ♂ ♀ coloribus dispares. (Subg. *Acocephalus*.)

a. Vertex antice subacutus. Antennæ fronte breviores.

† Vertex pronoto longitudine æqualis, medio haud carinatus.

1.—*Acocephalus rusticus*, Fab.

Color variat; testaceus, sub-viridis, griseus, rufo-brunneus, etiam niger. Genæ macula nigra notatæ. Vertex dimidia sua inter oculos latitudine non longior. Antennæ fronte conspicuè breviores. Suprà totus subtiliter rugulosus. Abdomen interdum nigrum. Pedes testacei vel brunnei; femora antica sæpe fusco-maculata, postica fusco-lineata. Alæ completæ.

♂. Frons ante oculos, pronotum prope basin, transversim pallido-vittata. Vertex quam in ♀ conspicuè brevior, apice suprà impressus. Hemelytra nervis infuscatis quasi striata.

♀. Frons et pronotum nunquam pallido-vittata. Supra unicolor, punctis plus minus fuscis irroratus. Long. $2\frac{1}{2}$-3 ♂; 3-$3\frac{1}{2}$ lin. ♀.

♀. *Cercopis rustica*, Fab., S. R., p. 97; *Acoceph. costatus*, Burm., Handb., p. 112; Gen. *Acocephalus*, fig.; *Acocephalus Cardui, obscurus, sparsus, rugosus, unicolor, fasciatus, pallidus*, Curt., B. E., 620, Nos. 1-7. *Cicada costata*, Panz., Fn. 61, 14. *Aphrodes pulverulenta*, Curt., B. E., 663, No. 17.

♂. *Cerc. striata*, Fab., S. R., p. 96. *Acoceph. striatus*, Burm., Handb., p. 112. *Acoceph. bicinctus*, Curt., B. E, 620, No. 8. *Cerc. striatella*, Fab., S. R., p. 98; *transversa*, Fab., ib. p. 96.

♂ ♀. *A. rusticus*, Flor, R. L., 2, p. 199.

This is a very common insect throughout the country, from July until late in October. It varies considerably both in colour and size: I have a dwarfish specimen no larger than the following species.

†† Vertex pronoto longior, carinulis 3 longitudinalibus.

2.—*Acocephalus bifasciatus*, Lin.

Vertex dimidia sua inter oculos latitudine longior, medio indistincte tricarinatus. Antennæ fronte briviores. Supra subtilissime punctulatus. Alæ rarissime completæ. ♂ ♀.

♂. Niger vel nigro-brunneus, sub-nitidus. Pronotum basi, hemelytra medio et versus apicem albo-fasciata. Frons, pectus, pedes, albida; femora apice, tibiæ anticæ et posticæ fere totæ, nigra.

♀. Color variat; flavo-brunneus vel griseus, haud nitidus. Supra plus minus atomis nigris vel fuscis irroratus. Hemelytrorum nervi pallidi atomis nigris interspersis. Pedes pallidi; coxæ, femora basi et medio, alba. Long. $1\frac{3}{4}$-2 ♂; $2\frac{1}{4}$-$2\frac{1}{2}$ lin. ♀.

♂. *Cicada bifasciata*, Lin., S. N., 5, p. 455. *Acoceph. bifasciatus*, Curt., B. E., 620, No. 9; *tricinctus*, Curt., ibid. fig. *Acoceph. albifrons*, H. Sch., Nom. Ent., p. 72.

♀. *Iassus obliquus*, Germ. Mag., 4, p. 89; *subrusticus*, Fn., 17, 16. *Acoceph. dispar*, H. Sch., D. Ins., 125, 3.

This handsome and well-marked species seems to be not very common with us, but is widely distributed. Single specimens of the black and white ♂ are in several collections, but the ♀ was unnoticed in England until last July, when I succeeded in obtaining it, with the other sex, from a meadow near Leicester. Mr. T. J. Bold takes the ♂ at Newcastle, and Mr. Curtis mentions Weston-on-the-Green, near Oxford, and Whittlesea Mere, as the localities for his *tricinctus*. The ♀ is intermediate in size between that of *A. rusticus* and *A. albifrons*, and distinguished from either by the greater length of the vertex, and the abbreviated wings.

(To be continued.)

DESCRIPTIONS OF NEW GENERA AND SPECIES OF *GALLERUCIDÆ*.

BY JOSEPH S. BALY, F.L.S.

(*Continued from page* 128.)

Genus Arcastes.

Corpus ovatum, convexum. *Caput* exsertum: *facie* perpendiculari; *antennis* robustis, basi et apice attenuatis; articulis tribus basalibus perparum gradatim dilatatis, quorum primus leniter curvatus, basi ad apicem paullo incrassatus; secundus brevis; tertius secundo fere aut plus dimidio longior; quarto primo longitudine fere æquali; tribus sequentibus singulatim quarto æqualibus vel paullo brevioribus, et ad apicem latitudine æqualibus; cæteris ad apicem minus robustis, perparum attenuatis; *encarpis* trigonatis contiguis. *Thorax* transversus, lateribus anguste marginatis; angulis anticis tuberculo setifero instructis; disco vix excavato, vel plano. *Elytra* thorace latiora, ovalia, convexa, confusim punctata. *Pedes* mediocres; *coxis* anticis erectis, trigonatis, contiguis; *femoribus* posticis haud incrassatis; *tibiis* omnibus singulatim apice spinâ acutâ armatis; *tarsorum* posticorum articulo basali elongato, tribus sequentibus longiori, secundo et tertio brevibus, æqualibus; *unguiculis* appendiculatis. *Prosternum* medio obsoletum. *Metasternum* utrinque obliquè impressum.

Type *Arcastes biplagiata.*

Arcastes, which at first sight resembles *Adorium*, is in reality much more nearly allied to *Luperodes*, from which it differs principally in the form of its antennæ; the peculiar shape of which organs will, indeed, serve to distinguish it at once from any of its allies.

Arcastes biplagiata, n. s.

Anguste ovata, convexa, nigra, nitida; antennarum articulis duobus ultimis sordide albis, 4° et 5° longitudine æqualibus; abdomine flavo-limbato; capite, thorace elytrorumque plagis oblongis duabus ante medium positis rufo-testaceis; thorace obsolete transversim depresso; elytris tenuissime punctatis. Long. 3 lin.

Hab.: Singapore, Malacca.

Genus Emathea.

Corpus rotundato-ovatum, convexum. *Caput* modice exsertum; *facie* brevi, trigonata, perpendiculari; *antennis* gracilibus, filiformibus, ad apicem attenuatis, articulo primo curvato, paullo incrassato, secundo brevi, tertio hoc duplo longiori, cæteris inter se fere æqualibus, singulis

primo æqualibus, aut paullo brevioribus. *Thorax* transversus, dorso non impressus; lateribus anguste marginatis, aut sub-rectis, aut convergentibus, ad angulos anticos incrassatis. *Scutellum* trigonatum. *Elytra* thorace latiora, latè ovata, convexa, confusim punctata; singulatim infra basim vix transversim impressa; *limbo* inflexo lato, horizontali aut margine exteriori producto. *Pedes* graciles; *coxis* anticis distantibus, transversis, modice elevatis; *femoribus* posticis non incrassatis; *tibiarum* apicibus inermibus; *unguiculis* appendiculatis. *Prosternum* distinctum, elongatum, postice dilatatum, medio elevatum, coxis fere æquialtum.

Type *Emathea æneipennis.*

Emathea æneipennis, n. s.

Rotundato-ovata, convexa, rufo-testacea, nitida; subtus obscurior; tibiis anterioribus tarsisque omnibus piceis; antennis (basi et apicem exceptis) nigris; elytris singulatim infra basim leviter arcuatim impressis, viridi-æneis; scutello piceo. Long. $3\frac{1}{3}$ lin.

Hab.: Sumatra.

Face short, triangular; apex of jaws and the labrum piceous; encarpæ quadrangular, oblique, slightly curved, contiguous at their upper and inner angles, and with a deep fovea immediately above their points of junction; vertex longitudinally strigose. Thorax twice as broad as long, sides narrowly margined, sub-parallel, slightly rounded, anterior angles thickened and recurved; disc smooth, very finely but not closely punctured, the punctures visible only under a strong power. Elytra more coarsely and rather more closely punctured than the thorax, interspaces minutely punctured.

ON SOME ABERRANT GENERA OF *PSOCINA*.

BY DR. H. A. HAGEN.

Family PSOCINA.

Division II.—*Ocellis tribus.*

Sect. I.—*Tarsis triarticulatis.*

A. *Alis superioribus lepidotis; prothorace vix obsoleto, tenuiori.*

Genus Amphientomum, Pictet.

Antennæ very slender, pilose, the two basal joints short and much stouter than the rest. Thorax, the upper-side of the superior wings, and the femora (in part) covered with scales as in the *Lepidoptera.*

1.—*A. paradoxum*, Pictet.

Long. 4½ millimètres; exp. alar. 8 mill.

Fossil in Prussian amber. Described and figured in Berendt's "Organische Reste im Bernstein," T. ii., pp. 61-64, tab. 7, fig. 21, and tab. 8, fig. 10. The insect is no longer in my possession, and I cannot say whether my description (otherwise greatly detailed) is correct in some points; but I think that the species goes well with the following.

The reticulation of the following species is arranged thus—

Superior wings. Sub-costa simple, slightly curved; median vein furcated in the middle, after having given off a branch (3) on the inferior margin, ending in a fork; superior branch (1) united by a transverse vein to the sub-costa, ending in a simple elongated fork; inferior branch (2) ending in a similar fork, after giving off a simple posterior branch.

Inferior wings. Sub-costa rudimentary; median vein furcated in the middle, after giving off a branch (3) to the posterior margin; superior branch (1) emitting a transverse vein to the anterior margin; inferior branch (2) simple.

2.—*A. incultum*, n. s.

Head and palpi black; ocelli very distant, the posterior close to the eyes; antennæ brown, slender, about 15-jointed, one-half shorter than the wings; thorax and inferior wings covered with blackish-brown and silver scales intermixed; inferior wings hyaline, greyish; legs dull yellow, the upper-side of the femora, the base and a broad band before the apex of the tibiæ, and the base of the first tarsal joint, black.

Long. 3½ mill.; exp. alar. 7 mill.

In gum copal (Animé); probably from Zanzibar. I am acquainted with only one individual, probably a female.

3.—*A. gregarium*, (Nietner M.S.) n. s.

A. ceylonicum, Nietner *in litt.*

Head reddish-yellow, near the eyes, and on each side of the occipital suture darker, brownish; ocelli close together, the superior placed in a black point; palpi pale yellow, the two apical joints brown; antennæ shorter than the wings, blackish-brown, the base, as far as the fourth joint, paler; thorax blackish-brown; superior wings clothed with black scales, intermingled with silvery and golden; paler spots near the apex, two quadrangular silvery spots on the anterior margin near the apex, one spot opposite on the posterior margin; legs pale yellow, the tibiæ at the knees and before the apex, as also the basal half of the first tarsal joint and the two following, black.

Long. 2¾-3½ mill.; exp. alar. 5½-7 mill.

Ceylon: Rambodde (Nietner). This species is found in troops of forty to fifty on the walls of houses. In two smaller individuals, probably males, the part between the eyes (which are more prominent) is narrower.

4.—*A. superbum*, (Nietner M.S.) n. s.

Head reddish-brown, at least on the occiput, a brown band in the middle to the ocelli (which are close together), and another on each side towards the eyes; labrum black; palpi black, the terminal joint white; antennæ short, blackish-brown, the apex of the third and fourth joints white; thorax blackish-brown, with golden scales posteriorly; abdomen black; superior wings velvety black, with golden scales intermingled, a golden spot on the middle of the posterior margin, and a similar one more towards the apex, several smaller ones at the apex; inferior wings hyaline, greyish; legs black, the knees, apex of the tibiæ and of the first tarsal joint, reddish-yellow. (♂ and ♀).

Long. 2½-3 mill.; exp. alar. 5-6 mill.

Ceylon: Rambodde (Nietner), on the walls of houses.

M. Nietner describes in his letter two species (*A. plagiatum* and *A. maculatum*,) which I have not seen; as he is so good an observer, we must await the arrival of these two species of this curious Ceylon genus.

5.—*A. caudatum*, (Nietner M.S.) n. s.

Head bright yellow, with a broad black band between the eyes; ocelli distant; palpi greyish-brown; antennæ greyish-brown, the three basal joints yellow; thorax brown, bordered on each side and posteriorly with golden scales, brown in the middle; abdomen black; superior wings elongated, the apex prolonged into a point truncated posteriorly, brown, with the scales forming very pretty markings, viz., the base golden, with silvery bands, on the middle of the anterior margin a golden band between two silvery lines bordered with black, at the apex an oblique comma-shaped silvery mark bordered with black, behind this mark an orange spot partially encircling a black pupil, placed after the apical prolongation; inferior wings hyaline, brown; legs yellow, femora with two black rings nearly obsolete on the posterior pair, posterior tibiæ black with a yellow ring before the apex, first tarsal joint with two black rings, the two following brown.

Long. cum alis 4¼ mill.; exp. alar. 9 mill.

Ceylon: Rambodde (Nietner), in woods.

I have seen but one specimen of this extraordinary species. In all the others the superior wings are oval, the apex scarcely acute, but in *A. caudatum* they are prolonged into a sort of tail. The colours are very bright, and the markings very pretty. Probably it will be advisable eventually to place *A. caudatum* in a distinct genus. I propose the name *Syllysis*.

Genus Perientomum, new genus.

Superior wings. Sub-costa giving off an oblique branch towards the anterior margin; median vein furcated in the middle, after giving off a branch (3) towards the posterior margin, ending in an elongated fork; superior branch (1) touching the sub-costa in such a manner that the end of the latter seems to be a prolongation, ending in an acute fork; by an oblique transverse vein uniting the median and sub-costa soon after the commencement of the third branch, and afterwards by the point where this branch touches the sub-costa, is formed an elongated areole, acute at both ends; inferior branch (2) ending in an acute fork, but after having emitted a simple posterior branch.

Inferior wings. Sub-costa rudimentary; median vein apparently double up to the point where it gives off the simple branch (3) to the posterior margin (or rather this branch commences at the base of the wings, and unites with the median by a short transverse vein); afterwards the median vein furcates, the two branches forming two forks, but the superior branch (1) commencing from the fork of the inferior branch (2) emitting a transverse vein to the posterior margin.

Otherwise as in *Amphientomum*.

1.—*P. trichopteryx*, (Nietner M.S.) Hagen.

Amphientomum trichopteryx, Verhand. Zool.-bot. Gesell., Wien 1859, p. 205.

Head yellow, pubescence concolorous; palpi yellow, the apical joint black; antennæ yellow, 22-jointed; ocelli somewhat distant; thorax brown; superior wings covered with brown and silvery scales prettily intermingled; inferior wings transparent grey; legs brown, femora internally pale, covered with scales. Females with a brown ovipositor. Males with the head browner, yellow on the sides, especially near the occiput; legs slightly paler; inferior wings sometimes almost entirely pearly-grey, in consequence of the more numerous silvery scales.

Long. cum alis 4 mill.; exp. alar. 7½ mill.

Ceylon: Rambodde (Nietner), in woods.

2.—*P. mortuum*, n. s.

This species is similar to *P. trichopteryx* in form, size, and colours. Thus I should not have separated it, but for a difference in the details of the reticulation. In the inferior wings the transverse vein on the anterior margin is emitted from the superior branch (1), while in *P. trichopteryx* it is emitted before the point whence this branch departs.

I admit that this difference alone is perhaps too slight to justify the formation of a distinct species, especially as in one individual out of five of *P. trichopteryx* now before me, the transverse vein is emitted precisely from the point of departure of the superior branch (1); but as the determination of insects in copal is always rather difficult, I have thought it best to note the species as distinct until more materials shall prove to the contrary.

In gum copal (Animé), from Zanzibar. One specimen, received from Baron Osten-Sacken.

3.—*P. triste*, (Nietner M.S.) n. s.

Totally black; ocelli rather distant; front of the head, palpi, antennæ, legs and body, black; superior wings blackish-brown, clothed with brown and silvery scales; inferior wings greyish, hyaline.

Long cum alis $2\frac{1}{2}$ mill.; exp. alar. 5 mill.

Ceylon: Rambodde (Nietner), on the walls of houses.

This species is closely allied to *P. trichopteryx*, but it is smaller; and, besides, totally black. I have seen but two examples.

4.—*P. morosum*, n. s.

I have seen but a single example of this species, with the colours probably deceptive; the scales being almost altogether wanting. *P. morosum* closely resembles *P. triste* in form, and in the reticulation, but it is immediately distinguished by its less broad front, and in the ocelli being placed somewhat closely together. It might be considered as the male of *P. triste* were it not for the golden scales on the wings, which are entirely wanting in that species; but the males of *P. trichopteryx*, if I am not mistaken in the sexes, differ in no way from the females.

P. morosum is of a dingy grey; the terminal joints of the palpi black; on the superior wings, especially towards the apex, are to be seen some brilliant golden scales, but no silvery ones.

Long. cum alis $2\frac{1}{4}$ mill.; exp. alar. $4\frac{1}{2}$ mill.

Ceylon: Rambodde (Nietner), on the wall of a house.

(*To be continued*).

AN ENTOMOLOGICAL EXCURSION IN THE ALPS.

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

On Thursday, July 13th, 1865, about 10 a.m., I entered the Val da Fain, the foot of which valley stands at an elevation of 6,700 feet above the sea.

Professor Frey has well observed, in his memoir on the *Tineæ* of the Higher Alps (Entomologist's Annual, 1858, p. 137), that "to the Lepidopterist it is a moment of his life never to be forgotten, when he, for the first time, eager for sport, enters an Alpine region, and wearily climbs to the summit of the higher mountains."

On the present occasion the concluding paragraph is scarcely applicable, as we made no attempt to ascend to the summits around us; and, owing to the elevated position of the foot of the valley (a greater height than Skiddaw piled on the top of Snowdon), we had no "weary climbing."

The profusion of Alpine flowers decked the short grass of the renowned "Valley of Hay" with a carpet of the richest pattern; and butterflies of all sorts threaded their way, now sipping from the chocolate-scented *Orchis*, now settling on the flowers of the *Sedum*, or on the blooming *Rhododendron ferrugineum*.

Colias Phicomone flew wildly up and down the hill side; the iridescent *Erebia Gorge*, and other of the mountain browns, helped to enliven the scene, along with numerous species of *Melitæa*, amongst which *Cynthia* and *Merope* were particularly plentiful. Occasionally a showy *Parnassius Delius* came hurriedly along, whilst of Coppers, Blues, and Skippers, there seemed no end.

My companions, on this occasion, were collected from all parts of Germany, viz.:—Herr von Heinemann (the greatest known Nepticulologist), from Brunswick; Professor Hering, from Stettin; Dr. Herrich Schäffer, from Ratisbon; Herr Schmidt, from Wismar; and Dr. Staudinger, from Dresden.

The *Lepidoptera* were not, however, represented solely by the *Rhopalocera*. *Cleogene tinctaria* flew in profusion, and the pretty little *Psodos equestrata* was no rarity. The gay yellow-underwinged *Plusia, devergens* was on the alert; and, occasionally, with heavy booming flight, *Zygæna exulans* swung before us. The genus *Procris* was not unrepresented, and the little *Botys rhododendronalis* swarmed by hundreds.

Again I was struck with the accuracy of Professor Frey's observation (Ent. Ann., 1858, p. 139), "We look round for the *Micros*,

but where are they? Nothing but butterflies, no *Tineæ*." In the whole day's ramble I did not see a dozen of the *Tincina;* a few of a *Gelechia* allied to *cinerella* (perhaps *tripunctella*), a *Coleophora* (which I unfortunately squashed in boxing), and a *Nepticula*, were all I saw in the perfect state. Pupæ of *Lithocolletis vacciniella* were found in the leaves of *Vaccinium Vitis-Idæa*, and larvæ of *Anchinia laureolella* in the young shoots of *Daphne laureola*. This last was the only good thing amongst the *Tineina* that we met with on that occasion. When Professor Frey wrote his "Tineen and Pterophoren der Schweiz" in 1856, he possessed only a single specimen of the *Anchinia*, taken early in August in the identical "Heuthal" where we were. The food-plant is extremely plentiful, and the insect is manifestly not rare, as, besides finding several larvæ, we found the shoots that *had been* inhabited by them were quite numerous; but, in fact, we were a little late.

Indeed, all my companions were remarking that, owing to the season being much earlier than usual, vegetation was more advanced, and flowers were out of bloom, which otherwise would have added their gay colours to the scene; hence, also, insects were worn and wasted, and many were already past.

The day was brilliant, not too hot—not too windy; in fact, it was perfection for "An Entomological Excursion in the Alps."

DESCRIPTION OF A SPECIES OF *BLEDIUS* NEW TO SCIENCE.

BY E. C. RYE.

BLEDIUS FUSCIPES, n. s.

Niger, nitidus, pedibus fuscis vel fusco-testaceis; antennis apice evidenter sat abruptè incrassatis, basi testaceis; thorace subtiliter coriaceo, opaco, lineâ subtili nitidâ canaliculato, parcè obsoleteque punctato, angulis posticis prominulis, obtusiusculis; elytris hoc sesqui longioribus, creberrimè sat profundèque punctatis; abdomine fere glabro.

Mas. abdominis segmento sexto inferius apice rotundato, leviter producto. Long. $1\frac{3}{4}$ lin.

In size and general appearance this species resembles *B. subterraneus*, from which its shorter elytra will readily distinguish it; it differs also from that species in the lesser degree of prominence exhibited by the hinder angles of its thorax, which, though not rectangular, are very nearly so, the entire surface being moreover less opaque; the lesser spinosity of the outer edge of the anterior tibiæ; and the

much more transverse apical joints of its antennæ. The structure of the antennæ, indeed, appears to separate this insect from any of its allies; the basal joint being clear testaceous, the second more or less pitchy, longer and much stouter than the third, which, with the rest, is pitchy-black; the fourth shorter than the third; the fifth, sixth, and seventh gradually getting wider, and the eighth, ninth, and tenth widening towards the apex, and exceedingly transverse, the apical joint being suddenly blunt, wide, and about half as long again as the penultimate.

From Erichson's description of *B. pallipes* that insect must somewhat resemble *B. fuscipes*, but would appear to differ from it in its lighter coloured legs and thinner antennæ; Erichson, moreover, states that *pallipes* differs from *opacus* (apart from colour, and amongst other characters) in its longer elytra, and in not having a transverse impression between the eyes. *B. fuscipes*, compared with *opacus*, has elytra of the same length, and a very decided frontal transverse impression.

In company with Mr. D. Sharp, I took a large number of specimens of this insect in a damp sandy place on the shores of the Frith of Forth near Aberlady in June last.

It was associated with *Bembidium pallidipenne* and *Bledius arenarius;* but appeared to be absolutely burrowing in the damp sand below the surface. A few stragglers ran about quickly in the hot sunshine, but the majority were obtained by raking up the wet sand.

Occurrence of a Bembidium new to Britain.

BEMBIDIUM QUADRISIGNATUM, Dufts., Faun. Austr., ii., 205, 16 (*Elaphrus quadrisignatus*); Schaum, Er. Ins. Deutschl., i., 748, 4.

It has again fallen to the lot of my friend, Mr. T. J. Bold, of Newcastle-on-Tyne, to detect a Geodephagous species new to Britain, and, curiously enough, in the same genus and section (*Tachys*) as *Fockii*, recently added by him to our lists.

Mr. Bold has sent me a single specimen of a *Bembidium*, captured by himself near Newcastle, and of which he has accurately observed the diagnostic characters. This insect, after much consideration, I refer to *B. quadrisignatum*, Dufts.; which, in its normal condition, is decidedly larger than *B. bistriatum*, more or less pitchy-black, with two roundish spots on each elytron (one beneath the shoulder and the other just before the apex), the base of the antennæ, and the legs, testaceous, the tibiæ in the darkest specimens being sometimes dusky in the middle. Mr. Bold's insect is scarcely larger than *B. bistriatum*, reddish-brown, with the spots on the elytra consequently not well contrasted against the ground colour, and only distinct in certain lights (but still evident), and the base of antennæ, and legs entirely, pale: I was, therefore, at first disposed to hesitate in referring it to *B. quadrisignatum*, but now have no doubt as to its being that species, since it accords

with description in all structural points, and I find in Jacquelin du Val's *Bembidia* of Europe (Ann. Soc. Ent. de France, 1852, 197) the following passage :—"cette "espèce (*quadrisignatum*) varie beaucoup par la taille, les stries, parfois la couleur, "qui peut devenir brunâtre ou même plus claire, un peu aussi par la forme du "pro-thorax, &c. ; mais l'on retrouve des passages d'une variation à l'autre."

It appears, also, that the species in question has been described under different names through this varying habit.

It is flat, oblong, shining, with two longitudinal grooves in front between the eyes; the thorax broader than long, slightly narrowed behind, with decidedly acute hinder angles, and a well defined basal fovea on each side, extending transversely for the greater part of the hinder margin; the elytra wider than the thorax, having three deeply impressed and punctulated striæ next the suture, rather faint at the base, and still more so at the apex, with the exception of the first, which is continued round the apex, and re-curved almost parallel to the suture, the re-curved part being slightly rounded outwards, and ending in a puncture near the termination of the fourth stria, which is not nearly so strong as the three first, but merely punctulated. The other striæ are entirely obsolete, except the eighth, or marginal one, which (though faint quite close to the shoulder, below which it has some deep scattered punctures) is very distinct, and especially deeply impressed behind.

The only British insect like it, even in its smallest, lightest, and unspotted condition, is a light variety of *B. bistriatum*, from which its deeply impressed and punctulated striæ, sharper hind angles to thorax, and brighter surface will serve to distinguish it.—E. C. Rye, 284, King's Road, Chelsea.

Note on a species of Atomaria new to the British lists.

Atomaria Barani, Ch. Brisout de Barneville, Grenier Cat. des Col. de France, et matériaux, &c., 69, 87 (1863).

To this species (which has for some time stood in my cabinet with the M.S. name of *Wollastoni*) must be referred the Hammersmith Marsh specimens, referred to by me in the Ent. Ann. 1865, p. 68, 46, and which were formerly considered by Dr. Kraatz (with doubt) as varieties of *A. fumata*, Erichs.

Independently of its more flattened and parallel shape, and finer punctuation, this insect exhibits an entirely different habit and coloration to *A. fumata*, being found in marshy places, and the lightest specimens being almost entirely light reddish-brown, with the suture and apex of elytra darker; and the darkest pitchy-black with a slight spot at the apex. The intermediate forms have usually a spot at the shoulder, and an oblique livid stain near the apex.

Mr. Sharp has recently taken a long series, of all colours, in a marshy place at Eltham.—*Id.*

Note on a species of Trachyphlœus new to the British lists.

Trachyphlæus aristatus, Gyll. (Schön. Curc.), Ins. Suec., iv., 613, 35-36.

stipulatus, Germ.

squamulatus, Oliv. var., Walton, ex Ann. and Mag. of Nat. Hist., 1844, 83, 4.

Messrs. Edward and Charles Waterhouse having pointed out to me the great difference between the erect scales of certain specimens of *T. squamulatus*, taken recently by us at Seaford, and those of other specimens so named in our collections, I referred to Walton's notes (loc. cit.), and at once perceived from his remarks, and Gyllenhal's description, that we have two distinct species under that name.

Walton, although he has remarked some of the differences between the two insects, considered specimens of *squamulatus*, sent to him on two occasions by Chevrolat, to be small immature varieties of *aristatus*, and has accordingly adopted Olivier's name (which is the oldest), being persuaded that Gyllenhal was misled by a want of varieties.

T. squamulatus, apparently found most commonly on the south coast, is usually smaller than *T. aristatus*, and of a lighter colour; its thorax is not so transverse, being much less expanded at the sides, its legs and antennæ are rather shorter, the basal joint of the latter being somewhat abruptly contracted in the middle, and the setæ on its elytra are much shorter, and more slender and uniform; whilst in *T. aristatus* they are erect, long, stout, and individually very decidedly thickest at the tip. My specimens of the latter were taken at Wickham and Mickleham.—*Id.*

Note on the occurrence of a species of Omalium new to Britain.

Omalium pineti, Thomson, Skand. Col., iii., 209, 2. I took one example of this species under the bark of a fir stump at Rannoch, in June last.

It is allied to *O. planum;* differing in being smaller, especially narrower, with fuscous elytra, of which the punctuation is finer and more sparing, and having no impressions on the anterior margin of the thorax.—D. Sharp, 12, St. Vincent Street, Edinburgh, *November*, 1865.

Note on the occurrence of a species of Leptura new to Britain.

Leptura rufa, Brullé, Mulsant, 269.—Mr. Thorncroft captured a single male example of this fine species (now in my collection) at Holme Bush, Sussex, during the past summer. It appears to be rare, and found in the south of France, Spain, Turkey, and Greece.

It is next to *L. scutellata*, and about the same size, with the head, thorax, and antennæ black (the first joint of the latter sometimes red), and elytra brownish-red, punctured coarsely at the base, and finely at the apex. The under-side is covered with ashy pubescence, the abdomen being more or less red towards the tip.—*Id.*

Note on the capture of an Atomaria new to Britain.

Atomaria impressa, Erichson, Ins. Deutschl., iii., 389, 19.—I found a single example of this species at the bottom of a hay-rick, Lee, Kent.

Of our species it is in the same section as, and nearest to, *munda* (having the thorax abruptly depressed in the middle behind), but is larger than that insect, with unicolorous (brown) elytra and thorax, thinner antennæ, and punctuation not so strong and close.—*Id.*

Note on Tachyphorus ruficollis, Grav.—I think that the name of this species must be removed from the British Catalogue; for all its exponents, seen by me in collections (including the specimens taken by Mr. Wollaston), in nowise agree with the descriptions of *T. ruficollis*, but are the *T. nitidicollis* of Stephens.

There is, also, much confusion about the latter insect. Mr. Wollaston, in a note published in the Zoologist for 1855, informs us of its capture in Ireland, adding that specimens of it, sent by him to Drs. Schaum and Kraatz, had been returned as belonging to a species unknown to them; and I see that it ranks as a

distinct species in the last edition of De Marseul's Catalogue of the *Coleoptera* of Europe. On the other hand, Mr. G. R. Crotch tells me that he has recently submitted a specimen of it to M. Ch. Brisout de Barneville, who informed him that it was very close to *T. ruficollis*, if distinct from it.

I have carefully examined several specimens of *T. nitidicollis*, and have no hesitation in stating my opinion that it is merely a variety of the common *T. obtusus*, differing in no respect from that species except in coloration; and, even in that respect, intermediate grades occur in Scotland.

Mr. Wollaston has stated (loc. cit.) that he never found *T. nitidicollis* in England, while it was common in Ireland; and this becomes the more remarkable, if the insect is to be considered a mere variety of *T. obtusus*.

I have never noticed the slightest variation in English specimens of the latter; but, in Scotch examples, the black bands at the base of the elytra and apex of the abdomen vary in width; in short, I consider that Stephens' *T. nitidicollis* is a form of *T. obtusus*, wherein the colour forming the two black bands is extended over a greater area than usual.—*Id.*

Hydroporus quinque-lineatus, Zetterst., taken in Northumberland.—This northern insect, which Zetterstedt, in his *Insecta Lapponica*, pp. 141, 29, records as occurring copiously in Lapland, will, I think, prove equally boreal in its habits in this country. I have in my collection a fine series of it, which was taken in the shallow grassy margins of the water, on Prestwick Carr, so far back as September 12th, 1855. This locality has since been destroyed, but the beetle will probably occur in similar places elsewhere, as I think that with us it takes the place of *reticulatus*, Fab.; of this, however, I cannot make sure, for all my old specimens, taken elsewhere, have been destroyed, except two, which, although certainly 5-*lineatus*, and of my own taking, are without locality or date. As pointed out by Mr. Rye, the distinct lineation, and more uniform, coarser puncturing, separate it from *reticulatus*. The latter has the elytra thickly covered with fine punctures, in which are sparsely scattered a few larger impressions.—Thomas John Bold, Long Benton, Newcastle-on-Tyne, *November 7th*, 1865.

Occurrence of Limnephilus subcentralis, Hagen; a Trichopterous insect new to Britain.—At Little Bridy, Dorset, in July last, I took a female *Limnephilus*, which, in structure and coloration, agrees with a continental specimen of *L. subcentralis*, kindly given to me, with other types of *Phryganidæ*, by Mr. McLachlan.—A. E. Eaton, Cambridge, *November 6th*, 1865.

On the use of the anal forceps in the Forficulidæ.—Seeing some remarks in your last number, and in the Athenæum, No. 1,982, p. 545, as to the use the earwig makes of its anal forceps, it may be worth while to add my mite of information, which I give from personal observation in India. A species of earwig found there uses the forceps, as stated by Mr. Weir, in folding up its wings after flight, and also for seizing, and keeping in convenient proximity to its mouth, such living larvæ as it may take a fancy to devour, turning its prey about with great ease, and so munching it up very comfortably. I have not observed the forceps used for *unfolding* its wings.—A. A. Dunlop, 95, Lower Baggot Street, Dublin, *8th November*, 1865.

Captures of Lepidoptera in the North.—In the last week in March I went on the Withnell Moors after *Amp. Walkerana*, and took nearly a hundred specimens, all males; the ♀ very rarely takes wing, and is only to be found by carefully looking for it, at rest, on the top of the heath; or by patiently watching the male settle down.

In the first week in April I went to Witherslack for *Butalis incongruella*, for which I was too late; but I took *Gelechia junctella* flying during the sunshine. *P. Argiolus* was sporting round the hollies; a solitary *Rhamni* now and then flew by; and *L. lobulata* was sticking on the gate posts. The woodman's axe had cleared away the birches where I used to get my birch-feeding *Tineæ*. Among shoots of *Anthyllis* the larvæ of *Gelechia anthyllidella* was feeding.

My next visit was in the second week in May, and I found plenty of *Micros* out in splendid condition, some of the specimens of *Elachista Kilmunella* being as large as *cygnipennella*. I made up a very fair bag of *Clepsis rusticana*, *Gel. longicornis*, *Peronea lipsiana*, *Phox. uncana*, *Nem. viridata*, *Eup. indigata*, *A. menyanthidis*, &c., &c., and a lot of cases of *Coleops. pyrrhulipennella* and *alcyonipennella*: out of seventy cases of the latter I did not get one moth, but plenty of Ichneumons.

In the first week in June I paid another visit along with my jolly friend and most indefatigable hunter, C. S. Gregson, and we set at it in earnest, and filled fully one thousand boxes in twelve hours' hard work. *P. Geryon* was in abundance among *Helianthemum*, or may be it was *statices* undergoing some transformation, for the specimens on the same ground were formerly nearly one-third larger, and were then booked as *statices*. *Agestis* was out in fine order, and in great variety, some with the white spots perfect, others "Saturnised," and also the *Salmacis* type.

Culiciformis put in an appearance for the first time, and was so unexpected, that I called out, "here is an Ichneumon for Mr. Cooke," when I had it betwixt finger and thumb, and I really thought it was one until the wing borders became visible. *Nola cristulalis*, *L. salicata*, *Eup. pulchellata*, and *pygmeata* (the latter I could not get to lay for Mr. Crewe, who is in want of eggs of this species) also occurred.

Eup. satyrata (*?*) flying freely during sunshine (these specimens are so pale, that I think it not improbable they may be a new species: I got eggs, but they did not hatch). *Eup. viminata* (*valerianata*) was also enjoying itself during the sunshine.

Among the *Tortricina* were *Phox. siculana*, *uncana*, *biarcuana*, *diminutana*; *E. fractifasciana*; *P. prælongana*, *ochromelana*, *marginana*, *carbonana*; *C. vacciniana*; *D. saturnana*, *Hyrcyniana*, as well as another *Tortrix*, of which Gregson and I each took a specimen among spruce firs. In these examples the wings are more obtuse than in *Hyrcyniana*. *S. Rewayana* flew wildly out of a holly bush. Among the *Tineæ* was *L. luzella*, *bistrigella*, *rufimitrella*, and *Ornix scoticella*, *avellanella*, *Loganella*, *Gel. tenebrosella* (about a hundred specimens of this among *Rumex acetosa*), *Elachista subochrëella*, *consortella*, *rhynchosporella*, &c., &c.

Bye and bye the wind got up, and we turned into a quiet lane, and soon C. S. G. shouted out "here it is"——"what! have you got *alternaria*" said I; and on going up to him, he pointed out to me a fine female specimen of *Macaria alternaria* in the middle of a sloe bush, and soon got her in a box all right. I at once got my magnifying glass out to look for eggs, knowing that the larva fed upon sloe, but we could discover none, though we afterwards found some in the pill box, of which a few hatched, and nine larvæ, fed up under Mr. Gregson's care, duly went to earth. After this, we went on the rocks to look for the larva of *Depressaria carduella* on

thistles, and found a couple mining in the leaves; and of these Mr. Gregson made a beautiful coloured drawing, and then sent them on to Mr. Stainton to be figured, as it had previously been known to nobody but myself.

During the second week in June I paid a visit to Wildbottoms, a place as rough as the name implies, to look for *E. Blomerata*, of which I soon espied a beauty high up on the shady trunk of an elm; and this, I find, is generally the position chosen by the insect during clear weather. Towards the end of the day I had boxed nearly a score, and also a few *sylvata*, *heparata*, and *corylata*, when the heat sent me into an old hut to rest; but even here there was no rest for me: first a *Tinea*, sheltering itself in the shade, attracted my attention, and proved to be *Œcophora stipella* (*similella*). Then my rest was done, and I began dissecting the old hut, when out darted *silaceata* of course, not unexpected by me; then came *affinitata*, and again *stipella*. After this, I went to get some *Elachista humiliella* (*occultella*) by sweeping, and during this operation saw a small *Argyresthia* flying about an oak tree, which proved to be *glaucinella*.

A few days after I went for the purpose of procuring eggs of *Blomerata*, but only got one egg to hatch, and the larva died. This species is a seed-feeder no doubt, at least I should think so by its appearance, most probably, in the seed heads of the red Campion which abounds there. It may be some time before I get any more *Blomerata*, as the place is so rigidly preserved that the owner whom I met only consented to my working there for that day when I showed him Lady Shelley's permit to go, uninterrupted, anywhere on her Ladyship's estates for entomological purposes.

To her kindness, in allowing me to hunt on the Brockholes estate, is due the bountiful supply of *Eidophasia Messingiella*, which I have been enabled to send to my friends. The dry weather having made the swamp traversable, so that I took about a hundred specimens from 4 to 7 p.m. (all amongst *Equisetum*), and also *C. Schrankella* and *Elachista perplexella* at the same time.—J. B. Hodgkinson, 31 Christ Church Street, Preston.

(To be continued.)

Notes on Cynthia cardui and Vanessa Antiopa.—The principal object of this communication is to record notices of two beauties observed in north Devon. This observation may possibly induce some persons to enquire, as Sheridan is said to have done, when the volume of Dodd's beauties of Shakespeare was put into his hands, "where are the other ten thousand?" This question would be very apposite, were it my intention to describe the scenery of Lynmouth or of Ilfracombe. Had I such a purpose in hand, my communication must of necessity be divided into a series of chapters, one being devoted to anticipations, a second to explorations; these might be followed by others devoted to admirations, realizations, and so on; but no, it is my intention to record facts, facts entomological.

I must admit that, in taking up my pen for that purpose, I find it guided by an almost irresistible impulse to note down some of the impressions that have indelibly impressed themselves upon my mind, so that it becomes almost a matter of necessity to indulge in some outpourings of my heartfelt appreciation of the charms of this lovely portion of fair Devonia; but no, I must resolutely keep to my purpose, and at once proceed to record facts.

The first of the beauties, respecting whom I have a few observations to make, is *Cynthia Cardui;* the following is the manner in which she forced herself upon my notice.

At the western extremity of Ilfracombe stands a parish church, passing behind which you enter a narrow lane, "a Devonshire lane;" its beauty will be appreciated by every one who has visited Devon, and he will thoroughly understand the meaning of the above appellation; he will know how it winds, and turns, and winds again; just so does the lane at the back of the church, until you arrive at a gate at its extremity that opens to the breezy downs.

The last fifty yards of the hedge, on the right hand of the lane, is covered by a mantle of ivy, which, on the 9th of October, was in full blossom; but the flowers were almost hidden from sight by a countless multitude of butterflies and moths; it was one of the most beautiful sights I ever beheld. The multitudinous host only comprised two species of butterfly, *Vanessa Atalanta* and *Cynthia Cardui*; scores of the former, but hundreds of the latter. The majority of them appeared to be so overpowered by imbibing the nectar of the ivy blossoms, that I had no difficulty in taking specimens of *Cynthia* between my fingers; I secured a single example, which appeared to me to be richer in colour than any I had ever previously seen. I also found *Cynthia* very numerous at Lynmouth, and observed great numbers assembled on the Michaelmas Daisy, at Coomb Martin.

I had not the good fortune to see the second beauty myself, but the following is the description and account of her, given to me by my wife.

"I had reached the top of the lane, where the ivy overhangs the hedge that faces the south-west, and there I stopped to admire the beauty of the mixed assemblage of butterflies, moths, and other insects; there were thousands of them. My attention was suddenly attracted by the appearance of a butterfly I had never seen before; it was larger than either the Admiral or Painted Lady. In certain positions it appeared to be black, or nearly so; in other lights it had a reddish rich brown tint, and its wings had a broadish border of white, within which I think there was a row of blue spots; what could it be?" There could be no doubt as to what it was; but, I enquired, "if it was a fly you had never seen before, why did you not try and catch it?" "Well," my wife replied, "I could have done so, and in fact *I did touch it*, but I was afraid of injuring it; so I let it go!" It was something, I thought, to have had the pleasure of touching "The Camberwell Beauty."—Frederick Smith, Ilfracombe, *October 9th*, 1865.

Chœrocampa Celerio at Exeter.—Mr. John Rowden, of this town, has just brought me a specimen of this hawk-moth to set out; it is, apparently, fresh from the pupa. He found it at rest on a window-sill about three o'clock in the afternoon. —John Hellins, Exeter, *October 19th.*

Chœrocampa celerio near Hendon.—I have much pleasure in reporting the capture of *Chœrocampa celerio*, in good condition, on the 26th of September last. I took it as it was hovering over a bed of *Petunias*, at about seven o'clock in the evening.—H. Druce, Holcombe House, Mill Hill, near Hendon, *November*, 1865.

Chærocampa celerio in Suffolk.— On going over to Oxford in Suffolk the other day, I was shown a specimen of *C. celerio*, which had been taken there this autumn, and is now in the collection of the rector, the Rev. J. Maynard.—E. N. Bloomfield, *November 7th.*

Cœrocampa celerio (*imago and larvæ*) *at Newmarket.*—I had a beautiful specimen of this rare insect brought to me last October. It was caught one evening in a grocer's shop here. It had evidently been attracted by the light, and, although caught by a cap, and conveyed to me in a glass, was scarcely injured.

During the same month I had four larvæ of this insect brought me. They were taken off a grape vine in this town; one of them was purplish-brown, with a brown horn at the tail; the other three were green, with brown horns. They each had two spots on the fifth and sixth segments respectively, that nearest the head being much larger than the other. These spots were bright silvery, but, as the larvæ drew to their change, and turned very dark, the spots became quite black, with a yellow rim round them. Unfortunately, the brown, and one of the green larvæ, died. The remaining two have concealed themselves under some dry leaves in my breeding cage, and I fancy, by their appearance, they will change to pupæ without entering the ground.—F. Postans, Newmarket, *November 14th*, 1865.

Description of the larva of Agrotis nigricans, with notes on its destructive habits.—On May 11th, 1865, Mr. Doubleday kindly presented me with some larvæ, which proved to be of this species; and to that gentleman I am greatly indebted for the following account of their destructiveness in a field of ten acres, which last autumn was sown with wheat, and with clover in the early part of this year; the clover came up well, and the field was green with it all over, until these larvæ began to attack it. So prodigious were their numbers and so great their powers of devastation that, by the 17th May, not a leaf of clover, nor even of any weeds, remained out of the whole ten acres, though the wheat was uninjured; and by that time they had left the open field and gone to the hedge banks and ditches, where a remarkable scene of destruction presented itself to view. The large *Heracleum* and other umbelliferous plants were stripped of their leaves and, in short, nothing was left but grasses, which they did not appear to touch.

I also received other larvæ of this species on the 14th May from Mr. Last, of Ipswich, feeding on *Plantago major* and *lanceolata*, and he reported that they liked a change of food, and would eat many low plants; however, I found they took readily to clover, and, like those before mentioned, continued to feed to about the middle of June, the moths appearing from July 15th to 24th, varying much in their appearance, and becoming active and restless the moment their wings were dry.

The larva when full-grown is an inch and a-half long, smooth and cylindrical. The colour of the back ochreous-brown, and in some individuals very bright ochreous; a thin grey dorsal line, margined with blackish, and running through a series of blackish-brown triangular and diamond shapes, well defined in some individuals, though obscure in others.

Sub-dorsal line greenish-black, in some varieties quite black, and edged below with a narrow line of dirty whitish-green, then a broad stripe of blackish-green, followed by another dirty whitish-green, narrow and slightly interrupted, line, and then another darker broad stripe of blackish-green, along the lower edge of which are the black spiracles. A double whitish stripe follows, extending down the sides of the anal prolegs, which is made by a line of pale dirty greyish-green, being the colour of the belly and prolegs, running through the middle of the white. The

ordinary shining warty spots black. The head greyish-brown, mottled, and streaked with black. A dark brown shining plate on the back of the second segment, with three paler greyish lines.

Some of these larvæ presented great resemblance to several of the varieties of *Agrotis tritici*, but the double white stripe above the feet, and black warty dots, give distinct characters to the larvæ of *nigricans*.—Wm. Buckler, Emsworth.

Description of the larva of Phytometra œnea, with notes on its food.—On July 30th I received a batch of eggs from Dr. Knaggs. These were of the ordinary *Noctua* form, round, ribbed, and with flat under-side; in colour they were by that time a dull purplish-brown. On August 5th the larvæ began to emerge, little translucent, almost colourless loopers to look at, but luckily they did not all come out at once, otherwise I should have had little to say about them; I tried them with every plant I could think of, but at first with no success, and by far the greater part of them had died of starvation, when luckily it came into my mind that the very last specimen of the moth, which I had captured myself, was flying over or near some plants of milkwort, *Polygala vulgaris*: a little bit of this plant therefore was put in amongst the other twigs and leaves, and in a short time, to my great delight, the 5 surviving larvæ had all found it out, and were eating it very freely. They soon began to show an increase in size, and turned pale green in colour, and although looping very much, it was easy to see they had two pairs of ventral legs. I noticed that whilst small their tint depended on the part of the plant they ate, the *blue* flowers (I could find no *pink* ones) causing them to appear of a dark bluish-green. In the first week of September they attained their full growth, and were then an inch long; slender if compared with other *Noctuæ* larvæ, but moderately stout for loopers; uniform in width when viewed from above, but when seen sideways, cylindrical in the middle segments, and flatter towards the head and tail; the skin smooth; the head round; legs twelve, the ventral pairs being on segments nine and ten, and rudiments of another pair, too small for use, on the eighth.

The colour is a velvety full green, scarcely paler on the belly; the head mottled with faint brown; a hasty inspection would scarcely detect any lines, but on looking closely, the dorsal vessel appears as a darker green thread, bordered with paler lines, between which and the spiracles come three pale sub-dorsal lines; the spiracles yellowish, below them a broader pale line, which on segments ten to thirteen becomes whitish. The segmental folds yellow, the usual dots very small, black, surrounded with light rings, and emitting small bristles.

When full grown, their walk is semi-looping, and they rest extended straight and flat on the stems of their food; if disturbed they drop off, and fling themselves about angrily. About 10th September they began to contract in length, and to grow pale, and in a day or two spun themselves up in very tight-fitting little cocoons of close woven grey silk, wrapped about with some of the leaves and stems of their food.

I have no doubt that in this case it is no *substitute* food, but the natural one, which I have been lucky enough to discover.—J. Hellins, *October 5th*.

Lepidopterous captures near Hastings.—The only captures at sallows worth mentioning were one *T. biundularia*, four *H. croceago*, one *T. gracilis*, and plenty of *T. rubricosa*.

As the spring advanced I took a few of the following:—*A. derivata*, *Ephyra porata*, and *pendularia*; the two latter I took again in the autumn. In June, although some of the common species came abundantly to sugar, I captured nothing better than two *A. tincta* and several *C. fluctuosa*.

The best species I met with during the summer were one *C. fluviata* (at light), three *P. bajularia*, and five *M. notata*, a second brood, I suppose, as they were taken from July 31st to August 24th. I have also met with the following species:—*C. Hyale*, *S. undulata*, *E. trilinearia*, *E. octomaculata*, and *Cr. pinetellus*, but only single specimens in each case.

A few *H. croceago* and *X. rhizolitha* occurred this autumn, at sugar.

Whilst on a visit to Suffolk in July I took one *M. abjecta*, one *X. scolopacina*, and one *Cr. falsellus*.—E. N. Bloomfield, Guestling Rectory, Hastings, *Nov. 7th.*

Ennomos alniaria at Gosport.—On the night of September 9th, a neighbour brought me a large specimen of ***Ennomos alniaria***, which he had just taken in a butcher's shop close by; and, on the afternoon of the following day, as my younger brother was returning from Sunday School, he brought in a female of the same species, which he took at rest on a lamp-post. I pinned it and put it aside, as owing to its worn state, I did not take much notice of it at the time; but, on looking at it a few days afterwards, I found it had laid a small batch of eggs (9), and, by their present appearance, I have every reason to expect a little brood of *alniaria* larvæ next spring. My friend, Mr. Woodman, took ***Heliophobus hispida*** at light, here, last month.—G. H. Lacy, Gosport, *October 30th*, 1865.

Sterrha sacraria near Folkestone.—Having seen several recorded captures of *Sterrha sacraria* in "The Magazine" this season, perhaps it may interest your readers to learn that I took a very fresh male specimen of this insect on September 12th, within four miles of Folkestone, amongst some rough grass in the corner of a clover field. It flew very slowly when disturbed, and settled again after a few yards' flight.—J. H. Briggs, St. John's College, Oxon, *October 25th*, 1865.

Argynnis Lathonia, Heliothis armigera, &c., near Folkestone.—I have seen two specimens of *Argynnis Lathonia* this season; one in some woods between Folkestone and Dover, the other a small dark ♀, which I secured at the lucerne, under West Cliff, Folkestone, on the 18th September.

Amongst other insects, which I observed on the West Cliff, were two specimens of *Heliothis Armigera*, *Melitæa Cinxia* (seen several times), *Colias Hyale* (three ♀), *C. Edusa* var. *Helice* (five); the typical *C. Edusa* being much more abundant towards the close than at the beginning of the month.—*Id.*

Note on Depressaria olerella.—I cannot help thinking that this species must be mixed in some cabinets with *D. albipunctella*, to which it bears a great superficial resemblance, since I have taken it this season in various localities, some of them at least fifteen miles apart, and, indeed, wherever I beat a thatch in the neighbourhood of heaths it occurs. Surely it must be found about other heaths in Surrey and Hants.

It differs decidedly from *albipunctella* in the whitish head and thorax, and the much more sharply angled pale fascia, and is, besides, rather a larger, lighter, and more rosy looking insect.

Hybernated specimens occurred in April, and it has been out ever since the beginning of August, but I overlooked the larva.—Chas. G. Barrett, Haslemere.

Double-broodedness, (?) *&c., of Macroglossa stellatarum.*—I have bred *M. stellatarum*, a second brood, this autumn, from the egg out of doors. I opened all the females, but could not detect any eggs in them. It is possible that eggs might develope during hybernation, and be laid in the spring? if not, there will be scarcely any of the species next year, judging from the fact that all my pupæ of the second brood (except two which are dead) produced imagos, and that all the females were, apparently, destitute of ova.—E. Horton, Powick, near Worcester, *Nov. 4th.*

Second appearance of Phorodesma bajularia.—From the brood of larvæ of this species, kindly sent me by Dr. Hearder, one moth emerged in September, and another now, this month; the remainder (i.e., those which are not dead) being still in the larva state, and about half-grown.—John Hellins, Exeter, *October 19th.*

The new British Pterophorus (dichrodactylus).—Mr. Stainton's note, in the last number of the Magazine, p. 137, on the "New British *Pterophorus*," reminds me that, in the summer of 1860, I found a larva near Scarborough, boring down the stems of the tansy.

From these I bred a fine series (the first made its appearance July 5th), and have had them in my collection ever since, under the name of *ochrodactylus*. On these the hind-legs present the conspicuous appearance described as characteristic of *dichrodactylus*.

I see, by my note-book, it was the third week in June that I collected the larvæ, which were of a dull whitish-green, with the lines conspicuously darker; when more mature, they had a pink tinge. The excrement was protruded from the joints of the leaves, and thus indicated the presence of the larvæ.

The species in the yarrow I have never met with.—W. R. Jeffrey, Saffron Walden, *November 1st*, 1865.

Observations on various Pterophori.—I, also, have been surprised at the polyphagous habits of *P. acanthodactylus*, having bred it this year not only from rest-harrow, but also from two of the *Labiatæ*, viz., *Clinopodium vulgare* and a *Mentha* (see *Ante*, p. 138).

About the end of August I met with a few larvæ of *P. Loewii* on the seeds of *Erythræa centaurea*, growing in a wood near here, from which I have bred four fine examples. I think I must have been late for them, as I took two or three of the perfect insects flying amongst the plant about the same time. The larva is dull dark green, and seemed more sparingly clothed with hairs than is usual for a plume larva. The first changed to a pink pupa on the 4th of September, remaining in that state about two weeks.

In the same woods, in the spring, I met with the larva of *P. galactodactylus*, and bred a fine series; and, also, *lithodactylus*.

The larva of the commoner *fuscus*, *pterodactylus*, and *pentadactylus*, have also come under my observation, and been bred this year.

I have captured with the net *P. bipunctidactylus* and *baliodactylus*, the latter in Kent, at the end of June.—*Id.*

Nascia cilialis near Cambridge.—Whilst sheltering from the rain, under a tree, in the neighbourhood of Cambridge last June, I had the good fortune to capture a specimen of this rare *Pyralis*.—PHILIP H. HARPER, 30, Cambridge Street, Hyde Park, *November* 16*th*, 1865.

Occurrence of Sesia spheciformis and Cucullia gnaphalii.—A friend of mine has been lucky enough to take the above-named species near Brighton; the former in the imago state at the end of June, the latter in the larva state in July.—*Id.*

Postscript to description, &c., of Botys asinalis.—It may seem strange that, in the November number, I speak so uncertainly of the double-broodedness of this species after the publication of Mr. Hudd's note in October. The reason is, that though his note was published first, mine had been written, and was in type, some days before he took the imagos of the second brood. Since then he has sent me further information, which seems to show conclusively that *asinalis* has two broods, one of which (as in several other species) goes through its transformations rapidly in the hot weather, while the other lingers in the larva state through the winter. Mr. Hudd is now taking the larvæ (from the eggs of the second brood) hybernating, and hiding themselves in rolled-up leaves, fallen to the ground under the hedge where the madder-plants grow.—J. HELLINS, *November*, 1865.

Postscript to note on Sterrha sacraria.—May I be allowed to make the following addition to the description of this larva? At the end of line 6, page 135, leave out the word "*and*," and, after "sub-dorsal lines," insert "which, in one or two of the larvæ, were on the anterior segments united in one strong brownish-red line, running back from the dark stripe on the lobe of the head."—*Id.*

Review.

THE RECORD OF ZOOLOGICAL LITERATURE, 1864. Volume First. Edited by ALBERT C. L. G. GÜNTHER, M.A., M.D., PH.D., F.Z.S., &c., &c. London: John Van Voorst, Paternoster Row, 1865.

We have here a somewhat bulky octavo, of upwards of 600 pages, treating of the Literature of Zoology published in the year 1864. The increasing mass of Zoological Literature, annually produced, renders it extremely difficult for any one to keep thoroughly *au fait* with all that appears, even in his own special branch of Zoological Science; and a record, such as this, is of great value, enabling any Zoological student to check by it the completeness of his own information.

A thorough worker ought to find, in such a record as this, nothing with which he is not already acquainted; and the extent to which any one meets here with notices of publications on his own speciality, ought to be a measure to him of his ignorance.

The Preface informs us that the object of the "Record" is "to give, in an Annual Volume, reports on, abstracts of, and an index to, the various Zoological publications which have appeared in the preceding year; to acquaint Zoologists with the progress of every branch of their science in all parts of the globe; and to form a repertory which will retain its value for the student of future years."

In the volume before us the Mammalia, Reptilia, and Pisces, are treated of by Dr. Günther himself, already so well known as a first-rate authority in everything relating to Erpetology and Ichthyology; the Birds are elaborated by Mr. Alfred Nowton; the Mollusca by Dr. Martens; the Molluscoida, Rotifera, Annelida, and Echinodermata, by Professor J. Reay Greene; the Crustacea by Mr. Spence Bate; the Helminthes by Dr. Cobbold; and the Arachnida, Myriapoda, and Insecta, by Mr. Dallas; the Insecta alone occupying 260 pages, or very nearly half the volume.

Mr. Dallas is already well and favourably known as a writer on *Hemiptera;* and it is satisfactory to find that so large a portion of the Record has fallen into the hands of one whom Entomologists generally will agree in considering competent for the task.

The subject Insecta is divided into eight chapters.

1 The General Subject	8 pages.	5 *Diptera*	33 pages.
2 *Coleoptera*	121 „	6 *Neuroptera*...	5 „
3 *Hymenoptera*	17 „	7 *Orthoptera*...	17 „
4 *Lepidoptera*	55 „	8 *Rhynchota*...	15 „

Each of these chapters is divided into three sections.

A. Separate Works. B. Works in progress. C. Papers published in Journals. &c. And, in each of these sections, the works or papers are enumerated alphabetically, according to the name of the author.

After these sections follow "General remarks on the order," in which, however, the order of arrangement is not so apparent.

Had our space permitted, we would gladly have extracted some specimens of the work, but we apprehend all real students are already acquainted with it; if not, we can assure them that the loss is their's.

Entomological Society of London, *November 6th*, 1865.—F. P. Pascoe, Esq., F.L.S., President, in the Chair.

H. Reeks, Esq., of The Manor House, Thruxton, and S. McCaul, Esq., of The Rectory, London Bridge, were elected Members.

The President regretted to have to announce the decease of one of the Members, Major-General Sir J. B. Hearsey, K.C.B., which had occurred at Boulogne a few days previously. He also mentioned the death of Mr. Peter Bouchard, so well known to all British Entomologists. Mr. Bouchard had proceeded to Santa Martha, in New Granada, in order to collect insects, and had already sent home a valuable collection, when he was seized with fever, which carried him off in four days.

Professor Westwood exhibited an example of *Acherontia Atropos* in which the right antenna was absent; this had been bred by Mr. Stone. He also exhibited the pupa-skin from which it had emerged, this skin showing a remarkable malformation in the antennæ-cases, the right hand one corresponding to the missing antenna of the imago, being short and distorted, sticking out like a ram's-horn. With reference to the great abundance of this insect during the present season, Mr. Smith remarked that a living specimen had actually been found in the British Museum.

Mr. McLachlan exhibited the example of *Sterrha sacraria* captured by his nephew at Worthing (Ent. Mo. Mag., Vol. 2, p. 92); and, also, the six specimens

that had been bred by Mr. Hellins from the eggs laid by this example. These were very extraordinary, for, not only did they not resemble the parent moth, but they bore little likeness to any examples of *sacraria* that he had seen, and widely differed from each other; in fact, he considered that, had any one of them been taken at large, it would very probably have been considered as a distinct species. He also exhibited a beautiful coloured drawing of the larvæ on *Polygonum aviculare*, executed by Mr. Buckler.

Mr. McLachlan also exhibited a curious variety of *Calepteryx splendens*, taken in France by M. Fallou. This example was a female, but the left hand anterior wing was coloured precisely as in the male, the corresponding right hand wing showing only a few brown dashes. In the form of the wings, colour of the body, and all the more essential anatomical characters, the insect was decidedly female.

Mr. Bond exhibited examples of *Acidalia Mancuniata*, Knaggs, together with a life-like figure of the larva by Mr. Buckler. He likewise exhibited some beautiful enlarged photographs of various species of microscopic parasites, executed by Mr. How, of Forster Lane, Cheapside, from negatives taken by Dr. Maddox.

Mr. Janson exhibited examples of *Myrmedonia plicata*, Erichson, a species new to Britain; these had been found by Mr. Smith's sons in the nests of *Tapinoma erratica*, at Bournemouth.

Mr. Crotch exhibited three species of *Coleoptera* new to Britain, viz., *Ægialia rufa*, Fab., taken by Mr. Archer near Liverpool; *Lithocaris maritima*, Aubé; and *Monotoma 4-foveolata*, Aubé, taken by Mr. Janson in Hainault Forest.

Mr. Stevens exhibited a collection of insects of all orders, formed by Mr. Andersson in Damara Land. He also read a letter recently received from Mr. Plant from Tamatave, Madagascar.

The President called attention to a remark in the newspaper accounts of the wreck of the "Duncan Dunbar," stating that, on the small islet forming part of Les Roccas reef, on which that vessel was wrecked, the passengers were greatly annoyed by large earwigs, with which the islet was covered. He enquired if anything was known of this so-called earwig, as he was inclined to think that it was probably some crustaceous animal, in which several Members agreed with him.

Mr. Hewitson sent for exhibition some oak leaves, completely covered by the small flat galls known as "oak-spangles," produced by *Cynips longicornis*.

Mr. Hewitson also communicated a paper on new species of *Hesperidæ*.
genera

Mr. Baly read a paper on new genera and species of *Gallerucidæ*.

Captain J. Mitchell, of Madras, communicated "Remarks on Captain Hutton's paper on the reversion and restoration of the silk-worm."

The Rev. Douglas Timins sent "Notes on collecting European *Lepidoptera*."

Mr. David Sharp communicated a paper on the British species of *Agathidium*, in which three new species were described, viz., *A. clypeatum*, *A. convexum*, and *A. rhinoceros*.

The President announced that, in future, when any Member intended to read a paper, on which he invited discussion, he was requested to give notice to the Secretary, which notice would be published in the literary periodicals previous to the Meeting.

DESCRIPTION OF A NEW SPECIES OF BUTTERFLY BELONGING TO THE FAMILY *LYCÆNIDÆ*.

BY A. G. BUTLER, F.Z.S.

Aphnæus (?) Marmoreus, n. sp.

♀. Upper-side. *Fore-wings.* Basal half white, tinted with pale blue at the base; apical half brown, deeply trisinuated within, and enclosing two sub-apical white spots; extreme edge of hind-margin and cilia deep brown; anterior margin pale grey-brown; a triangular brown spot just below, and before the middle of the second branch of the median nerve.

Hind-wings. Sub-triangular, white, with two tails, the longer one at the extremity of the sub-median nervure; nervures and base tinted with pale blue; apex broadly brown, deeply sinuated within, and terminating at the second branch of the median nervure; the remainder of the hind-margin sub-marginated by three deep brown oval spots between the nervures; an indistinct greyish band a short distance from, and following the direction of, the hind-margin; extreme edge of hind-margin and tails dark brown; inner margin deeply excavated just above the anal angle; fringe white, varied with brown at the terminations of the nervures.

Body. Thorax pale blueish, abdomen white; head white, antennæ brown, barred with white below, tips reddish; palpi, lower half white, upper half brown above, white beneath.

Under-side. *Fore-wings.* White, front and hind-margins pale grey-brown; a quadrate black spot within the cell near the base; a black curved line crossing the wing just beyond the middle of the cell, broadest upon the costa, and tapering to near the inner margin; a small black line at the end of the cell; a large irregular brown blotch-like band near the apex, beginning on the costa and terminating at the second median nervule; two brown spots placed obliquely, from just before the middle of the second median nervule, towards the anal angle; a wavy sub-marginal brown line near the outer margin; extreme edge of outer margin brown; fringe brown.

Hind-wings. White; nervures irrorated with greyish; a marginal band of greyish, and a sub-marginal wavy line of brown, near the outer margin; cell crossed by a short narrow black band, and closed by a

brown lunule; a narrow brown band crossing the wing from just beyond the middle of the costa to the first median branch, and apparently continued irregularly inwards by two brown dashes between the first and second, and the second and third median nervules; a brown sub-apical dash; a fine black lunule on the abdominal fold below the middle; a black spot at the anal angle, and a small black dot just above it; a second black spot near the margin, between the second and third median branches; extreme marginal edge and tails brown.

Body. White.

Habitat: White Nile.

In the collection of the British Museum.

ON SOME ABERRANT GENERA OF *PSOCINA*.

BY DR. H. A. HAGEN.

(*Concluded from page* 152).

B. *Alis superioribus non lepidotis.*

a. *Prothorace transverso, oblongo, tripartito, non obtecto.*

Genus EMBIDOPSOCUS, new genus.

Head flattened, triangular, broad. Eyes small, rounded. Ocelli placed somewhat close together. Palpi and labrum as in *Psocus*. Antennæ slender, short; the two basal joints short, cylindrical; the thread more slender, crisped; about 15-jointed; not ciliated. Pro-thorax transverse, narrower than the head, three times longer than broad, well evident, and on the same level with the head and meso-thorax; a trapezoidal part in the middle, and a rounded part on each side. Meso-thorax cordiform, flattened. Abdomen long, oval, flattened. Superior wings flat in repose, not roof-shaped; scarcely longer than the abdomen, slender at the base, afterwards dilated, the apex semi-circular; the membrane is very thin and weak, as in *Termes* and *Embia;* neuration very simple, but the veins strong; the costa visible as far as the middle, where it unites with the sub-costa, which is prolonged from that point into a branch divided somewhat obliquely towards the apex; median vein running to the apex, slightly curved downwards, slightly separated from the sub-costa; there is also a small oblique vein at the base of the posterior margin; all the rest of the wing (even the margin) without veins. Inferior wings slightly shorter than the superior, similar in form; I see but one weak vein, extending from the base to the apex, more towards the anterior margin. Legs short, the posterior not extending beyond the abdomen; femora enlarged, compressed; tibiæ slender; tarsi short, the joints nearly equal, the basal slightly larger and stronger than the others.

1.—*E. luteus*, n. s.

Body uniformly livid brown; legs paler; wings whitish, almost colourless, veins livid.

Long. cum alis 2-2¼ mill.; exp. alar. 3½ mill.

Cuba (Gundlach). I have seen but two examples, in bad condition, gummed on paper.

This genus is perhaps the most curious of all the *Psocina;* it resembles *Termes* in a certain degree, and still more the genus *Embia;* but it truly belongs to the *Psocina*, for the body is less elongated than in *Embia*, and without appendices.

Genus Empheria, Hagen.

Head flattened, triangular. Eyes large, somewhat prominent. Ocelli placed close together. Antennæ as long as the body, slender, 25-jointed, the two basal joints stoutest. Mouth as in *Psocus*. Prothorax forming a narrow ring, free. Wings flat in repose, scarcely longer than the abdomen, oval, posterior margin somewhat contracted; veins very strong, ciliated. Superior wings with the sub-costa straight, united to the costa before the apical third; between them a fine additional vein; median vein forked in the middle shortly after emitting a branch (3) widely forked towards the middle of the posterior margin; superior branch (1) and inferior ditto (2) giving off a long fork towards the apex, and also a simple branch; the superior branch (1) towards the anterior margin, the inferior (2) towards the posterior; the sub-costa is united at the end by a transverse vein with the simple branch of the superior branch (1), thus forming a trapezoidal pterostigma. Posterior wings with the reticulation of *Amphientomum paradoxum*. Abdomen oval. Legs moderate; femora stouter; tibiæ cylindrical; tarsi with the first joint long, the two others equal, scarcely two-thirds the length of the first.

1.—*E. reticulata*, Hagen.

Uniformly brown, as is almost always the case in amber insects. The individuals appear to be males, judging from the bifid part at the apex of the abdomen.

Long. cum alis 2 mill.; exp. alar. 3 mill.

Fossil in Prussian amber; three examples, which are no longer in my possession. Described and figured in Berendt's "Organische Reste im Bernstein," T. ii., p. 64, tab. 8, fig. 6.

Genus Thylax, new genus.

In some degree resembling *Empheria*, but differs as follows. The ocelli are more separated; antennæ 40-jointed, but shorter, and the two basal joints stouter. Pro-thorax forming a transverse ring, slightly narrower than the head. Wings rather long, very narrow, lanceolate; the posterior margin appears angulated before the middle; reticulation analogous, but the median vein and the sub-costa are united by a transverse vein before the pterostigma, so that there is an elongated hexagonal areole below it; the simple branch of the superior fork (1) broken at the base, so as to form a short transverse vein from below. Inferior wings much more acute, the anterior margin excised at the apex; neuration as in *A. paradoxum*.

1.—*T. fimbriatum*, n. s.

Uniformly pale brown; very pubescent on the head, antennæ, wings, and legs, the margin of the wings with long cilia.

Long. $2\frac{1}{2}$ mill.; exp. alar. 4 mill.

In gum copal (Animé) from Zanzibar. Three examples received from Baron Osten-Sacken.

The genera *Empheria* and *Thylax* are somewhat allied to *Amphientomum*, but without scales. They have nothing in common with *Embidopsocus*, save the free pro-thorax, which is not elsewhere found in the *Psocina*.

Königsberg, *September*, 1865.

DESCRIPTION OF A NEW SPECIES OF THE FAMILY *GALLERIDÆ*.

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

Melissoblaptes (?) Cephalonica, n. sp.

Alis anticis breviusculis griseis, venis saturatioribus, margine postico saturate griseo-punctato; capite albo.

Exp. al. ♂ 9‴; ♀ $9\frac{1}{2}$‴.

Head white, the frontal tuft protruding as in *Melissoblaptes*, and concealing the short palpi of the male. The palpi of the female are short, drooping, the second joint densely clothed with long scales, leaving only the extreme tip of the terminal joint visible; antennæ pale grey, the basal joint thickened, greyish-white.

Anterior wings with the costa slightly rounded (in the male specimen these have almost the form of a flattened ellipse, though this peculiar shape is less marked in the female); grey, with the nervures darker, especially those between the end of the discoidal cell and the apex of the wing; hind margin spotted with dark grey. In the male specimen the costal portion of the wing has an ochreous tinge towards the base. Cilia pale grey, with the extreme tips a little darker.

Posterior wings pale grey, somewhat transparent towards the anal angle; cilia pale grey.

Thorax in front whitish-grey, then grey concolorous with the anterior wings.

Legs pale grey.

This singular insect was bred by Mr. Hind, of York, from dried currants; we must, therefore, presume it to be an importation, though possibly it may, ere long, be completely domiciled in this country.

At a first glance it puts one in mind of *Achroea grisella*, though readily distinguished by the white head and veined anterior wings, but a closer investigation shows that the clothing of the head, as also the palpi, are very different from what we find in *Achroea*.

The similarity to *Melissoblaptes* in structure is very great, especially in the male, for the palpi of the *female* are much shorter and more thickly scaled than those of the *female Melissoblaptes bipunctanus;* but the form of the anterior wings is very different and the markings are quite distinct. All the three European species of *Melissoblaptes* have the two transverse lines, of which in our *Cephalonica* we see no trace.

One curious character is furnished by the abdomen; in both the specimens before me it is very greasy. Now Professor Zeller observes of *Melissoblaptes bipunctanus*, "that it is remarkable the imago does not suffer at all from greasiness," but I am not aware whether this applies also to the other species of the genus In habit, *M.* (*?*) *Cephalonica* appears sluggish, certainly not restless.

I think it extremely probable that a new genus will eventually have to be created for this new species, but I defer doing so till I have more specimens before me, and an opportunity of examining the neuration of the wings.

Mr. Allis kindly brought the specimens up to London in the summer for my examination; one is now in his collection, the other in the collection of Mr. R. Hind.

Mountsfield: 27*th October*, 1865.

ON THE BLUE-BELTED *EPICALIÆ* OF THE FORESTS OF THE AMAZONS.

BY HENRY WALTER BATES, F.Z.S.

Among the host of brightly-coloured butterflies which enliven the shades of the vast tree-wilderness of the Amazons, few exceed in beauty the *Epicaliæ*. The *Epicaliæ* are members of the great family *Nymphalidæ*, and approach nearest to *Limenitis* of any European representative of the group. They rather exceed our *Limenitis Sibylla* in size; have rounded wings and slender-clubbed antennæ; and their caterpillars are studded with branched spines, two of which, longer than the rest, proceed from the head. In respect of colours, the twenty species of which the genus is composed may be divided into three groups. The first group comprises species in which both sexes have black wings with blue (sometimes white) belts and spots: the second, those in which the females have belts of yellow spots on a black ground, whilst the males have velvety-black wings with glossy orange belts and spots: the third and last, includes a few handsome forms richly decorated with light blue and orange belts on a black ground, the females differing from the males (in some cases) in wanting the orange belts. It is of two members of this last group that I wish now to speak, with a view to communicating a description of the hitherto unknown female of one of them, and showing how curiously small is the amount of apparent difference which, in some cases, distinguishes two allied species.

The *Epicaliæ* are true forest-dwellers; that is, unlike the scarlet and blue striped *Catagrammæ*, the purple *Eunicæ*, the long-tailed *Timetes*, and many other genera of tropical American *Nymphalidæ*, they do not issue from the forest on fine days to sport about in open sunny places, but remain all their lives in the shades. They love to glide through the less dense places, where the wilderness has been a little thinned by the uprooting of gigantic trees, or by the destruction of timber by the inhabitants, and settle on leaves where a ray of sunlight penetrates. In flight they are excessively rapid, and show but little of that floating motion which distinguishes *Limenitis* and many other genera. I have never noticed them to settle on the ground, and very seldom on flowers, their habit being to alight for a few moments on leaves, and imbibe the small quantities of moisture which are sometimes found on them. Some of the species are amongst the commonest of the forest butterflies: it is impossible to go far along any of the narrow pathways without seeing one or more of them, and there seems to be an uninterrupted succession of generations all the year round.

The most gaily-adorned species of these lively and attractive creatures is the *Epicalia Ancea* of Linnæus, known originally as a native of Dutch Guiana, but since found in various places on the banks of the Amazons, although unknown in other parts of America. The wings are of a rich deep black colour, the anterior pair being adorned by a belt of light blue, and the posterior by a broad belt of tawny-orange; whilst the under-surface is of a pale green, marked with a few brownish lines and spots. This is the colouring of the males, the females differing in wanting the orange belt of the hind-wings, and in having an additional smaller blue streak near the tip of the anterior pair. During the first few weeks of our explorations in the forests near Pará, at the mouth of the Amazons, no single object gave greater pleasure to Mr. Wallace and myself than this handsome insect, shooting like a meteor athwart the paths of the palm swamps, and settling on the broad glossy leaves of the wild banana and other plants. It was exceedingly wary, and we never succeeded in capturing one, when settled, if we had to walk a few steps to reach the place where it sat. The slightest movement was sufficient to startle the creature, and no course remained but to lie in wait near a favourite spot, with net in position, so as to strike the instant a specimen alighted. In course of time we thus obtained a large series; sometimes capturing half-a-dozen in the course of a morning's walk.

I subsequently met with *Epicalia Ancea*, far in the interior of the country, 1800 miles distant from Pará, and there had the pleasure of discovering a new allied form,—the *Epicalia Hewitsonii*, which differs in the male sex by having belts of blue both on the hind- and the fore-wings, without the tawny-orange belt. This, however, is a widely distinct species. What I have to speak of now is a third kind, which so closely resembles *E. Ancea* as to have been always confounded with it. I frequently noticed this third form whilst collecting in the forest,—at least, the male of it: it differs from *E. Ancea* in the tawny-orange belt being abbreviated, and wider in the middle than at the two ends; the same belt in *E. Ancea* being of equal breadth throughout. This peculiarity is so slight that I never dreamt of considering the form as more than an accidental variety,—that is, as appertaining to one individual, or a few of a brood of the type form; especially as it occurred in the same parts of the forest as *E. Ancea*, flying, in fact, in company with it. My friend Dr. Felder, of Vienna, however, on receiving from me, two years ago, a specimen mixed up with a small series of *E. Ancea*, confidently pronounced it a distinct species, and figured and described it as such, under the name of *E. Batesii*. I could not agree with

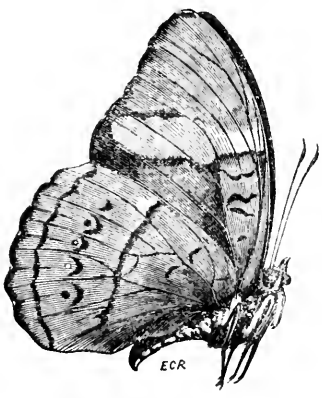
Dr. Felder in this opinion, not being able to find females of the new form amongst a long series which I examined, and so entered the form provisionally in my collection as a variety under the name which he had given it. The only points of difference from *E. Ancea*, besides the shape of the tawny-orange belt, are the black colour of the two basal lines on the under-surface of the hind-wings, and the central brown line of the same wings being reduced to a series of lunules surmounting the ocelli.

Within the last month, the correctness of the decision of Dr. Felder has received confirmation in quite an unexpected manner. A pair of the doubtful form, taken in copulâ, has come to light. This pair formed part of an interesting collection of insects made in Demerara, a few years ago, by Bernard Piffard, Esq., who kindly brought them to me, simply as likely to prove interesting on account of having been taken in copulâ. The pair *has* proved interesting, for an examination of the female has shown that, in all the minute points (colours and shapes of streaks of the under-surface of the wings) which distinguish the male *E. Batesii* from both sexes of *E. Ancea*, the female perfectly accords with the male. I have compared it closely with about twenty pairs of *E. Ancea*, and find that it differs in the same degree from all. The shape of the tawny-orange belt, of course, cannot be compared, as this is a decoration belonging to the males only of the two species. The following is a description of the female:

EPICALIA BATESII, Felder.

Lepidopterische Fragmente, p. 57, pl. 10, f. 3. ♂.

♀. Shape and expanse of wings same as in the ♀ of *Ep. Ancea*. Wings, *above*, brownish-black, darker towards the apex of fore-wings. Fore-wing crossed, a little beyond the middle, by an opaque light blue belt, broadest in the middle, and not reaching the outer edge; near the apex is a small light blue spot. Hind-wing with a small spot of light blue at the apex. *Beneath*, both wings light green; fore-wing cell with a spot and three transverse streaks black; blue belt as above, but paler, especially towards the costa, and margined on the inner side with black. Hind-wing with two *black* lines near the base and crossed, at the middle and towards the outer margin, by a reddish-brown line, the row of minute spots between these two lines surmounted each by a brown lunule.



EPICALIA BATESII (Felder). ♀.

Pará, Amazons (Bates & Wallace). Demerara (Piffard).

The difference between our two species consists in the two short streaks near the base of the hind-wing, on the under-side, being black in *Ep. Batesii*, and rufous-brown in *Ep. Ancea*, and in the row of minute ocelli of the same wing being surmounted in *Ep. Batesii* by detached lunules, and in *Ep. Ancea* by a continuous streak. The males differ a little also in the shape of the blue belt, and, as I have said before, considerably in that of the tawny-orange belt.

It is not uncommon in the Order *Lepidoptera* to find perfectly distinct species distinguished from each other by such minute points of difference as these separating our two *Epicaliæ;* but it cannot be said that full proof is afforded of their true distinction as species, until we find that each kind has its own mate and maintains itself, from generation to generation, free from intermixture with its relative. Such results as these show how important it is to study both sexes in investigating species. There cannot be much doubt that the pairing together of similar varieties, in the first stages of the segregation of new varieties, and their refusal to intermarry with sister varieties or the type of their species, have played a great part in the origin of new forms on our earth.

AN ESSAY TOWARDS A KNOWLEDGE OF BRITISH *HOMOPTERA*.

BY THE REV. T. A. MARSHALL, M.A.

(*Continued from page* 146.)

b. Vertex antice obtusangulus vel rotundatus. Antennæ fronti æquales longitudine vel parum longiores.

† Vertex pronoto non brevior.

* Vertex antice obtusangulus. Alæ completæ. Hemelytra ♀ abdomine longiora; ♂ transversim nigro-fasciata.

3.—*Acocephalus albifrons*, Lin.

Vertex longitudine vix dimidiæ suæ inter oculos latitudini æqualis, medio vix carinatus. Antennæ fronte longiores, articulo 2do nigro. Alæ completæ.

♂. Pallide flavo-brunneus, colore plus minus saturato. Hemelytra nigricantia, basi flavo-brunnea, fasciis duabus transversis (altera ante, altera pone medium), interruptis, albidis; apice albido. Ad suturam interdum, post fasciam 2dam, macula rotunda, communis, albida. Pedes testacei, tibiis anticis apice, posticis fere totis, nigris.

Var. *a*. Supra saturatior, fere niger; pronotum transversim albido-fasciatum.

Var. *b*. Supra perpallidus, testaceus, fasciis solitis albidis, alteraque ante membranam transversa, nigra. Tibiæ posticæ apice tantum fuscæ. Immaturior.

♀. Fuscus vel niger, fronte sæpe pallida; supra griseus, atomis nigris plus minus dense irroratus. Hemelytra sub-pellucida, nervis pallidis, hic illic nigro vel fusco interstinctis: sutura plerumque anguste nigra, ter quater pallido interrupta: costa sæpe nigro-maculata. Pedes testacei; tibiæ posticæ et tarsi omnes, apice nigri.—Sed variat sine fine intra has duas (quæ sequuntur) formas, quas tanquam terminos utrinque constituere licet:—

Var. *a*. Supra atomis nigris ita dense irroratus, ut totus ater evadat. Tibiæ posticæ totæ nigræ.

Var. *b*. Pallide testaceus, fronte alba, hemelytris immaculatis. Immaturior. Long. $1\frac{1}{2}$-$1\frac{3}{4}$ ♂; $2\frac{1}{4}$ lin. ♀.

♂. *Cicada albifrons*, Lin., Fn. S., 241, 884. *Flata serratulæ*. Mus. Dom. Banks, Fab., S. R., 54, 46. *Aphrodes Testudo*, Curt., Ent. Mag., 1, 195; *concinna*, B. E., 633, No. 1. *Iassus albiger*, Germ., Fn., 17, 17; Mag. 4, p. 88; *obliquus*, ib., p. 89.

♀. *Acuceph. bifasciatus*, H. Sch., D. Ins. 125, 2. *Pholetæra dispar*, Zett., Ins. Lapp., p. 289, 6. *Acoceph. adustus*, Hardy, Tyneside Trans., 1, p. 429 (according to the types in the Brit. Mus.).

This seems to be a species of Northern Europe, or, at least, is only recorded as such. It is abundant in the midland counties, ex. gr., at Buddon Wood, and on the banks of the Soare, Leicestershire; not common near London; a few only of var. *b* near Sandwich. The dissimilar sexes were first paired by Fallén, who remarks (Hem. Suec., pt. 2, p. 26), "Mirum sane quod in tanta individuorum copia ne unicum quidem par copulatum vidisse contigerit." The insect must be sought for close to the ground, at the roots of the herbage; it will hardly be obtained by sweeping.

** Vertex antice rotundatus. Alæ plus minus abortivæ. Hemelytra ♀ abdomini longitudine æqualia; ♂ longitudinaliter nigro striata.

4.—*Acocephalus rivularis*, Germ.

Vertex ♂ dimidia sua inter oculos latitudine paulo longior, medio levissime unicarinatus. Antennæ fronte vix longiores, articulo 2do basi nigro.

♂. Testaceus, nigro-varius. Nigra sunt—abdomen supra plus minus; fasciæ verticis, una apicalis, altera basalis quater emarginata, linea tenuissima inter se conjunctæ: genarum macula sub antennis: frontis inferioris litura media: pronoti fascia transversa antica: scutelli maculæ 3 basales, una apicalis, (sed hæ variant): hemelytrorum spatia inter nervos, nervis ipsis albentibus. Corii striæ 4 nigræ ante apicem in maculam magnam concurrunt; apex ipse albus. Pedes testacei; tibiæ anticæ apice, posticæ fere totæ, cum femorum macula apicali, nigræ.

♀. Flavo-brunneus, vertice quam apud ♂ longiore. Caput, pronotum, scutellum, plus minus nigro irregulariter maculata. Hemelytra apice angustiora quam in ♂; cum nervis ipsis pallida, fusco-testacea, atomis nigris inter nervos intersitis, unde discus striatus apparet. Alæ alis masculis ampliores.

Var. *a*. Pallidus, testaceus, hemelytris concoloribus.

Long. $1\frac{1}{3}$ ♂; $1\frac{3}{4}$-2 lin. ♀.

♂. *Iassus rivularis*, Germ., Mag., 4, p. 89. *Aphrodes*, Curt. B. E., 633, No. 3.

♂ ♀. *Acoceph. rivularis*, Flor, R. L., 2, p. 205.

The typical females of this and the preceding are sufficiently distinct, but for the pallid varieties it is not easy to propose a ready method of division. The ♀ of *rivularis* is a little smaller and shorter, the hemelytra being not longer than the abdomen (unless this is full of eggs). It has most commonly a blackish spot on the genæ, beneath the base of the antennæ, which is wanting in *albifrons*. The pale varieties of *albifrons* commonly offer traces of spots upon the apex of the costal nervure itself, but the costal nervure of *rivularis* is always pale and spotless, even in the dark varieties. Common in the same situations as the preceding, but I have never met with it in the London district.

†† Vertex pronoto quarta fere parte brevior.

* Hemelytra longitrorsum regulariter nigro striata.

5.—*Acocephalus histrionicus*, Fab.

♂. Niger; caput et pronotum testacea, nigro varia. Hemelytra hyalina, albida, nervis nigricantibus. Vertex brevis, dimidia sua inter oculos latitudine brevior, basi niger, lineam e medio apicem versus nigram emittens, quæ in fasciam maculosam ibi desinit. Pronotum antice fascia transversa nigra, basi etiam anguste nigrum. Scutellum nigrum. Hemelytrorum nervus costalis testaceus, cæteri nigricantes, tenues, in fasciam apicalem nigram ante membranam decurrentes. Pedes testacei, tarsis nigris; tibiæ nigro lineatæ, anticæ etiam apice, posticæ fere totæ, nigræ.

♀. Similis mari, sed latior; magis brunneus; scutellum albo-maculatum; striæ hemelytrorum latiores, fascia postica magis obsoleta. Subtus albus. Pedes pallidi, tibiis infuscatis. Long. ♂ $1\frac{3}{4}$ lin.

Cercopis histrionica, Fab., S. R., p. 98. *Cicada histrionica*, Fall., Hem., 2, p. 30. *Acoceph. histrionicus*, Flor, R. L., 2, p. 209.

Rare. A single ♂ is in the Brit. Mus., and Mr. T. J. Bold informs me that he possesses specimens from the north of England. Upon this evidence, and the authority of Messrs Walker and Curtis, it is here admitted as British. The ♀ I have never seen, and the only description of it is that by Fallén, copied by Flor, and abridged above. The ♂ somewhat resembles *rivularis*, but differs in having the vertex conspicuously shorter than the pronotum, and in the hemelytra, which are pellucid, and owe their striated appearance merely to the blackish veins. In *rivularis* the black and white striæ are of equal breadth, and the hemelytra are opaque.

** Hemelytra irregulariter fusco lineata.

6.—*Acocephalus arenicola*, n. sp.

♂ ♀ similes. Testaceus, abdominis segmentis supra et infra nigris, testaceo-marginatis. Vertex carina media distincta testacea, utrinque apicem versus plus minus fusco irroratus; nonnunquam cum scutello sub-rufescens. Hemelytrorum nervi interrupte leviter infuscati; nervus marginalis interior fuscus, albido ter quater interruptus, unde (hemelytris clausis) maculæ dorsales 2 vel 3 albidæ apparent. Frons et clypeus fusco plus minus irrorati. Pectus nigrum, lateribus testaceis. Pedes testacei; genæ posticæ cum tibiis iisdem fuscæ; tarsi 4 anteriores apice, postici toti, fusci. Alæ completæ.

Long. $1\frac{1}{2}$-2; alar. exp. $3\frac{1}{4}$ lin.

This species seems hitherto to have escaped detection. The sexes, being similar in coloration, are both liable to be mistaken for the ♀ of *albifrons*, to which they have the strongest resemblance, except in the following particulars. The vertex (♂ ♀) is much shorter than the pronotum, and the form of the insect somewhat longer and narrower in proportion; while a comparison of the males exhibits an important difference in the external genital apparatus. The *laminæ genitales*, or external processes which spring from the concealed *valvula*, are in the present species long and lanceolate, reaching upwards nearly to the superior surface of the abdomen. In *A. albifrons* they are sub-ovate and less than half as long.

This species is constant in form and coloration, and I am unable to refer it to any of the published descriptions. It belongs to the peculiar insect Fauna, observable upon the *marrains* or *burrows* of our sandy sea shores. I took four or five upon the sand-hills near Deal two years ago, and considered them at that time as a coast variety of *albifrons* (♀). Having taken both sexes again this autumn in plenty at Newton Burrows,* Freshwater Bay, Pembrokeshire, and observing that the larvæ also constantly differ from those of *albifrons*, I no longer hesitate in regarding the species as new.

(*To be continued*). /97

Occurrence of Silvanus bidentatus, a species new to Britain.—I have taken, under pino bark near Paisley, a single example of a *Silvanus* which Mr. D. Sharp informs me is the *bidentatus* of Fabricius (Syst. El., i., 317, 28, *Dermestes;* Erichs., Ins. Deut., iii., 338, 3).

It is half as large again as ***S. unidentatus***, and more elongate and duller than that species; having, also, the anterior angles of the thorax much more distinctly and sharply spined, and a short—but decided—spine on each side of the head, behind the eyes. The thorax, moreover, is longer, and has two shallow longitudinal grooves; the joints of the antennæ are longer; and the tibiæ are not dilated externally and obliquely truncated, as in ***S. unidentatus.***—Morris Young, 7, Old Sneddon Street, Paisley, *December*, 1865.

Observations on Otiorhynchus fuscipes and O. ambiguus, &c.—Having for some time suspected that we did not possess both *O. tenebricosus* and *O. fuscipes* (in spite of the plate accompanying the late Mr. Walton's paper on *Otiorhynchus* in the "Annals and Mag. of Nat. Hist."), and being unable to find British specimens agreeing with the description of the latter in Dr. Stierlin's admirable "Revision der Europäischen Otiorhynchus—Arten (Berlin, 1861)," I am not surprised to find, from an examination of types sent by Dr. Stierlin himself to the British Museum, that the true *O. fuscipes* is unlike anything that has come under my notice; and I therefore think (on these and other grounds) that it has probably not as yet been correctly recorded as indigenous to this country. Some examples representing it in the British Collection of the Brit. Mus., have been pointed out to me as presented by Walton, but they are all females of ***tenebricosus.*** That insect appears to vary considerably, both sexually and individually, as to bulk, punctuation, and colour of legs. Typically, it is oblong-ovate; with the head and thorax very delicately coriaceous, the latter being narrow, and a little longer than broad; with its elytra obsoletely striated, thickly coriaceous, and adorned with sparing patches of grey pubescence. The chief varieties appear to have the thorax closely punctulated,

* This remote and unexplored locality, similar in character to the coast between Deal and Sandwich has produced me another novelty this season, being a British form of the genus *Tettigometra*, belonging to the group *Fulgorina*, and not hitherto known as inhabiting this country. I obtained four individuals, differing much in colour, but two of them were eaten in the night time by a marauding *Forficula*. The species is not *T. virescens*, Fab., nor *atra*, Hagenbach, nor *piccola*, Burm., and is perhaps new: but at this distance from London I have not yet found the means of identifying it.

and the elytra more strongly striated, with smoother interstices. The male is always the narrowest, and has the apical segment of the abdomen beneath longitudinally striated, strongly, and somewhat unevenly; the middle striæ being not so closely packed as those on the sides.

O. fuscipes appears to be rather the larger of the two. Typically, it is elongate, almost glabrous, with the thorax closely and delicately granulated, and not longer than broad; and the elytra oblong, crenate-striate, with the interstices obsoletely rugose. The chief varieties have the elytra either more deeply striated, with the interstices more strongly rugulose, or *(fagi)* closely rugulose-tuberculate, with scarcely any striæ, or the disc of the thorax closely punctulated. The legs are often bright red; but this is also the case in some examples of *tenebricosus*.

In the male (which is still narrower than the female), the last segment of the abdomen is delicately, closely, and evenly longitudinally striated beneath.

Apart from the sexual character, it will thus be seen that *O. fuscipes* is a narrower, more elongate insect than *tenebricosus;* with no scanty patches of pubescence, a shorter and broader thorax, and the elytra either more deeply striated or with more rugose interstices.

I shall be glad if the present reference to the subject causes an examination of specimens from different localities; as there is no reason why we should not have *fuscipes* as well as *tenebricosus*.

With regard to *O. ambiguus*, recorded as British by De Marseul (Cat Col. d'Eur., 1863), and by Stierlin (loc. cit., 281), I may remark that I have taken specimens, answering very well to its description, at Rannoch, under the same stone as *O. rugifrons*, to which it is assuredly *very* closely allied,—if distinct, which I doubt.

It should be somewhat narrower than *O. rugifrons*, and clothed more thickly with hairs; the thorax is somewhat more finely granulated, and the elytra are more finely punctate-striate, with the granulations of the interstices not arranged in such distinct rows. The rostrum and vertex are more rugose-punctate, the punctures (though scarcely more distinct than in *rugifrons*) running into longitudinal rugulæ; the rostrum, moreover, is distinctly keeled in the middle, with an obsolete longitudinal furrow on each side. The second joint of the funiculus should be almost shorter than the first, instead of somewhat longer, as in *O. rugifrons*.

O. impoticus, found in France, appears to be very closely allied to *rugifrons;* but having the rostrum slightly keeled, the thoracic granulations larger, more obtuse, and setiferous, and the elytra more deeply striated, with level and delicately granulated interstices.

O. Ghestleri, found in Switzerland, is also nearly allied to *rugifrons* and *impoticus*; differing from those species in being smaller and narrower, and having much less incrassate antennæ, of which the second joint of the funiculus is almost half as long again as the first.—E. C. Rye, 284, King's Road, Chelsea.

Further notes on Oligoneuria Rhenana.—In my notes on *Oligoneuria rhenana*, Imhoff. (Vol. I., p. 262), I stated that these ephemeridous insects appear at Basle in the first days of September, as for many years back this had proved to be the rule. But I have since been informed, by one of my correspondents, that this

season was an exception to the rule, inasmuch as numerous swarms of these creatures appeared as early as the 25th and 26th July, which shows a difference of about a month in the time of their appearance.

It is natural to suppose that the remarkably hot and dry summer, with which Switzerland was favoured this year, has caused the waters of the river Rhine to attain that degree of warmth, which is necessary for the development of these insects, much earlier in the season than in other colder years; and I am told that, on those two evenings mentioned above, the water had at sunset a temperature of 19 degrees Réaumur, which is unusually warm for so late in the day.

Those of your readers who have never witnessed this beautiful scene of insect life, the dance of *Ephemeridæ*, may form an idea of the sight of the swarms of *Oligoneuria rhenana* if I tell them that at times a glance over the river will show it as if covered with a brilliant whitish undulating veil of gauze, rising and falling in a thousand different folds, and this spectacle reaching as far as the eye can follow the course of the river.

No wonder that the contemplation of such a wonderful phenomenon has given rise to reflections as in the following verse:—

> "And the fly that is born with the sinking sun,
> To die ere the midnight hour,
> May have deeper joy, ere his course is run,
> Than man in his pride and power.
> And the insects' minutes be spared the fears
> And the anxious doubts of our threescore years."

As a further illustration of their prodigious numbers, I may add that one of my friends counted about 200 specimens in the cobwebs taken from one lamp-post near the river, and one can understand how accumulations of the dead bodies of another "day-fly" have received, in certain parts of Germany, the name of "*Uferaas*" (carrion of the river banks).—Albert Müller.

Correction to note on Linnephilus subcentralis.—I regret to say that I erroneously recorded this species as British in the last number of the Magazine. I had misplaced the labels on my types, and did not discover the mistake until I received the monograph, when my previous notice was already in type.—A. E. Eaton, Cambridge, *December* 1*st*, 1865.

Argynnis Lathonia, &c., in Kent.— Whilst entomologising at Sandgate during the past autumn, I took several specimens of both ***Colias Hyale*** and *C.* var. ***Helice***, the typical *C. Edusa* being the greatest profusion.

A friend of mine caught a fine specimen of ***Argynnis Lathonia*** at Tenterden last September.—M. A. Addison, Cranbrook, Kent.

Captures of Lepidoptera at Powick.—I have sent the names of a few insects captured by myself this season.

Thecla W-album, on flowers of grass, June 22nd, a new locality for this species; ***Cymatophora ridens***, at light, April 17th; ***Neuria saponariæ***, at light and sugar, end of May, this is a new locality; ***Agrotis ravida*** at light and sugar, middle of June; ***Phorodesma bajularia***, a ♀, at dusk, June 19th; ***Anticlea rubidata***, at light, June 20th; ***Camptogramma fluviata***, at light, September 22nd.— G. J Hearder, Powick, near Worcester, ***November***, 1865.

Chærocampa celerio near Hartlepool.—A specimen of this insect was brought to me by a boy on the 26th of October. I was not at home when it arrived, so got no particulars. I know of another specimen captured last year.—JOHN E. ROBSON, Hartlepool, *November 13th*, 1865.

Note on Vanessa cardui.—I wish to call attention to the fact that this species has not only been excessively abundant during the past season, but has also varied much in size.

The smallest specimens we took here, at Exeter, expanded less than 1″ 11‴, whilst the largest measured very nearly 3″ in expanse. One of these giants is remarkable, also, for a small white ocellus, edged with black, which is placed in the largest yellowish blotch of the fore-wings, about 1½‴ from the anal angle, and appears plainly on both the upper and under-sides.—J. HELLINS.

Lepidoptera in the Lake District.—On the 21st of June I started, in company with my friend, Mr. Thos. Blackburn, on an entomological excursion to the Lake District. Strange to say, it rained but very little all the time we were there.

Our first excursion was to Stye Head Tarn, through Langdale, and over Blackcrag Pass. The first Lepidopteron we started was *Larentia salicaria*, which we found at rest, or rather in the act of refusing to remain at rest, on the large lumps of rock that render the ascent of the ravine, which constitutes Blackcrag Pass, at once delightful and romantic.

Just as we gained the greensward, at the top of the pass, *Erebia Cassiope* made a futile attempt to look like a "meadow brown," and afterwards acted the penitent convict in solitary confinement with considerably more success; we saw a good many, and caught most of them, but they were somewhat worn. This was on the 22nd. I may remark that this was the fourth ascent I had made in search of *Cassiope*, and the first time I had seen it. I ought not to forget to state that Mr. Blackburn took a good number of *Coremia munitata*, which, for that day, eluded me.

On the grassy slopes between Sprinkling and Stye Head Tarns, and, in fact, on pretty nearly every high hill which we ascended during the "out," we found *Crambus furcatellus* not uncommonly; and somewhere about the *Cassiope* locality, which I should describe as almost anywhere between the two tarns, I took *Mixodia Schulziana*.

The next excursion of any extent was to Conistone Old Man. In a little hollow on the left hand side of the road to Conistone, just past the fir-woods at the top of the hill-road, we took *Argynnis Aglaia* and *Selene*, *Acidalia fumata*, *Ennychia octomaculalis*, *Pterophorus tephradactylus*, and *Pt. osteodactylus*.

On another occasion, on the other side of the road, we found *Plusia festucæ*, *Thera coniferata*, and *Macroglossa stellatarum*, which latter has been generally common this year. On Conistone Old Man, besides *Cr. furcatellus*, we took *C. munitata* very commonly, and, also, one or two *Larentia cæsiata*, with which we afterwards met almost wherever there were rocks, though I do not remember to have seen it on Helvellyn.

The next time we visited Blackcrag Pass, which we did at dusk, and under the combined auspices of rain and treacle, we added the following to our list:—*Larentia olivata* and *Eupithecia pulchellata* (whose foxgloves I don't think grow among the rocks); besides which, Mr. Blackburn took *Mamestra furva*. I never recollect seeing *Geometridæ* in such swarms as were *C. munitata* and *pectinitaria*, *L. salicaria*, *cæsiata*, and *olivata*. The failure of "sugar" was signalized by the sole appearance of an old and long-tried acquaintance, *X. polyodon*.

The following day (June 29th) we were again in the *Cassiope* neighbourhood, but either the unfavourable weather prevented its appearance, or, as I fancy, the species was quite over by that time. Going up Blackcrag Pass for the third time, we captured *Venusia cambrica*, settled on a rock, and one of the *Larentidæ*, which I have not at present satisfactorily made out, and my friend took another *M. furva*.

Next day we walked from Langdale, in the direction of Coniston, by a way which I consider, next to Borrowdale, affords some of the most striking scenery of any walk in the Lake District. It furnished Mr. Blackburn with *Plusia interrogationis*; this was taken flying over short heath, near a tarn on the right hand side of the road, which precedes a further tarn called, I believe, Little Langdale Water.

We collected on Loughrigg Fell the evening before we left Ambleside. We ascended it on the 3rd of July, in the evening, to watch the sunset; and we both agreed that the view of the mountains in the grey of the evening, especially in the direction of Bow Fen, and the Langdales, was the grandest sight we witnessed during the excursion.

Here let me warn all climbers of Loughrigg Fell to notice particularly the point to which the path through the wood, which grows on the side, leads them, and on no account to descend by any other way, for in trying to do so, we ran the most imminent risk of breaking our necks, though we took *Hepialus velleda* and *Melanippe unangulata*.—E. M. Geldart, Rose Hill, Bowdon.

Captures near Saffron Walden.—*A. Atropos* and *C. Porcellus* in the larva state; *G. quercifolia* and *T. Cratægi*, bred; *E. fuscantaria*, attracted by light; *A. imitaria*, bred, middle of June, from a long, slender, ochreous larva, curling up the anterior segments when disturbed, found on galium May 13th; *C. temerata*, *E. decolorata*, caught. Of the "Pugs" I have bred *Eup. venosata*, *linariata*, *Haworthiata*, and *exiguata*; also, from barberry, *A. berberata* abundantly, and two or three *certata*; from clematis, *P. tersata* and *vitalbata*, and *I. vernaria*; from buckthorn, *S. dubitata*, *vetulata*, and *rhamnata*.

C. reclusa and *curtula*, bred; *A. ligustri*, bred from privet; *N. saponariæ* and *H. popularis*, at light; *X. citrago*, at ivy bloom; *E. ochroleuca*, two at rest, on leaves of knapweed, one caught flying, August; *E. viminalis*, bred from sallow. At Scarborough, in July, I again met with the larva of *D. Templi*, feeding in the roots of the corn parsnip.

E. crocealis, bred from flea-bane. *S. cinctalis*.—This is said to feed in the larva state on broom, but where I take the insect there is none, but quantities of mugwort. Is not the last-named plant a more likely one for the larva to feed on? *S. ferrugalis* captured.

D. semifasciana, bred from sallow; *P. marginana*, bred from teazle; *S. pau-*

perana, of this species I took two, flying in a lane, early in April; *P. rugosana*; *P. ramana*, and *G. cinerana*, bred from aspen. The last named appears to be quite distinct from *nisana* when reared.

E. feneana, bred from roots of mugwort. I have also been successful in rearing *C. splendana* and *pomonana*, and *E. nebritana*.—WILLIAM R. JEFFREY, *November 4th.*

Captures of Lepidoptera in the North (*concluded from page* 160.)—During the last week in June, Mr. Gregson and I went to Pelling Moss for *Eup. plumbeolata*, which we soon met with in its old haunt, where 20 years ago I used to take it, among *Melampyrum*. I got eggs, and sent them to Mr. Crewe.

About five p.m. *Psyche roboricolella* began flying freely among some old birch stumps. We looked carefully for *Elachista serricornis* towards sunset, but could not find any; indeed, it was a job to use one's eyes at all, for the midges bit us awfully, and it was a glorious relief to get off that moss from such persistent tormentors. When we got clear of the moss we began "Pugging," and boxed a few specimens of *Eup. valerianata* among others; I now began to turn my attention to *Depressaria* larva hunting, and, among *Anthriscus sylvestris*, got a number of *D. pimpinellæ* and *Weirella*, from sallows *conterminella*; and in the stems of *Heracleum* both larva and pupa of *pastinacella*; and from angelica and thistles bred *D. angelicella*. Whilst hunting for these larvæ, I stumbled on a fine specimen of *D. pulcherrimella* among some old grass at a tree root, and having adopted the "Pelissier" mode, with some touch paper which I had in my pocket, soon secured nine specimens. Just now the sun was setting, and began to shine on a grassy bank with a good variety of vegetation, and here flitted about such metallic beauties as *Gracil. auroguttella*, *Coleoph. alcyonipennella*, and *C. Schrankella*; some *Coleoph. murinipennella* and *discordella*, *Gelech. fraternella*, *maculella*, and *Laver. paludicolella*, also kept filling my boxes until it became killing work, what with hot weather, and what with being one half of the week at business, the other hardest half collecting and setting such quantities of *Micros*. I had to send a man to catch me some *P. interrogationis*, of which he brought me about 50 specimens, for I could not be everywhere at once.

As I wanted to go for *T. pubicornis*, and also to get some *Euchromia rufana*, &c., I took the first day I could spare, and went to Witherslack. On the road side, among some sloe bushes, *Ephip. signatana* and *Olindia ulmana* were flying freely, but I had only half-an-hour's work with them, before a thunderstorm upset my hopes; and then the wind got up furiously, so that my captures were only three *Euchromia rufana*, *D. consortana*, one *Catop. expallidana*, two *Scopoliana*, *Sciaph. perterana* and *octomaculana*, *Elachis. adscitella*, *Crambus falsellus*, and a few *Ephes. semirufa*, so that my day was of little use: my hope rested in the wind abating in the evening, which it did, but more disaster was in store for me——a fire cleared the entire moss, and only stopped in its devastating course at the highway; so farewell to all the *S. turfosalis*, &c., I was to catch, and my green emeralds are gone too for that locality. All was a blackened charred scene that a few days before was covered with sweet gale and heather, so I trudged back to the inn, taking a specimen of *Tinea albipunctella* on the road thither.

Next morning it was blowing a gale, and I found a lot of thistles that took me nearly all day to examine for larvæ, and I got probably 200, which I hoped would have been *Depressaria carduelia;* but when I came to look at them, they were so variable that I could not be certain about them, and time told them to be *arenella* (*gilvella*); they mined in the same manner as *carduella*.

Some heaps of old dead juniper that were piled up for burning, upon being turned up, produced *Thera coniferata*, *Eup. constrictata* and *rufifasciata*, and plenty of *sobrinata:* but the gale kept on, so I came home again to business for a few days. When the weather began to settle, I found time to go to Windermere for *Cidaria reticulata*, but had no luck. The day was melting hot, and in those close avenues so many flies and "cleggs" bite and buz about one's face that, if a moth is beaten out, you can hardly see it. However, I worked hard, and made up a bag with *Emmelesia tæniata*, *C. olivata*, *S. dubitata*, *H. costæstrigalis*, *Eudorea truncicolalis*, a single specimen of *E. gracilalis*, and a good supply of *Arg. ephipphella* off the wild cherry, and *anderreggiella* from the crab. Another visit produced nothing different; the weather was as fine as needs be, but I would rather have had a storm the night before to drive the moths out of the trees.

At the end of July I went down to Lytham, among the dwarf sallows that grow on the sand-hills; here, by going down on my knees and parting the roots, the following began to creep up:– *Gel. cinerella*, *senectella*, *ligulella*, *distinctella*, *maculiferella*, *temerella*, *sororculella*, myriads of *marmorella* and *artemisiella*, *Dep. nanatella*, *Yeatiella*, *ocellella*, *conterminella*, and also *Lithocolletis quinqueguttella*; and in the afternoon, if sunny, *Ephip. ephiphana* flew in plenty.

Whilst I was on my knees another net came up, and a little conversation proved we had before met, and I recognized an old friend; and upon asking him what he had done this season, he told me he had taken an "ermine," a bit of a variety; it is a *lubricepeda*, radiated in a crescentic form, and a very handsome variety. I may here note a *Geometra* I took in July out of a lamp; it may be a variety of *Cidaria unidentata* by the pectination of the antennæ, but the ground colour is chocolate, and the band through the wings like that of *Thera variata*.

The next journey was to Rhyl, N. Wales, for *Luperina Gueenéei*, with my friend, C. S. G.; we raked at day time, and sought diligently with lamps at night, but could only find *testacea*, *præcox*, *valligera*, *cursoria*, and such-like, and, at day time, *Depress. rhodochrella*, *propinquella*, *Alstrœmeriana*, *badiella*, and *Eupœcilia atricapitana*.

A few days after my return, I called upon a friend of mine in Manchester, who had been "beetleising" and botanising on the Isle of Man, whence he brought back two moths; and when I called for them, I found they were a beautiful pair (♂ and ♀) of *Troch. muscæforme*, so fine in the belts and plumage, that it has rather puzzled some parties who have Torquay specimens to compare them with; the latter appearing to have been badly used.

I must now bring my rambles to a close, and also my disjointed rambling notes, by saying that my last trip (September 22nd) to Witherslack produced very little; some splendid *Thera firmata* almost like a distinct species, some *Lyon. Clerckella* and *Cidaria psittacata* from the yews, and *Botys ferrugalis* out of a young fir, were all I got. I forgot to mention that when C. S. G. and I were in a young larch plantation, some of the trees were devastated by *Coleophora laricella*. I have also

omitted noticing a large number of species captured, as I must have set some three thousand moths at least during the season, and have a good number to spare.—J. B. Hodgkinson, 31, Christ Church Street, Preston.

Parthenogenesis in Orgyia antiqua.—The details of this case were communicated to me by a friend, who has satisfied me that perfect isolation from the male was maintained throughout.

First generation. From a pupa found at Venn Hall, Sherborne, Dorset, in the autumn of 1864, a female imago emerged which laid eggs.

Second generation. Of the above-mentioned eggs, ten hatched in the spring of 1865; but of these larvæ one only, the largest from the first, came to maturity; this produced a female which laid eggs.

Third generation. Five larvæ from these eggs attained the pupal state of development, and one of them produced a female imago by the middle of October. The series is, therefore, yet incomplete.—A. E. Eaton, Cambridge, *Nov. 11th*, 1865.

Description of the larva of Hipparchia Semele, with notes on habits, food, &c.—Eggs of this species were obtained in 1864 by Dr. Knaggs and sent to the Rev. J. Hellins on July 26th and August 3rd; some of them hatched August 8th, and others continuously for three or four days.

The larvæ at first were ochreous, with a blackish interrupted dorsal line, and fed on *Triticum repens*, were very sluggish, often hiding low down amongst the grass, and hybernated when about four lines in length. One larva only survived the winter, and was kindly presented to me on the 13th of May, 1865, by Mr. Hellins, to whom I am indebted for the foregoing account of it. The larva had shown a partiality for *Aira cæspitosa* previous to my receiving it, and on this it was therefore placed, being then about eight lines in length. On the 20th of May I chanced to dig up a rather larger larva of this species from a waste piece of sandy ground near the sea, amongst *Aira præcox* and other small grasses, which rendered the task of rearing doubly interesting in observing the habits of each, kept separate and on different food.

The captured larva on being placed under a glass in a pot with its native growing food, immediately burrowed in the sandy earth, and the few times it was seen on the grass were always at night, and each morning brought evidence of its doing well by the diminished grass.

About the 14th of June, these indications ceased, and on the 23rd, I searched for the pupa, and found it in a hollow space a quarter of an inch below the surface the particles of sand and earth very slightly cohering together, and close to the roots of the grass, yet free from them. The pupa was obtuse, rounded, tumid and smooth, the abdominal rings scarcely visible, and wholly of a deep red mahogany colour. The perfect insect (a ♂) appeared July 24th.

The larva reared wholly in captivity from the egg, always remained on its rigid food, with its head uppermost, when feeding, which at first it did both day and night till it was an inch long, from which time it fed only at night, remaining all day at rest on the grass with its head downwards, in comparative darkness, amongst the lower parts of the stems. It never showed any disposition to burrow, though the soil was supplied for the purpose, until it was full fed about the middle of June.

The butterfly (a ♂) appeared on the 5th of August.

No material difference existed between the two larvæ, excepting that the captured one was rather less bright and distinct in colour and markings than the other. The full grown larva is an inch and a-half in length, tapering much to the anal forked extremity, and a little towards the head, which is globular. Ground colour of the back a delicately mottled drab, with longitudinal stripes broadest along the middle segments, viz., a dorsal stripe of olive-brown, very dark at the beginning of each segment, with a thin edging of brownish-white. Three stripes along the sub-dorsal region, of which the first is composed of a double narrow line of yellowish-brown, the second wider, of the mottled ground colour, edged above with paler and below with white, and the third of similar width of dark grey brown, edged above with black. Spiracular stripe broader and of nearly equal width, of pale ochreous-brown, edged both above and below with brownish-white. The spiracles black. Belly and legs drab colour. Head brown, on which the principal stripes of the body are delicately marked with darker brown.—William Buckler, Emsworth.

Description of the larva of Acidalia mancuniata.—At the time that Mr. Hellins sent me two larvæ as variations of *A. subsericeata*, I remember making known to him that they were not the least like those of that species sent to me in October, 1862, by Mr. Crewe, nor yet like others I had in April, 1863; for both Mr. Crewe's examples and the last named, although they varied slightly, were all constant to one particular, viz., a pale yellowish or whitish mark on each side of the ninth segment.

It will be seen by the subjoined description that, from *subsericeata*, *Mancuniata* is more distinct in the larval than in the perfect state even, the character of its markings being entirely different.

Description.—Larva about three-quarters of an inch long, tapering gradually towards the head, which is grey-brown, with a dark brown line on each lobe. Ground colour of the body pale reddish-grey; dorsal line scarcely paler, very thin, and enclosed by a broad brown line on either side, which gradually widens down to four-fifths of the segments, and then contracts towards the segmental divisions, and at the widest portions on each side is a rather large spot or blotch of blackish-brown.

The sub-dorsal lines are of grey-brown, very thin and double, with a blackish-brown oblong blotch on them, about the same distance from the end of each segment as those on the dorsal region.

The last four segments appear paler than the others, as the dorsal line on them is enclosed only by thin brown lines, and the sub-dorsal lines on them also have no dark spots, except a slight indication of them on the tenth segment only.

A blackish-brown line on the spiracular region extends between the tenth and thirteenth segments.

The full-fed larva was figured on the 15th July, and on the 20th it changed, on the surface of the earth, to a very slender dark blackish-brown pupa, the tail of which was turned backwards.

The moth appeared August 9th.—*Id.*

Description of the larva of Scoria dealbata.—My notes on the earlier stages of this species are not so satisfactory as I could wish, for they were jotted down in a busy time; but, as far as they go, I believe them to be correct.

On 2nd July, 1864, I received indirectly from Mr. Wilks (late of Ashford) some eggs, which began to hatch on the 7th; I scarcely know any larva which varies so little in tint throughout its growth; of course, as the bulk increases, more lines and mottlings appear, but they are all of the same ochreous and grey tints throughout. Mr. Stainton, in the Annual for 1862, has described the larva just before hybernation, when he says it was $\frac{7}{12}$-inch in length; but the three which I succeeded in retaining (some dozen others escaped from my not being able to attend to them in time) grew to a full inch in length before they ceased feeding; all through the winter I noticed that, except in the coldest weather, they remained extended on the leno covering of their flower-pot, as though very fond of fresh air.

On 14th February they began eating again, and grew slowly till the middle of April, when they changed skin for the last time. About the middle of May they seemed to have attained their full size, and began spinning about the 20th.

When full grown this larva is a longish, stout-looking smooth looper, tapering considerably from the hinder segments towards the head; the length $1\frac{1}{8}$ inch; the head flat and rounded at the sides; the anal flap large.

The general colour ochreous, or brownish-grey; but ornamented with so many waved and irregular lines that it is hard to describe. The head is pale ochreous; down the centre of the back is a double fine dusky line, which, with the first sub-dorsal line (composed of a double fine thread also), forms a series of irregular figures by alternately contracting and expanding; on the anterior and posterior segments the dorsal line becomes closer and darker. Below the first sub-dorsal line is a stripe of yellowish or reddish-buff, then comes another waved fine double thread; then the yellowish spiracles, scarcely distinguishable in a drab stripe, which is bordered below with a dusky line, followed by a reddish-buff line; the belly drab, with central and sub-ventral whitish lines. The usual spots are represented by fine black dots, and the central segments in one specimen were suffused with a smoky hue.

About 20th May these larvæ began to spin, and soon formed for themselves beautiful spindle-shaped cocoons of yellow silk, attached to upright blades of grass. And here, unfortunately, I can say no more, after waiting some time for the perfect insects I examined the cocoons closely, and found that, by some mischance, the pupæ had been killed. But although I failed, I think the species might be easily reared if kept in the open air, and fed on growing plants of dock, chickweed, knotgrass, and the coarse grass, which, in its localities, is doubtless the favourite food of this species.—John Hellins, *October 4th.*

Notes on hybernating Lepidoptera.—On the 11th of last August, the weather being at that time stormy and wet, I chanced to observe on the ceiling of an unoccupied building two specimens of *Vanessa urticæ*, looking exactly as if settled down for hybernation. Being resolved to see whether this was the case, I made a pencil mark round each specimen, so as to know if either moved. Ten days

afterwards they were in the same place, and were joined by a *Gonoptera libatrix*. Four days later (August 25th) I saw plenty of half-grown larvæ of *V. urticæ* feeding on nettles. These doubtless produced the autumn brood of butterflies a fortnight or three weeks afterwards.

On September 7th, the weather having at this time become excessively hot, I examined the building again, and found in it five *V. urticæ*, five *G. libatrix*, one *Hypena rostralis*, and several *Alucita polydactyla;* and one of the original *V. urticæ* was so profoundly torpid, that it had permitted a *libatrix* to station itself on the side of its wings and body, so that the indented hind margin of *libatrix* reached beyond that of *urticæ*, giving the latter a very odd appearance, yet it had not moved a step. At this time this species of butterfly was flying everywhere in abundance, the autumn brood having made its appearance.

On September 18th another *urticæ*, and three more *libatrix*, had settled down. The loaded *urticæ* had, apparently, got tired of its burden, and had moved about an inch, shifting it off on to the ceiling close by, where it remained some time.

On October 5th, I took a light, and examined a dark part of the building, and found altogether eight *V. urticæ*, twenty-seven *G. libatrix*, and two more *H. rostralis*. The weather had, as will be remembered, been all this time very hot and sunny, and *V. urticæ* was still flying in profusion.

On November 23rd, the winter having fairly set in, I examined again, and found half-a-dozen more *libatrix*. *Alucita polydactyla* was in all the corners, and several specimens of a common *Chrysopa* were on the ceiling, the other species remaining as before.

All through the intense heat, therefore, of the autumn these *Vanessa urticæ* had, with the exception mentioned, absolutely not stirred a step, nor apparently moved a wing, while numbers of their own species *of a later brood* were flying about, and, indeed, getting much worn.

It is well known that *Vanessa polychloros*, after flying for a week or two, at the end of July or beginning of August disappears, and is seen no more until the spring; and it appears to me that instinct induces those specimens of *V. urticæ*, that are to perpetuate their species in the spring, to adopt a similar course, retiring early for hybernation without reference to the weather; while it seems that the numbers which continue to fly about, as long as the warm weather lasts, must die when the winter sets in, since there was no increase in the number of hybernating species when the weather changed, although the means of ingress continued as before.

The *libatrix*, too, though not so torpid as *V. urticæ*, and rather addicted to moving about, evidently did not leave the building, and those that could find a crevice or break in the plaster to poke their heads into, remained perfectly still. They certainly continued to come in much later than *V. urticæ*, but the specimens are all so perfectly fine, that they must have retired very soon after emerging from the pupa. At the same time, other individuals of this species were to be found at night enjoying themselves on the ripe blackberries in the hedges.

Hypena rostralis occurred so sparingly, and it and *Alucita polydactyla* were so lively and restless, that no opinion could well be formed respecting them.—Charles G. Barrett, Haslemere, *14th December*, 1865.

Entomological Society of London, *December 4th*, 1865.—F. P. Pascoe, Esq., F.L.S., President, in the Chair.

The Rev. W. Farren White, of the Vicarage, Stonehouse, Gloucester; and J. H. Cartwright, Esq., of 16A, Terrace, Kennington Park, were elected Members.

The Secretary exhibited a collection of insects of all orders, collected by Lieut. Beavan at Moulmein and the Valley of the Salween River.

Mr. Stevens exhibited a fine specimen of *Goliathus giganteus*, brought over by M. Du Chaillu from the interior of Western Africa; also a collection made by the late Mr. Bouchard at Santa Martha.

Mr. Stainton exhibited a remarkably dark (almost black) example of *Tinea cloacella*, bred by Mr. C. S. Gregson from dead birch trees from Llangollen.

Mr. F. Smith exhibited a long series of the saw-fly, *Cræsus septentrionalis*, which he had recently bred from larvæ found on alder at Bournemouth in August last. Also a number of a moth used for food by the aborigines of New South Wales, received from Dr. Bennett; these moths, which are termed "Bugong" by the natives, are found in large numbers in November and December, congregated on the face of granite rocks, and their bodies contain a large quantity of oil; they were considered to be the *Agrotis spini* of Guenée.

Mr. Smith also called attention to a query recently put to him by a correspondent respecting the so-called "death watch." Mr. Smith was inclined to think that the "ticking" said to be caused by *Atropos pulsatorium* was scarcely substantiated, as he could not conceive it possible that so soft and delicate a creature could produce any sound whatever; and with reference to that supposed to be made by *Anobium*, he thought it more likely that this was caused by the insects gnawing the wood, rather than as being a special independent sound, as was generally supposed.

Mr. Moore exhibited a beautiful collection of engravings of the transformations of North American insects, executed by Mr. Glover, of Washington, and intended to be published by him.

The Rev. Joseph Greene exhibited a series of *Acidaliæ* bred from a number of pupæ sent to him from Sheffield; several of these appeared to be the recently described *A. mancuniata* of Knaggs, while others were certainly *subsericeata*; he was induced to consider the former a good and distinct species.

Professor Westwood read descriptions of new species of *Canthrocnemis*, and exhibited the insects.

Mr. McLachlan read a paper on some extraordinary varieties of *Sterrha sacraria*, together with general notes on variation in *Lepidoptera*.

Mr. Semper, of Altona, communicated a paper on a beautiful new species of *Papilio* from Upolu in the Samoa islands, which he described under the name of *P. Godefroyi*.

Mr. C. A. Wilson communicated some additional notes on the *Buprestidæ* of South Australia.

A FEW DAYS AMONG THE *MICRO-LEPIDOPTERA* OF SOUTH DEVON.

BY R. C. R. JORDAN, M.D.

Having a few days which I could take as a holiday in the middle of September, I determined to work a little at the lesser *Lepidoptera*, and the following is a short summary of my work.

September 20th—early morning. Road from Teignmouth to Haldon. Examined the elm carefully, both *Lithocolletis Schreberella* and *L. tristrigella* were in abundance in the pupa and larva states; *L. trifasciella* was in profusion on the honeysuckles; *L. emberizæpennella* scarce. *Viburnum lantana* grows commonly as you approach Haldon, but *L. lantanella* did not appear to be very frequent in its leaves, however, several were found; many also of *Peronea tristana* were met with, frequently the moth had escaped, but sometimes the pupa still remained well and lively in the curious oblong box constructed for it by the larva. On one of the leaves of this plant I found a *Gracilaria* cocoon, with the pupa-skin protruding and the moth gone, but careful examination showed that this was no novelty, as a sallow was intertwined amongst the branches, and the cones of *G. stigmatella* were abundant on its leaves. On the poplar trees at the cemetery were also cones, probably of this same species, and the mines of what at first looked like a large *Nepticula*, but which I suspect was dipterous.

Morning. Went to the Shaldon Cliffs round the Ness point to search for the *Cemiostoma* among the *Lathyrus sylvestris;* blotches there were in plenty, but the larvæ had all escaped, and I could not find the cocoons. The mystery of this little insect must therefore wait in patience for another year. On the *Epilobium* and *Eupatorium* leaves were a few larvæ of *Coleophora troglodytella* feeding, and on the *Lotus* plants were larvæ of *Coleophora discordella.* The leaves of *Silene maritima* were also eaten as by a *Coleophora*, but no larvæ could be found.

The teazle heads abounded with the larvæ of *Cochylis roseana;* on the sallow were cones of *G. stigmatella*, and on the wild privet, cones (but none with larvæ) probably of *Coriscium cuculipennellum;* on the plantain were the young mines of *G. tringipennella.*

The *Inula* flowers were no longer tenanted, *Gelechia paupella* had taken its flight, and *Eupithecia absinthiata* had buried, but I found a *Eupithecia* larva, probably of this species, on flowers of Golden-rod, and another larger one, to me unknown, on flowers of *Chrysanthemum leucanthemum.* Golden-rod was searched in vain for *Coleophoræ*, and the *Poterium* in vain for *Nepticulæ.*

September 21st. In the early morning went again to Haldon, going through Coombe Lane, and examining the elms again with care. My hope was to find the larvæ of *Ornix Devoniella* in these, as my late brother, Mr. Charles Jordan, always expressed a very strong opinion that he had found decided traces of an *Ornix* on this tree; I found the usual *Lithocoll.* larvæ, and plenty of the mines of *Nepticula marginicolella*, from all of which the larvæ had escaped, also leaves of the elm turned down by a *Tortrix* (from one of which I believe that I since reared *Oxygrapha scabrana*). There were, however, a few elm leaves in which the green part was eaten through, and the apex folded almost like a cone, in this was a young green *Tortrix*-looking larva, with a dark shield on the second segment; the whole construction was so *Ornix*-like, that at first I thought my search had been successful. On the sloe the *Ornix* and *Lithocolletis* were in plenty, and also commonly enough the conspicuous blotches of *Nepticula plagicolella*, in which the larvæ were still feeding. On the sallow bushes in the Exeter road, were mines of *L. viminiella*, but not very abundantly.

Going on to Haldon I examined there the beech trees, and found mines of *L. faginella* commonly, but no traces of *Ornix fagivora;* the search, however, was not as complete as it might have been, from lack of time; I did not find any mines of *N. Tityrella*, which yet I think could scarcely fail to be there. On the green sand I found two of *Epunda lichenea* asleep.

The rest of the day was spent in examining the plants in my brother's small garden in Teignmouth. On the large white *Convolvulus*, *Bedellia somnulentella* was very abundant, but the second brood had all escaped. The apple trees yielded *Lyonetia Clerckella* in abundance, but the mines were chiefly without tenants, the pupæ in their little silken webs were, however, frequent under the leaves, *L. pomifoliella* was of course abundant, and one *L. corylifoliella* was there. In the folded leaves of the apple were also *Ornix guttea*, and the prettily spotted larvæ of *Simœthis pariana*. *Tischeria marginea* was in the leaves of the double flowered bramble. The *Nepticulæ* on the rose leaves were not, however, by any means so abundant as usual.

September 22nd—early morning. Went up the lane opposite the gas house (called, from its winding character, Corkscrew Hill), chiefly to examine the *Viburnum lantana*, which is there very abundant; *L. lantanella* was not, however, in as great plenty as it is in some seasons. On the dried *Origanum* heads the larvæ of *Gelechia subocellea* were common. *Poterium sanguisorba* was plentiful, but no *Nepticulæ*. *Bolys ferrugalis* occurred literally in swarms, whereas, in some years it is very difficult to obtain a single specimen.

After this I made an expedition up the banks of the Teign on the Shaldon side, in order to examine carefully the plants of *Pyrus torminalis*, which grow there in some abundance. These plants need a little scramble in order to get at them, but for this I was well repaid, by finding the neatly made cones of an *Ornix* on the points of many of the leaves. It was too late to find the larvæ, but it is to be hoped that another season will ascertain with certainty to what species this belongs. On the same trees were the mines of *L. torminella* and *L. corylifoliella*, both tolerably common. There were also abundance of wild cherry trees, and these were examined (though from lack of time not so carefully as they deserved), the mines of *Lyonetia Clerckella* were common on them, and on one leaf I found the folds of an *Ornix*, not a neat cone as on the *P. torminalis*, but a fold as that made by *Ornix guttea*. There were no mines of any *Lithocolletis* on the cherry. On the *Atriplex* by the river's bank were mines of *Gelechia næviferella*, but the larvæ were gone.

In the evening, sugar as usual was a complete failure, but on the flowers of *Linaria vulgaris* two larvæ of *E. linariata* were found, and also *Pterophorus pterodactylus* in plenty, and one *P. acanthadactylus*.

September 23rd. Examined the alder trees. The only mines were *L. alnifoliella;* except a single example of what I believe to be *L. Frölichiella* from Haldon.

September 25th. Went to Whitewell on Haldon, for the purpose of examining the trees of *Pyrus aria*, which are there found in plenty. On these there were two species of *Lithocolletis*, one on the upper-side, certainly *L. corylifoliella*, one on the under-side, probably *L. torminella*. On none of the leaves did I see any symptom of an *Ornix*.

September 26th. Went to Newton by train, and from there walked to Ashburton; about two miles on the road I first found *Lith. Bremiella* on the left hand side, and it was met with almost the whole way to Ashburton. On the tops of the *Vicia Sepium* were also some curious pod-like galls, looking like the work of some *Cecidomyia*. *L. Bremiella* occurred chiefly amongst the more sheltered plants, and I found one of the perfect insects asleep on a leaf, and since then others have made their appearance, so that in Devon, like *L. trifasciella*, it is almost a winter insect. The only other plants examined carefully in this walk were *Viburnum lantana* and the little *Poterium sanguisorba*, the latter again without any trace of a *Nepticula*.

At Teignmouth a specimen of *Botys asinalis* was caught at light,

and one of *Acidalia promutata*. I think I may say that certainly neither of these species are there double brooded, both appear in July, but worn specimens of *asinalis* may be seen even in November.

September 27th was devoted to an examination of the common trees near Teignmouth. The oak yielded cones of *G. Swederella* and mines of *Lithocolletis*, which, from old experience, I may say will yield *lautella*, *Cramerella*, and *quercifoliella*; the *Nepticula* mines were empty. The maple yielded *L. sylvella* and old cones of *Gracilaria semifascia*, of which latter I took one perfect specimen. Nut showed everywhere the blotches of the *Ornix*, and near Haldon I met with mines of *Lithocolletis Nicellii*, this was in the long lane leading from the Newton road to Haldon. On the hawthorn *L. corylifoliella* was scarce, *L. pomifoliella* common. Two insects were conspicuous for their entire absence, these were *Cemiostoma scitella* and *Tischeria complanella*. *Nepticulæ* were generally scarce, and almost invariably the mines were empty.

September 28th. Walked to Chudleigh, over Haldon. Nothing new in *Micro-Lepidoptera*, but *Lithocolletis Bremiella* was again met with in Chudleigh Glen.

On the heath, were there are no *Cruciferæ*, *Plutella cruciferarum* was seen in swarms.

In the foregoing account the exact localities are given, in order that any visitor to Teignmouth may profit by them.

Few of the larger *Lepidoptera* occurred to me during my stay, the species chiefly worthy of note, either seen or captured, were the following:—

Colius Edusa, 23rd, 28th.

Vanessa polychloros, 28th. This is unusually late for this insect, which hybernates very early.

Cynthia Cardui. Very abundant.

Macroglossa stellatarum, 22nd, 26th, and 28th.

Episema cæruleocephala, 25th. In Devon this is decidedly a rare insect.

Agrotis saucia, 27th. Beaten from thatch.

Epunda lichenea, 21st.

Polia flavocincta. Several at light.

Dasypolia templi, 27th. A ♂ at light.

Larentia pectinitaria, 28th. In Devon this insect appears in May and again in autumn; near Birmingham, where it is also much rarer, it seems to me only to occur once a year, in June and July.

Thera variata, 24th. Near Teignmouth this is usually rare.

Between the times of leaf hunting I managed to resort to a good thatched barn, distant about a quarter of a mile from the town, and from this the following species were procured :—

Depressaria pimpinellæ (2), *chærophylli* (2), *ultimella* (4), *Alstrœmeriana* (8), *pastinacella* (7), *nervosa* (3), *arenella* (4), *purpurea* (19), *albipunctella* (20), *heracliana* and *applana* (of the three last named species some were allowed to escape, especially *applana*, but of the others none were let go, except by accident).

Laverna decorella (1).

Anybia Langiella (1).

P.S.—November 10th. In Devon for one day only. The rose bushes, which when I left in October contained no *Nepticula* larvæ, were now, in the garden, literally swarming with the larvæ of *Nepticula angulifasciella*. Some of the mines were already empty, and in others there were full-fed larvæ, often several in one leaf.

AN ESSAY TOWARDS A KNOWLEDGE OF BRITISH *HOMOPTERA*.

BY THE REV. T. A. MARSHALL, M.A.

(*Continued from page* 181.)

B. Valvula ventralis maris externa. ♂ ♀ coloribus subsimiles. (Subg. *Selenocephalus*, Burm., *Strongylocephalus*, Flor.

7.—*Acocephalus agrestis*, Fall.

Pallide griseus, fronte irregulariter nigro notata; vel niger, supra griseus, plus minus atomis maculisque nigris irroratus. Supra nitidus, subtus semper obscurus. Vertex planus, obtusus, longitudine vix quadrantem suæ inter oculos latitudinis superans, plus dimidio brevior quam pronotum. Hemelytra abdomine modo breviora, modo paulo longiora, nervis hic illic albo interstinctis. Pedes testacei, unguiculis, tibiarum spinis basi, femoribus anticis plus minus, posticis intus longitudinaliter vel totis, nigris. ♂ plerumque nigricat, ♀ magis pallescit.

Long. 1-2½ ♂ ; 2½-3 lin. ♀.

Cicada agrestis, Fall., Hem. 2, p. 36. *Acoceph. agrestis*, Flor, R. L. 2, p. 210. *Amblycephalus irroratus*, Curt., B. E. 572, n. 6. *Euacanthus irroratus*, Lewis, Trans. Ent. Soc. 1, p. 52, (fig.). *Selenocephalus obsoletus*, Germ. Mag. 4, p. 93, Burm., Gen. *Selenocephalus* (fig.). *Iassus conspersus*, H. Sch., Fn. 124, 12. ♂, *Phrynomorphus nitidus*, Curt., Ent. Mag. 1, 194.

Var. *a*. Niger: vertex maculis 3 ochraceis; frons pallido transversim striata. Pronotum, scutellum, ochraceo varia. Hemelytra fusca, ochraceo irrorata. Pedes maximam partem nigri. Parvus (1-2 lin.) ♂ *Phrynomorphus nitidus*, Curt.

Var. *b*. Flavo viridis. Hemelytra fusco-punctata. (2⅓ lin.) *Euacanthus irroratus*, Lewis.

Var. *c*. Fusco-ochraceus, nigro-irroratus, pedibus nigro-vittatis. *Amblycephalus irroratus*, Curt. (2⅓ lin.)

Var. *d*. Totus pallidus, immaculatus; hemelytris abdomine multo brevioribus. Maximus. ♀. (3 lin.)

Var. *e*. Similis varietati *d*; sed vertex nigro bimaculatus; pedes nigro varii.

It would be useless to multiply varieties of this common species. The extremes in size and colour are given above; they are so dissimilar, that nothing but a long series of specimens, exhibiting the intermediate forms, can produce a conviction of their identity. The smallest of the black males (*Phryn. nitidus*, Curt.), are barely one line long, and much resemble *Iassus pulicaris*, Fall.—one of which actually stands amongst them in the collection of the British Museum. The varieties seem to be localised in some degree, their size and colour depending upon their habitat: thus the small dark individuals will be chiefly found in high mountain pastures and arid situations; while the more lymphatic subjects owe their constitution to the rich grass of the valleys and marshes. The obtuse vertex, and the prominence of the genital apparatus in the ♂, combined with greater activity, and a slightly different habit, render this species aberrant, but hardly justify the establishment of a separate genus.

Gen. Eupelix, Germ.

Head flattened above and beneath, wider than the pronotum; vertex very much produced, acutangular, thin, foliaceous, with a longitudinal medial carina both above and below. Eyes nearly bisected by the foliaceous plane of the vertex. The above characters are sufficient to separate this genus from every other. In general structure, appearance, and habits, it is not far removed from *Acocephalus*.

* Vertex feminæ longior quam maris.....*E. producta*, Germ.

** Vertex ♂ ♀ æquilongus .....*E. cuspidata*, Fab.

1.—*Eupelix producta*, Germ.

Pallide testacea vel grisea. ♂. Vertex latitudine sua non longior, punctis nigris in maculas congestis notatus, lateribus pellucidis. Heme-

lytra nervis elevatis, nigro-pulverosis, sed costali immaculato. Abdomen supra, femora, tibiæ posticæ apice, plus minus nigricantia. ♀. Vertex quarta paste longior quam latitudo sua, carina media infuscata. Tota pallidior quam ♂, minus maculata. Long. ♂ 3, ♀ 4; alar. exp. 4¾ lin.

Eupelix producta, Germ., Fn. 20, 24. Burm., Gen. 2, fig. 1, 5. *Eupelix cuspidata*, Cuv., Règne Anim., pl. 99, fig. 3. *Eupelix producta*, Flor, R. L. 2, p. 213. *Eupelix cuspidata*, Brit. Mus. collection.

This remarkable insect is found sparingly upon grasses in barren, and especially sandy situations, from July to October. It is slow in its motions, and from its resemblance to dried oat-slough, difficult to detect. I reared both sexes under a glass from larvæ taken at Swithland Slate Quarries, Leicestershire, in July last. I have also met with it late in the autumn, on the sand hills near Deal, and on the rocky shores of Milford Haven.

2.—*Eupelix cuspidata*, Fab.

Similis præcedenti; supra nigro densius conspersa. Vertex ♂ ♀ latitudine sua brevior.

Cicada cuspidata, Fab., S. R., p. 79, n. 86; Ent. Syst. 4, 46, 86. *Cicada depressa*, Fab. (?)—*Eupelix cuspidata*, Germ., Mag. 4, p. 94; Ahr., Fn. 4, 22; Fall., Hem. Suec. 2, p. 22; Burm., Gen. *Eupelix* (fig.), and Ent. 2, 1, 112, 10, 1.

Probably only a variety of the preceding; see Signoret, Bull. d. l. Soc. Ent. d. France, 1854, p. 55. Three or four males, which I refer to this species, are in the collection of Mr. Douglas. The shorter vertex and darker colour prevail in all of them, and as I have never met with any similar forms among the 20-30 *Eupelix* which I have captured, and have never seen a ♀, I leave the two species for the present separate. Flor speaks of a difference in the male genital apparatus, which I cannot trace, for want of specimens with expanded wings, but which possibly is decisive of the question.

(*To be continued.*) 220.

THE NEW AMERICAN MOTH TRAP.

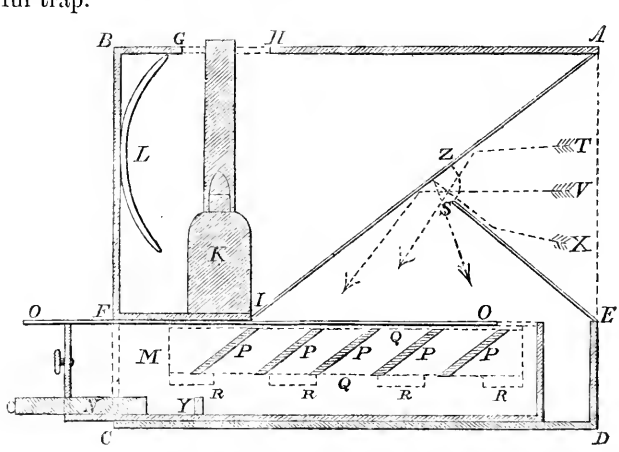
BY H. G. KNAGGS, M.D.

A short time since it was my good fortune to be introduced to Mr. Glover, of Washington, U.S., then on a visit to this country, and whom I found to be a thoroughly practical collector.

In course of conversation with him I became acquainted with many novel and valuable hints on collecting, the most important of which was contained in an account of his marvellous moth trap; an apparatus which, in the words of my ingenious informant, "WILL CATCH MOTHS ALL NIGHT LONG WITHOUT ANY TROUBLE TO THE OWNER."

Collectors all the world over must feel greatly indebted to Mr. Glover for his admirable invention, the practical value of which is undeniable; especially too as its nature is not so complicated but that an amateur of ordinary ability can easily carry it out, the cost of the materials required is not considerable: and furthermore, the trap when completed is really calculated to fulfill all that its inventor claims for it.

Under the conviction that British Entomologists,* Lepidopterists more particularly, will like to know the means whereby the above desirable consummation is brought about, I am induced to make the invention known through the pages of "The Magazine." And with this end in view the accompanying diagrams and explanatory notes will, I trust, enable the collector to master the construction of Mr. Glover's wonderful trap.



A B C D is a box, having a partition I F for lamp K to rest on, behind the latter being a strong reflector L. The box A B C D is open at A E, also at H G (for lamp chimney to pass through), and at F C for the drawer M.

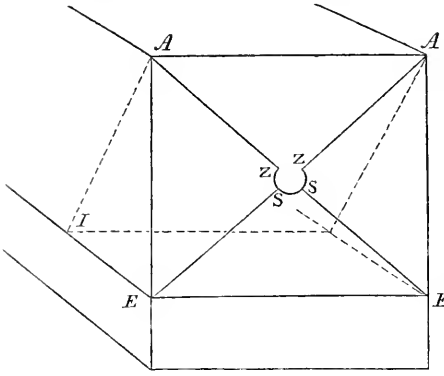
M is a drawer fitted above with a glass slide O running in a groove; and a Venetian blind-like apparatus P P (the laths of which are kept in position by the side strips indicated by the dotted lines Q Q), dropping loosely on to the side-rests R R. It is also fitted with a small drawer N, the latter being filled with layers of flannel for the reception of chloroform, and stopped by the block Y.

* Though *Lepidoptera* will naturally be the chief visitors to this trap, still examples of other orders, — especially of *Coleoptera* not to be captured by other means, — will frequently put in appearances.

A (Z) I is a quadrilateral sheet of glass, of the width of the box, fixed at the angle shown in the figure.

E S is another piece of glass of the shape of a triangle with the apex cut off.

A E S Z (represented by the lines A Z, E S and dotted lines A E, Z S) are two other bits of glass shaped like E S—the four pieces A I, A E S Z, E S, and A E S Z (No. 2) being arranged and fixed (as shown in accessory perspective figure) in such a manner that, viewed from the point V, they form a hollow four-sided pyramid, the apex of which is wanting, as shown at Z S in both figures.*



T, V, and X are arrows indicating the direction an insect flying towards the lamp K must unavoidably take.

N.B.—Besides the above, it is recommended that the parts of the sides of the box corresponding with the triangles A E I should be lined with glass; and a duplicate drawer, fitted up in every way exactly like the drawer M, should be prepared in readiness for use.

To set the trap, all that is necessary is—1. To light the lamp. 2. Push in the drawers M and N. 3. Pull out the glass slide O.

As seen by the directions of the arrows T, V and X, any insect flying towards the lamp K must go into the trap, even though its flight be not directed to the central aperture Z S; once in, it must go down to "the dark regions," where soon becoming snugly ensconced in some dark corner of the drawer, or on parts of the Venetian apparatus out of the focus of the light, it will not, avers Mr. Glover, again risk getting into the glare of the lamp, but even if it do, the odds against the escape of the captive are something fearful.

—facilis descensus Averni;
Sed revocare gradus * * *

Whenever it may be considered advisable to examine the contents of the trap, the slide O should be pushed in, the drawer M removed, and the duplicate quickly inserted in its place, a procedure which, without interfering with the influx of visitors, allows us to leisurely operate upon our captures by chloroforming them with the aid of the little

* If Young Euclid will now obliterate the line Z I, and from some point between A and H draw a line to I, another idea will be represented which, though rendering the escape of the entrapped all but impossible, has certain drawbacks.

drawer N, watching the effect through the glass slide O, and finally, by withdrawing the latter and lifting out the Venetian apparatus, securing such as we may require.

Of course the trap may be of any dimensions, but the two following sizes are suggested as likely to prove most serviceable. A portable travelling one (of—say—a cubic foot, with small doubling-up tripod stand, leather or cloth cover, and top handle), for working the rides of woods and other outdoor situations. The other, adapted to fit the space left by the opened sash of a window.

Kentish Town, *January*, 1866.

DESCRIPTIONS OF SOME CURIOUS VARIATIONS IN THE GENUS *MORPHO*.

BY A. G. BUTLER, F.Z.S.

MORPHO TERRESTRIS—M. MENELAUS, var.

♂. Upperside. Variable metallic purplish-blue, glossed with green; fore-wings, anterior and posterior margins brown; two white spots on the anterior margin, one just beyond the cell, the other near the apex; a similar small indistinct sub-apical spot; hind-margin sinuated, the cilia in the centre of each sinuation white.

Hind-wings, outer margin brown, sinuations as in fore-wings.

Under-side. Rich chocolate brown; fore-wings paler beyond the middle; a pale brown elbowed marking crossing the cell just beyond the middle, and a second similar mark at the end of the cell; a submarginal row of six spots a little way from the hind-margin, the uppermost one white, the second, third, and sixth pale brown, the fourth and fifth ocellate, black, pupillated with white, and surrounded with dull red; hind-margin reddish-ochreous, bounded and intersected by narrow sub-marginal brown lines.

Hind-wings, with outer margin as in fore-wings, four ocelli placed as in *M. Menelaus*, the three lower ones increasing in size towards the outer margin.

Habitat: Villa Nova.

The principal difference between this insect and *M. Menelaus* consists in the absence of any bronze markings on the under-side.

MORPHO MELANIPPE—M. MENELAUS, var.

♂. Upper-side as in *M. Menelaus*.

Under-side. Chocolate-brown; fore-wings with an irregular, indistinct broken bronzy streak, extending from the anterior margin just

beyond the middle to below the middle of the third median nervule, elbowed at the end of the cell; hind-margin reddish-ochreous, intersected by a narrow sub-marginal brown line, and bounded inwardly by a cloudy suffusion of violet scales; a white sub-apical spot; a large ocellus below the end of the cell, and a small reddish spot pupillated with brown just below it.

Hind-wings. Outer margin as above; ocelli placed as in *Menelaus*, and bounded inwardly by bronzed lunules; a bronze spot within the cell, and a second similar spot just above it.

Habitat: South America (exact locality undecided).

This insect differs from *M. Menelaus* in having only one ocellus in the fore-wings below, the outer margin more brightly coloured; the hind-wings more deeply sinuated, the ocelli larger, paler, and more angular, and several of the bronze streaks wanting.

Morpho vitrea—M. Achillæna, var. (??).

♂. Upper-side. Variable metallic blue-green; base, anterior margin and interior margin of hind-wings brown; outer margin broadly brown; fore-wings with a white spot on the anterior margin at the end of the cell, bounded by the first sub-costal nervule; a sub-marginal row of six white spots along the outer margin.

Under-side. The same as in *M. Achilles*, except that the bands are more greenish, and a little more interrupted.

Habitat: Bolivia.

Differs from *M. Achillæna* in having the brown border of the upper-side only half the usual width, and the metallic colouring much more greenish. On the under-side it much more closely resembles *M. Achilles* than *M. Achillæna*.

Morpho cœlestis—M. Helenor, var.

♂. Upper-side. Variable metallic blue-green; fore-wings, a quadrate white spot on the anterior margin at the end of the cell, and a sub-marginal row of seven white spots along the outer margin; anterior margin brown, hind-margin broadly brown, half as broadly as in *M. Helenor*.

Hind-wings Anterior and interior margins grey-brown; outer margin broadly brown as above; two reddish lunules at the anal angles.

Under-side. The same as in *M. Helenor*, except that the bands and streaks are more greenish; and the hind marginal bands are narrower; in the specimen in the National Collection the sub-apical spot on the left front wing is converted into a small ocellus.

Habitat: Brazil.*

This variety closely resembles the preceding on the upper-side, but the metallic colouring is much more bluish, and the base of the wings is not suffused with brown, the inner margins of the hind-wings are greyish instead of dark brown, and the entire insect is smaller and more elegantly formed.

MORPHO HYACINTHUS—M. MONTEZUMA, var. (??).

♂. Upper-side. Fore-wings as in *M. Montezuma*.

Hind-wings with larger and much longer sub-marginal red spots.

Under-side. Differs from *M. Montezuma* in being much more reddish, with the outer margin much paler, the sub-marginal lines not nearly so lunulate, forming only about half the number of lunules, and all the other lines much more angular; the central ocellus of each triplet larger than the outer ones.

Female differs from male in having the upper-side only blue to just beyond the middle of the wing, a second row of white spots on the fore-wings, and the white spots at the end of the cell extended to the second sub-costal nervule.

Habitat: Honduras.

The wings of this insect are much shorter than those of *M. Montezuma*, and though it may very likely be only a local variety of that insect, I think, taking into account the other differences mentioned above, that, according to our modern ideas of species in this beautiful genus, it is very doubtful whether it should not be considered as distinct.†

Zoological Department, British Museum.

Capture of Limnephilus striola, a Trichopterous insect new to Britain.—On the 7th of October last, I captured near Bowdon, Cheshire, two males of a *Limnephilus*, which have been examined by Mr. McLachlan and pronounced to be *L. striola* of Kolenati and Brauer. He states that the species is widely distributed on the continent. They were in company with *Anabolia nervosa*, and but for their mottled appearance and smaller size, might have been mistaken, while alive, for examples of that common insect. This mottled colouring I am further informed is not a rule, the species being very variable, sometimes spotless with a trace only of the pterostigma.—B. COOKE, 49, Ardwick Place, Manchester, 15*th January*, 1866.

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* We have two specimens in the National Collection of what is probably another form of this variety, but of a much more greenish tint above, with a large brown spot at the end of the fore-wing cell as in *M. Pelcides*, and a darker colouring below; the uppermost ocellus in the hind-wings is also four times the size of the other ocelli.—A. G. B.

† I have described the above insects, not to make the study of this genus more difficult, but on the contrary, as I have myself found it exceedingly hard to determine to which of the many and closely allied species these varieties belonged, I thought by settling the question at once, to save all future labourers in this work both time and trouble.—A. G. B.

Occurrence of a species of Omalium new to Britain.

OMALIUM SEPTENTRIONIS, *Thoms., Skand. Col.* iii., 211, 2.

I have recently found a single example of this insect, among some captures made by myself in the Isle of Arran in August, 1864. Of the recorded British species it bears most resemblance to *O. rivulare;* from which it is readily distinguished by being much more strongly and closely punctured, and less shining, with its elytra narrower in proportion to the thorax,—the sides of which are less rounded,—and by the five basal joints of its antennæ being red. Its much stronger punctuation, independently of other characters, distinguishes it at a glance from *O. riparium*, which it somewhat resembles in build.—W. HENDERSON, 34, Hill Street, Glasgow, *January*, 1866.

Apion ononidis, Gyllenhal.—I see that Mr. Rye, in his admirable paper in the Annual, has sunk this name in favour of *A. Bohemanni*, Boh. This is an alteration that cannot be maintained, as Gyllenhal's name has the priority by twelve years. Thomson,—who, in his recently published volume, has originated this change,—gives no express reason for it; but remarks in a note, after his description of the species, "I have seen types of this as well as of most of Schönherr's *Apions*, and am on this account much indebted to Prof. Boheman." If this be his reason for adopting the more recent name, it is certainly a strange and insufficient one. M. Wencker, in his lately completed monograph of the European *Apions*, has incorrectly considered *A. Bohemanni* as a synonym of *paripes*. Also, according to recent authors, *Apion Germari*, Walt., equals *semivittatum*, Gyll., the latter name being the older.—D. SHARP, 12, St. Vincent Street, Edinburgh.

[I presume, from Thomson inserting the word *mas.* after his reference to Boheman's insect (of the identity of which he is satisfied, from his inspection of the Schönherrian types), that he has been induced to sink the name originally given to it by Gyllenhal, on account of the latter not having noticed the male character, which is of considerable importance.

He may, also, have felt less scruple in suggesting this alteration, from the fact of there being another *Apion*,—described by Kirby prior to Gyllenhal,—the name of which, "*ononis*," is so exceedingly close to the *ononidis* of the latter (both, moreover, being intended for the genitive of the same word) that the suppression of the later in date is advisable, to avoid confusion.—E. C. R.]

Hot Weather and New Beetles.—I may perhaps be allowed to make a few remarks on the theory that the large number of species of *Coleoptera* added to our lists during the year 1865 is due in a great measure "to the long continued and excessive heat of the past summer." This supposition is quite unsupported by the facts; for, of the 56 new species enumerated in Mr. Rye's exhaustive list, it would appear from the records that only 17 were taken at all in 1865; the other 39 having been captured in previous years, though not introduced into our lists till last year; moreover, of the 17 new species of which specimens were actually taken in 1865, 10 had been found also in preceding years, leaving only seven species as the actual number taken for the first time in the hot year of 1865; and, as regards the heat having anything to do with their capture, even this number must be further reduced;

for one of them (*Olophrum fuscum*) was captured in February. Thus, then, it is impossible that the hot weather of 1865 *can* have had any influence in adding to our fauna, except in the case of six species.

But to put it in another way. I have by me the Annuals recording additions for 1863, 64 and '65; and, forming as correct an opinion as I can from the records contained in them, the number of species taken for the first time during each of these years to be, in 1863, five; in 1864, eleven; in 1865, seven.

From these considerations it would appear, first, that as regards the *actual capture* of beetles new to our catalogue, we are not adding to our fauna at so great a rate as would at first sight seem to be the case, but are merely determining with greater precision the insects already contained in our collections; and secondly, that the year 1865 has been remarkable for the amount of examination of *Coleoptera* by our entomologists, and the use of books on the science. From the first of these conclusions it would also seem that the number of species of *Coleoptera* to be added to our catalogue is not so great as we might conclude from the rapid additions made during the last few seasons, for these additions have resulted from the examination of our collections of previous years, a source which must soon be exhausted. From the second conclusion we easily understand how it happens that most of the additions to our lists are owing to the exertions of a few workers, the number of Coleopterists who examine carefully the insects they possess being in this country very small. I would therefore advise any one who wishes to distinguish himself by adding species to our fauna to commence his work at once, and not to wait the advent of another unusually warm year, or he will wake some day and find the work he proposes to begin already nearly completed by the exertions of others.—D. Sharp.

[The above note of my friend, Mr. Sharp, is marked by his usual accuracy: but I may be excused for deprecating an interpretation so rigidly "*au pied de la lettre*" of a mere introductory remark. My only words on the point were—"*I presume* that the extent of the following list of novelties must *in a great measure* be owing to the long-continued and excessive heat of the past summer;" and the italicised expressions seem to me rather to modify a very general opinion as to the abundance of good insects in warm seasons. Mr. Sharp sufficiently proves by *figures* that it is impossible the hot weather *can* have had any influence in adding to our fauna; nevertheless (passing over some of the species first taken here in 1865, and also the great number of rare species captured in profusion) I think that the addition to our lists of a *Leptura*, a *Cryptocephalus*, a *Myrmedonia*, and a *Bembidium*, during one hot year, by no means weakens the popular delusion. I do not refer to the extraordinary capture, by Mr. Sharp himself, of a large *Apion* new to us, and in great quantities, as I believe two undetermined individuals were taken in former years by himself and Dr. Power. But, abandoning any connection between heat and novelty (although the agency that appears to cause an increase of mere *numbers* of specimens is most likely to bring to our notice species that have hitherto escaped observation through their rarity), it may be another question whether a gradual alteration in our climate, especially shewing itself by the increased temperature of the winters, may not be causing a corresponding alteration in our insect fauna.—E. C. R.]

Capture of some of the rarer species of Delphax near Newcastle.—

Delphax hamatus, Boh. One male and three females, brachypterous, taken by sweeping rough herbage near Newcastle, in August.

Delphax guttula, Germar. I have one specimen from Gibside, taken in August; and several others, ♂ and ♀, found at the roots of grass on the sand-hills, near Hartley, on the 6th of November last. All have the hemelytra fully developed.

Delphax albomarginatus, Curtis. I took a good many specimens of this rarity by sweeping grassy places in Briar-dene, near Whitley, in May and June. I got both males and females, but all were of the brachypterous form.

Delphax discolor, Boh. This rare species would appear to be widely spread. I have specimens of it taken on the sea-banks at Whitley, in Gosforth Woods, and near Naworth, in Cumberland. All, both ♂ and ♀, are of the brachypterous form, and were taken in May and June.

Delphax striatellus, Fall. Apparently not rare. I have fully-developed males and females from Briar-dene, Gosforth, and Gibside, taken in May, June, and August.

Delphax pellucidus, Fab. The most abundant species of the genus with us. On the 28th of August last, I found it in immense numbers on the rushes, near the margin of the lake, at Gosforth. A ten minutes' sweep produced hundreds, but all were of the brachypterous form, and varying considerably in colour.—Thos. Jno. Bold, Long Benton, Newcastle-on-Tyne, *December 4th*, 1865.

Homopterous and other insects taken in December.—When down on the sea-coast, opposite St. Mary's Island, yesterday, I had a look for insects, and was much surprised at the numbers astir. Parting the grass on the sandy slopes, I found, of *Homoptera*, *Delphax guttula* (macropterous and larva), *Acocephalus rivularis* (♀), *A. agrestis* (females and young larvæ), *Agallia venosa* (♀), and *Eupteryx citrinellus*; the last quite plentifully. *Hemiptera* were of two species only, *Stygnocoris arenarius* and *Salda saltatoria*. The half-hour's search showed many of the *Coleoptera* which frequent such places, such as various species of *Dromius*, *Notiophilus*, *Amara*, *Stenus*, and *Apion*; with swarms of *Sitones lineatus* and other commoners. —*Id.*

Note on monstrosity in the antennæ of a bug.—I find a pretty bug, *Scolopostelpus affinis*, very common upon heath, and which seems subject to considerable variation in the antennæ. In the variety most commonly found, a joint is wanting on one side only; in which case the second or third joint, or both, are so much elongated that the three will be nearly as long as the four joints of the other antenna. This may not be at all singular, but I do not recollect seeing other Hemipterous insects so formed.—*Id.*

Re-capture of Heterocordylus unicolor.—I have again taken this local bug. On visiting the locality, Briar-dene, near Whitley, on the 26th of June last, I found its pabulum, the dyer's weed, just coming into flower. On it were many larvæ and pupæ, but very few of the perfect insect, and these only recently developed. Visiting the place on the 17th of July, I found the imago in plenty, and the other stages had disappeared. Returning on the 24th of the same month, not a trace of the insect could be found.—*Id.*

Lepidopterous captures in Suffolk.—Although I have not done much this season, a list of the best insects I have taken may interest some of your readers.

April 17th. In company with Mr. H. Lingwood, of Needham Market, I took a few *B. notha* in a wood at Barking. Mr. L. took a good many, both before and after this date.

During the first fortnight in May and August, *A. berberata* and *S. certata* occurred freely in a lane near this town, each species being well represented in both broods.

Early in May, Mr. Lingwood and I took several dozens of *F. limbata* on broom growing on the Creeting Hills.

May 29th. Beat several *E. trilinearia* out of beech trees, and one *M. alternata* out of a fir tree at Dalham.

June 9th. About a score of *H. uncana*, several *E. russula*, *M. artemis*, and *D. falcula*, at Tuddenham; and, about the same time, some two dozen *H. serena*, in very fine condition, at rest on trees and palings near Bury.

July 3rd. One *E. fasciaria*, several *E. russula* and *A. porphyrea*, on Herringfleet Common.

July 12th. Several *I. vernaria* at Hardwick.

July 21st. Plenty of *N. despecta*, *P. purpuralis*, a few *H. aurantiaria*, and *P. ænea*, at Tuddenham.

At the end of August, a dozen larvæ of *N. dromedarius*, one of *A. leporina*, and several of *G. papilionaria*, at Tuddenham.

A very kind non-entomological friend, Mr. T. G. Hinnell, brought from the Sandhills at Yarmouth, six *A. præcox*, several *A. valligera*, and lots of *A. cursoria*, the result of three hours' search. At the end of July, a very good specimen of *T. subsequa* flew to a lamp in his house, which is nearly in the middle of this town; this, also, he added to my collection.

Lately I have taken very little, beyond *C. spartiata* in abundance at Icklingham, and, by digging there, I have obtained a few pupæ of *N. dictæa* and *P. palpina*. —Edmund Skepper, 13, Abbeygate Street, Bury St. Edmunds.

Lepidoptera captured at Saugor, Central India.

Papilionidæ: *Papilio Erithonius*, *P. Pammon* (not common), *P. Diphilus*, *P. Hector*, *Pieris Coronis*, *P. Eucharis*, *P. Mesentina*, *Thestias Marianne*, *Callidryas Alcmeone*, *C. Hilaria*, *C. Philippina*, *C. Pyranthe*, *C. Jugurtha*, *Terias Hecabe*, *T. læta*, *T. Sari*, *T. venata*.

Nymphalidæ: *Euplœa Core*, *Danais Chrysippus*, *D. limniacæ*, *D. Clexippus*, *Telchinia violæ*, *Atella Phalanta*, *Pyrameis cardui*, *Junonia Asterie*, *J. Limonias*, *J. Œnone*, *J. Orithya*, *Neptis aceris*, *Diadema Anyce*, *D. Bolina*, *D. Lasinassa*, *Symphædra Thyelia*, *Nymphalis Dolon* (scarce), *Mycalesis Hesione*, *M. Polydecta*, *Yphthima Lysandra*, *Cyllo Banksia*, *C. Leda*.

Lycænidæ: *Myrina Erylus*, *Dipsas Jarbas*, *Lycæna Cnejus*, *L. Rosimon*, *L. Bætica*, *L. Theophrastus*, *Polyommatus Latus*.

Hesperidæ: *Pyrgus superna*, *Pamphila Vedanga*, *Tarilla Echerius* (not common), *Ismene Ladon*.

Sphingidæ: *Sesia Hylas*, *Macroglossa Passalus*, *M. stellatarum*, *Chærocampa*

Alecto, *C. celerio*, *C. Lycetus*, *C. Thyelia* (flies during the heat of the day), *Daphnis Nerii*, *Zonila Morpheus* (flies during the day), *Sphinx convolvuli*, *Acherontia Styx*, *Smerinthus dentatus*.

LITHOSIIDÆ: *Hypsa ficus*, *Digama Hearseyana*, *Atteva Brucea*, *Utethesia pulchella* (flies during the day).

ARCTIIDÆ: *Alope ocellifera*, *Spilosoma suffusa*.

LIPARIDÆ: *Euproctis gamma*.

SATURNIDÆ: *Antheræa Paphia*. Curious to say, the larva of this *Saturnia* was captured by Col. Cherry's gardener, feeding on a cabbage plant. No "Baer tree" (*Zizyphus jujuba*) was near the cabbage plant; a "Neem tree" (*Azadirachta indica*) and "Babul" (*Acacia arabica*) being the only trees near. A "Jat" (*Seobania ægyptiaca*) hedge flanked one side of the cabbage-bed. I placed the larva in my breeding cage with the leaves of the Jat, Neem, and Babul, and also cabbage leaves, but it only eat the latter. It remained five days in the larva state, and was perfectly healthy. It is now hanging in its cocoon in my cage. On the 29th October, one larva, fed on Baer leaves, produced an imago, after having remained 27 days in the pupa. This species is not common at Saugor. The largest I have in my cabinet (a ♀) measures seven inches in expanse of wings.

BOMBYCIDÆ: *Tragama Ganessa*.

OPHIDERIDÆ: *Ophideres Materna*.

OPHIUSIDÆ: *Lagoptera magica*, *Ophiusa Tyrrhæa*.

EUCLIDIDÆ: *Trigonodes Hippasia*.

Capt. F. M. ALEXANDER, 8th Madras Cavalry, Saugor, 31*st October*, 1865.

Note on Macroglossa stellatarum.—On the 24th of December last, while preparing for church, my wife called my attention to a large insect that was buzzing on the window. It appeared to me to be a humming-bird hawk-moth, and I immediately procured my ring-net, and captured the intruder, when it proved to be, what I thought it was, a very fine specimen of *Macroglossa stellatarum*. Perhaps you will kindly note the circumstance in the next number of the Entomologist's Monthly Magazine, as I do not think the insect is usually taken so late in the year.

I also captured, in November last, a great many specimens of *Cynthia cardui*, of very large growth, one of them measuring 2″ 11‴ fully, being only one line short of three inches.—E. W. SHACKELL, Carmarthen, *January* 10*th*, 1866.

[The *Macroglossa* was no doubt disturbed from its winter quarters; the second brood always naturally hybernates in this country.—EDS.]

Double cocoons of Eriogaster lanestris.—On looking over some cocoons of *E. lanestris*, which I obtained from larvæ taken in the spring, I saw two which were much larger than the rest, and, my curiosity being excited, broke them open, and discovered inside of each two dead larvæ, which had evidently spun the cocoon as a joint speculation. I have heard of two pupæ of *S. carpini* being found in one cocoon, but do not remember to have seen the fact recorded of *lanestris*,—though I am told it is not a rare occurrence, and that Mr. Bond has observed as many as *three* cocoons of this insect amalgamated into one.—HOWARD VAUGHAN, 14, Gaisford Street, Kentish Town, N.W.

Hadena atriplicis near London.—In June last, I took a specimen of *H. atriplicis* at sugar, in Bishop's Wood, Hampstead—rather a strange locality for the species, I think.—*Id.*

Captures at Folkestone.—In addition to the captures which I made last year in this locality, the following may be worth mention.

Deilephila galii.—A lovely specimen made its appearance in my breeding cage on the 13th June last; the larva from which it was bred was the one referred to at Vol. I., page 189 of the Magazine as having been taken at Folkestone.

Sesia ichneumoniformis.—This species occurred in the Warren, hovering over the grass.

Lithosia complana.—Common on the slopes of the Undercliff.

Acidalia strigilata.—I was fortunate enough to secure a specimen of this local "Wave"; I saw another taken by a brother entomologist. I hope, some day, to be more successful with this insect, now that I know its habits and locality.

Spilodes sticticalis.—I took an example of this rarity on the 3rd of July: I disturbed it from an ant-hill, and it flew a few yards and then settled, when it was speedily pill-boxed. It proved to be a beautiful and fresh ♀. She deposited some eggs, but, unluckily, they were not fertile.

Phycis ornatella.—This pretty species also occurred in this locality.—Edward Meek, 5, King Street, Old Ford Road, N.E., *October* 31*st*.

Notes on varieties.—In a former number of "The Entomologist's Monthly" Mr. Llewelyn gives an account of some varieties of *Lepidoptera* he has met with, and concludes the notice with remarking that he should be glad to hear the results of the labouring of other entomologists. As no supplementary paper has appeared, I am induced to send my own observations.

Pieris napi.—It is well known that this species is very variable in size, yet a specimen which I took at Croydon is worthy of notice, the alar expansion being only 1″ 2‴.

Polyommatus Phlæas.—Last spring I captured a very good variety, in which the usual copper-coloured margin of the hind-wing is absent, being represented by three short, faint reddish streaks at the extremity of the nervures, and a minute spot of the same colour at the anal angle.

Lycæna Argiolus.—A female, taken at Darenth, differed from the ordinary run of specimens, having the wings more suffused with black. It was, also, rather smaller, the expansion of the wings being only one inch.

Smerinthus populi.—An albino (or almost so) variety of the larva came under my notice last autumn, feeding on aspen, and was remarkably transparent. Unfortunately it died in pupa, so that I lost the opportunity of observing whether the imago would possess any peculiarity. I have twice had a second variety which, besides having red spiracles, was also adorned with several rather large, crimson-lake spots, situated above the spiracular line.

Biston hirtaria.—A curious male, in Mr. Edle's possession, has not the slightest vestige of either fore- or hind-wings.

Boarmia repandata.—One of the variety *conversaria*, bred from a larva found feeding on whitethorn at West Wickham.

Hybernia progemmaria.—A black female, at rest, on an oak trunk.—S. A. Davis, Seven Sisters' Road, Holloway, N., *October 14th.*

Unusual time of appearance of Biston hirtaria.—This morning I found a specimen of *Biston hirtaria*, which had just emerged from the chrysalis, sitting on the trunk of a lime-tree; so that the warm temperature had brought it out several months before its time.—A. G. Butler, British Museum, *January 5th*, 1866.

Note on Gracilaria omissella.—On July 31st, I chanced to notice in a lane a small plant of *Artemisia*, nearly every leaf of which was blistered with the mines of *Gracilaria omissella*. I secured the leaves; and the larvæ, which were full grown, spun up in a day or two, and on August 19th to 21st the moths emerged. Two days before this, however, I had found, in another lane, a great abundance of mines of the same species, and had secured plenty. The larvæ in these, also, spun up in a few days, but, with the exception of two specimens, which made their appearance on October 25th, not a moth has come out; and if the pupæ are living, as I have no reason to doubt, they are evidently waiting till next season. These are evidently not successive broods, but seem to have got into confusion.—Chas. G. Barrett, Haslemere, *15th December*, 1865.

Note on Gracilaria phasianipennella.—I obtained, in the beginning of October, several specimens of *Gracilaria phasianipennella* from a hedge, consisting of hazle and bramble, with occasional patches of *Artemisia*. Singularly enough, every specimen of *phasianipennella* was beaten from among the plants of *Artemisia*. This seems a singular partiality for an insect that feeds on *Polygonum hydropiper.—Id.*

Note on Gracilaria falconipennella.—Beating the thatch of a solitary cottage, completely embosomed in woods, one day last September, I noticed when examining the rubbish in the net, a large *Gracilaria*, quite unknown to me, marching up the side with about the most tremendous swagger I ever noticed in a moth. Its large anterior legs set wide apart, and with whitish thighs, gave it a very striking appearance. This boastful attitude was, however, not assumed without a reason, for the insect turned out to be no less a rarity than *G. falconipennella.* By hard working at the same place I ultimately secured two more specimens.—*Id.*

Description of the larva of Luperina cæspitis.—The larva of this species is described in Stainton's manual, after Freyer, but not very correctly; Guenée's description of *Heliophobus popularis* comes much nearer to it, there being, it appears, a great resemblance between the two in the caterpillar state; but of this I hope to say more another season.

In September, 1864, I received a number of eggs from Mr. Terry, of St. Mary Church; they were all loose, but probably, in a state of freedom, the moth would attach them to grass, &c.

The eggs at first are pale straw color, soon turning pale purplish-brown, and again becoming dingy grey a long time before the larvæ appear: this is singular, for the last change of colour usually precedes the hatching of the larva but a few hours or days at the outside.

One half of my eggs I kept in a pillbox, the other half I dropped on a bit of wallmoss, *Tortula ruralis*, which was planted with some tufts of various common grasses in a flower-pot; here they were exposed to every change of weather—snow, rain, or frost—all through the winter; till on April 4th, which was a warm day, I put the flower pot under a sunny wall, and thus prevailed on the larvæ to come forth. The eggs in the pillbox shrivelled up, every one. The larva at first is a little dingy fellow, but after a moult or two puts on the gayest dress worn in all its existence, becoming of a clear full green, with white dorsal, sub-dorsal, and broader spiracular lines. As it grows bigger, the green becomes tinged with olive, and at the last moult the colour of the back is of an olive-brown, shining with a metallic lustre (reminding one of bronzy morocco leather), and the lines, which are clearly defined, are of a dirty freckled white. The figure is stoutest in the middle, tapering towards either end; the head horny, brown in colour; the plates on segments two and thirteen nearly black, the belly of a pale olive-green. When disturbed, these larvæ had a way of turning their heads sideways back to their tails, and after attaining some size, hid themselves by day among the grass. About the end of June, they began to go underground, forming for themselves very neat and smooth oval chambers, at about half-an-inch below the surface, and inclined to it at various angles, some of them being nearly perpendicular to it, so that the pupæ in them rested nearly upright. The pupa is reddish-brown, round and full in outline, the blunt anal spike having two very small fine points projecting from it.

The first moth appeared on August 14th, and the rest soon after. It was not always easy to detect the newly-bred moths, as they hid themselves at the roots of grass nearly as cleverly as the larvæ had done, but one could always see the clean round holes they had bored through the earth in emerging from their cocoons. All sorts of common grasses were eaten by this brood, but a certain number of them showed a decided preference for the rough hard *Aira cæspitosa*.—J. Hellins, *October 11th.*

Worcestershire captures, and species bred in 1865 (*arranged chronologically*), *with notes.*—March.—*T. munda*, 14 bred, two without the spots. *A. prodromaria*, several one good variety nearly black. In March, 1864, I had 37 *A. prodromaria* out in my box at the same time. I bred three very remarkable varieties (rich brown and white). My highly esteemed friend, the Rev. Edward Horton, was puzzled when he saw them, and made several attempts before he named them correctly. *C. flavicornis*, bred. *C. populeti*, several bred.

April 4th and 7th.—*L. lobulata*, two bred from larvæ I captured the previous season. They are the only specimens I ever knew taken in this county.

7th and 22nd.—*C. temerata*, bred from larvæ kindly sent me by the Rev. J. Hellins.

10th.—*X. conspicillaris*, one bred. It emerged a little after nine o'clock a.m. I have, excepting in this case, always found this species emerge a little before

eight o'clock a.m. This was the only one I bred out of 1,500 pupæ of various kinds I had dug up in the previous autumn.

11th.—*X. lithoriza*, at rest on trees. *H. rectilinea*, larvæ entered the pupal state early this month. They did not eat again after hybernation.

18th.—*P. mendica*, bred some good varieties.

22nd to May 8th.—*P. lacertula*, bred a series beautifully marked. As I expected, the spring-bred specimens were richly varied in colour; whereas the summer-bred ones were poor in this respect.

April 22nd to June 14th.—*P. palpina*, several bred from larvæ, and others from pupæ, obtained by digging.

April 24th.—*C. curtula*, very fine, bred from larvæ taken full-fed off aspen the previous September.

24th.—*L. hexapterata*, bred from larvæ beaten off aspen the previous autumn. *P. lacertula*, depositing eggs the night after cop., in rows of from five to twenty, upon the twigs of birch, rarely upon the leaves: one laid 95 and and another 64 eggs.

April 26th.—*D. coryli*, two bred from larvæ beaten off birch in the autumn of 1864. I took out of one of them 120 eggs in a perfect, and about 40 in a progressive state.

27th.—*O. pudibunda*, bred a very large one. I took from it 478 eggs, perfectly developed.

28.—*L. sinapis*, several on the wing, they were early.

20th to 29th.—*E. pendularia*, beating. Ditto, bred a nice series.

May 1st.—*S. tiliæ*, bred two good varieties.

May 3rd to July 17th.—*N. dictæa*, bred from pupæ taken by digging the previous autumn. It is not surprising that this species has been considered double-brooded, but it is not so. I have often bred it at these long intervals.

May 3rd.—*E. orbicularia*, one bred from a larva off sallow.

5th.—*S. lunaria*, two bred from larvæ I took on elm, full fed. *C. Vinula*, not common here.

7th.—*H. rectilinea*, bred from the hybernating larvæ, reared from eggs. I kept one moth alive fifteen days. It fed upon sugar and water.

9th to 24th.—*C. ocularis*, bred some from the egg, and a few from pupæ, taken by digging. I took out of a female 145 eggs in a mature, and 50 in a progressive state. 200 eggs are about the number a female lays. I have examined several. It is most difficult to get this species to lay. I have had three pairs in cop. at one time, but not one would spare me an egg; but I had to endure the torment of having three or four of them completely spoiled.

17th to 25th.—*L. hexapterata*, a fine and perfect series; by beating, &c. *A. ramella*.

17.—*X. conspicillaris*, one, by beating, in almost the centre of a very large wood. Being a female I kept it, hoping to get some eggs, but by the following morning it had spoiled itself. It laid no eggs, and it contained none upon examination. I kept it alive five days. Upon placing a bit of sponge, saturated with syrup, before it, it would instantly commence feeding, and continued the enjoyment for more than an hour at a time.

17th.—*P. hamula*, one, by beating. This species has been rare here for several years. I took a larva the preceding season.

18th.—*A. Baumanniana.*

19th.—*P. falcula*, bred.

20th.—*H. barbalis*, by beating. *E. punctaria*, by beating. *E. pendularia*, by beating. *A. mendica*, on the wing.—Abraham Edmunds, Cemetery House, Ashwood Road, Worcester, *November 9th*, 1865.

(*To be continued.*)

Note on the food of Lobophora viretata.—This insect has been bred by Herr Hoffmann, of Ratisbon, from larvæ which fed on the berries of *Actæa spicata*. The young larvæ bore into the unripe berries in July, and afterwards quit the berries to attack the leaves of the plant.

At the end of July or beginning of August, the larvæ descend to the surface of the earth, and there form earthen cocoons, sticking to any extraneous object—generally to some of the fallen dry berries.

Herr Hoffmann bred also *Eupithecia argillacearia* from the berries of the same plant. (See Wiener Entom. Monatschrift, 1864, p. 26-27.)—H. T. Stainton.

Review.

"*Coleoptera Atlantidum*," being an Enumeration of the Coleopterous Insects of the Madeiras, Salvages, and Canaries; by T. Vernon Wollaston, M.A., F.L.S. (Van Voorst), 1865.

Every British Coleopterist must feel an inward gratification at the addition of such a book by his fellow-countryman to the literature of the science. The amount of material (and especially *new* material),—the peculiar attraction of the study of geographical distribution of species, the accuracy, elegance of diction, and evident good faith of its author,—combine to render this volume at once interesting and instructive in the highest degree.

We are apparently in a great measure indebted for it to the large mass of species recently collected by the Messrs. Crotch: these, indeed, constitute the chief novelties of the book; which, in other respects, may be considered as a careful revision of the "*Insecta Maderensia*" and "Catalogue of Canarian Coleoptera," with the addition of divers species found in the Atlantic Islands, and described or mentioned in other publications. Thus the characters of all the *Coleoptera* as yet found in these islands are collected into one volume, which is furnished with a map, and excellent Topographical and general Indices, in the first whereof are indicated the European (and other) forms to which many of the species are most closely allied, and of which they may possibly be considered as local modifications. The author, indeed, whilst very fairly stating the evidence on both sides, expresses an opinion that some of those latter, though differing permanently, will perhaps prove local phases of European species; and his remarks on variation, &c. (p. xxxix., et seq., Int.), will be perused with great interest. It appears that no *truly* African element is indicated in these islands, nearly all the species not peculiar to them being Mediterranean; and, curiously enough, the Canarian *Coleoptera* seem to be more European than the Madeiran,—*malgré* the more northern position of the latter group. These observations seem to corroborate the extended view of the European Fauna now so generally received.

The entire number of species recorded is 1,449 (of which 19 are doubtful as indigenous, and at least 38 certainly imported); and of these 1,039 appear to be peculiar to the islands in question, though 700 only are, in Mr. Wollaston's opinion, absolute "autocthones." The entire number are distributed in the following proportions: Canaries, 1,007; Madeiran group, 661; and Salvages, 24; and all but 215 have been taken by the author (who first visited the islands in 1847), who has himself described 935 of them. They are contained in 423 genera,—82 of which have been founded by Mr. Wollaston; and in the volume now under consideration 75 species are first described (appendix), 11 suppressed, and one new genus characterized. The number of species, being less than half of those found in Great Britain, may at first seem small; but it must be remembered that there is little diversity in the hunting-ground beyond sand and mountain, and that the entire area of all the islands (14, without counting mere rocks) is only equal to about six of our smaller counties; the largest being rather less than Cheshire. Nevertheless, the large number of species peculiar to these groups, as compared with our fauna, at once shows their interesting nature. There appear to be 260 species of *Coleoptera* common to these islands and Great Britain; and of these we can understand the occurrence of *Anisodactylus binotatus, Bembidium biguttatum, Agabus bipustulatus, Laccobius minutus, Cercyon quisquilium, Epurœa obsoleta, Meligethes picipes, Lathridius minutus, Typhœa fumata, Saprinus nitidulus, Aphodius granarius, Ceut. pollinarius, Apion frumentarium, Sitona lineata, Strophosomus coryli, Clytus arietis, Lema melanopa, Phratora vulgatissima, Cocc. 7-punctata, Rhizobius litura, Falagria obscura, Ischnopoda longitarsis, Homalota gregaria* and *analis, Aleochara mœsta, Tachyporus brunneus, Quedius fulgidus, Ocypus olens* (universal in Canaries, but absent in Madeira), *Philonthus œneus, sordidus*, and *varius, Stilicus affinis, Stenus cicindeloides* and *Oxytelus nitidulus* being sufficiently aggravating to the newly arrived Coleopterist.

The *Rhynchophora* appear to be the most numerous (*Atlantis* and *Laparocerus* the dominant genera), and the *Longicorne* the rarest; the *Cicindelidæ, Cetoniadæ*, and *Elateridæ* being all but entirely absent, and the first even altogether doubtful. The sluggish *Tarphius* (*Endophlœidæ*) is evidently the most endemic, and in fact centred in these isles; and *Calathus* and *Acalles* seem peculiarly abundant in species,—the latter numbering no less than 36, whilst there are but 27 known in all Europe: but perhaps the most salient feature is afforded by the number of beetles frequenting *Euphorbiæ*, as there are 50 species exclusively attached to those plants, and often found in incredible quantities.

It is difficult to select particular points as interesting, where there is so much likely to be of use; but the note on *Mezium sulcatum* seeming to be indigenous, living beneath stones and dry scoriæ;—the remarks on the apparent identity of Madeiran and Himalayan *Metabletus obscuroguttatus*, and of the Atlantic *Trichopteryx umbricola* and Ceylonese *T. orientalis* (according to Rev. A. Matthews, whose species are transferred from this magazine);—the notes on the *Corylophidæ* (p. 90), and observations on *Ptinus* and its barbarous inversions (p. 215),—*Acalles* (p. 270), and *Procas* (p. 297) must be particularly mentioned. Besides these, the British Coleopterist will find the following references affecting himself:—*Dromius sigma* (p. 16), *Agathidium* (p. 86), *Stenolophus Teutonus* (p. 49), *Olibrus Stephensii* (p. 105), and *consimilis* (p. 106), *Nephanes Titan* (p. 101), *Epistemus* (p. 145), *Hypera*

murina, (p. 305), *Phytosus* (p. 453), *Conurus pedicularius* (p. 479), and *Stenus Rogeri* (p. 512). Lastly, the necessity of accuracy in notes, &c.,—so insisted upon (and so pre-eminently exampled) by Mr. Wollaston,—is sufficiently shown by the instances here afforded of carelessness of French authors; M. Brullé (Webb et Berthelot, Hist. Nat. des Isles Can.) being especially obnoxious through his loose and unreliable list: and the suppression by Du Val of Mr. Wollaston's genus *Glœosoma* (p. 93), in favour of his own *Moronillus*, appearing to deserve especial condemnation.

Haogerstone Entomological Society.—The Half-yearly General Meeting of the above was held at the Society's Room, on Thursday, December 7th, 1865, when the usual business was transacted, and the Officers for the ensuing half-year were elected. Several collections of *Lepidoptera* taken by the Members during the past season were exhibited, containing, amongst many others, fine specimens of *C. Edusa*, *I. betulæ*, *A. atropos*, *L. Asellus*, *E. russula*, *A. villica*, *plantaginis*, and *urticæ*, *L. quercifolia*, *E. dolobraria*, *E. fuscantaria*, *A. prodromaria*, *P. hamula*, *C. furcula* and *bifida*, *N. dodonea*, *C. ridens*, *N. glareosa*, *I. leucographa*, *C. asteris* and *lychnitis*, *E. venustula*, *S. sticticalis*, &c., &c.

This Society (now in the eighth year of its existence) still continues to progress, and numbers at the present time nearly forty Members. The Library is now well stocked with Entomological works, and the Cabinet contains a very fair collection.

Entomologists desirous of joining are requested to apply to the Secretary, 10, Brownlow Street, Queen's Road, Dalston.—C. J. Biggs, Secretary and Curator.

Entomological Society of London, 1*st January*, 1866. F. P. Pascoe, Esq., F.L.S., President, in the Chair.

H. Adams, Esq., of Hanover Terrace Villas, Notting Hill; Dr. E. Percival Wright, of Clare Street, Dublin; Capt. Julian Hobson, of Sattara, Bombay; and C. O. Rogers, Esq., of St. George's Terrace, Lower Clapton, were elected Members: and T. Blackburn, Esq., of Grassmead, Wandsworth, and W. P. Pryer, Esq., of Shanghae, were elected Subscribers.

Mr. Stevens exhibited four large cases of insects of all orders from the Himalayas. They were remarkable for their fine state of preservation, many of the *Lepidoptera* having been bred. Among them were *Buprestis Buquetii* and *Dynastes Hardwickii*.

Professor Westwood read some extracts from a letter received from M. Sneller von Vollenhoven. The latter remarked that *Macroglossa stellatarum* had been unusually abundant in Holland during the past autumn; *Chareas graminis* and *Heliophobus popularis* had appeared in immense numbers in certain districts, and proved very destructive. M. Van Vollenhoven also mentioned that a variety of the male of *Hepialus humuli*, with the coloration of the female, had recently been found.

Mr. Baker mentioned that he had just received a letter from Mr. E. Bartlett, who had proceeded up the river Ucalayi. He announced that a large collection of insects, &c., collected by Mr. Bartlett, was on its way to this country.

Mr. Hewitson communicated a paper on new species of *Hesperidæ*, belonging to the genus *Hesperia*.

The President read a catalogue of the species of Longicorn beetles collected by the late Mr. Bouchard at Santa Martha; there were fifty-three species, of which twenty were new.

ADDITIONS TO THE BRITISH FAUNA (*HEMIPTERA*).

BY J. W. DOUGLAS AND JOHN SCOTT.

The descriptions of the following species were to have been inserted in the Entomologist's Annual for this year, but owing to a plethora of matter they were excluded. We now, therefore, avail ourselves of the pages of the Entomologist's Monthly Magazine for their appearance.

GYMNOCERATA.

Section 5. — *LYGÆINA*.

Family 4.—CYMIDÆ.

Genus 2.—Ischnorhynchus, Fieb.

By a singular error in "The British Hemiptera," p. 233, the name and synonyms of *I. resedæ*, Panz., are followed by the description of *I. geminatus*, Fieber, and the description of the former species is omitted. To rectify this we supply the following description of

Ischnorhynchus resedæ.

Yellowish-red, inclining to brown; *head*, 2nd and 3rd joints of the *antennæ*, *scutellum*, and *legs*, red.

Head—red, sides next to and behind the eyes black, dull, distinctly punctured. *Antennæ*, 1st and 4th joints black, 2nd and 3rd light red, base and apex black, of the 2nd more broadly than of the 3rd; the base of the 4th is also sometimes red. *Eyes* pitchy-black. *Rostrum* black, 1st joint more or less piceous.

Thorax—*Pronotum* narrow and constricted to a collar in front, ochreous or red-brown, shining, with somewhat fine and close black punctures, the base of the collar or the whole of it, and sometimes the whole or the middle only of the posterior margin, black. *Scutellum* in the middle bright red with a few punctures, the basal depression and sometimes the sides black, with large deep punctures. *Elytra* shining, ochreous. *Clavus* with a pink line down the centre, on each side of which is a row of distinct dark punctures, and another row on the inner margin. *Corium* outwardly clear ochreous, inwardly with a reddish flush; behind the middle two contiguous narrow black spots, each on a nerve, posterior to them and extending to the posterior margin a triangular space is distinctly punctured brown or black; inner margin with a carmine line, posterior margin reddish, piceous or blackish, interrupted by a yellowish spot near the inner angle, a black one at the end of each of the two nerves, and one at the apex; sometimes by the junction of the black spots

the whole of the margin is black, except the yellowish spot before mentioned. *Membrane* yellowish-white, lustrous. *Sternum* black, its sides and the margin of the odoriferous orifices often yellowish. *Legs* red or red-brown; *thighs* at the sides and tibiæ at the apex, often with a piceous tinge; *tarsi*, 1st joint concolorous with the tibiæ, dusky at the apex, 2nd and 3rd black.

Abdomen—beneath, black, the posterior and genital segments more or less reddish, with fine longish, light coloured hairs.

Length 2 lines.

On alder trees, near Weybridge, in October (Dr. Power).

This species bears a great *primâ facie* resemblance to *I. geminatus*, but may be distinguished by its uniformly greater size, its darker colour, the absence of the rime-like white which often occurs on the head, pronotum, and scutellum of that species (a fact not mentioned in our description), and the different habitat.

It then remains to place the following before our description in "The British Hemiptera," p. 233:—

Species 2.—Ischnorhynchus geminatus.

Heterogaster geminatus (*Mus. Vien.*).

———————— vitreipennis (*Kunze*).

Ischnorhynchus geminatus, *Fieb.*, Europ. Hem. 200, 2 (1861).

The length should have been $1\frac{1}{2}$-$1\frac{3}{4}$ instead of 2 lines. This is the species figured pl. 8, fig. 7.

Section 9.—CAPSINA.

Div. 2.—Bicelluli.

Family 3.—MIRIDÆ.

Genus 2*a*.—Teratocoris, Fieb.

Elongate, narrow. *Elytra* slightly oval. Both sexes undeveloped, and without wings.

Head—large, vertical in front, viewed from above beyond the eyes triangular, the sides rounded; from the side almost a parallelogram, as long as the breadth, across the eyes, deflected to the base of the clypeus; a little before the posterior margin a deep transverse channel, and in the centre a longitudinal channel, its apex a little in front of the anterior margin of the eyes. *Clypeus* prominent, very convex, rounded at the apex, the antenniferous processes longish, almost in a line with the under-side of the eyes. *Face* vertical, central lobe short, stout, convex, side lobes short, some-

what triangular, rounded outwardly. *Antennæ* considerably longer than the body; 1st joint as long as the head and $\frac{2}{3}$ of the thorax, almost cylindrical, slightly thickened and bent before the middle, its entire length reaching beyond the face; 2nd slender, more than twice the length of the 1st; 3rd and 4th filiform, together longer than the 2nd; 4th $\frac{2}{3}$ the length of the 3rd. *Eyes* large, prominent, viewed from above oval, their outer margin projecting almost in a line with the hinder angles of the pronotum, from the side subglobose. *Rostrum* stoutish, reaching almost to the end of the mesosternum; 1st joint shorter than the head; 2nd and 3rd each longer than the 1st; 4th as long as the 1st.

Thorax—Pronotum longish, trapeziform, with a collar in front; nearly as long as the breadth on the posterior margin; anterior margin concave, angles acute; sides margined in front, slightly rounded for about $\frac{2}{3}$ their length, then widened out to the raised obtuse hinder angles; posterior margin slightly concave; disc with a large callosity extending from side to side, and occupying nearly the half of the length behind the collar, in its centre an inverted cordate depression, the hinder portion longitudinally flat, transversely flattish convex. *Scutellum* large, triangular, flattish, level with the clavus. *Elytra* horizontal, as long as the abdomen. *Clavus* without a flexible suture, flat as far as the nerve, then slightly deflected to the corium. *Corium* horizontal, flat above, sides between the 1st nerve and the anterior margin convex; 1st nerve slender, extending to the rounded apex, a little before which it is met by the stout posterior branch of a furcate nerve, having its base at the apex of the clavus, the inner branch also joins the 1st nerve diagonally and forms with the former a somewhat spherical triangular cell. *Membrane* represented by a narrow stem-like strip extending only along the posterior margin to the apex. *Legs* longish, thin; *thighs* somewhat cylindrical; *tarsi* long; 1st joint of the 3rd pair as long as the 2nd and half the 3rd; 3rd longer than the second.

Abdomen of almost equal width throughout, apex rounded.

Species—Teratocoris dorsalis.

Teratocoris dorsalis, *Fieb.*, Wiener Entomol. Monatschrift viii., 325 (1864); Ent. Ann. 1866, fig. 4.

Yellowish-white. *Elytra* with a longitudinal black-brown streak next the suture.

Head—Black; *crown* with a yellow spot adjoining each eye behind the transverse channel. *Antennæ* dusky-reddish, 1st joint pale yellowish, base narrowly black, apex red. *Eyes* red-brown. *Rostrum* yellow, tip black.

Thorax - *Pronotum* black; hinder angles somewhat yellowish; callosity sometimes brownish, shining, with 4 punctures in the inverted cordate depression, two close together, and one at each extremity; the posterior portion of the disc transversely wrinkled. *Scutellum* black. *Elytra* yellowish or greenish-white. *Clavus*, inner margin narrowly black, base on each side of the nerve narrowly reddish, apex as far as the scutellar angle black-brown, the colour continued more or less along the nerve. *Corium* with a broadish black-brown longitudinal streak next the suture, extending from the apex to the apex of the clavus, about $\frac{2}{3}$ the distance from the base it becomes contracted, and then branches out for a short distance towards the outer basal angle. *Membrane* black-brown. *Legs* pale yellowish-white; *thighs* at the apex, especially the 3rd pair, bright red; *tibiæ*, apex of the 1st and 2nd pairs narrowly brownish-yellow, 3rd sometimes red; *tarsi* yellowish, occasionally the 1st joint red; 3rd at the apex blackish. *Clavus* reddish.

Length $1\frac{1}{2}$-2 lines.

The markings on the elytra are variable, as will be seen by referring to fig. 4* on the plate of Ent. Ann. One or two specimens were taken by Dr. Power at Wicken Fen in June.

(*To be continued.*)

AN ESSAY TOWARDS A KNOWLEDGE OF BRITISH *HOMOPTERA*.

BY THE REV. T. A. MARSHALL, M.A.

(*Continued from page* 199.)

Gen. IASSUS, Fab.

A numerous and difficult group, offering a wide field for the researches of a monographer. Confining myself necessarily to those species which I have seen or captured, and ignoring those found only in catalogues, I shall here speak of three of its sub-divisions, upon the principles marked out by Burmeister, Flor, and Kirschbaum.

* Vertex acutangulus, pronoto plerumque longior.

[Subg. DELTOCEPHALUS, Burm.

** Vertex rotundatus vel obtusangulus, pronoto brevior.

† Hemelytra intus ad apicem limbo membranaceo nullo vel perexiguo aucta, sutura recta sese invicem tangentia; cum alis sæpissime abbreviata .....Subg. Athysanus, Burm.

†† Hemelytra intus ad apicem limbo membranaceo aucta, sese invicem complicantia; cum alis completa, abdomine longiora....Subg. Iassus, Fab.

Subg. I.—Deltocephalus, Burm.

The above sections are of a very flimsy and unsatisfactory character, and should be either multiplied or altogether suppressed. Species occur which combine the characters of two of them at once, and others appear hardly to suit any of the three. Ex. gr.; *Iassus attenuatus*, Germ., exhibits the vertex of *Deltocephalus*; the absence of a membranaceous appendage to the hemelytra refers it to *Athysanus*, and the lanceolate form and cellular structure of those organs are irreconcileable with any established section. This method of division, however, has been tolerated by others, and is, perhaps, sufficient for the limited purposes of the present writer. *Valeat quantum.* The *Deltocephali* are among the smallest of the group *Iassus*, and are generally found associated in large numbers, leaping actively, assisted by their wings, amongst grasses and low plants. Their markings and colours are very unstable, and render description difficult. I had well nigh abandoned as hopeless any attempt at a specific synopsis, but perhaps the following may be of some slight use, when applied to well-marked individuals.

1. Hemelytrorum cellulæ plus minus fusco-marginatæ, ocellatæ.
   a. Cellulæ fere omnes ocellatæ.
      * Vertex et pronotum transverse et late nigro quadrivittata ....*quadrivittatus*, n. sp.
      ** Vertex et pronotum haud nigro vittata.
         § Hemelytra truncata, apice lato...*ocellaris*, Fall.
         §§ Hemelytra apice subattenuata, rotundata.....*Argus*, n. sp.
   aa. Cellulæ tantum apicales (membranæ) ocellatæ .....*socialis*, Flor.
   aaa. Cellulæ tantum interiores ocellatæ, costa late immaculata.....*striatus*, Lin.
2. Hemelytra puncto unico interiore ante membranam nigro ....*punctum*, Flor.

3. Hemelytra maculis nigris circiter sex; nervorum anastomosibus cruciformibus, lacteis, costa lactea ..... *sabulicola*, Curt.
4. Testaceus, unicolor. Vertex maculis nigris, annularibus. Pedes omnes nigro-punctati ..... *coronifer*, n. sp.
5. Hemelytra viridia, immaculata.
   a. Costa viridis.
      b. Membrana apice infuscata ..... *abdominalis*, Fab.
      bb. Membrana non apice infuscata..... *vitripennis*, Flor.
   aa. Costa albicans .... *pascuellus*, Fall.
6. Vertex maculis 2 magnis rotundis, punctisque 4 parvis nigris..... *maculiceps*, Boh.
7. Cæruleo-niger, supra brunneus, fusco nebulosus. Pedes postici nigri, geniculis albis ..... *pulicaris*, Fall.

1.—*Iassus (D.) quadrivittatus*, n. sp.*

Niger, supra albidus, margaritaceus. Vertex acutus, sua inter oculos latitudine longior, longior pronoto; albus, macula apicis magna, antice emarginata, vittisque 2 transversis interocularibus latis, nigris. Vitta anterior medio interrupta. Ad angulos hujus vittæ anteriores striola utrinque nigra. Frons flavido-alba; linea apicis semicircularis verticem contingens, striolæ paucæ disci transversæ, et margines laterales tenuiter, nigri. Pronotum album, antice nigrum; vitta disci lata transversa, nusquam margines attingens, nigra. Scutellum nigrum, apice obscure pallido. Abdomen antice cæruleo-nigrum, postice fere cupreum, segmentis tenuissime albo-marginatis. Segmenta 3 apicalia margiuis postici medio latius flavescentia. Hemelytra nivea, splendida; corii margines pro parte, maculæque undecim oblongæ (sc. cellulæ) aureo-brunneæ, fusco marginatæ. Pedes pallidi; femora postica leviter infuscata; tibiæ posticæ linea interiore, maculis extus ad basin spinarum, apicibusque anguste, nigris; tarsi antici et intermedii apice ipso nigri; postici nigri, basi pallidi. ♀. Long $1\frac{1}{4}$; alar. exp. $2\frac{1}{4}$ lin.

Distinct from *ocellaris*, Fall., by the shape of the hemelytra, which are regularly rounded, not truncate, at the apex; by the different arrangement of the ocellated spots, by the proportions of the vertex, and a different facies. The pearly white upper surface contrasts strongly with the broad black transverse fasciæ, and in certain lights is brilliantly iridescent. I took a single specimen of this beautiful species in a wood near Leicester, in August, 1864. Nothing like it seems to have been described, nor have I seen a similar form in any collection.

* A figure of this species will appear in No. 23

2.—*Iassus* (*D.*) *ocellaris*, Fall.

Niger, supra testaceus, nitidus. Vertex, pronotum, scutellum, maculis flavo-rufis notata. Vertex longitudine suæ inter oculos latitudini æqualis, pronoto non brevior; apex lineolis 2 brevibus incurvis, maculisque 2 lateralibus ante oculos nigris notatus. Frons utrinque transverse pallido quadri-striata. Genarum pars superior, clypeique latera testacea. Pronotum longitrorsum inter maculas obscure albido quinque-lineatum. Hemelytra apice quam medio latiora, truncata; nervi late albidi; cellulæ testaceæ nigro marginatæ, unde maculæ fiunt magnæ, ocellatæ. Abdomen postice testaceum. Pedes testacei; femora præter apicem, tibiarum intermediarum linea inferior, tibiæ posticæ præter basin, tarsique postici, nigra. ♂ ♀.

Variat pictura tota plus minus obsoleta.

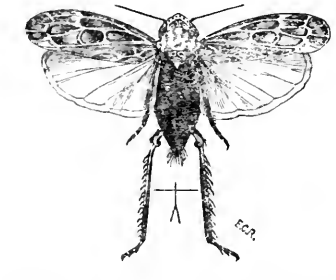
Long. $1\frac{1}{2}$-$1\frac{3}{4}$; alar. exp. $2\frac{3}{4}$ lin.

Cicada ocellaris, Fall., Hem., pt. 2, p. 33.
Iassus ocellaris, Flor, R. L., 2, p. 237.
Iassus ocellatus, Germ., Fn., 17, 18.
Cicada costalis, Fall., Hem., pt. 2, p. 32.
Cicada russeola, Fall., Hem., pt. 2, p. 34.

It is common amongst herbage and in grassy places throughout the kingdom.

3.—*Iassus* (*D.*) *Argus*, n. sp.

Præcedenti similis, minor. Cœruleo-niger, supra testaceus, nitidus. Vertex punctis utrinque 3 lateralibus nigris, nonnunquam etiam additis 2 inter oculos, basalibus; medio maculis 2 lineaque antice abbreviata, flavo-rufis: latitudine sua inter oculos et pronoto brevior. Frons testacea, striis utrinque nigris in spatiis 2 ovalibus clausis, quæ spatia linea nigra cingit undique. Pronotum obscure fulvo-maculatum. Hemelytra apice rotundata, leviter angustata; nervi albidi; cellulæ aliæ testaceæ, fusco-marginatæ, unde maculæ quædam fiunt ocellatæ; aliæ omnino infuscatæ, unde maculæ 3 apicales, 2 pone medium laterales apparent. Abdomen cœruleo-nigrum, segmentorum 3 apicalium margo posterior tenuissime testaceus. Pedes testacei; femora basi nigra, antica ante apicem maculis 2 nigris, postica macula intus ad apicem nigra; tibiæ omnes subtus nigro-lineatæ; tarsi antici et intermedii apice nigri; tarsi postici nigri, articuli omnes basi et apice testacei; ungues nigri. ♀.



Long. $1\frac{1}{2}$; alar. exp. $2\frac{3}{4}$ lin.

Aphrodes Puella, Curt., B. E., 633, No. 4 ? (insufficiently characterised.)

Four specimens were taken by me at Esher and near Surbiton, in September. Although at first sight very similar to *ocellaris*, they differ in the shortness of the vertex, in the markings, and, above all, in the form of the hemelytra, which are longer, with the anterior margin much more rounded, and the apex not truncated, but rounded and slightly attenuated.

(*To be continued.*)

ABSTRACT OF M. DE BARNEVILLE'S MONOGRAPH OF THE GENUS *ORCHESTES*, WITH REFERENCE TO THE BRITISH SPECIES.

BY E. C. RYE.

M. Henri Brisout de Barneville having published a monograph of the European and Algerian species of *Orchestes* in the last issue of the "Annales" of the French Entomological Society (4me série, 5th vol., p. 253), I take the earliest opportunity of laying an epitome of his remarks before our Coleopterists; especially since M. de Barneville includes in his list as British certain species not generally recognized as such in this country. It will be observed, also, that this author does not consider the difference between a six- and a seven-jointed funiculus to the antennæ to afford a sufficient generic distinction; an opinion which seems to be becoming prevalent, as *Miccotrogus*, *Lyprus*, &c., have been recently debased into sub-genera. This is a great contrast to the views that separated *Ceuthorhynchideus* so far from *Ceuthorhynchus*.

M. de Barneville divides the species as follows:

1st division.—*Funiculus of the antennæ six-jointed (the true* Orchestes).

1st sub-division.—*Hinder femora denticulated and angulated in the middle, with the hinder tibiæ arched.*

A.—*The entire insect either reddish-testaceous, reddish-ferruginous, or blood-red.*

a.—*Body provided with black or dark hairs, slightly erect on the thorax, and elevated on the elytra.*

O. quercûs, Linn.

O. hirtellus, Miller (Greece).

O. rufus, Oliv. This species is included in the British lists of Walton and Waterhouse, on the authority of a specimen in the British Museum; but "appears to be wanting in Sweden and England"

according to M. de Barneville. It is less bulky, narrower, and more convex than *O. quercûs*, with the elytra strongly punctate-striate (the punctuations being rather distant) and always entirely blood-red in colour. It seems to be not uncommon near Paris; being found on oak, elm, &c.

b.—*Body hairless.*

O. scutellaris, Fab.

B.—*Insect with a black head; the rostrum, also, being either entirely or partially of that colour.*

O. alni, Linn.

O. mutabilis, Schön. (Siberia).

O. ferrugineus, Marsh. (*melanocephalus*, Oliv.). M. de Barneville gives the following distinctive characters for this insect as compared with *alni*, to which it is sometimes referred by beginners as a variety, on account of its resemblance in form and colour. The apex of the rostrum is more or less testaceous, the light colour seldom extending further upwards than the middle, and the rostrum being sometimes almost entirely black. The elytra are unspotted. The three apical segments of the abdomen beneath are more widely bordered with reddish-testaceous, the entire segments being sometimes entirely of that colour. The legs are testaceous or reddish-testaceous, with the knees and base of the femora more or less black.

C.—*Rostrum, head and thorax entirely black.*

O. semirufus, Gyll. "Très-rare, Suède, Angleterre.—(Coll. Chevrolat). —Allemagne." It is not easy to decide from this notice whether M. Chevrolat's specimens are from Sweden or England. In the absence of a distinct understanding upon this point we must fall back upon M. de Barneville's synonymy as affording a possible clue to the reference of this species to our country.

M. de Barneville refers, after Gyllenhal, to Stephen's Brit. Ent. and Man.; but Mr. Walton has long ago (Cat. Brit. Rhynch., B.M.) shown that the *semirufus* of Stephen's Coll. is nothing but a var. of *quercûs*. Stephens, of course, *more suo*, transcribed the right description from its author, and represented it by the nearest approach to it that he could find. Besides the type form, M. de Barneville supposes (but with doubt) a var. of this species to be the *nigricollis* of Marsham and Stephens; but Mr. Walton has also shown that the latter insect is nothing but *melanocephalus*, Oliv.

Supposing M. Chevrolat's insects cannot with certainty be proved British, there are no grounds for considering *semirufus* indigenous to this country; and the error (if it be one) will be the more surprising, as Mr. Waterhouse has in his Catalogue reiterated the Waltonian corrections.

O. semirufus appears to resemble *scutellaris*, but with the head, rostrum and thorax black (the latter being less rounded at the sides) and the femora obsoletely toothed.

D.—*Insect entirely black.*

c.—*Body covered with more or less long black hairs, rather erect on the thorax, and elevated on the elytra.*

O. ilicis, Fab.

O. irroratus, Kies. (meridional Europe).

O. sparsus, Schön. (meridional Europe).

O. subfasciatus, Schön. (Crimea, &c.).

d.—*Body hairless.*

1.—*Elytra uniform.*

1a.—*Scutellar lobe of the thorax not produced.*

O. fagi, Linn.

O. pubescens, Steven. Attributed to England, but with no specific note of locality. In the synonymy are references to Stephens' Man. and Brit. Ent.; in the latter under the synonym of *pilosus*. Both the *pubescens* and *pilosus* of Stephens have been shown by Mr. Walton (loc. cit.) to be nothing but *O. ilicis;* and the case is, as regards Stephens, in all probability in the same category as *O. semirufus* above mentioned.

O. pubescens appears to resemble *fagi*, but with stronger and coarser pubescence, the scutellum and sides of breast white, and the elytra more deeply punctate-striate, and not so dilated behind the middle. It resembles *ilicis* in form.

1b.—*Scutellar lobe slightly produced.*

O. pratensis, Germ.

O. ramphoides, du Val (meridional Europe, Algiers).

O. flavidus, Brisout (Algiers).

2.—*Elytra banded.*

O. erythropus, Germ. (Germany and France). Found on oak. Like *avellanæ*, but with entirely ferruginous legs, denticulated femora, &c.

O. tricolor, Kies. (meridional Europe).

2nd sub-division.—*Hinder femora rounded in the middle, unarmed; the hinder tibiæ but little arched, almost straight.*

O. loniceræ, Herbst.

1.—*Elytra uniform, black.*

O. populi, Fab. M. de Barneville's expression "toute l'Europe," and his reference to Stephens' Brit. Ent. and Man., must, I presume, signify his opinion that this is a British species. According to Mr. Walton, Stephens' *populi* is *Tachyerges stigma*. The true *populi*, found abroad on poplar and osiers, is oblong-ovate, rather narrow, black, sparingly and very delicately clothed with ashy pubescence, the posterior femora un-toothed, very slightly thickened, and banded with black.

O. cinereus, Schön. (meridional Europe).

2.—*Elytra variegated.*

O. rusci, Herbst.

O. avellanæ, Donov.

2nd division.—*Funiculus of the antennæ seven-jointed* (Tachyerges). *Femora and posterior tibiæ as in the 2nd sub-division.*

1.—*Elytra black, uniform.*

O. stigma, Germ.

O. saliceti, Fab.

2.—*Elytra variegated.*

O. decoratus, Germ. M. de Barneville does not expressly state this to be a British species, but again quotes Stephens' Brit. Ent. and Man. for the type; and also refers the *affinis* of that author to an immaculate form of it. Mr. Walton, as before, has shown that both the *decoratus* and *affinis* of Stephens are *O. rusci*.

O. salicis, Linn.

O. rufitarsis, Germ. (Sweden, Germany, and France). Nearly allied to *O. salicis*, but considerably larger, with clear reddish-testaceous tarsi, rather broader thorax, and the front band of the elytra stronger, and more dilated in the middle.

DESCRIPTION OF A NEW SPECIES OF *JUNONIA* IN THE NATIONAL COLLECTION.

BY A. G. BUTLER, F.Z.S.

JUNONIA IXIA, n. sp.

Upper-side white, base and front margins dull ferruginous; outer margins with two sub-marginal brown lines. *Fore-wings*—two short

dull orange bands margined with black, one crossing the middle, the other the end of the cell; a brown lunulated band beyond the cell, extending obliquely outwards from the sub-costal nervure to the first median nervule, and thence vertically downwards to the sub-median nervure; an indistinct brown wedge-shaped patch near the apex, its base resting on the costa; apex brown; outer margin dull ferruginous; a row of seven brown spots between the nervures near the outer margin, the third and sixth large.

Hind-wings—outer margin dull orange; four ocelli near the outer margin, black pupillated with violet and encircled with orange, two near the apex enclosed in a brown blotch, the lower six times the size of the upper one, a small one between the first and second median, and a large one between the second and third median branches; inner margin brownish ochreous.

Body—brown, head and pro-thorax dull ferruginous, antennæ black tipped with orange.

Under-side white, hind-margins and nervures orange ochreous. *Fore-wings*—base and front margin pale orange; cell crossed by two white bands margined with brown; a similar band near the base, between the third median branch and the sub-median nervure; central band indistinct; sub-marginal spots well defined, the sixth and seventh large, the sixth with a violet pupil; sub-marginal bands indistinct, the inner one converted into brown lunules near the anal angle.

Hind-wings—basal half irregularly irrorated with ochreous scales; a short wavy brown line near the base, extending from the costa to the sub-costal nervure; a short brown line below the cell, at the base of the third median nervule, a very irregular large ochreous marking margined with brown within the cell; an ochreous wavy central line beyond the cell, extending from the costa to the anal angle; a row of five spots, the first, second, and fifth indistinctly ocellate near the hind-margin; two sub-marginal brown lines, the inner one lunulate, interrupted at the nervures.

Body—orange ochreous, antennæ with a black band near the tip.

Expanse of wings, 2 inches.

Hab.: W. Africa.

This species bears a general resemblance to *Anartia Iatrophe*, Linn. (S. America). I can find no insects in the genus *Junonia* to which it is closely allied, perhaps the nearest approach to it is *J. Imomedia*, Godt. (Asia), but it is very distinct even from this.

Zoological Department, British Museum.

Descriptions of four new British species of Halticidæ.—I see by the *Wiener ent. Monatschrift*, vol. 8 (1864), that among the British species of *Halticidæ* forwarded by my father to Herr Kutschera for inspection, are four species new to science. One of these is the "*Psylliodes*, spe. 6," of my father's catalogue, a species discovered by Mr. Wollaston in Lundy Island, and which is pretty well known to English Coleopterists. To this Herr Kutschera gives the name *P. luridipennis* (p. 393 of the Monatschrift). The other three species belong to the genus *Thyamis* (*Longitarsus*), and are named *L. fusculus*, *L. Waterhousei*, and *L. gracilis*. They are characterized as follows (*Monatschrift*, pp. 273-5) :—

1. *Thyamis* (*Longitarsus*) *fusculus*, Kutsch. "Oblongo-ovatus, sub-convexus, nitidus; fuscus aut fusco-piceus, elytrorum humeris, margine apiceque, antennarum basi et pedibus pallidioribus : thorace transverso, tenuissime granuloso et minutissime punctulato; elytris humeris vix prominulis, apice singulatim obtuse rotundatis distincte dense ac confuse ruguloso-punctulatis. Apterus—Long. $\frac{2}{3}$—$\frac{3}{4}$'''."

♂. Abdominis segmentum ultimum foveola rotundata et profunda ornatum et leviter 2-sinuatum.—Tarsorum anteriorum articulus 1. modice dilatatus."

Differs from *T. brunneus* and *minusculus* in being less convex, and more thickly punctured in the elytra.

2. *T. Waterhousei*, Kutsch. "Ovatus, convexus, nitidus; capite ferrugineo, vertice obscuriore, labro nigro-piceo; thorace rufo-ferrugineo, elytris, antennarum basi pedibusque testaceis; abdomine nigro, segmento ultimo pygidioque ferrugineis; fronte encarpis distinctis; thorace transverso ruguloso-punctulato; elytris ovatis, humeris prominulis, apice vix conjunctim rotundatis, fortius confuse seriatimve punctatis. Tibiarum posticarum spinula apicali longa. Apterus—Long. 1'''."

This species is compared with *T. ballotæ* and *lycopi*; and distinguished from the former by its more glossy surface and reddish colouring; and from *lycopi* by its larger size, greater convexity and breadth, and by its coarser, and, on the elytra, very indistinctly striate punctuation.

3. *T. gracilis*, Kutsch. "Oblongo-ovatus, depressiusculus, nitidus; albido-testaceus, capite pectore abdomineque pallide ferrugineis; ore piceo; antennis extrorsum et tarsorum articulis ultimis cum unguiculis fuscescentibus : fronte encarpis subdistinctis; thorace transverso latiusculo lævi aut vix punctulato; elytris ovatis pellucidis, humeris modice prominulis, apice subsingulatim rotundatis, minutissime et obsolete confuse punctulatis. Tibiarum posticarum spinula apicali brevi. Alatus—Long: $\frac{3}{4}$—$\frac{4}{5}$'''."

"♂. Abdominis segmentum ultimum linea longitudinali tenui ornatum, apice bisinuatum."

Extremely like a small *T. ochroleucus*, in which the blackish colouring of the apical half of the hind tibiæ is wanting. The thorax is broader than in *ochroleucus*, more than half broader than long, at the sides gently rounded, and with a gentle projection behind the anterior angles. The insect is common at Mickleham, and elsewhere, on *Senicio Jacobæa*.

4. *Psylliodes luridipennis*, Kutsch. Oblong-ovate, of the size and build of *P. hyoscyami*, but not so broad; head and thorax brassy green. Elytra reddish-brown, shining, with brassy green legs, and testaceous antennæ; the hind femora brassy, pale at the base. Its smaller size, brassy colouring, and more finely and closely punctate-striate elytra will serve to distinguish it from *P. chrysocephala*.

When the collection forwarded to Herr Kutschera is returned, an account of that author's views relating to our species will be forwarded to the "Entomologist's Month. Mag."—Chas. O. Waterhouse, British Museum, *February 12th*, 1866.

Occurrence of Bœocrara littoralis, a species new to Britain.—I have detected among some beetles, which I captured at Rannoch, a species of *Trichopteryx* which I believe has not yet been recorded as British, viz., *Bœocrara littoralis* of Thomson. It has all the facies of a *Trichopteryx*; but, when closely examined, it is found that the sides of the thorax are thickly margined, and the posterior angles not acute and produced behind, but right angles; while the punctuation of the upper surface is far coarser and more distant than in any other species with which I am acquainted of the genus.

On these characters Thomson has founded the new genus *Bœocrara*; but it is, I think, doubtful whether this will stand unless other characters are found; indeed De Marseul in his catalogue places it as a mere sub-division of *Trichopteryx*, while Schaum, accepting the species, sinks the genus altogether; if, however, this course be adopted, the trivial name *littoralis* must, I fear, be changed, a *Trichopteryx littoralis* (really, however, a *Ptenidium*, as evident from the figure given) having been described by Motschulsky in the Mosc. bull., Vol. 18, p. 517, for 1845. In accordance with the time-honoured custom, in such a case *Thomsoni* should be adopted as the name for the insect now recorded.—D. Sharp, 12, St. Vincent-st., Edinburgh.

Apion ononidis.—The question of the lawful name of this insect having been raised, and, by reason of the editorial comment appended to my last notice, left (I beg leave to think) in a most unsatisfactory state, it is evidently desirable that we should settle the matter at once, and not wait until the species takes its place in our various catalogues under different appellations. Notwithstanding the priority of the name *ononidis*, Mr. Rye suggests two reasons for adopting that of *Bohemani*, the first of which amounts to this, that Gyllenhal's description is applicable to both sexes; Boheman's to the ♂ only, and is therefore to be preferred! Thomson's insertion of the word *mas* after his reference to Boheman's description meaning simply (as everyone acquainted with entomological literature must of course recognise) that the said description was that of a male specimen. Moreover, though Gyllenhal has not noticed *all* the differences of the sexes, he *has* noticed one of the most important ("*rostrum.....maris paulo brevius*"); and, granting that the older of the two descriptions is not a perfect one, surely the more recent one by which it is to be supplanted should be a better; whereas the fact really is that while Gyllenhal's description is slightly imperfect, Boheman's is altogether erroneous, for he has made a most curious blunder about the insect: it is this,—giving a revised list of the species of the genus *Apion*, he enumerates "94 ♂ ♀ *A. ononidis*, Gyllenh.," and then as No. 95 immediately proceeds to describe the ♂ as another and new species!! But this is not all; there seems to me to be some doubt whether *Bohemani* really is synonymous *at all* with *ononidis;* for not one of all the distinguished entomologists who have studied Boheman's description has ever recognised that it is to be applied to the well-known *A. ononidis*. In the Stettin

catalogue, Boheman's opinion is adopted, and *A. ononidis*, Gyl., and *Bohemani*, Boh., are placed in juxta-position as distinct species. Schaum followed the same course in both editions of his catalogue; and Wencker, the most recent monographer of the genus, has thought Boheman's description most applicable to the well-known *A. flavipes* (not *paripes*, as erroneously printed in my last communication); and Thomson himself has only recognised that the two supposed species are identical by an inspection of Boheman's type; indeed, if any one who possseses *Apion ononidis* will examine it, he will find that there is an important discrepancy between it and Boheman's description. The second reason suggested by Mr. Rye for the suppression of Gyllenhal's name is that it too closely resembles a previously existing (but ungrammatical) one in the same genus, viz., *ononis* of Kirby. Now I cannot for a moment entertain the opinion that this is of itself a sufficient reason for dropping a name universally adopted and substituting for it one more recent, and, as shown above, in other respects very objectionable. Gyllenhal, Boheman, Schönherr, Schaum, De Marseul, Grenier, and others have not thought that the names *Apion ononis* and *ononidis* too closely resemble one another to co-exist in the same genus; why, then, should Mr. Rye? To recollect the fact that *Apion ononis* and *ononidis* are two distinct names and represent different species seems to me not one whit more difficult than to associate in one's mind the names *Stenus biguttatus*, *bipunctatus*, *bimaculatus*, *binotatus*, and *bifoveolatus* with the species to which they are applied. Moreover, what does Mr. Rye propose to do with the universally adopted *Rhynchites betulæ* and *betuleti*, *Cicindela sylvicola* and *sylvatica*, &c., &c.? Besides, if the name *ononidis* were dropped, we should no doubt have some grammatical purist stepping forward to point out that the designation *ononis* is absurd; and that evidently *ononidis* must be substituted for it; indeed, that probably Kirby meant to have written, or did write, *ononidis*; and thus would arise another source of confusion for future students. We ought always to bear in mind, when suggesting or adopting a change of nomenclature, that the object we have in view is, not to display our own learning, research, and contempt for ignorance, but to promote simplicity and prevent confusion; unless, then, it is quite evident that a change *will* further these objects, we shall do far better to leave matters *in statu quo*.—*Id.*

[There is now sufficient evidence to enable our readers to form their own opinions. The inference that Gyllenhal's description applies to both sexes, whilst Boheman's only fits the male, may be logically correct, but does not do away with the fact that the former does not mention the important male character; and, if continental authors be right in suppressing the *Homalota vicina* of Kirby on account of a similar omission, the same measure should be meted to all. Personally, I do not think such an omission *alone* sufficient to annul priority; but, in the present case, the proposed change is strengthened by the confusion of the mere names *ononis* and *ononidis*, which are intended for the genitive of the *same word* (there being, indeed, some Latinized Greek words wherein the genitive is simple,—instead of compound, as in the present case). I must, however, remark that *I* have proposed nothing in the matter; and I protest against *my* name being selected as objecting to the co-existence of these names, whilst the authors above mentioned have been content with them: it was Thomson, and not I, who proposed the change. I fail to perceive how the specific compounds of *bi* in *Stenus* have any

bearing upon the point at issue ; differing as they do alike in derivation, sound, and meaning. Neither are the other instances of similarity above given at all in the same category as the present names : *betulæ* and *betuleti* may be inconveniently close ; but their nominatives bear the same relationship to each other as *rosa* and *rosetum*, I presume ; and they are not, at all events, parts of, or intended to be parts of, the same word.

Mr. Sharp's concluding paragraph (apart from its undoubted moral value) is not pertinent to the matter, even as an expression of opinion, if not intended to apply either to Thomson for originating, or to myself for adopting, an attempt to simplify ; and, if it be intended so to apply, I think that no one should suggest any but the best motives for such a proposed change.—E. C. R.]

Observations on Otiorhynchus fuscipes of Olivier, &c.—The observations on *Otiorhynchus fuscipes* and *O. tenebricosus*, by Mr. Rye, at page 181, and his expressed hope that they might induce entomologists to examine their specimens, have so influenced myself ; and the process has brought back to my mind the most important points of a lengthened examination of specimens, and also of a most interesting conversation with Mr. Walton at the time, when he finally determined the distinctive specific difference between *Otiorhynchus fuscipes* and *O. tenebricosus*. I think it may not prove unprofitable if I publish the results of my recent investigation.

In the first place, let me acknowledge my perfect concurrence in Mr. Rye's opinion, that the *O. fuscipes* of Walton is certainly not that so named by Dr. Stierlin.

Secondly, after a most careful re-examination of a series of examples of *O. fuscipes*, and also of *O. tenebricosus*, given to me by Mr. Walton, I cannot agree with Mr. Rye in considering the former insect a mere variety of the latter.

Having arrived at this opinion, the question naturally arises, what is the insect named *O. fuscipes* by Mr. Walton ? In my opinion it has not been proved that it is not the true *O. fuscipes* of Olivier ; it has only been decided that it is not the species so named by Stierlin. Mr. Walton took the greatest possible pains to decide this question ; in the first place, he carefully compared it by a reference to Olivier's description, and he found the elytra described by that author "*elytris* ovato-oblongis crenato striatis"—"elytra vix striata." This is a true diagnosis of Mr. Walton's insect, but not of Stierlin's. The true diagnosis of the latter would be *Elytris profundius striatis, interstitiis fortius rugulosis.* In order to ascertain whether the insect described by Schönherr under the name of *O. fuscipes* was identical with his own, Mr. Walton forwarded a series of specimens to that entomologist, who at once pronounced them to be so ; Schönherr undoubtedly considered his insect identical with Olivier's ; such, then, was the opinion of two of the most eminent Curculionidists, if I may use the term.

That Mr. Walton most carefully compared both sexes of the species, in every particular, all who are acquainted with him will feel quite satisfied ; and that he left no stone unturned so long as there appeared to be the slightest chance of finding any additional information. To those who had not the good fortune of his

acquaintance, it were vain to attempt to convey any approach to a correct idea of the enthusiastic zeal and untiring energy with which Mr. Walton investigated the family *Curculionidæ*.

It is true that in the notes upon *O. fuscipes* Mr. Walton does not mention the difference in the striation of the ventral apical segment of the abdomen in the males of the two species; but in his remarks upon *O. tenebricosus* he mentions that character as one appertaining to males only; the striking difference in the form of the joints of the antennæ appeared to him to present at once the strongest possible characteristic distinction: the sculpture of the elytra he only regarded as one of secondary importance. His own words are, "*O. fuscipes* is a shorter insect, and very generally smaller and less pubescent; but it chiefly differs by having the antennæ in both sexes, with all the articulations, shorter and stouter; the elytra of the female evidently shorter in proportion to the breadth, and more or less distinctly punctate-striate." This, then, is a description of the most obvious differences between his *O. fuscipes* and his *O. tenebricosus*; we may add, that the ventral apical segment of the abdomen of the male of the latter is more coarsely striated than in the former.

The conclusion, therefore, at which I arrive is, that, in all probability, Mr. Walton's *O. fuscipes* is identical with that of Olivier, and also with the insect so named by Schönherr; and lastly, that it is a distinct species from that named *O. tenebricosus* by Mr. Walton. Stierlin has quoted the *O. ater* of Stephens as being synonymous with his *O. fuscipes*. This is an error; the *O. ater* is a small specimen of *O. atroapterus*.—Fredk. Smith, British Museum, *Feb.*, 1866.

[I regret that I cannot share Mr. Smith's opinion as to the probable identity of Olivier's and Walton's *O. fuscipes*. That gentleman's observations, nevertheless, demand the greatest consideration, as coming from one who of all living entomologists is perhaps best able to elucidate the late Mr. Walton's notions with regard to these species of *Otiorhynchus*; since it is to him that we are indebted for the plate accompanying that author's notes above mentioned. Mr. Walton's reputation for careful scrutiny and accurate observation stands too high to need any apology from me for doubting the correctness of one of his recorded species; but, in the present case, there is only a trifling responsibility attached to him, as (p. 93, loc. cit.) he says, "I have applied the name '*fuscipes of Oliv.*' to this insect on the authority of Schönherr, having sent specimens for his examination;" so that in bringing forward the insect he simply records the verdict of the latter, which, in my opinion, is counterbalanced by his following remark, "I forwarded many specimens (♂ ♀) as *Ot. fuscipes* of Oliv. and Schönh. to Germar, who referred them to *Ot. tenebricosus* as varieties." Independently of this initial discrepancy, and without laying undue stress upon the rather numerous instances of carelessness (in the shape of re-descriptions, &c.) exhibited by Schönherr in his Syn. Ins., I incline to the idea that Stierlin, who was engaged upon a monograph of one genus, and had the benefit of his predecessor's work, is more likely to be correct in his determination of Olivier's insect than was Schönherr, who described the whole *Curculionidæ*.

Apart from this: Mr. Smith states that, from Olivier's description, the elytra in *O. fuscipes* are both '*crenato-striata*' and '*vix striata*' (the apparent incongruity being intended, I presume, to refer to the extreme forms of the species), and that

this is a true diagnosis of Walton's insect, but not of Stierlin's, in which they would be "*profundius striatis*," &c. This, however, is scarcely correct; for Stierlin's type of *fuscipes* has the elytra crenate-striate; his 1st var. has the deeper striation, &c., mentioned by Mr. Smith; and his 2nd var. (*fagi*, Chevr.) has the elytra '*vix striata*,' and '*confertim ruguloso-tuberculata*.' Stierlin's insect would seem, therefore, not to differ from Olivier's.

I must admit I have never seen any examples of the so-called *fuscipes*, such as Mr. Smith appears to possess, exhibiting specific distinctions from *tenebricosus*; and the antennal differences, &c., must be very minute; for, unless I am much mistaken, Mr. Smith himself told me some time ago that it took him an entire day to draw the simple figures above alluded to, on account of the difficulty he experienced in deciding upon their characters; that Mr. Walton in a measure compelled him to see the differences; and that he had since been unable to consider the two species as satisfactorily settled.

I must attach more importance than Mr. Smith does to the omission of any notice of the male character by Walton in describing *O. fuscipes*, as it seems that he had expressly remarked it in *O. tenebricosus*; and, being quite aware of the extremely close alliance of the insects he sought to separate, would assuredly have recorded any difference in this respect,—had there been any, as there should have been, if his insect were the true *fuscipes*.

Lastly, it seems that *O. fuscipes* is found only in mountainous regions (except, perhaps, the var. *fagi*, with which, from his description, it is impossible that *all* Mr. Walton's specimens should be identical, if, indeed, he had that form at all, which I doubt); whilst Mr. Walton states that it is commonly found *in company with O. tenebricosus*, and in the same localities, viz., hedges in Surrey and other southern counties, though he once found it in the Isle of Portland unaccompanied by that species.

The conclusion, therefore, to which I adhere is that Stierlin is most likely correct in his determination; and, consequently, that Mr. Walton's insect is not the *fuscipes* of Olivier; also that Mr. Smith's specimens are possibly distinct from *O. tenebricosus*; though, if they be (as is most likely) identical with those sent by Walton to Germar, they are probably only varieties of that species.—E. C. R.]

Haploglossa pulla taken near Newcastle-on-Tyne.—When beating for insects in the woods at Gibside, on the 25th of August, I was much gratified by capturing four specimens of *Haploglossa pulla*, Gyll. The beetle appeared to frequent the flowers of the heather, but for what purpose I could not learn. Gyllenhal says that its habitat is in fungi.—Thos. Jno. Bold, Long Benton, *January 27th*, 1866.

Myrmica lobicornis in Durham and Northumberland.—This very rare ant has this year turned up in our district. It appears to be a littoral species; living in small communities beneath stones on sand-banks. I found one female and two workers at South Shields in April. Eight others, also workers, were met with near Whitley in August, and I have one worker from Blyth. I was not lucky enough to find males; but, as the insect seems widely spread, I hope to be more fortunate this year.—*Id.*

Correction of Errors: Delphax pellucidus.—By some oversight, the above name has appeared in my notes on *Delphax*, at page 207, instead of *limbatus*. The first mentioned (*pellucidus*) occurs here, but not commonly. On the same page, line 14 from bottom, for *Scolopostelpus* read *Scolopostethus.*—*Id.*

Autumnal captures near Wandsworth.—I send you notes of a few of my captures here with my brother, Mr. T. Blackburn, in the autumn. In my own sitting-room I took a specimen of *A. ophiogramma* about ten o'clock in the evening. This made me examine the lamps in my neighbourhood, and I met with *C. fluviata*, *C. xerampelina*, *E. tiliaria* and *angularia* (the latter very seldom at light), *A. ornata*, *X. flavago* and *cerago*, *C. cytherea*, *C. diffinis*, *E. porata*, with, of course, hosts of commoner species. *Anchocelis rufina*, *pistacina*, *lunosa*, and *litura* occurred in great numbers, *lunosa* being the most abundant. With them were *Orthosia lota* and *macilenta*. *Xanthia citrago*, which I never took at light, occurred at rest during the day.

I got great numbers of *A. aceris* larvæ from horse-chestnut trees near Tooting, besides *S. tiliæ* and *populi*, the former of which is not uncommon here. *A. Atropos* made an appearance in the larvæ state; and not far from its quarters, *C. ligniperda*.

I had a little pupa-digging, but found it very unprofitable. Out of every twenty pupæ *S. populi* and *tiliæ* and *P. bucephala* are pretty sure to make a total of ten.

My friend Mr. B. F. Brodie took a lovely imago of *A. Atropos* at Swanage, which he gave to me. Another reached me from the kind hands of a lady in Wales, who, not lacking resource, *sewed* the wings to the bottom of the box to ensure a safe journey.—J. B. Blackburn, Grassmeade, Wandsworth, S.W.

Worcestershire captures and species bred in 1865 (*arranged chronologically*) *with notes.*—(*Concluded from page* 214).—May 28th to 30th.—*G. papilionaria*; fifteen larvæ by beating. They were all ichneumoned but one, which produced a good specimen. I always find that nine out of ten are ichneumoned; it is strange that this species should be so much attacked. I have watched the ichneumon grubs work their way out, and have often dragged some of them forth *nolens volens*. There is a small thread-like membrane attached to the grubs when forced out in this unceremonious manner, and the larvæ die much sooner than when left for the grubs to take their natural course. I once saw a larva eat a little after this, and have frequently seen them drink two or three drops of water with which I supplied them.

22nd.—*A. sylvata* bred.

25th to 30th.—Several *T. cratægi* larvæ upon hawthorn, blackthorn, birch, and oak; they varied greatly. *T. quercus* larvæ beaten off oak; they are seldom found upon the lower branches. *P. lacertula*, *E. pendularia*, and *M. euphorbiata* by beating. *M. artemis*; two good varieties. *S. apiformis*; a fine series bred. *H. genistæ* at rest. *A. Selene*; a good variety.

28th.—*C. furcula*; one bred. *C. Elpenor* bred. *N. cristulalis*; one at rest on an apple-tree. *T. extersaria* by beating.

June 7th.—*N. viridata*; two, worn. This species has become rare in its only known locality in this county; they become faded and soiled in a single sunny day. *M. artemis*; I watched a female of this species depositing eggs upon leaves of

Scabiosa succisa. *R. arcuana* by beating. *C. porcellus*; one fine female just emerged upon a patch of *Galium verum*. I took out of this moth 135 oval rich green eggs, perfectly mature; this is apparently the full number usually laid by this species.

10th.—*S. carpini* larvæ. *C. umbratica*; this species has been scarce here during the past few years.

19th.—*P. bajularia*, *S. undularia*, *A. prunaria*, *C. mesomella*, *C. bistriga*, and *A. luteata* by beating. *A. cinicana* in a damp grassy place in a wood. *C. vibicella*; I have taken a number of the larvæ of this species to a place eleven miles distant from its locality, to endeavour to induce them to form a new colony.

July 5th.—*P. lacertula*; second brood emerging. Two days afterwards some were depositing eggs, and several of these eggs hatched in eight days.

21st.—*D. cucubali* at rest.

24th.—*P. Phlæas*; a pale fawn-coloured variety.

1st to 20th.—*E. apiciaria*.

25th.—*L. cinerana* (Wilkinson).

August 4th.—*C. viminalis* at rest. *C. diffinis* and *C. affinis* bred.

22nd to 31st.—*T. cratægi*, *C. xerampelina* (a fine series), *C. psittacata*, *E. tiliaria* (1 ♀), and *A. ravida* (1) bred. *L. literana*.

Sept.—*V. C-album*; many taken on the ripe plums and pears in my garden.

8th.—*P. flavocincta* at rest on a wall. *C. Edusa*; visiting the scarlet geraniums in the flower-garden. One female is a good variety, almost without spots; it was very fresh, and the wings so limp that it could scarcely fly. *G. rhamni*, *V. cardui*, *V. Atalanta*, and *M. stellatarum* were busy amongst the scarlet geraniums.

14th.—*S. ferrugalis* at sugar.

15th.—*X. semibrunnea*; one bred from a pupa found upon a slope with a ditch at the bottom. A season or two since I caught one in my hat, having disturbed it on a slope near a brook-side; and at another time I captured one at sugar upon a slope at the bottom of which was a stream of water. It would appear from this that the food-plant grows in such situations.

6th to 16th.—*C. nupta* at sugar. *C. miata* at sugar; and also others that had flown into a shed to hybernate.

16th.—*A saucia*; one male very fine; the only specimen that I have heard of as being taken in this county.

26th.—*P. ophthalmicana*; several beaten from poplars. *A. Atropos*; I engaged two men to look for larvæ and pupæ. They brought me twenty-eight; the first larva arrived on the 24th July, full-fed; the others I received at various periods; the last pupa at the end of September. From these I bred nineteen moths, four or five of which are not to be surpassed for size and colour. In the season of 1858 they were much more abundant; I then obtained upwards of one hundred larvæ and pupæ.

October 7th was the last day upon which *M. stellatarum* *V. Atalanta*, and *V. C-album* were observed in my garden.—Abraham Edmunds, Cemetery House, Ashwood Road, Worcester. *November 9th*, 1865.

Remarks on the larvæ of Acidalia subsericeata.—Eggs of this species received on the 19th of June, through Dr. Knaggs, from Mr. Barrett, of Haslemere, hatched June 23rd; the larvæ, with three exceptions, fed up quickly on *Polygonum aviculare*,

and were full-fed by July 25th, spinning slight webs at the top of the cage where the glass meeting the gauze forms an angle, and they soon afterwards changed to pupæ.

The larvæ agree perfectly with the Rev. H. Harpur-Crewe's description, and the distinctive marks wherein they differ from those of *mancuniata*, as pointed out by Mr. Buckler at page 189 of this magazine, are very conspicuous; for the lateral expansion increases from the head to the 9th segment, where it terminates abruptly, this latter segment being marked at its outer parts on either side very distinctly with the pale patch alluded to by Messrs. Buckler and Crewe, giving a peculiarly striking character.

The moths emerged in the second week of August, and though of small size, the ordinary characteristics of *subsericeata* (as contrasted with *mancuniata*) were particularly strongly marked.

Of the three exceptions alluded to above, one larva made its escape early in the autumn, and another was knocked off its food and perished, but the third is still alive and apparently healthy.—Geo. Gibson, 55, Chalk Farm Road, 10*th February*, 1866.

Notes on Sterrha sacraria.—By the kind permission of Mr. H. Doubleday, I am able to communicate some particulars respecting this species, recorded by M. Millière in his carefully written and illustrated "Chenilles et Lépidoptères inedits." M. Millière says that in 1859 he took a ♀ moth as late as December 12th; from which he obtained four eggs; these, he says, are deposited singly on the stems of the food plant, but he figures them all in a little cluster; he notices their singularly elongated outline, and describes them as coral red, very finely dotted with vermillion (the fine network and puncturing of the shell would no doubt show so), but he appears to have missed their first stage of colour, which I gave as pale greenish-yellow, on the authority of Mr. M'Lachlan, for this change must take place very soon after the eggs are deposited.

M. Millière's larvæ were hatched on January 5th, and he fed them on various species of *Compositæ* and *Rumex*, and on an *Anthemis*, which flowers in Provence during winter; he does not say which food seemed most acceptable, but believes the larva to be polyphagous. By the end of February, 1860, his little brood had changed skin three times; but, after that, whether from want of proper food or from the effects of the weather at that season of the year—he can't say which,—they died off one after another at their last moult.

And he gives it as his opinion that in the hot countries, where *sacraria* is truly indigenous, there would be a succession of broods from May to October. To his account of *sacraria* Mr. Millière appends a little foot note, which, I confess, makes me own him as a true lover of larva-rearing. He says that an excellent method of obtaining eggs from a moth is not to pin it, but to shut it up in a little box of wood or card. With such treatment it is seldom the insect fails to lay its eggs; which very often it will not do when wounded with the pin. Oh that the captor of *sacraria* at Worthing had read this! I have *lost* my pincushion these five or six years, and can show as good specimens as can be desired.—J. Hellins, 12*th February*, 1866.

Pygæra bucephala in the second week of October.—As my friend Mr. Bond and I were trudging up the lane to Mountsfield, at about 6.30 on the evening of the 11th of October, I spied upon one of the rails of a gas lamp a moth, which we at once

recognised as a "buff-tip." When we returned a little after 9 p.m. the moth was still there, and, at the request of my friend, I "swarmed" the post, and brought the insect (a ♂) down captive. Of course it is to the peculiarly equable autumn weather which we have had that the singularly late appearance of this specimen is due. I am reminded, that while at Folkestone in the middle of July this year, Mr. Wright and I found three batches of *bucephala* larvæ respectively just hatched, one-third fed, and full fed: and about the end of July I took the perfect insect. I also met with two or three specimens of the imago at Hampstead early in June of the present year.—H. G. Knaggs, Kentish Town, *October 13th*, 1865.

Notes on sallow-bloom-frequenting insects.—Sallows, as most people will recollect, were very late in blooming last spring. The cold weather kept them back until the beginning of April; and it was not till about the 6th of that month that they were sufficiently out, even in the warmer woods here, to make it worth while to examine them.

On the evening of that day, I went with a friend into a wood, where we thought something might be done.

That no chance might be lost, I sugared a line of trees, and then, as most of the blooming sallows were in awkward places for examination, we cut some branches, and planted them along the wood-paths and open places.

As soon as it was dark we lighted up and went to work, and my friend soon commenced the evening's sport by taking *Hoporina croceago*. In a few minutes, to my great joy as well as astonishment, I took the first *Tæniocampa miniosa* I ever saw alive; a second soon followed, and then two *croceago*. In the meantime *Tæniocampa munda* turned up here and there, in company with numbers of *T. gothica, stabilis*, and *cruda*. There were also a few *T. instabilis* and *Anticlea badiata*, and very nearly all were upon the planted branches of sallow. The growing bushes were comparatively deserted, and the sugar produced nothing but four *T. munda*. On our way home we tried other sallows, and from one bush at the corner of a wood obtained thirteen *T. munda*, so that we had over thirty specimens of that species that evening.

The next evening I went again and re-planted the sallow branches, which I had stuck into a little stream to keep fresh, and also some fresh cut ones; but, instead of the cool west wind that had blown the evening before, the night was still and hot, and the moths had something else to do, probably, than feed, for I do not think I saw one-tenth of the number that were to be found the night before. However, I met with another *T. miniosa*, as well as *H. croceago*, and a few *munda*. *Tæniocampa rubricosa* and *gracilis* also made their appearance this evening; and *Xylocampa lithorhiza*, which had been out several days, came to the sallows, at which it had not been seen the evening before. I was particularly struck on this occasion with the abundance of *Hibernia progemmaria* and *Pterophorus pterodactylus* on the planted sallows, and am led to think that the worst evenings for *Tæniocampæ* are those most favoured by these two species, as well as *lithorhiza*.

A few evenings after, my friend and I tried the same plan in another wood, and took our first *Tæniocampa leucographa* and one *miniosa*; but the glut had gone by, and, from this time forward, the sallows were deserted, or produced nothing better than a chance *Trachea piniperda* or *T. instabilis* and *rubricosa*.

I have no doubt that when the sallow blossoms have grown slowly through cold

weather, they are very sweet and attractive, probably more so than those that have been forced out by a hot sun; and I also think that when first appearing after hybernation, or just out of pupa, the moths are far more greedy for food than after they have had one or two good meals; but certainly the weather has great influence over them, and warm, still nights, such as we had last April, must be very suitable for the great business of depositing eggs. I quite accidentally met with a case in point before I quite gave up working the sallows. I had tried hard through the evening, and found nothing but a few *T. rubricosa*, with an occasional *gothica*, *Glœa vaccinii*, and *Eupithecia abbreviata*, yet *Tæniocampæ* were still out, for I took them flying now and then; and I was pondering in no very good humour, on the great problem of how to get at them, when I caught sight of a specimen settled at my feet. On examination, I found it to be a female *T. gracilis*, busy depositing her eggs in a dead seed-head, apparently of plantain. With the lantern I could distinctly see her ovipositor at work, placing the eggs at the base of the seed-vessels, until the light disturbed her, and she had to be boxed. This put me on a fresh scent, and, in a few minutes, I found a female *T. miniosa* on an oak twig similarly engaged, and, after an hour's searching, another. Both of these were depositing their eggs in a little heap at the bases of the oak buds.

I spent another evening or two searching for the egg layers, but, although I took another *miniosa* on the oak, and several more *gracilis* depositing in seed-heads of *Solidago* and *Stachys*, I do not pretend to recommend this plan of collecting as very productive, as that of planting sallow boughs certainly is, since it is so very easy to examine them on all sides, or shake them over the umbrella, which is carried as a matter-of-course for the benefit of the high bushes.

While on the subject of sallows, I may as well mention that I took several specimens of a scarce beetle, *Dryops femoratus*, feeding at the bloom.—Charles G. Barrett, Haslemere.

Entomological Society of London, *Feb. 5th*, 1866.—Sir John Lubbock, Bart., F.R.S., President, in the Chair.

The President thanked the Society for electing him, after which he handed to Dr. Wallace the Prize awarded him by the Council for his essay on "Ailanthiculture," and announced that the Council had determined to renew the offer of prizes on the same conditions as those of last year; the essays to be sent in before the 1st of December next, so that the Prizes might be distributed at the Anniversary Meeting.

Messrs. Guérin-Méneville, of Paris, and C. A. Boheman, of Stockholm, were elected Honorary Members.

Mr. D'Orville, of Alphington, sent for exhibition the specimen of *Sterrha sacraria* taken by him last autumn (vide Ent. Mo. Mag., vol. 2, p. 115); also some varieties of *Lepidoptera*, including an enormous example (2″ 10‴ in expanse of wings) of *Vanessa cardui*, *Hipparchia Tithonus* with an additional ocellated spot in the anterior wings, *Argynnis Selene* with the marking much obliterated both above and below, *Agrotis segetum*, &c.

Mr. Stevens exhibited an example of the rare and remarkable *Papilio Semperi*, from Mindanao.

Professor Westwood mentioned that having confined a pair of the *Ixodes* exhibited by Major Cox in February last, in a glass tube, he found shortly afterwards

a brood of young; these died, and after them the parents, but at the present time the tube was full of minute young (in the hexapod condition) apparently of another brood; the creatures had been kept entirely without food. He also exhibited a remarkable larva with external branchiæ, which he considered to pertain to *Tipula replicata*, and remarked that it had been figured by De Geer.

Mr. Saunders exhibited a long series of *Heliconiæ* from Cayenne, which varied to a very great extent, although all from one locality; he considered that they might probably be of two species.

Mr. Bates remarked that these examples were apparently intermediate between *H. Melpomene*, *H. Thelxiope*, and *H. Vesta*. He had found these three species together on the Amazons, but observed no indications of their interbreeding. The variable form exhibited by Mr. Saunders was peculiar to the Guiana mainland, and he considered all the specimens to pertain to one species, which illustrated the effects of some conditions analogous to that of domestication, as exhibited in the cat, which was originally tabby-coloured, but, as was well known, varied now to such an extent, that it was not unusual that in a litter of kittens not two were alike. He was of opinion that a species would adjust itself to change, in the local conditions, and thus originate what was considered a distinct species. A discussion ensued, in which Prof. Westwood, Mr. Pascoe, Dr. Wallace, and others took part, Dr. Wallace remarking on the fact that *Bombyx ricini* and *B. Cynthia*, although differing remarkably in all their stages, feeding on very different plants, and natives of different countries, would constantly hybridise; the hybrids being fertile not only among themselves, but also with either of their original parents; the weaker larvæ resembling the one species, while the stronger were more like the other.

Mr. Smith stated that having at a previous meeting expressed doubt as to whether the ticking known as the "death-watch" was produced, as was commonly supposed, by insects of the genus *Anobium*, he had received a letter on the subject from Mr. Doubleday, in which he remarked that he had repeatedly observed that the *Anobium* caused the sound by raising itself on its posterior legs and striking the head and underside of the thorax against some substance; he had confined the insect in a pill-box, and, by making a similar sound, had caused it to answer him.

Dr. Wallace remarked that the roof and aisles of a church at Colchester were destroyed by *A. tessellatum*, and noticed that they chiefly affected the side facing the south.

Mr. Stainton announced the death of Senator von Heyden, of Frankfort; he mentioned also that he had received a letter from Mr. Wollaston from the Cape de Verd Islands, in which Mr. Wollaston stated that in two islands alone he had collected 150 species of *Coleoptera*.

Professor Westwood called attention to the remarkable gynandromorphous example of *Dytiscus latissimus* figured in the new part of the Stettin Entomologische Zeitung (vol. 27, part 1-3), and described by Dr. Altum.

Mr. McLachlan noticed also a record in the same part (p. 132), by Herr Teich, of Riga, of a curious gynandromorphous example of *Argynnis Paphia*; the left side male and the right female; the former being coloured, as in the normal condition of the species, whereas the latter presented the variety known as *Valesina*.

Mr. Hewitson communicated a paper on 17 new species of *Hesperia*.

NOTES ON SOME SPECIES OF *TRICHOPTERYGIDÆ* NEW TO BRITAIN, AND OF VARIOUS ALTERATIONS OF NOMENCLATURE IN THE SAME FAMILY.

BY THE REV. A. MATTHEWS, M.A.

Having been lately engaged in furnishing lists of the *Trichopterygidæ* for new catalogues, which will shortly be published in this country and in France, I take this opportunity of stating my reasons for various alterations of nomenclature, and of describing some new species, the names of which will appear in those publications.

The reckless manner in which the nomenclature of the *Trichopterygidæ* has been treated by authors, whose works have unfortunately been regarded as text-books of the science, has led to almost endless confusion. In 1844 most of the commoner species were named and described by M. Allibert (Rev. Zool, p. 51, &c.), and his descriptions are in most cases amply sufficient for recognition. In the following year Erichson published his version of the *Trichopterygidæ* (Ins. Deutsch., I., p. 21, &c.), ignoring Allibert's names, and substituting his own in their places; later on in the same year, Gillmeister's monograph appeared (Sturm's Deutschl. Fauna, xvii.), in which, with a culpable disregard of previous works, he brought out a fresh list of names of his own manufacture. From the confusion thus engendered I can see but one way of escape; that is, by rigidly enforcing the law of priority, and expunging from our lists every name which will not stand that test. On this principle, I propose to restore the Allibertian names to many species, in lieu of those more recently in use, for the following reasons:—

1st.—That they possess an undisputable claim of priority.

2nd.—That the descriptions of M. Allibert are intelligible, and agree with the types in his own collection, which has been very kindly entrusted to me by its present owner, M. Guérin-Méneville.

If these reasons are allowed to be valid, the following alterations of nomenclature will take place, as a matter of course, viz.:—

Trichopteryx Chevrolatii, Allibert.
vice—*T. pygmæa*, Erichson.
T. parallelogramma, Gillm.

Trichopteryx Montandouii, Allibert.
vice—*T. similis*, Gillm.

Ptilium rugulosum, Allibert.
vice—*Pt. fuscum*, Erichson.

Ptilium Spencei, Allibert.
vice—*Pt. angustatum*, Erichson.
Pt. oblongum, Gillm.

Ptilium excavatum, Allibert.
vice—*Pt. canaliculatum*, Erichson.
Ptilium myrmecophilum, Allibert.
vice—*Pt. inquilinum*, Erichson.
Ptilium foveolatum, Allibert.
vice—*Pt. excavatum*, Erichson.

Besides these alterations, the names of the following species may be added to our list:—

Trich. Chevrierii, Allibert.

Among my old reserves, probably from Oxfordshire, I have found two specimens of this species. It belongs to the same division of the genus as *T. dispar*, i.e., with the thorax short, and the posterior angles scarcely produced; and may be known by its short and wide form, the sculpture of its thorax, its castaneous colour, and long legs.

Trich. littoralis, Thoms.

Of this very remarkable species, one specimen was found by Mrs. Matthews, near Gumley, in moss, February 7th, 1862; since then, I have met with another, and four more have been taken by Mr. Wollaston in Devonshire; and I see, by the last number of this journal, that Mr. Sharp records the capture of this species by himself in Scotland during the last year. For my own part, I had referred our English examples to this species solely from the description in p. 99 of Thomson's Skand. Coleop., Vol. I.; and suppressed a notice of its occurrence, which I had sent to the editors of this journal for publication more than two years ago, expecting at that time a type from M. Thomson, which has never yet arrived: I hope, however, Mr. Sharp may have been more successful.

Among all the known species of *Trichopteryx*, now exceeding 50, *T. littoralis* presents the only instance of true punctuation, all the rest having the surface of the thorax either smooth, or more or less tuberculate. It has been separated from *Trichopteryx* by M. Thomson under the generic name of *Bæocrara;* but, I think, without sufficient reason, since the character on which he seems to found his genus, i. e., the margined sides of the thorax, occurs, to a greater or less extent, in very many other species. It is, however, only fair to add, that I have not yet examined the organs of the mouth; perhaps, when this is done, I may find reason to alter my opinion. I do not think the alteration of the specific name, suggested by Mr. Sharp, will be at all necessary;

since the term "*littorale*" was used by Col. Motschulksy for a species of *Ptenidium* (a genus as diverse from *Trichopteryx* as any two genera of one family can possibly be), and can only be cited as a synonym of *Pt. punctatum*, Gyllenhal.

Ptilium elongatum, Thomson.

A *Ptilium*, differing from *Pt. Kunzei* in its finer sculpture, darker colour, and prolonged apex of the elytra, is found abundantly under dry cow-dung in most parts of the country during the autumn. This I conceive to be the *Pt. elongatum* of Thomson; but, not having received any types from him, can only enter its name provisionally in our list.

Trichopteryx Sarœ, n. s.

L. c. $\frac{7-8}{16}$ lin. Brevis, lata, validissime convexa, pilis griseis densius vestita; capite et pronoto nigris, hoc magno, valde dilatato, elytris latiori, elytris rufo-castaneis, brevioribus, valde attenuatis; pronoto tuberculis minutissimis, distinctis, ordinibus regulariter sinuatis eleganter dispositis, interstitiisque quam levissime alutaceis ornato, angulis posticis latis, valde productis; pedibus atque antennis flavis.

Head—black, very large and wide, smooth and shining; eyes small, somewhat prominent; antennæ slender, with the two basal joints bright yellow, the rest rather darker, and the apical joint much elongate.

Thorax—black and shining, very large, excessively convex, much dilated posteriorly, with the sides much rounded and strongly margined; ornamented with very minute but distinct tubercles, prettily arranged in regularly sinuated rows, with the interstices delicately alutaceous; the posterior margin deeply tri-sinuate, with the angles wide, and very much produced.

Scutellum—pitchy-castaneous, large, triangular, acuminate, deeply and closely asperate.

Elytra—rufo-castaneous, attenuated posteriorly, narrower than the thorax, equal in length to the head and thorax united, deeply and very closely asperate, with the sides nearly straight, the apex slightly rounded, and the posterior part of the suture elevated.

Abdomen—piceous, moderately exserted.

Legs—short, bright yellow.

Under parts—castaneous, with a large spot near the apex of the metasternum and the coxæ bright yellow; abdomen with terminal segments paler.

T. Saræ differs from every other European species in size, shape, and colour, in the great development and peculiar sculpture of the thorax, in the shortness of its legs, and the elongation of the apical joint of its antennæ.

Two specimens only were taken five years ago in Nottinghamshire by my brother, the Rev. H. Matthews. I have named this fine species in honour of Mrs. Matthews, by whom two species, *Ptin. Maria* and *Trichopteryx littoralis*, have been added to the British list, and a third, *Ptilium myrmecophilum*, taken for the first time in England.

Trichopteryx Waterhousii, n. s.

L. c. $\frac{5}{16}$ lin. Oblonga, sub-parallela, aliquantum depressa, nigro-fusca, elytris testaceis, pilis brevibus pallidis vestita; capite magno, prominulo; pronoto sat brevi, vix postice dilatato, tuberculis minutis distinctissimis, ordinibus densis irregulariter dispositis, interstitiis leviter alutaceis ornato, angulis posticis aliquantum productis; elytris brevibus, quadratis; pedibus atque antennis flavis.

Head—large, dull black, alutaceous; eyes moderate, not prominent; antennæ moderate, bright yellow, with the apical joints but little incrassate.

Thorax—dull black, short, quadrate, scarcely dilated posteriorly, with the sides very slightly rounded; covered with small distinct tubercles, irregularly arranged in close rows, with the interstices slightly alutaceous; posterior margin yellow, reflexed, scarcely depressed, and deeply sinuated, with the angles slightly produced.

Scutellum—dull black, large, triangular, very slightly asperate.

Elytra—short, quadrate, testaceous, not longer or wider than the head and thorax united, slightly dilated towards the apex, with the sides nearly straight, lightly asperate in rather distant transverse rows; apex wide, and very little rounded.

Abdomen—fuscous, moderately exserted.

Legs—rather long, bright yellow.

Under parts—piceous, with the metasternum and abdomen paler; mouth and coxæ yellow.

The only two examples of this species which I have seen were taken many years ago by Mr. Waterhouse: locality unknown.

T. Waterhousii is allied to *T. Chevrolatii* and *T. Guerinii*, but may be known from these, and all other species of the genus, by the size, shape, and colour of the body, and by the sculpture of the thorax.

Trichopteryx Jansoni, n. s.

L. c. $\frac{7}{16}$ lin. Oblonga, fere cylindrica, sub-parallela, aterrima, pilis brevibus argenteis parcissime vestita; capite brevi, latissimo; pronoto modico, vix dilatato, tuberculis modicis ordinibus remotis irregulariter sinuatis dispositis, interstitiis nitidis fortiter alutaceis ornato; angulis posticis aliquantum productis, elytris oblongis; antennis piceo-testaceis, pedibus læte flavis.

Head—large, very wide and shining; eyes moderate, rather prominent; antennæ rather long, pitchy-testaceous.

Thorax—short, scarcely dilated posteriorly, with the sides somewhat rounded, and widely margined; ornamented with tubercles, arranged in remote irregularly sinuated rows, with the interstices deeply alutaceous, and very shining; posterior margin not depressed, sinuated, yellow towards the extremities, with the angles slightly produced.

Scutellum—moderate, triangular, acuminate, deeply and irregularly asperate.

Elytra—long, not attenuated, with the sides nearly straight, but slightly contracted at the apex; rather longer, but not narrower, than the head and thorax united; deeply asperate in remote sinuated rows, with the apex depressed, rather paler, and slightly rounded.

Abdomen—black, rather long.

Legs—moderate, bright yellow.

Under parts—black, with the mouth, coxæ, and apex of the metasternum yellow.

T. Jansoni may be known by its sub-parallel, cylindric shape, very wide head, deep black colour, and superficial sculpture, especially of the elytra.

I found one example of this species near Gumley some years ago; since then, I have often searched for it in vain.

Its characters are so distinct and striking, even without careful examination, that it is impossible to associate it with any known species. In shape it resembles the Ceylon *T. invisibilis*, Nietner, more than any other; but it is readily distinguished from all by its cylindric form and very black colour.

Among the large number of undescribed species of *Trichopterygidæ* now in my possession, I hope to commemorate the names of all those entomologists who have exerted themselves in the pursuit of these atoms, either in our own or other countries.

ADDITIONS TO THE BRITISH FAUNA (*HEMIPTERA*).

BY J. W. DOUGLAS AND JOHN SCOTT.

(*Continued from page* 220.)

Family 7.—PHYLIDÆ.

Genus 1.—Ætorhinus, Fieb.

Species 2.—Ætorhinus bilineatus.

Capsus bilineatus, *Fall.*, Hem. Suec., i. 122, 14 (1829).

Capsus (Capsus) Kirschbaumi, *Flor.*, Rhyn. Liv., i. 614, 90 (1860).

Greenish or yellowish, clothed with fine depressed yellow hairs.

Head—yellow. *Crown* with a piceous central line scarcely extending to the posterior margin. *Face*, central lobe black, side lobes yellow. *Antennæ*, 1st joint black or pitchy-black; 2nd, 3rd, and 4th pitchy-brown; sometimes the 2nd is paler than the others. *Rostrum* greenish or yellowish, tip black.

Thorax—Pronotum greenish or yellowish, the callosities and hinder angles (the latter narrowly) piceous. *Scutellum* yellow, with a large triangular black patch in the middle; or black with the sides yellow. *Elytra; Clavus*, inner margin narrowly black, the disc between the latter and the nerve more or less pitchy brown. *Corium* yellowish or greenish, the posterior margin next the inner angle narrowly pitchy-brown. *Cuneus*, inner basal angle narrowly pitchy-brown, the colour extending for a little way upon the large cell of the membrane. *Membrane* pale brown, with a short longitudinal darker streak immediately below the lesser cell nerve; cell nerves yellowish or pale brownish-yellow, inner marginal nerve pitchy-brown. *Legs* yellow or green. *Tibiæ*, 2nd and 3rd pairs at the base and apex narrowly piceous, sparingly clothed with a few long, erect, somewhat spinose, yellowish hairs.

Length 2 lines.

Three examples taken by the Rev. T. A. Marshall, at Leicester, in August, by sweeping.

Family 7.—PHYLIDÆ.

Genus 3.—Tytthus, Fieb.

Wien. Ent. Monat. 82, t. 2. fig. x. (1864).

♀ Minute. Longish oval.

Head—Viewed from above somewhat triangular; vertical in front; twice as broad across the eyes as long. *Crown* horizontal, convex. *Clypeus* convex a little in advance of the anterior margin of the eyes: apex and short antenniferous processes in a line with the

middle of the lower half of the eyes. *Face*, central lobe stoutish, convex, slightly produced beyond the clypeus; side lobes narrow, gently rounded outwardly. *Antennæ* longer than the body; 1st joint cylindrical, as long as the head, $\frac{3}{4}$ of its length reaching beyond the face; 2nd about $2\frac{1}{2}$ times as long as the 1st, very slightly thickened towards the apex; 3rd and 4th filiform, subequal, together longer than the 2nd. *Eyes* large, prominent, viewed from above sub-globose, from the side oval; their outer margins almost in a line with the hinder angles of the pronotum. *Rostrum* slender, reaching to the 2nd abdominal segment; 1st joint reaching to the middle of the xyphus of the prosternum.

Thorax—Pronotum short, somewhat campanulate; anterior margin straight, angles rounded, sides concave; hinder angles somewhat acute and slightly raised; posterior margin slightly concave across the scutellum; disc with two flat callosities in front, between the latter and the posterior margin longitudinally straight. *Scutellum* triangular, equilateral, flattish convex, level with the clavus. *Elytra* scarcely as long as the abdomen, horizontal as far as the junction with the cuneus and membrane, which are slightly deflected. *Clavus* convex, deflected to the corium. *Corium*, between the claval suture and the first nerve flat, from thence to the anterior margin convex. *Cuneus* small, triangular. *Sternum—Prosternum*, xyphus triangular, convex. *Mesosternum* somewhat flat, hindwardly broad, convex on the sides; posterior margin above almost straight, notched in the middle. *Metasternum* obtuse angled, broad, prominent. *Legs*—1st and 3rd joints of the 3rd pair of *Tarsi* of almost equal length; 2nd shortest.

Species 1.—Tytthus insignis, *Douglas and Scott.*

Yellowish-grey, delicately clothed with fine, short, depressed, yellowish hairs.

Tytthus insignis, D. and S.

Head—Black, shining. *Crown* with a greyish-white spot adjoining each eye. *Antennæ* black; 1st joint at the apex broadly pale yellow; 2nd at the apex very narrowly whitish. *Rostrum* yellowish, tip piceous.

Thorax—Pronotum pale yellowish; callosities yellow; hinder angles black, sometimes the entire disk from behind the callosities is dark grey. *Scutellum* yellow or dark grey, the hinder portion finely wrinkled transversely. *Elytra* diaphanous, entirely yellowish-grey. *Membrane* pale, iridescent; cell nerves yellow. *Sternum* pitchy-

black. *Legs*—*Coxæ* and *Fulcra* yellowish-white. *Thighs* and *Tibiæ* yellow, the latter with a few erect, somewhat spinose, brown hairs. *Tarsi* yellow; apex of the 3rd joint narrowly darker.

Abdomen—Above pitchy-brown; underneath yellowish-white, the sides with a broad piceous streak. Length 1¼ line.

Two examples taken by the Rev. T. A. Marshall, at Esher, in September.

Family 9.—GLOBICEPIDÆ.

Species *.—Globiceps ater, *Douglas and Scott.*

Black, shining, clothed with sub-depressed yellow hairs. *Antennæ*, apical half of the 2nd joint fusiform. *Legs* yellow.

Head—black. *Antennæ*, 1st and 2nd joints black, clothed with fine, short, black hairs; 3rd and 4th blackish, basal half of the 3rd yellow. *Rostrum* brown, apex black.

Thorax—*Pronotum* black, callosities distinct, hinder angles somewhat raised, posterior margin slightly concave across the scutellum. *Scutellum* black, convex, the anterior portion deflected to the transverse channel. *Elytra* longer than the abdomen, horizontal as far as the junction with the cuneus and membrane, which are deflected. *Clavus* pitchy-black. *Corium*, anterior margin black; disc pitchy-black at the base, within the anterior margin a short whitish streak, claval suture very narrowly whitish; posterior margin black. *Cuneus* black; base next the inner angle with a pale brownish-white patch. *Membrane* pale brown, iridescent; cell nerves pitchy-brown. *Legs*—*Thighs* pale brownish-yellow or reddish-brown yellow, near the base on the outside a somewhat undefined dark patch. *Tibiæ* dusky-yellowish, apex very narrowly brownish. *Tarsi* dusky yellow; 1st joint brownish, apex of the 3rd and *Claws* piceous.

Abdomen—Above and underneath, black. Length 1¾ line.

The description is drawn up from a single ♀ example taken by the Rev. T. A. Marshall, at Leicester, in August. Dr. Fieber, who has seen this insect, thinks it may be the ♀ of *G. dispar*; but as he writes to us that he does not know the ♀ of the last-named species, we prefer for the present leaving it under the name of *G. ater*. Dr. Flor, in the *Rhyncoten Livlands*, i. 472, 3, describes the ♀ of *G. dispar* in its undeveloped form as being black, but he says of the antennæ, "1st and 3rd joints bright yellow, 2nd, 4th, and apex of the 3rd brown, apical half of the 2nd spindle-shaped, thickened, black," whereas the 1st and 2nd joints in our species are entirely black.

* This species should stand first in the genus.

Species 4.—Globiceps dispar.

Cyllecoris dispar, *Boh.*, Nyn Svenska Hem. 20, 28 (1849).
Capsus (Capsus) dispar, *Flor*, Rhyn. Liv. i. 472, 3, ♂ (1860).
Globiceps dispar, *Fieb.*, Europ. Hem. 283, 3 (1861).

Black, strongly clothed with very short, somewhat depressed, pale yellowish hairs. *Cuneus*, apex pale pitchy-brown.

Head—Black, shining. *Antennæ* clothed with short, somewhat erect black hairs; 1st and 2nd joints black, base of the former yellowish; 3rd and 4th pitchy-yellow. *Rostrum* yellow, tip black.

Thorax—*Pronotum* black, very finely punctured behind the callosities; the latter somewhat distant and prominent; hinder angles elevated; posterior margin straight. *Scutellum* black; transverse channel concave. *Elytra* considerably longer than the abdomen. *Clavus*, between the inner margin and the nerve pitchy-brown, darkest towards the apex; between the nerve and the suture white, almost transparent. *Corium*, anterior margin pale pitchy-brown; on the inside, at the apex, a small dark spot or very short longitudinal streak; basal half of the disc white, almost transparent, continued as a narrow line next the claval suture, apical half pitchy-brown, leaving a sublunate white patch over the base of the cuneus; posterior margin narrowly darker. *Cuneus* white; anterior margin and apex narrowly pale pitchy-brown. *Membrane* brown, iridescent, almost transparent; between the apex of the cuneus and the lesser cell nerve a small white patch, below which is a triangular dark brown one extending to the apex; inner marginal and cell nerves dark brown, the latter narrowly margined internally and externally margined with dark brown. *Legs*—*Coxæ* black at the base, apex pale yellow. *Fulcra* pale yellow. *Thighs* and *Tibiæ* pale brownish-yellow. *Tarsi*, 1st joint brownish-yellow; 2nd yellow; 3rd and *Claws* somewhat piceous.

Abdomen—Underneath black, clothed with pale yellow hairs.

Length 1½ line.

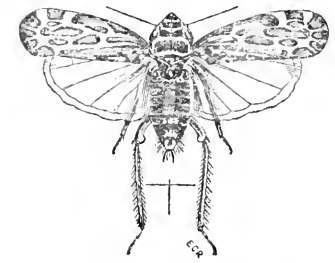
The smallest species of the genus with which we are acquainted. The description is drawn up from two specimens, ♂'s, taken by the Rev. T. A. Marshall, at Leicester. Mr. Marshall, in a communication to us, says :—"These were found on the ground, at the roots of grass from which the hay had been taken, in a small ditch draining a meadow on the banks of the canal, Aylestone, at the end of August."

(To be continued.)

AN ESSAY TOWARDS A KNOWLEDGE OF BRITISH *HOMOPTERA*.

BY THE REV. T. A. MARSHALL, M.A.

(*Continued from page* 224.)



Iassus (D.) quadrivittatus, Marshall. (*Vide* p. 222.)

4.—*Iassus* (*D.*) *socialis*, Flor.

Similis *ocellari*, sed minor, minus maculatus. Testaceus, subnitidus, abdomine plus minus nigro. Vertex pronoto et sua inter oculos latitudine longior; striolis 2 apicis, obliquis, maculisque 4 disci in arcum dispositis, fuscis vel rufo-testaceis, sæpe obsoletis. Frons nigra, utrinque pallido striata. Pronotum cum vertice interdum obsoletissime albido striatum. Hemelytra ♂ abdomini longitudine æqualia, ♀ breviora, apice late rotundata vel subtruncata, testacea; nervi pallidi; cellulæ discales hic illic obscure, apicales distinctius, fusco-marginatæ, unde apex ocellatus. Abdomen vel testaceum, vel (in ♂ præsertim) nigrum, apice et lateribus testaceum. Pedes testacei, plus minus nigro-varii: tibiarum posticarum apices tarsique iidem præter basin, nigri; ungues fusci. ♂ ♀. Long. $1\frac{1}{4}$; alar. exp. 2 lin.

I. socialis, Flor, R. L., 2 p.

The markings, as usual, are subject to be obliterated; the palest examples have generally the two apical cells of the membrane partially ocellated, and the base, at least, of the abdomen black. The form of the hemelytra and the smaller size distinguish it from *ocellaris*. Very abundant throughout the season in some places of the metropolitan district, Epping Forest, Darenth Wood, &c.; also in Buddon Wood, Leicestershire.

5.—*Iassus* (*D.*) *striatus*, Lin.

Niger, supra griseo-testaceus. Vertex sua inter oculos latitudine brevior, pronoto fere æqualis, supra interdum fusco-pictus. Frons obsolete utrinque brunneo cancellata. Pronotum sæpe lineis quinque albidis, ægre cernendis, nonnunquam cum scutello fusco-maculatum. Hemelytra abdomine longiora, apice rotundata, parum attenuata, dimidia exteriore semper immaculata. Dimidiæ interioris cellulæ pro parte fusco-marginatæ, unde striæ irregulares, longitudinales, interruptæ fiunt, sæpe obsoletæ. Pedes pallidi, plus minus nigro-punctati et lineati. Long. 1-$1\frac{1}{2}$; alar. exp. $2\frac{1}{2}$ lin.

Cicada striata, Lin., S. N., 5, p. 462.
Iassus striatus, Flor, R. L., 2, p. 259.
I. strigatus, Germ., Mag., 4, p. 92.

In countless swarms amongst short grass in the salt marshes bordering Pegwell Bay; also common in most parts of the country.

6.—*Iassus* (*D.*) *punctum*, Flor.

Flavo- vel viridi-testaceus. Vertex pronoto et sua inter oculos latitudine longior, medio linea alba. Pronotum lineis quinque albis sæpius obsoletis. Hemelytra ♂ abdomini æqualia longitudine, ♀ eodem breviora, apice rotundata, haud attenuata, testacea, nervis albidis. Corii cellula ante membranam interna semper nigricans. Membranæ cellulæ sæpe plus minus fusco-marginatæ, ocellatæ. Abdomen ♂ nigrum, apice testaceum, ♀ plerumque testaceum; segmentum genitale macula utrinque et margine postico medio nigris. Pedes testacei; femora antica bis nigro sub-annulata; tibiæ omnes vel nullæ subtus nigro-lineatæ; posticæ apice fuscæ, ad basin spinarum nigro-punctatæ; tarsi iidem præter basin nigri. ♂ ♀.

Var. ♂. Supra nigro-fuscus, capitis et pronoti lineis albis insignibus; cellulæ omnes ocellatæ; pedes omnes nigro-punctati et lineati. Rarior. Long. $1\frac{1}{4}$; alar. exp. 2 lin.

I. punctum, Flor, R. L., 2, p. 247.

The black spot in the innermost apical cell of the corium, just before the membrane, is constant, and serves to distinguish the paler varieties. Abundant at Milford Haven, on grass at the base of the cliffs, from July to November.

7.—*Iassus* (*D.*) *sabulicola*, Curt.

Pallide testaceus, supra maculis nigris lacteisque insignis. Vertex obtusangulus, pronoto et sua inter oculos latitudine brevior, medio albidus, utrinque fusco-pictus. Frons brunneo-cancellata. Pronotum brunneo longitrorsum quadri-striatum, striis 2 intermediis latioribus, omnibus ad basin fuscis. Scutellum striolis 2 apicalibus convergentibus fuscis. Hemelytra abdomine longiora, apice rotundata, sub-attenuata, testacea, lacteo nigroque varia. Clavus basi, margine suturali partim, maculisque duabus, lacteis; harum macularum altera humeralis, altera post medium suturalis, obliqua, linearis. Maculæ irregulares, nigræ, stant inter lacteas. Clavi apex intus nigro-marginatus, sed vena suturalis ipsa ubique pallida. Corium lituris 3 nigris irregularibus, venarum anastomosibus bis lacteis, cruciformibus; margo externus

semper, nervique cæteri interrupte, lactei. Membranæ cellula apicalis infuscata. Abdomen supra nigrum, nitidum, iridescens, segmentorum marginibus tenuissime, segmentis 2 apicalibus fere totis, testaceis. Pedes pallidi, raro nigro-punctati, unguibus fuscis. ♂ ♀.

Long. $1\frac{1}{3}$; alar. exp. 3 lin.

Aphrodes sabulicola, Curt. B. E. 633. fig.

The irregularity and instability of the markings somewhat baffle description, but the milk-white cruciform figures formed by the anastomoses of the nervures, with ziczac spots between, are the most obvious character. The description is from a well-marked specimen. It is very like *formosus*, Boh., but the vertex in that insect is as long as the pronotum. Rather common on the sand hills at Freshwater Bay, Pembrokeshire, August—September: sent also to me by Mr. T. J. Bold from Northumberland; Curtis's examples were from the sandy coast of Lowestoft. The figure in B. E. represents a rather imperfectly marked individual.

(*To be continued.*) 205.

DESCRIPTION OF A GENUS OF CADDIS-FLIES, OF WHICH THE LARVÆ CONSTRUCT CASES KNOWN AS *HELICOPSYCHE*.

BY DR. H. A. HAGEN.

Genus Helicopsyche, Bremi.

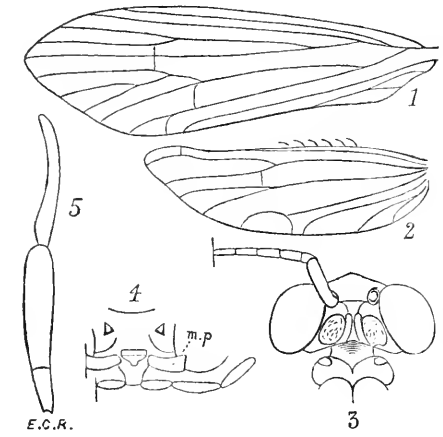
Spurs 2.4.4. The external spur on the anterior tibiæ very small, the internal strong, one half shorter than the first tarsal joint; the spurs on the other tibiæ strong, half as long as the first tarsal joint, the external rather shorter than the internal, especially on the intermediate tibiæ, placed a little before the apex.

Maxillary palpi of the male clothed with long and thick hairs, stout; first joint short; second long and broad, straight; third slightly shorter, curved, thinner; these palpi are curved upwards, the third joint flexible (or changed in form in drying ?). Labial palpi short, the joints somewhat widened in the middle, flattened, the basal joint slightly shorter than the others, which are equal.

Maxillary palpi of the female nearly as hairy as those of the male, the second joint slightly shorter, the succeeding ones successively shorter, the terminal thinner. These palpi in the female at first sight appear similar to those of the male, but on closer examination it is found that the part analogous to the third joint in the male is divided into three; they are longer than the head.

Antennæ somewhat stout, very slightly longer than the wings; the basal joint strong, straight, hairy, as long as the head; second joint short, as broad as long; the rest slightly longer, becoming thinner towards the apex.

Head broad; eyes large; ocelli absent; occiput on each side with a strong rounded tubercule, punctuated, divided in the middle by two flattened lines placed close together. Prothorax small, divided in the middle, widened externally. Mesothorax with two punctuated lines. Metathorax bi-tuberculate. Abdomen with a little baton at the base of the ventral surface of the penultimate segment (as in *Agapetus*), not extending beyond the segment. Inferior appendices of the male broad, short, curved upwards, spoon-shaped; between is the prominent penis, furnished on each side with a narrow plate. In the female the apex of the abdomen is obtuse, slightly excavated below; the baton on the penultimate segment shorter. Legs long, stout. Anterior wings long, somewhat dilated before the apex; first and fourth apical cells equal, acute; second and third shorter, narrow at the base; fifth not reaching the anastomosis; discoidal cell as long as the apical cells, narrow. Posterior wings shorter, not folded at the base; neuration simple, as in *Mystacides*.



Details of *Helicopsyche borealis*, Hagen (*magnified*).

1. Anterior wing.
2. Posterior do.
3. Head, pronotum, &c.
4. Front of head, showing labial palpus, &c.
5. Maxillary palpus (highly magnified).

The pupa-skins (♂ ♀) shew strong and acute mandibles. Larva unknown. Case of the larva similar to a shell of the Molluscous genus *Valvata;* with a moveable operculum; formed of concentric whorls, with an eccentric fissure. Cases of this kind have been found in Europe, America, and New Caledonia. See my paper in the Stett. Ent. Zeit., 1864, p. 122, et. seq.

1.—*Helicopsyche borealis*, Hagen.

Notidobia borealis, Hag. Syn. North Amer. Neurop. p. 271, 1.
Helicopsyche glabra, Hag. Stett. Zeit., 1864, p. 130, 9. (Case of the larva.)

Brown; eyes very large, black; maxillary palpi long, with greyish-

brown hairs; antennæ clear yellow, basal joint greyish-brown; legs pale yellow; body with greyish-brown pubescence; anterior wings brown, clothed and ciliated with yellow, but seen directly from above the hairs appear brown; posterior wings greyish hyaline, ciliated at the apex. Long. cum alis 7 millimetres.

River St. Lawrence, Canada (Osten-Sacken). I cannot find the example from Washington mentioned in the synopsis. I have seen only males.

Mr. Uhler has sent me a copy of a paper by Mr. Bland, in the Ann. Lyc. Nat. Hist. New York, 1865, viii., p. 144. He bred from cases of *Helicopsyche* some small *Phryganides*. The first batch sent to me was unfortunately lost *en route;* Mr. Uhler has been so kind as to send all that remained, but the little phial was broken when it arrived. I have carefully examined the fragments, and am much pleased to find, firstly, cases perfectly similar to that described by me as *Helicopsyche glabra;* secondly, two pupa-skins (♂ ♀) with strong mandibles, similar to the pupa of *H. minima*, l.c. p. 126, 3; and thirdly, a male imago in very bad condition, which I think is identical with my *Notidobia borealis;* any way it is very similar, and I think that further researches, and examples with the clothing intact, will prove the correctness of my suspicions. I do not see the small black baton on the penultimate ventral segment, but it is perhaps broken. I repeat that at any rate *N. borealis* is closely related, and belongs to the same genus.

2.—*H. lutea*, Hagen.

Notidobia lutea, Hag. Syn. North Amer. Neurop. p. 271, 3.

Very similar to *H. borealis* in form, but bright yellow; antennæ slightly annulated with brown; maxillary palpi ciliated with dark brown internally; legs yellow; anterior wings clothed and ciliated with bright orange yellow; posterior wings yellowish hyaline. Male and female (the male in bad condition). Long. cum alis 7 mill.

Haiti.

Notidobia pyraloides, Walker; Hag. North Amer. Syn. p. 271, 2, belongs to the genus *Anisocentropus*, McLachlan.

Mr. Bland's discovery is very precious, for during twenty years I have sought in vain to clear up the mystery of these *Valvata*-like cases.

The genus *Helicopsyche* apparently pertains to the family *Sericostomidæ*, and is to be placed between *Mormonia* and *Dasystoma*.

It remains to be seen what *Phryganidon* dwells in the cases of the

European *H. Shuttleworthii*. I find in my collection no species analogous to *H. borealis* and *lutea*. Possibly a new genus allied to *Dasystoma* belongs here; it should contain *Rhyacophila microcephala* and *R. setifera*, Pictet, *Dasystoma nigrum*, Brauer, and two or three new species from Spain, Switzerland, and Bavaria. The neuration is similar, especially in the posterior wings, but the spurs are very short and less in number.

As I have said in the Stett. Zeit., 1864, p. 132, the genus *Molannodes*, McLachlan (to which belongs *Pot. Pictetii*, Kolenati) has perhaps a right to these cases. The neuration differs somewhat from *Helicopsyche;* but otherwise the habit, legs, spurs, antennæ, hairy palpi, &c., are similar. I should add that the maxillary palpi of Mr. Bland's examples were broken *en route*, and that I have described them after the types of *Notidobia borealis;* but it is always very difficult to distinguish the number of joints in these hairy palpi.

Königsberg, 28*th February*, 1866.

[Note.—The character of my genus *Molannodes* will shortly appear in the Ann. Soc. Ent. France. That genus has undoubtedly five joints in the maxillary palpi of the male, and belongs to the *Leptoceridæ*, coming near *Molanna*. Mr. Scudder, of Boston, informed me that in America the cases of *Helicopsyche* are generally found attached to the outside of large bivalve shells of the genus *Unio*. The British Museum possesses cases from Portugal (Oporto), Jamaica, Trinidad, Ceylon (Colombo), and New Zealand; those from the latter locality in very large numbers and of two or three forms. The solving of this hitherto difficult entomological enigma has commenced; the full solution cannot be far distant!—R. McLachlan.]

Omalium pineti, Thoms.—Towards the close of last year I introduced this species into our fauna, and Mr. Rye, in his paper in "The Annual," enumerated it among the new species of the year, adopting, however, for it the name of *lapponicum*, Zett., an alteration previously made by De Marseul in his catalogue, but which cannot be maintained (as Thomson appears to have known, from the synonyms he quotes).

In 1830 Mannerheim described an *Omalium lapponicum*, while Zetterstedt's description only bears date 1838: I was therefore correct in the appellation I gave to the insect, for Thomson's name being the next oldest to Zetterstedt's, and otherwise unobjectionable, must be retained.—D. Sharp, 12, St. Vincent Street, Edinburgh, 3*rd March*, 1866.

Note on Ceuthorhynchus suturellus (?), a species new to Britain.—About the middle of last May I swept into my net from *Cardamine pratensis* (?) on waste ground, at a short distance from my residence, three examples of a *Ceuthorhynchus*, which I took at the time for *cyanipennis*, Illiger, but which, on further inspection, could not be so identified. A second visit to the same spot, towards the end of the month, produced one more specimen ;—altogether two ♂ and two ♀, as I infer from the longer rostrum in two of the examples (♀). No trace of *cyanipennis* has occurred, as far as I am aware, in the neighbourhood. As there is no other species on our list for which it could well stand, I could not but consider it a stranger, and was gratified to find my opinion confirmed by Mr. Rye, to whom I forwarded specimens. A short time since Mr. G. R. Crotch, of Cambridge, mentioned to me in a note that he had taken with him to Paris a species nearly allied to *cyanipennis*, which M. Brisout had compared with one of Schönherr's types of "*suturellus*," Sch., and pronounced to be the same species. Mr. Crotch very kindly offered, if I would send him my species, to compare it with his own, and let me know the result. A second note from him states :—"I have examined your specimens with care ; they are no doubt identical with mine entirely." Mr. Crotch also states that his specimens were from the Rev. H. Clark's collection, labelled "*cyanipennis*." That gentleman's captures are therefore, in all probability, prior to mine.

Against the opinion of M. Brisout and Mr. Crotch, I should not for a moment think of hazarding mine : but, before the introduction of this insect into our list as "*suturellus*," I hope such specimens as are attainable will be carefully compared with Gyllenhal's diagnosis in Schönherr's great work ; as mine at least will be found to present rather serious divergences from his characters.

These I proceed to point out. (I may remark that I compared my specimens with Schönherr's description of *suturellus* before sending them to Mr. Crotch.)

1. "*C. cyanipenni in multis similis sed dimidio minor.*"

The four examples I have seen do not differ in this respect from my series of *cyanipennis*, which are of the usual size.

2. "*Thorax niger, parcè albido-squamulosus.*"

Though difference of colour may only indicate variety, and scales are easily lost, it is worth remarking that the thorax in my examples is decidedly of a concolorous green colour, and has no trace of scales on its upper surface : indeed the colour of the whole insect is so bright that a good specimen might be detected amongst a number of *cyanipennis* by that character alone.

3. "*Elytrorum striis obsolete punctatis, interstitiis planis, subtiliter strigosis.*"

I think that "*elevatis*," or some such word, would express the character of the interstices in my insect better than *planis*, to which word those in my specimens can in no wise be brought to conform ; in fact, the interstices afford, perhaps, the first point upon which an observer would seize to distinguish the insect from *cyanipennis*, which has "*interstitiis*" certainly "*planis*."

4. "*Sutura anterius densè albido-squamosa.*"

The base of the suture in one or two of my specimens is slightly squamose, but I do not think this would have suggested Gyllenhal's language. Scales, how-

ever, are liable to abrasion. The same remark applies to "*Pedes albido-squamulosi.*" Schönherr's type may, as Mr. Crotch remarks, have been in particularly good condition.

5. "*Femoribus...omnibus subtus dente obtuso armatis.*"

This character, as regards the anterior femora, I have failed in detecting. They seem to want the tooth.

I must leave the final decision of the matter in the hands of better judges. But, with these discrepancies between the actual specimens and Gyllenhal's description, I hope the hesitation I have expressed as to the insertion of the insect as "*suturellus*," Sch., in our lists will be pardoned in a tyro by those who are masters in the science.

It is not at all unlikely that other cabinets contain examples of the insect mixed up with *cyanipennis*. I subjoin, therefore, a few marks whereby to distinguish the new species.

Rostrum in ♀ longer than in *cyanipennis*: nearly glabrous, except at the base, where the punctures are very fine: in ♂ the rostrum is shorter, and punctured very nearly as in *cyanipennis*.

Head: not quite similar to *cyanipennis*, which has a depression between the eyes. In this insect the forehead is either round (♂), or has a quasi furrow, roughly and indistinctly marked.

Thorax entirely destitute of setæ, which are obvious in *cyanipennis*: this latter also has the thorax distinctly wider at the base. The anterior margin in the new insect is unreflexed in ♀, and only slightly so in ♂.

Elytra: Narrower at the shoulders, and distinctly more rounded than in *cyanipennis*: setæ wanting, or nearly so: interstices rounder, and clothed with delicate short hairs, regularly distributed: in *cyanipennis* the hairs are longer and less regular. The whole contour of the elytra is more convex than in *cyanipennis*, and the colour brighter; the thorax being concolorous.—W. Tylden, Stanford, near Hythe.

[To the above-mentioned points of discrepancy between the so-called "*suturellus*" and Gyllenhal's description (his insect being, moreover, from Tauria) I may add that in my two specimens (given to me by Mr. Tylden; and one of which is, if anything, rather *larger* than the usual run of *cyanipennis*) the apical margin of the thorax beneath exhibits no trace of red colour, whereas it should be rufescent; and the striæ of the elytra are strongly and evidently—instead of "*obsolete*"—punctate. As regards the scales, any idea of abrasion is negatived by the exceedingly bright appearance of the scapular patches.

In endeavouring long ago to identify this insect with any of the species described in Schönherr's work, I remarked (as did Mr. Tylden, separately) that there are three or four allied to *cyanipennis* therein, the descriptions of which so nearly resemble each other, that, if it were to be forced to that of *suturellus*, no confidence could be placed in *any* of them; for there are certain particulars wherein some of these allied insects come nearer to our species than the descriptions of the corresponding parts of *suturellus*. Gyllenhal, moreover, in describing these insects, draws the finest distinctions both of colour and structure; such as particularizing

the legs which are toothed, and the size of the tooth;—and noting differences of colour so close as the following (thorax) "niger, cærulescenti sub-micans,"—"nigro-cærulescens, certo situ æneo-micans," &c., &c. It is, therefore, to say the least, improbable that he who could see and describe so well, and had just noted the corresponding parts of the nearest species, should intend his description of *suturellus* to fit our insect.

Types may be allowed to corroborate imperfect descriptions (though even that much has been questioned as regards the Stephensian species); but it is surely out of all reason that they are to *negative* an accurate one. It is possible, however, that some mistakes may have been made with Schönherr's type; we see, at all events, that so good a Coleopterist as the Rev. H. Clark had confused the very insect in question.—E. C. R.]

Note on Stenus debilis.—Having observed that Herr Kaspar Dietrich (Beitrag zur Kenntniss der Insekten Fauna des Kantons Zürich, 1865) makes no mention of *Stenus debilis* in his list, and that he gives *S. opacus*, Er., without any comment (beyond a note, questioning the identity of that insect with *S. carbonarius*, a doubt previously expressed by myself in Ent. Ann. 1865), I have communicated with that gentleman, with reference to the existence of *S. debilis* as a species, and received the following reply:—"The *S. opacus* of my *Beitrag* is certainly no other than the *St. debilis*, Diet., in litt., as you very rightly anticipated. I omitted any reference to the latter name, as I imagined it was only known to Dr. Kraatz."

It may be remembered by our readers that the insect hitherto (and, as it appears, correctly) known as *S. opacus* in England was forwarded by Mr. E. W. Janson to Dr. Kraatz, who returned it as probably *S. debilis;* an opinion obligingly communicated to me by the former gentleman. From this circumstance, and the above-mentioned confusion of synonomy, I am inclined to believe that the *S. opacus* of Erichson was not at that time recognised on the Continent.—E. C. Rye, 284, King's Road, Chelsea.

Occurrence of Hylurgus pilosus.—Among some insects lately sent to me for examination by my friend Mr. J. Sidebotham, of Manchester, I found three examples of a small wood-feeder, which I am inclined to refer to this species (Ratzeburg, Forstins., p. 178, T. vii., 4), and which were taken by that gentleman at Milldingle, Beaumaris, in 1865.

These insects are rather less than *Hylastes obscurus*, Marsh., and somewhat of the shape of *H. opacus*, being elongate, narrowed, and very nearly parallel, though the elytra are slightly widest at their lower third. The elytra are yellowish-brown: the thorax being somewhat darker, but lighter in front; the head small and black, with long yellow hairs between the eyes, and a very fine medial frontal elevated line; and the antennæ and legs brownish-yellow,—the former with the club darkish (a character at variance with Ratzeburg's description). The thorax is longer than broad, almost imperceptibly constricted in front, and clothed with short depressed stout grey hairs. The elytra have the basal margin rounded from the sides to the scutellum, elevated, thickened, and crenulated; they are evenly punctate-striate, the interstices (which are rather wide) being pubescent, and set

each with a single row of stout yellowish-grey setæ, raking backwards. The anterior tibiæ are widened just before the middle, but not very suddenly; and they are armed on the outer side with 6 or 7 small teeth.

The species is superficially very unlike *H. piniperda*; and, indeed, is more suggestive of a large bright-coloured specimen of *Phlœopthorus rhododactylus*,—with which it is associated by Thomson in the second part of vol. vii., Skand. Col., 253, in the sub-genus *Carphoborus*, Eichhoff. The insect, however, appears to be more closely allied to *Hylurgus* than to *Phlœopthorus*, if it were only for the structure of the club of its antennæ, which is short, and scarcely at all flattened; whilst in the latter genus it is narrow, compressed, distinctly jointed, and much longer than the funiculus.

H. pilosus is already included in our lists; being in the collection of Mr. Waterhouse and others, from Leicestershire, I believe. There is no type of it in the European collection in the British Museum.—Id.

Note on Orchestes rufus.—Mr. F. Smith kindly informs me that there are *three* specimens (not *one* specimen only) of this insect in the British collection of the Brit. Mus., carded in exactly the same manner as hosts of others, and with similar pins; "in fact," as Mr. Smith says, "any one can satisfy himself that all the evidence derivable from an examination of the specimens is in favour of their being British."

By a typographical error the species *O. iota*, Fab., was omitted from my abstract of M. Brisout's paper on *Orchestes* in our last No.; it should immediately precede *O. fagi*, though not in the same division.—Id.

A word about "The British Hemiptera."—The President of the Entomological Society, in his Anniversary Address, has noticed our "*British Hemiptera*" in terms so partial, that we confess they are more than we could have expected or deserve; for the merits of the book are mostly taken for granted, and only a few of its defects are pointed out. Yet, as due weight will be attached to the remarks of one so well qualified to judge of the matter, we venture to offer a few words on a criticism which is doubtless formed on misconception arising from a hasty inspection of the volume.

It is stated that "the book is all descriptions;" and this would seem like high praise of a work that professes to be descriptive, but is qualified by the remark that "there is no attempt to differentiate genera or species." Now it is not quite the fact that the book is all descriptions; for the first 50 pages are occupied with the characters of the Sub-Order, Division, Sections and Families; the latter including those of the genera indicated, which again are fully set forth in connection with their species, and are further illustrated by the plates. The genera and species we at first intended to tabulate, but abandoned the plan as unnecessary, since they are so few, when compared with those of the Continent: nevertheless, it is exceptional that some leading character is not given in the first line of the specific descriptions, or the differences are not pointed out below. We preferred this method to the often-used system of differentiating allied genera and species by one or two characters, by which they frequently become unnaturally separated; and

we adopted the plan of making all the descriptions in one regular form,—"beginning with the head, ending with the abdomen, and putting down all we saw,"—instead of never beginning, continuing, or ending any descriptions in the same manner (or putting down either what we *did not*—or only *part* of what we *did*—see); for we had proved that this latter way increases indefinitely the labour of him who would compare the descriptions of two or more genera or species. Better than any mere opinion whether this or that be the superior plan, is the fact,—which may be as consolatory to the President as it is pleasing to us,—that our method has already proved amply sufficient for several persons easily to determine their species: and this was the end we had in view when writing the book.

There is another slight error, in saying that we have followed Fieber in the creation of groups of species which we "call Families;" since Fieber has no such groups as ours in his work: and it is doing us too much honour to credit us with the application of the name "Family" to such groups; for the same principle had been previously adopted by Wollaston in his "Insecta Maderensia," by Dallas in his "List of Hemiptera," by Waterhouse in his "Catalogue of British Coleoptera," by Stainton in his "British Butterfies and Moths",—and, indeed, by most Continental writers.

We plead guilty to an omission of the words "*nec. Lin.*," on page 83, which makes it appear that we have supplanted an old by a more recent name; but the remark that "some names are exchanged for others of later date, even of our own creation," arises, we take it, from a misconception of the fact (which we have not thought it requisite to explain *in loco*) that such names had already been suppressed by other authors on account of *double emploie*.

The President thinks the climax of our faults is reached in the omission of synonymes from the Index. Of course he has a perfect right to his opinion; we humbly thought that, as the majority of the species are recognised throughout Europe by the names we have retained, it was not necessary to put the synonymes in our book *twice*.

As the President has forgotten to send us a copy of his Address, we pen these remarks from recollection of a casual reading thereof; but we believe we have omitted none of the points he has noticed. Sensible as we are that our work of endeavour to aid British entomologists still contains some faults and misprints,—which the President has not noticed, although of course known to one so well acquainted with the subject as he must be,—we feel proportionately grateful for the forbearance shown to us; and in return we hope that, when the works of the President himself are put into the critical crucible, they will be treated with the same fairness and consideration he has shown to ours.

JOHN W. DOUGLAS, 7, Kingswood Place.
JOHN SCOTT, 13, Torrington Villas, Lee.

Notodonta dromedarius double-brooded?—I found a fine larva of this species on the 8th July, 1865, in Birmingham, under a birch tree. It buried the same morning, only just enabling me to see the accuracy of the short description in the Manual, which suited my individual caterpillar exactly. A fine male moth appeared from it on the 8th of August, 1865; the duration of the pupa condition being only thirty-one days. The jar was out of doors in a cool place. This species of *Notodonta*

is therefore evidently double brooded sometimes, and I suspect this to be the case with some others of the genus. May I ask for evidence on this subject from my entomological brethren? R. C. R. Jordan, M.D., Edgbaston, Birmingham.

Note on the larva of Emmelesia albulata.—The larva of this species has been described more than once before, and I should not have thought of saying anything about it myself, but that when, for the purpose of procuring specimens for figuring, I set to work this season to rear it from the egg, I found that not one of my specimens corresponded with previous descriptions. I am driven to the conclusion, therefore, that this is a variable species, and proceed to record the variety I have met with.

On June 2nd of this year I took some moths, and one female laid several eggs, and next day I looked for and found some more laid at large on plants of yellow-rattle in the same locality.

These eggs are oval and yellow, paler at first, and becoming richer in tint afterwards, deposited on the flower bracts. On June 9th the little yellowish larvæ with dark heads appeared, and a few days afterwards I captured several others feeding in the green and tender seed-pods of their food-plant. It is easy to detect a larva, as the seed-vessel containing it looks discoloured; but I could not perceive that they spun together any covering for themselves, all I noticed were completely hidden within the seed-pods. After a change or two, the larvæ became dirty whitish in tint, the head, plate on second segment, and tip of tail, being dark. About June 30th they were full fed, and were then of an uniform pale primrose-yellow—no lines—but the ordinary dots very small, brownish, with a few bristles, the head brown, the horny plates on second and thirteenth segments scarcely tinged with brown, spiracles brown. Soon after this date they changed to pupæ, but before doing so, as far as I could see, they all left their food, and entered the earth; and although I searched diligently, I failed to find any pupæ in the ripened plants where I had previously taken the moths, eggs, and larvæ.—John Hellins, *5th Oct.*

Macroglossa stellatarum on the wing in February.—Yesterday I was taking a walk round by Plymouth Bridge, and along a stone embankment, with a warm sun on it (the wind being from the north), I saw an example of *M. stellatarum* flying actively. I watched it as it flew several times a distance of ten or twenty yards backwards and forwards, and once it settled near me, but I could not fix my eye on its place of rest; but shortly afterwards I saw it rise, and subsequently disappear round a bend of the lane. I also took a bee (one of the *Andrenidæ*) on a *Taraxicum* flower.—B. Piffard, Portland Square, Plymouth, *February 14th*, 1866.

Lepidopterous captures in various localities. — North of Ireland.—*Lobophora viretata;* one specimen in a fir-wood. *Eupithecia innotata;* one specimen flying on a heathy mountain. *Charæas graminis*; plentiful, flying by day in the long grass. *Scopula alpinalis;* common at the Giant's Causeway, and along the coast westward. Near London—*Pterophorus acanthodactylus;* abundant in Battersea Park, hovering at dusk over the flowers of a kind of sage. *Sarrothripa Revayana;* one specimen beaten from hawthorn. Near Guildford—*Xylina semibrunnea;* one specimen at ivy. *X. rhizolitha;* two specimens at ivy.—S. Canning, 51, St. George's Square, S.W.

Variation in Lepidoptera.—Mr. Davis, in this month's number of the "Entomologist's Monthly Magazine," referring to a letter of Mr. Llewelyn's, gives a list of varieties he has observed; and, believing the subject to be one of interest to entomologists, I append a few notes on some insects in my own collection, as it is only by comparing abnormal forms occurring at different times and places that we can eliminate varieties, and assign to them their legitimate weight, and that only.

I think, however, a very great distinction should be made between a simple aberration from the normal condition and an actual "variety" technically so called. A species may afford a series of diversified examples without producing a variety; nor can malformation, stunted or excessive growth, or mere lighter or darker colouring be considered as indicating a departure from the type, or being otherwise than the result of accident. Wollaston, in his "Variation of Species," defines varieties as "various aberrations from their peculiar type, which are sufficiently constant and isolated in their general character to *appear*, at first sight, to be distinct from it," and which have in them "the primâ-facie elements of stability." Of the insects mentioned below only the examples of *Vanessa urticæ* and *V. cardui* have any appearance of being true varieties, and I should like to ascertain if similar forms have been observed before.

Vanessa urticæ.—A fine variety captured at Brixton, having the second and third costal spots on the fore-wing merged into one, the white spot beyond extending to the middle of the hind margin, and the two central spots absent. Hind-wing nearly totally suffused with black. Alar expansion 1″ 9‴.

Vanessa cardui.—A remarkable variety,—taken by my late father in the Isle of Wight, having the normal white oblong costal blotch and the dark markings in the discoidal area absent, and the five round black spots on the hind-wing replaced by white ones,—has been very fully described by Mr. Newman in the Zoologist, page 3304.

Chortobius Pamphilus.—A male taken at Wandsworth, whose alar expansion is only 11‴, has the black spot on the tip of the wing barely discernable.

Zygæna trifolii.—A specimen with all the spots united in a regular blotch.

Zygæna filipendulæ.—An example having each pair of spots confluent, and the upper basal spot expanded into a streak extending along the costa to nearly the tip of the wing.

Euchelia jacobææ.—A specimen having the red stripe near the costa and the two red spots on the hind margin confluent.—William Ingall, Albany Road, Camberwell, 12*th February*, 1866.

Food of Boarmia rhomboidaria.—Noticing that it is very positively asserted in the current "Annual" that the above-named species will not eat ivy, and, indeed, "inevitably perishes if not supplied with other pabulum," I send a note to say that in this locality, at any rate, ivy is undoubtedly its *natural* food, and the moths are commonly found frequenting that plant.—E. Horton, Powick, near Worcester.

[At our request Mr. Horton has kindly forwarded an example of the Worcestershire form of *rhomboidaria*. We consider that it is an ordinary type of that insect.—Eds.]

Offer of Glyphipteryx Haworthana.—This insect will shortly be in pupa on our mosses. I shall be glad to forward a few to any one who may want them on receipt of a small box and return postage. A medium size pill-box answers very well.—Chas. Campbell, 4, Toll-bar Street, West Gorton, Manchester, *March 12th*, 1866.

Captures at Haslemere.—Riding one day last August over one of our heaths, I suddenly noticed a lot of Crambidæ start up before me. I soon found that they were *hamellus*, and in a couple of hours secured fifty specimens, besides five *C. latistrius*, one *Stilbia anomala*, and some *Depressaria umbellana*. They were nearly all in a space of twenty yards in extent, and hiding among the heath and furze bushes. At a short distance hardly a specimen was to be found.

A few days afterwards I went there again, but obtained only ten *hamellus* and one *latistrius*, that appearing to be the regular proportion of the two species.

Earlier in the month, and very near the same place, I came upon a spot which swarmed with *Gelechia diffinis* and *velocella*, and secured one hundred of the former and forty of the latter. As may be supposed, the turf in this spot was covered with plants of *Rumex acetosella*. The *velocella* were hiding among it, most of the *diffinis* being among some young heath.—Chas. G. Barrett, Haslemere.

Note on Oncocera ahenella.—On the 9th June last I met with several specimens of *Oncocera ahenella* on the side of a sloping bank. They were among the short grass, and started up and flew a short distance, like a *Crambus*, when disturbed. They did not, however, settle perpendicularly on the grass culms, but horizontally, close to the ground, and were conspicuous for a peculiar metallic or leaden appearance when at rest. I suppose I was late for the species, as nearly all I took were females.—Id.

A new locality for Pterophorus paludum.—On June 10th I had the satisfaction of taking a specimen of *Pterophorus paludum*, flying among the long grass, asphodel, &c., in a marsh on Woolmer Forest. It was exceedingly difficult to see on the wing, and I failed to find any more.—Id.

Capture of Eupithecia irriguata at Haslemere.—In May I had the good fortune to take two specimens of *Eupithecia irriguata*. One of them was seated pug fashion on a birch trunk, the other turned out of a hedge.—Id.

Thatch in 1865.—Thatch has again produced me so many good insects that it really seems to deserve another notice.

In April I met with hybernated specimens of *Depressaria carduella*, *Yeatiana*, *olerella*, *ultimella*, and *pastinacella*.

In July *Pyralis glaucinalis* appeared, and plenty of *Ephestia elutella*, also *Tinea arcella*, *Cerostoma vittella* and *alpella*, *Depressaria rhodochrella*, *hypericella*, *pulcherimella*, and *badiella*; and *olerella* began to come out. *Gelechia basaltinella* was common in thatches that I had worked the previous year without finding a specimen, and *G. similis*, *sororculella*, and *senectella* occurred.

In August *Depressaria pimpinella* appeared on the heaths, and *D. carduella* in its single locality, a small shed, from the thatch of which I could generally reckon upon two or three specimens, while I could find it nowhere else.

In September I met with *Simæthis Pariana*, the only *Tortrix* (*?*) that I have ever found regularly frequenting thatch. It continued out till November. I also took *Theristis caudella* and *Depressaria ultimella*, as well as *Gracilaria falconipenella*.

Phyllocnistis saligna, which in 1864 was apparently confined to a single thatch, was last year plentiful everywhere, as also were the *Lavernæ* and other species mentioned in former papers.—Id.

Entomological Society of London.—March 5th, 1866.—W. Wilson Saunders, Esq., F.R.S., Vice-President, in the Chair.

The Secretary read letters from Messrs. Guérin-Méneville and C. A. Boheman, returning thanks for their election as Honorary Members.

With respect to the ticking of *Anobium*, Mr. Groser communicated the fact that the Rev. L. Jenyns had long since recorded that he had observed these insects produce the sound precisely in the same manner as noticed by Mr. Doubleday. In a letter to Mr. Groser, the Rev. L. Jenyns said that his observations referred to *A. tessellatum*.*

Mr. Stevens exhibited a collection of insects from Hakodadi, Japan, and remarked upon the striking prevalence of European genera; many of the species strongly resembled some of those found in Britain, but yet presented certain minor differences.

Mr. Tegetmeier exhibited a small collection from Nagasaki, formed by a native.

Mr. Smith exhibited a beautifully perfect nest of *Vespa sylvestris* sent by Mr. Stone; also a number of nests formed by different species of wasps, the colonies of which had been deprived of their queens, and thus the nests showed a tendency to run into abnormal forms, the ruling architects having been removed; these were likewise from Mr. Stone.

Mr. McLachlan exhibited a twig of mulberry-tree sent from Saugor by Capt. Alexander, on which were deposited a large number of eggs of a species of *Ascalaphus* or *Myrmeleon*; the young larvæ that had emerged from their eggs were also exhibited. He stated that these eggs were arranged in a precisely similar manner to those of the European *Ascalaphus macaronius*, as recorded by Dr. Brauer. He remarked also on a statement by Geoffroy that recently emerged examples of *Myrmeleon formicarius* laid one or two eggs which never produced anything. According to his own observation, Mr. McLachlan was convinced that these so-called eggs were in reality the meconium, which, instead of being voided in a liquid state, here took the form of egg-like lumps.

The Rev. O. Pickard Cambridge, exhibited a large number of insects collected by himself in Syria, Greece, &c.

Mr. Edward Saunders read a catalogue of the species of *Buprestidæ* collected in Siam by the late M. Monhot; there were three new genera and 33 new species.

* In our report of the February meeting (ante p. 240) an error has occurred. Mr. Smith did *not* doubt that the sound was produced by *Anobium*, but was only uncertain as to whether it was a special call, or merely caused by the action of the insect's mandibles upon the wood.

AN ESSAY TOWARDS A KNOWLEDGE OF BRITISH *HOMOPTERA*.

BY THE REV. T. A. MARSHALL, M.A.

(*Continued from page* 252.)

8.—*Iassus (D) coronifer*, n. sp.

Vertex pronoto fere æqualis longitudine, latitudine sua inter oculos brevior. Testaceus, abdominis basi supra et lateribus paulo infuscatis. Frons supra et ad latera lineâ nigrâ incurvâ marginata. Hæc linea (in vertice latior), ibidem bis sinuatur, medio angulum rotundum efficiens; postice autem ramulos 4 curvatos emittens, spatia orbicularia semi-aperta circum apicem designat. Discus frontalis lineas transversas, per paria intus conjunctas, 4 utrinque, nigras gerit; inferius nigro maculatur: ad latera, extra limbum nigrum, maculæ quædam cum eodem limbo conjunguntur. Hemelytra fere concoloria, cellulis quibusdam intus et apicem versus fusco-limbatis. Pedes omnes nigro distincte maculati; tibiæ posticæ interdum apice fuscæ: tarsi iidem nonnunquam articulis apice infuscatis. Alæ completæ, hyalinæ. ♀.

Long. $1\frac{1}{2}$; alar. exp. $2\frac{1}{2}$ lin.

The black marks upon the face, enclosing pale spots, resemble in some specimens a pair of spectacles; in others they are more or less obsolete. The vertex and pronotum sometimes bear faint traces of irregular fulvous spots. The above characters, and the distinct semi-annular spots upon the legs, render this species very distinct. Abundant in one spot only of the common at Esher, in September, among grass beneath gorse bushes. All my specimens whose sex is discernible are females.

Vertex of *I. coronifer*, Marshall.

9.—*Iassus* (*D.*) *abdominalis*, Fab.

Supra pallide viridis, nitidus; subtus niger. Vertex pronoto æqualis longitudine, sua inter oculos latitudine paulo brevior. Frons supra nigra, utrinque flavo auguste striata; inferius flava; apex lineis duabus approximatis, longitudinalibus, nigris. Hemelytra abdomini æqualia, opaca, malino-viridia; membranæ hyalinæ cellulæ apicales transversim leviter infuscatæ. Alæ apice sub-fumosæ, nervi infuscati. Abdomen nigrum, apice plus minus testaceum. Pedes flavi; femora postica ad spinarum basin nigro-punctata, subtus nigro-lineata; femora antica basi nigra v. nigro-punctata; tibiæ posticæ apice, tarsorum posticorum articulus primus præter basin, secundus et tertius toti, nigri.

Long 2; alar. exp. $3\frac{1}{2}$ lin.

Cercopis abdominalis, Fab., S. R., p. 98.
Cicada abdominalis, Fall., Hem., 2, p. 31.
Iassus abdominalis, Flor, R. L., 2, p. 251.
Cicada bicolor. Fab., Ent. Syst., 4, 40, 55.
? *Aphrodes pallidipennis*. Curt., B. E., 633, text, no. 7 (insufficiently characterised).
Thamnotettix juvencus of Brit. Mus. Coll., *nec* Hardy, Tynes. Trans. 1, 425.

The head and pronotum of dried specimens turn yellow, and the hemelytra only preserve the delicate green colour of the living insect. Found locally in great profusion in damp meadows, but only in certain years. Very numerous in 1864 in Leicestershire, on the banks of the Soare. Less frequent on Wimbledon Common in 1865.

Note.—To this section belongs, perhaps, *Iassus chlorizans*, Hardy M.S., a fine species from Scotland, examples of which, presented by Mr. Hardy, are in the British Museum. I have had no opportunity of examining this insect, and have not succeeded in procuring any information about it. It appears from a hasty inspection to be about $2\frac{1}{2}$ lines long; the head and pronotum are yellow, and the hemelytra pale green. See Walker's Cat. of Brit. Mus. Homopt. No. 100 (*Iassus*), where *I. assimilis* Ahr. For. 17, 15 is given as a synonym. The latter, however, is *Pediopsis virescens*, as plainly appears from the fig. in Ahrens Fn., l. c., as well as from the words "*Vertice brevissimo*," applicable only to a *Bythoscopus* or *Pediopsis*. To increase the confusion, there is an insect described as *Cicada assimilis* by Fallen, Kongl. Vet. Ac. nya Handl., 1806. p. 22, and Hemipt., part 2, p. 35, which is certainly a *Deltocephalus*, and is wrongly quoted by Ahrens as identical with his *Iassus* (*Pediopsis*) *assimilis*. See also Flor, R. L. vol. 2, p. 253 (*I. assimilis*). I conclude only from these descriptions that the Scotch species in question is not *assimilis* Ahr., nor yet *assimilis* Fall., Flor.

10.—*Iassus* (*D.*) *vitripennis*, Flor ?

Flavo vel viridi-fuscus; abdomen supra nigrum, lateribus flavis. Vertex suæ inter oculos latitudini et pronoto fere æqualis. Frons brunnea, utrinque flavo-cancellata; apex supra lineolis 2 transversis incurvis, quarum superior ocellos connectit. Hemelytra abdomine longiora, apice rotundata, parum angustata, pellucida, nervis pallide flavis; membranæ cellula apicalis media macula obscurè fusca. Alæ apice sub-fumosæ. Pedes pallidi, unguiculis nigricantibus; tarsi postici præter basin nigri. Femora nigro-punctata et lineata.

Long. $1\frac{1}{2}$—$1\frac{3}{4}$ line.

I. vitripennis, Flor, R. L., 2, p. 255.

A single example, apparently of this species, is in the collection of T. G. Bold, Esq., of Newcastle, one of the few entomologists who take an interest in the *Homoptera*.

11.—*Iassus* (*D.*) *pascuellus*, Fall.

I. abdominali, Fab., sub-similis, minor. Supra pallide viridis, vel viridi-flavus, capite magis flavescente: subtus niger, flavo-varius. Vertex sua inter oculos latitudine et pronoto longior; apex supra striolis 2 fuscis, brevibus, antice conniventibus. Frons brunneo-cancellata, cancellis sæpe plus minus obsoletis. Hemelytra feminæ abdomen longitudine æquantia, maris longiora, pellucida, nervis pallidioribus. Corii margo externus a basi ad medium et ultra flavo-albidus. Abdominis segmenta basalia plus minus nigra, vel abdomen nigrum, apice testaceum. Pedes testacei; tibiæ sæpe nigro-punctatæ: femora antica obscure nigro-bi-annulata; postica subtus nigro-lineata.

Long. $1\frac{1}{2}$; alar. exp. $2\frac{1}{2}$—$2\frac{3}{4}$ lin.

Cicada pascuella, Fall., Hem., 2. p. 32.

Iassus pascuellus, Flor, R. L. 2, p. 253.

Thamnotettix juvencus, Hardy, Tynes, Trans., 1, p. 425; *nec* Brit. Mus. Col.

Abundant from July to October in the northern and midland counties; less common in the London district.

12.—*Iassus* (*D.*) *maculiceps*, Boh.

Breviusculus, niger, supra sordide testaceus, nitidus. Vertex fere sua inter oculos latitudine et pronoto brevior; versus apicem maculis 2 magnis rotundatis, et in ipso apice 2 minutis approximatis, nigris; in margine etiam frontis prope oculos punctum utrinque minimum, nigrum. Frons vel testacea, medio nigra, utrinque pallido-cancellata (♂), vel testacea immaculata (♀). Hemelytra (♂) abdomine longiora, (♀) breviora apice rotundata, immaculata; nervus costalis a basi ad apicem fere infuscatus; clavi margines tenuiter fusci. Pedes testacei; femora basi nigro-varia; tibiæ posticæ nigræ, basi et latere externo testaceæ; spinulæ pallidæ; tarsi antici testacei, unguibus nigris; postici nigri, basi testacei. ♂ ♀. Long. $1\frac{1}{4}$; alar. exp. $2\frac{1}{4}$ lin.

Deltoceph. maculiceps, Boh., Öfvers. 1847, p. 264. No. 2, Handl. 1847, p. 25.

This well marked species occurs sparingly on the dry and open parts of Wimbledon Common, where I took it in July, associated with *pulicaris*, Fall.

13.—*Iassus* (*D.*) *pulicaris*, Fall.

Deltocephalorum minimus. Cæruleo-niger, nitidus, supra brunneus, obsolete fusco varius. Vertex triente brevior quam sua inter oculos latitudo, pronoto æqualis longitudine; quam apud cæteras species obtusior. Hemelytra vel abdomine longiora, vel abbreviata, membrana contracta. Pedes nigri; genua, tibiæ late, tarsorum articuli anguste, basi nigri:—sed pedes interdum plus minus testacei. Segmenta abdominalia (♀) nonnunquam albido-marginata. ♂ ♀.

Long. 1; alar. exp. 2 lin.

Cicada pulicaris, Fall., Hem. 2 p. 34.
I. pulicaris, Flor, R. L., 2. p. 266.
Deltocephalus melanopsis, Hardy, Tynes. Trans. 1. p. 247.
Phrynomorphus nitidus (partim), Brit. Mus. Coll.

Common on dry grassy banks from June to September.

(To be continued.)

NOTES ON THREE LITTLE-KNOWN SPECIES OF BRITISH *HEMEROBIDÆ*.

BY R. M'LACHLAN, F.L.S.

Having been engaged in an examination of the British species of *Hemerobidæ* and allied families, preparatory to a Monograph of the species which I intend to work out in the same manner as that followed in the *Trichoptera*, I have been for some time aware of the existence in this country of three species omitted in Dr. Hagen's synopsis of the British species, published in the Entomologist's Annual for 1858; and I have thought it advisable to lay before those readers of this Magazine who attend to this subject, a short account of these three species, all of which we owe to the indefatigable researches of Mr. J. C. Dale.

1.—*Sisyra Dalii*, McLachlan.

Hemerobius nitidulus, (Dale) Walker, Brit. Mus. Cat. Neurop., pt. 2, p. 296, 61; nec. Fab.; nec. Stephens.

Castanea: antennis rufo-fuscis; oculis nigris; abdomine nigro-fusco; pedibus pallidis; alis anticis testaceo-hyalinis, venulis nonnullis transversalibus medium versus furcisque marginalibus fuscis aut fusco-nebulosis; posticis pallidioribus. Exp. alar. 6 *lin.*

In size rather larger than *S. fuscata*, F., and *S. terminalis*, Dale; can be distinguished from both by its castaneous head and thorax, by the testaceous tint of the anterior wings, and by the presence in these

of several (3 to 5) transverse veins placed irregularly rather before the middle, which transverse veins, with others placed nearer the base, are distinctly darker; a peculiarity shared also by the small marginal and other furcations, especially at the points where the veins divide, hence the wings appear slightly spotted. In *fuscata* there is very rarely more than one transverse vein in the middle of the wing, and in *terminalis* these veins are almost entirely absent; the former is also at once separable by its universally darker colour, and the latter by its great pallidity, and by the pale tips of the antennæ.

This species has been found by Mr. Dale at Glanville's Wootton, and also at Ambleside. It appears to be unknown on the Continent.

2.—*Hemerobius pellucidus*, (Dale) Walker, Brit. Mus. Cat. Neurop., pt. 2, p. 284, 19 (1853).

Hemerobius fuscescens, Wallengren. Öfversigt af Kongl. Vetenskaps-Akademiens Förhandlingar, 1863 (published in 1864), p. 22, 10.

This little species is of the same size as *H. elegans*, Steph. (= *H. Marshami*, Steph., = *Mucropalpus pygmæus*, Rambur), which at first sight it greatly resembles. A closer examination will show, however, that in *H. elegans* the longitudinal veins in the anterior wings are delicately spotted with white, of which there is no trace in *pellucidus;* but there is a more important structural difference in the neuration, for *H. elegans* possesses only two *sectores radii*, whereas in *pellucidus* there are three. The transverse veins are somewhat clouded, but otherwise the wings are remarkably pellucid; in *elegans* the anterior wings are more or less clouded and spotted with grey.

According to Wallengren's description I have no doubt whatever that his *fuscescens* is identical with *pellucidus;* for the comparison he draws between *pygmæus* (*elegans*) and *fuscescens* answers precisely to our insect. He says that it is found here and there on pine trees.

Mr. Dale tells me that *pellucidus* is found at Glanville's Wootton, Dorsetshire, but was more common formerly than at present.

3.—*Hemerobius dipterus*, Burmeister, Handb. Ent. 2, p. 973, 1; Curtis Trans Ent. Soc. London, new series, vol. 3, p. 56.

This most singular insect may at once be known by the almost entire absence of posterior wings, these organs being reduced to two minute lobes. As I have not the specimen before me at the present moment, I cannot give a detailed description here. One singular character may be worthy of notice, viz., that the anterior wings are so formed, that above they present a very convex surface, and correspondingly concave beneath.

It is an exceedingly rare species on the Continent. The only known British example was taken by Mr. Dale near Langport, Somerset, at the end of June, 1843.

H. ochraceus, Wesmael, is a discovery made since the publication of the "Synopsis:" *vide* Ent. Ann. 1863, p. 137.

It may be worthy of remark, that according to the types, *H. humuli* of Stephens (Ill. p. 108, 7) is not the Linnæan species of that name, but a small pale form of *H. nervosus*, Fab.; whereas *H. lutescens*, *affinis*, *paganus*, *apicalis*, *subfasciatus*, *irroratus*, and *marginatus*, of Stephens, are all forms of the true *humuli*.

Through the kindness of Mr. Piffard, I have just added to my collection a British example of *Drepanopteryx phalænoides*, taken at Windermere, by Mr. Strouvelle, of Windermere College. This insect, though common on the Continent, is very rare here; I believe that all the native specimens have occurred either in the north of England or south of Scotland.

ON SOME PECULIARITIES IN THE DEVELOPMENT OF *HEMIPTERA—HETEROPTERA*.

BY J. W. DOUGLAS.

During the critical examination of the *Heteroptera*, two kinds of variation from typical structure came under my notice.

1*st. Abnormal structure of antennæ.*— In the section *Lygæina* examples frequently occur having one of the antennæ shorter than the other, and in every such case the shorter one has 3 instead of 4 joints. The first and terminal joints are of the usual form, the last generally slightly shorter than usual in the respective species, but sometimes longer, the second joint about half as long again as in the other antenna, and the joint corresponding to the 3rd in the ordinary form wholly wanting. The result is that the antenna, although it has but three joints, is longer than if the joints were of the normal length, yet is perceptibly shorter than the other antenna; it is dwarfed but not deformed. This peculiarity never extends to both of the antennæ; it occurs as often on the left side as on the right, and is not confined to either sex, and the insects so affected are in other respects perfectly developed. The most remarkable thing is, that it is always the 3rd joint that is wanting; the impression produced on the observer is that Nature, having been short of material, had yet determined to produce the terminal joint as essential to the functions of the antenna, and had endeavoured to do the best she could under the circumstances by

lengthening the 2nd joint and suppressing the 3rd. At what period of the insect's life this adaptation occurred, and what were the circumstances inducing it, are the points for investigation.

The species of *Lygæina* in which the peculiarity has been observed are *Calyptonotus pini*, *C. pedestris*, *Scolopostethus pictus*, *S. adjunctus*, *S. affinis*, *S. contractus*, *Peritrechus luniger*, *Drymus sylvaticus*, *D. pilipes*, *Rhyparochromus dilatatus*, *R. prætextatus*, *R. antennatus*, *Hypnophilus micropterus*, *Stygnocoris sabulosus*, *Nysius thymi*, and *Ischnodemus sabuleti*.

The aberration probably occurs in other species of this section, but I am not aware that it has been recorded of any before.* In other sections it is rarely seen; indeed I have only observed it in one individual of *Alydus calcaratus* (*Coreina*); but an analogous difference of structure sometimes occurs in the section *Scutatina*, where, in single specimens of the following species,—*Sehirus bicolor*, *S. albomarginatus*, *Tropicoris rufipes*,—one antenna has but 4 instead of 5 joints; the normal 4th being suppressed, the 3rd elongated, and the terminal one of the proper form and size or even lengthened, joined to it; the entire organ, nevertheless, is shorter than its fellow.

In the three sections mentioned another kind of irregularity in the formation of the antennæ sometimes happens, as I have observed in single instances. Here one of the antennæ has one joint less than its fellow, but it is the ordinary terminal one that is wanting, and the one that does duty for it has not assumed its form. In a *Tropicoris rufipes* (*Scutatina*) the 3rd joint is shortened and thickened, the 4th much elongated and somewhat thickened. In a *Syromastes marginatus* (*Coreina*), the 3rd joint is slightly lengthened and thickened towards the end. In a *Gastrodes ferrugineus* (*Lygæina*) the 2nd and 3rd joints are both elongated and thickened.

I have seen two examples of malformation of another kind, each pertaining only to one antenna. In an *Enoplops scapha* the first two joints of the left antenna are of the usual form and size, but the 3rd is extremely short, and the 4th, instead of having a slender base, is abruptly anchylosed with the 3rd, so that the junction of the two is not perceptible; the 4th is also shorter and smaller than usual, and the apex is obtusely rounded. In a *Plinthisus brevipennis* the left antenna is very short, the 2nd joint of it is shortened and abruptly clavate at the apex, which is somewhat distorted, and to it is anchylosed one stout, almost cylindrical joint, instead of two each with a fine base, as in the other antenna.

* Except by Mr. Bold in *Scolopostethus affinis*. (See *ante*, p. 207.)

There can be but little doubt that the last two classes of malformation are the consequences of injuries received while the insects were in the penultimate state; but for the first-mentioned kind of aberration I hesitate to offer a hypothesis. I have not detected the suppression of a joint of one of the antennæ in any other section than the three above-mentioned; and I should be very glad to hear if it has been noticed by others in these or other sections.

(*To be continued.*)

ADDITIONS TO THE BRITISH FAUNA (*HEMIPTERA*).

BY J. W. DOUGLAS AND JOHN SCOTT.

(*Continued from page* 220.)

FAMILY 12.—PSALLIDÆ.

Genus 4.—STHENARUS, Fieb.

Species 2.—STHENARUS ROSERI.

CAPSUS ROSERI, *H. Schf.* Wanz. iv. 78, fig. 407 (1839.) *Meyer*, Caps. 105, 94 (1843). *Kirschb.* Caps. 87, 115 (1855).

CAPSUS (CAPSUS) ROSERI, *Flor.*, Rhyn. Liv. i. 560, 53 (1860).

STHENARUS ROSERI, *Fieb.*, Europ. Hem. 309, 1 (1861).

Orange-yellow, clothed with fine depressed golden-yellow hairs.

Head—black. *Antennæ*, 1st and 2nd joints black; 3rd and 4th reddish brown, the base of each narrowly black. *Rostrum* black.

Thorax—*Pronotum* reddish-yellow, finely wrinkled transversely, the hinder margin of the callositics, a central line and the posterior margin blackish-brown. *Scutellum* black. *Elytra* orange yellow; *Clavus*, inner margin narrowly black; disk from thence to the nerve suffused with blackish; *Corium* in the middle with a large, somewhat triangular, black patch between the 1st nerve and the claval suture, extending to the posterior margin; *Cuneus* red; *Membrane* blackish brown, between the apex of the cuneus and the lesser cell-nerve whitish; cell-nerves reddish, narrowly margined with whitish, lesser cell white. *Legs*, 1st pair reddish yellow; *tibiæ* at the apex blackish; *tarsi* yellow; 3rd joint and *claws* black (2nd and 3rd pair of legs of the specimen wanting).

Length $1\frac{1}{2}$ line.

We have only seen a single ♂ example of this species, which was taken by the Rev. T. A. Marshall at Battersea. It was submitted for determination to Dr. Fieber, who returned it as a variety of *Sthenarus*

Roseri. The typical form, according to Fieber and Flor, has the head, pronotum, antennæ, and scutellum black. Dr. Fieber also points out to us in a letter that the *Capsus saliceticola* of St[a]l is a variety of the above with black pronotum and elytra.

Family 13.—CAPSIDÆ.

Genus 2.—Agalliastes.

Species.—Agalliastes Wilkinsoni, Douglas and Scott.

Black. *Elytra* clothed with very short, depressed, yellowish hairs. *Tibiæ* without black spots. ♀ *Elytra* generally undeveloped, not covering more than half the abdomen; *clavus* not distinct; *cuneus* and *membrane* wanting.

Head—shining. *Antennæ*, 1st joint black, apex pale yellow; 2nd pitchy brown; 3rd and 4th brownish-yellow, 3rd at the base piceous. *Rostrum* pitchy-brown, 1st joint and the apex of the 4th black.

Thorax—Pronotum in the ♂ with an X shaped depression between the callosities; in the ♀ the disk posteriorly wrinkled transversely. *Scutellum* with a transverse channel in front, the anterior portion very convex; posteriorly flattish-convex, level with the clavus. *Elytra—Clavus* pitchy brown, somewhat shagreened. *Corium* and *cuneus* pitchy brown, the anterior and inner margin of the latter darker; *Membrane* pitchy-brown, iridescent; cell-nerves white, narrowly margined on both sides with brown. *Legs—thighs* black, apex brownish yellow; *tibiæ* brownish yellow, with longish, erect, somewhat spinose black hairs, but without black spots; *tarsi* brownish-yellow, 3rd joint and *claws* brown.

Length ♂ $1\frac{1}{4}$, ♀ $\frac{7}{8}$ line.

Mr. T. Wilkinson, after whom we name the species, has met with it in some numbers at Scarborough, amongst moss at the roots of *Convallaria bifolia*, in May and June.

It is very closely allied to *A. pulicarius*, but may at once be separated from that species by the absence of the black spots on the tibiæ. It should stand as the first species in the genus in our Volume.

Species 4.—Agalliastes albipennis, Fall.

Phytocoris albipennis *Fall.* Hem. Suec. i. 107, 59 (1829). *Hahn.* Wanz. ii. 91, p. 177 (1839).

Capsus albipennis, *H. Schf.*, Nom. Ent. i. 82 (1835). *Meyer*, Caps. 79, 56 (1843). *Kirschb.* Caps. 92, 127 (1855).

Capsus (Capsus) albipennis, *Flor*, Rhyn. Liv. i. 598, 78 (1860).

Agalliastes albipennis, *Fieb.* Europ. Hem. 311, 2 (1861).

Grey or greyish black, with longish, depressed, silvery white hairs. ♂ narrower and more elongate than the ♀. *Tibiæ* with large black spots.

Head—black. *Crown;* hinder margin broadly brownish yellow. *Antennæ*, 1st and 2nd joints black, the apical half of the latter yellow; 3rd and 4th yellow. *Rostrum* yellow or brownish yellow, tip black.

Thorax—*Pronotum* pale or dark grey, more or less suffused with blackish gray on the sides and in front to behind the callosities. *Scutellum* black, basal angles orange yellow or yellow. *Elytra—clavus* inner margin from the scutellar angle to the apex black, the colour extending for a little way upon the disk; disk blackish gray. *Corium*, anterior margin pale grey, or with the apex more or less blackish gray; disk between the 1st nerve and the inside of the anterior margin white, occasionally more or less suffused with blackish grey; towards, and at the apex, between the 1st nerve and the claval suture blackish grey, darkest towards the apex; *Cuneus* white at the base, the apex broadly black; *Membrane* blackish, iridescent, between the apex of the cuneus and the lesser cell a somewhat triangular white patch; cell nerves white, cells brown; inner marginal nerve brown-black. *Legs—thighs* black; 1st and 2nd pairs at the apex frequently piceous; *tibiæ* brownish-yellow with large black spots, and long, erect, somewhat spinose, black hairs, the base narrowly black; *tarsi* brownish yellow; 3rd joint and *claws* piceous.

Abdomen—black. Length ♂ $1\frac{1}{2}$, ♀ $1\frac{1}{3}$ line.

Several examples taken at the side of the bridge between Havant and Hayling Island, on *Artemisia maritima*, in September (*Douglas*). Immature specimens are of a uniform pale gray colour.

Family 14a.—BOTHYNOTIDÆ.

Genus—Bothynotus, Fieb.

♂ Longish oval, sides almost straight; ♀ broad oval, with undeveloped elytra.

Head—viewed from above short, vertical in front, $2\frac{1}{2}$ times wider across the eyes than long, posteriorly produced into a short neck, its sides very convex. *Crown* almost horizontal, flattish-convex. *Clypeus* convex, nearly parallel with the anterior margin of the eyes; apex in a line with the base of the antennæ; antenniferous

processes very short, in a line with the underside of the eyes *Face* triangular, central lobe broad, longish, convex, produced beyond the clypeus; side lobes short, somewhat triangular, and slightly rounded outwardly. *Antennæ* shorter than the body 1st joint cylindrical, a little longer than the head, its entire length reaching beyond the end of the face; 2nd $2\frac{1}{4}$ times longer than the first, in the ♂ stoutish, almost cylindrical, in the ♀ slightly clavate; 3rd and 4th filiform, together shorter than the 2nd; 4th $\frac{3}{4}$ of the 3rd. *Eyes* very prominent, projecting considerably beyond the anterior margin of the pronotum; viewed from above hemispheric, from the side oval. *Rostrum* short, reaching to the end of the mesosternum.

Thorax—Pronotum trapeziform, $1\frac{1}{2}$ time as broad on the posterior margin as long; anterior margin in the ♂ almost straight, and with a raised collar; behind the latter a transverse depressed space bounded posteriorly by a deep curved channel, its extremities terminating a little within the anterior angles; in the ♀ the collar is flat; sides straight; posterior margin in the ♂ straight across the scutellum, rounded towards and at the hinder angles; disk convex, very much deflected to the head from in a line with the base of the elytra; in the ♀ the posterior margin is slightly concave across the scutellum, and somewhat raised; disk horizontal, almost flat as far as the channel. *Scutellum* triangular, equilateral, convex, raised above the clavus, with a transverse channel in front, the anterior portion concealed beneath the posterior margin of the pronotum. *Elytra* in the ♂ longer than the abdomen, in the ♀ undeveloped, without cuneus or membrane; *Clavus* convex, deflected to the corium; *Corium* in the ♂ almost flat, anterior margin slightly reflexed; in the ♀ elevated towards the apex of the clavus; *Cuneus* long, triangular. *Legs* thin; *thighs* of almost equal thickness, somewhat cylindrical; *tarsi*, 3rd pair, 1st and 2nd joints of almost equal length; 2nd shortest.

Figure 3 (♂ & ♀) Ent. Ann. 1866.

Species—Bothynotus Minki, Fieb.

Bothynotus Minki, *Fieb.* Wiener Entomol. Monatschrift, viii. 77, Taf. 2, fig. 7 (1864).

♂ Shining, pitchy black, or with a faint greenish-brown tinge; clothed with fine, erect, pale yellowish hairs. *Legs* red.

Head—black; *Face*, side lobes reddish. *Antennæ* pitchy brown, sparingly clothed with longish, very fine, pale yellowish hairs. *Rostrum* piceous.

Thorax—Pronotum black, rugose, thickly and very deeply punctate, the depressed portion alone smooth and somewhat convex. *Scutellum* black, wrinkled transversely, depressed in the centre at the transverse channel. *Elytra* somewhat diaphanous; *Clavus* pitchy black, finely wrinkled transversely; *Corium* pitchy-yellow, the anterior margin, 1st nerve, and a narrow space adjoining the clavus pitchy-brown; *Cuneus* pitchy or reddish brown; anterior margin at the base rounded, and leaving a small but distinct notch; *Membrane* pitchy-brown, finely but irregularly wrinkled longitudinally, clothed with very fine short hairs; cell-nerves black. *Legs—thighs* and *tibiæ* red, the latter narrowly brownish at the apex; *tarsi* brown; *claws* reddish.

Abdomen pitchy-black, clothed with fine, pale yellowish hairs.

Length 2—2¼ lines.

♀ Black, shining, clothed with fine, erect, yellowish hairs. *Legs* very pale reddish yellow.

Head—reddish; *Crown* with a slightly curved blackish line on each side of the centre extending to the inside of the antenniferous processes; *Face*, central lobe black. *Antennæ*, 1st joint reddish or brownish yellow, base and apex narrowly blackish; 2nd, 3rd, and 4th pitchy-black.

Thorax—Pronotum rugose, the punctures deeper than in the ♂. *Scutellum* wrinkled transversely, with a faint central keel extending from the apex to the transverse channel, disk depressed on either side next the latter. *Elytra* undeveloped, without cuneus or membrane; *Clavus* and *Corium* rugose, anterior margin of the latter thickened, apex rounded. *Legs—thighs* very pale reddish-yellow; *tibiæ* pale yellow, clothed with somewhat erect, fine, yellowish hairs; *tarsi* and *claws* pitchy-brown.

Abdomen entirely black, clothed with pale yellowish hairs; *Connexivum* broad, perpendicular, and somewhat reflexed inwardly.

Length 1¾ line.

Four specimens of this insect were taken in July last by Mr. D. Sharp, on the hills between Loch Long and Loch Lomond, at a height of about 1500 feet.

(*To be continued.*)

NOTES ON COLLECTING, MANAGEMENT, &c. (*LEPIDOPTERA.*)

BY H. G. KNAGGS, M.D.

THE CATERPILLAR STATE (*continued from page* 114).

MANAGEMENT—*Feeding.*

The kind of food having been determined upon, a few hints as to collecting it, &c., may be added. As a general rule food, like fruit, should be gathered early in the morning, and if conveyed any distance, packed very lightly. When, however, intended for juvenile larvæ which are being reared on the air-tight principle, it must not be plucked until the morning sun has dispelled the dew from its surfaces; though for more advanced individuals, when fed in ventilated situations, this same dew, or the moisture caused by a shower or even by the water tap, gives an invigorating fillip to the appetite which cannot be otherwise than healthful. It may be noted here that when food is too wet the quickest plan to dry it is:—having placed it in a towel, the four corners of which are held in one's hand, to *swing* it round and round, and thus get rid of the extra dampness by centrifugal force, whereby the plant is not bruised, as would be the case if shaking were resorted to to dislodge the moisture: or it may be dried nicely in the draught caused by opening a window-sash two or three inches, and placing the food half a foot inside the window.

The more mature foliage is generally chosen by larvæ, but by no means invariably so, since many appear to prefer the young tender shoots, and of course in some cases even unexpanded buds.

Nearly all larvæ like their food healthy and fresh: but the risk of their being injured in changing it, often makes it advisable to be content with clipping the ends off the twigs, &c., which go into the water; and indeed this practice will keep the food good for a long time. There are, however, some special and curious exceptions to the rule that fresh healthy food is preferred, for, while the larva of *Aleucis pictaria* selects the stunted unhealthy-looking sloe-bushes, *Cidaria* (?) *sagittata* actually causes its food to wither before partaking of it; and in the case of *Petasia nubeculosa* careful feeding with fresh food seems to fail, though a stale dryish diet affords a far greater likelihood of success.

It sometimes happens, even in Nature, that eggs hatch, and hybernating larvæ come forth, before the requisite food is in leaf or even in bud, in which case unopened buds, if to be found, may be split and offered with considerable chances of success; they must, however, be frequently renewed, and not allowed to dry up. By this means with care, and luck on our side, we may manage to keep our larvæ going while we look out for a stray example of a food-plant, in some sheltered nook or other, perchance more forward than the rest of its species, or till buds have in due time expanded into little leaves: but if not even buds are obtainable, then our only alternatives lie between supplying peeled or rasped twigs and bark, finding a "substitute," or leaving our *protégés* entirely to their fate.

There are some larvæ, not altogether polyphagous, for which it seems important —even necessary—to provide an alterative diet: thus it has been recommended to feed *Diphthera Orion* on oak and birch, *Noctua neglecta*, and perhaps, too, *Agrotis agathina* on heath, sallow, &c., and *Cerastis vaccinii* has been found to thrive best on oak and dock.

It is sometimes considered desirable, and occasionally even absolutely necessary, to supply captured larvæ with food procured, if not off the same tree or shrub, at least from the same locality as that in which they previously fed.

The larvæ of local coast species are at times exceedingly hard to rear when the attempt is made to feed them up in inland situations—in such cases it is frequently imperative to procure food from the sea-side; but there is another ingenious alternative, namely, to damp the food with sea-water, of which a supply must be kept on hand for the purpose, as, for example, in breeding *Mamestra abjecta*, &c., though sometimes even a substitute food, when sprinkled with sea brine, will answer instead of the native food, as in the instance of *Bombyx castrensis*, which will thrive on pickled wild cherry.

All food should be rigidly searched over for cannibals and other vermin before admitting it to our breeding-cages.

When lichens and mosses have to be employed as food, it is well to collect them damp and with the substance to which they are attached adherent if possible, and they should be renewed whenever they cease to look fresh; but the old food should not be hastily cast away; it should be put by, under cover, and carefully watched from time to time for any larvæ which may turn up, especially if at the time of changing any were missing; and this reminds me that it is well to know the number of individuals in a brood, for one can then be certain whether they have or have not *all* been shifted. And it may also be laid down as a general rule that there is much greater chance of a successful result in the way of imagos when we are content with a moderate number of larvæ, than when we collect, or retain for ourselves after egg-hatching, a large crowd of the larvæ of any species.

For information respecting the management of internal stem or root-feeders, seed-feeders, &c., the reader is referred to former papers at pages 195, 217.

Wood-feeders may be kept in flower-pots or wide-mouthed bottles, with wire-gauze covers, or in tins,* being allowed either to remain in the logs, branches, or twigs in which they were originally feeding when removed, or else supplied with the fresh cut (but not wet) sawdust and chips of their food. The tins should be freely perforated, and a sharp eye should be kept for mildew, which, when present, should be removed, and fresh food supplied. These remarks similarly apply to bark-feeders.

Larvæ feeding on vegetable refuse, dried fruit, honeycomb, feathers, hair, dung, &c., may be kept supplied with their food in suitable boxes; no particular precaution being necessary beyond securing the prisoners from escape, and the prevention of mould.

(*To be continued.*)

Note on the habits of the larva of Grammesia trilinea.—In June, 1864, I obtained eggs of this species from moths taken at flowers of yellow-rattle, the larvæ from which appeared during the same month. A few of these I put on a broad-leaved plantain in a flower-pot, and soon saw signs of their taking to their food. After a time, however, I missed them, and at first concluded that they had been eaten by some spider, slug, centipede, ant, or other wild beast; still I kept the gauze covering on the flower-pot, and finding that the plantain was continually kept level

* Nothing in strength short of *tin* or earthenware and wire gauze will defy the jaws of *Cossus*.

with the earth, at last turned out earth and all, and thus detected the missing larvæ—much grown in size, and very muddy in appearance from having burrowed an inch or more under the surface : they seemed to eat the stem of the plantain as well as the leaves, and continued their subterranean habits until the last, seldom—and then only at night—showing themselves above ground, and changing to pupæ about the end of April. The description of the larvæ in the Manual from Freyer is good as far as it goes, but is rather too much curtailed, so I venture to add a few particulars noted by Mr. Buckler and myself, premising that the first step in describing *trilinea* must be to give the larvæ a good washing. In form it is short and thick, very wrinkled, the head small and retractile, also 13th segment very small, the segmental folds deeply cut. Ground colour variable :—sometimes dark grey ; then the dorsal line is pale grey, edged with black at the segmental folds. The sub-dorsal line is a series of pale grey wedges on the several segments, the thin end of each wedge pointing forwards, and its upper side bordered by a short oblique black stripe, and its bigger end enclosing a black dot : below again comes a rather broad dark brown stripe, and below that a narrow one of grey : spiracles black, each placed on a little swelling ; belly pale grey. Sometimes the ground colour is a dirty reddish brown, with the dorsal line partaking of the same tint, but paler, edged with black as before most distinctly at the folds ; the sub-dorsal row of stripes of the same colour as the dorsal line, but of uniform width, and showing distinctly only on the anterior part of each segment, where also appear a pair of black dots ; the spiracular brown stripe tinged with ochreous. There is another variety of dirty flesh colour, with the markings but faintly visible.—J. Hellins, *6th February*, 1866.

Notes on Tineina.—Early in May last, the shoots of a solitary juniper bush in my garden were much infested with larvæ, of which the following is the description : Green, with a coral-red band, dotted with green, across the anterior part of each segment, except the head, which is brown. The red bands extend down to the spiracles, and more faintly to the belly, so as almost to form rings. They feed inside the terminal joints of the juniper, completely hollowing them out, but leaving plenty of excrement in the mine, and move freely from one shoot to another. When full grown, they look too fat to have inhabited so narrow a dwelling.

These larvæ, as I was led by Mr. Stainton to expect, produced *Argyresthia dilectella* in the beginning of July. A few specimens occurred about the bush in the garden at the same time, but they were exceedingly sluggish and retiring in their habits.

There are no wild junipers within seven miles, and but few cultivated ones in the neighbourhood ; and I have no doubt that this species must breed, year after year, in that one bush. I hope that, from long interbreeding, they will not become deteriorated.

On July 31st, I paid a hasty visit to Hydon Heath, where wild juniper grows in abundance, and found *Argyresthia aurulentella* in such swarms that, had I not been pressed for time, I might easily have taken enough to supply the cabinets of all my friends.

In the middle of July, *Argyresthia Andereggiella* was rather common in an

orchard here, among the apple trees. I have very little doubt that the larva will be found to feed in shoots of apple, immediately after that of *A. curvella*.

In the latter part of June, *Laverna Raschkiella* occurred very sparingly among *Epilobium angustifolium* in the woods. It was only to be found settled on the leaves, and had a most singular habit of revolving in a circle, of which its head formed the centre. The head was kept in one place, the hind legs moving the hinder part of the insect in circles, or segments of circles, backwards and forwards, round it; the wings being very slightly raised. I fear that I do not give an accurate idea of this waltzing movement. It is the most singular I have seen in any insect. Although apparently so engrossed in this amusement that it would allow a very close inspection, it was almost impossible to box the insect on the leaf, or to follow it with the eye as it escaped.

In striking contrast to the habits of this species are those of *Laverna lactëella*, which I took several times flying over hedges higher than my head, and along wood-paths, but never saw about any species of *Epilobium*.—Chas. G. Barrett, Haslemere, 15*th December*, 1865.

Entomological Society of London. 2nd April, 1866.—Sir John Lubbock, Bart, F.R.S., President, in the Chair.

J. Watson, Esq., of Rose Hill, Bowdon, was elected a member.

Mr. Wilson Saunders made the following exhibitions:—Firstly, a number of pedunculated eggs (probably of a *Chrysopa*) attached to a piece of bark, and arranged in rows in such a manner that between two longitudinally-placed eggs another was situated at right-angles, and so on to the end of the series. Secondly, a larva (probably of a Lamellicorn beetle) from the anterior portion of which *Sphæriæ* proceeded in the shape of ram's-horns. Thirdly, several larvæ of one of the *Locustidæ* collected on a twig, and apparently inextricably entangled by each other's legs, in which position they had died; Mr. Saunders was utterly unable to imagine by what means, or for what purpose, they had thus collected. All the specimens exhibited were from Australia.

Mr. Rogers sent for exhibition a spider's egg-bag, from which he had bred several examples of *Pimpla oculatoria*, which ichneumon was a parasite on the spider. Mr. Smith and Mr. Desvignes stated that they had reared this parasite from bramble-sticks; probably these sticks had contained the nests of spiders.

Mr. Weir exhibited a number of larvæ, apparently of *Tenebrio*, which had caused considerable damage to the corks of port wine bottles; he suggested that the wine had perhaps been packed in bran instead of sawdust, and that the larvæ had quitted the bran to attack the corks. Mr. Saunders remarked that some time since a quantity of manufactured corks warehoused in the docks had sustained great damage from the attacks of *Dermestes* larvæ, through the corks having been placed in close proximity to a number of skins infested by these larvæ.

Mr. Smith exhibited an example of *Bembex olivacea*, said to have been taken many years since near Gloucester, by a Dr. Hicks, and given to Mr. Smith by a friend who had it from Dr. Hicks himself. He remarked that the species had been figured as British by Donovan, under the name of *B. octopunctata*, but that there had never been any satisfactory evidence of the occurrence of the insect in Britain, and he was unable to trace any further history of the example now exhibited.

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