THE

ENTOMOLOGIST'S MONTHLY MAGAZINE:

CONDUCTED BY

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R. McLACHLAN, F.L.S. H. T. STAINTON, F.L.S.

VOL. III.

"The science which we cultivate is not one of names alone; we have living objects for our contemplation;—who will affirm that a single individual of all the British species of insects has been thoroughly studied in all the various relations of its natural history and œconomy, internal and external anatomy, in its affinities and analogies?"—*Westwood.*

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PREFACE.

THE conclusion of the 3rd Volume of the "Entomologist's Monthly Magazine" is considered by the Editors of that publication to be a fitting occasion for expressing their acknowledgments to their numerous supporters.

As the Magazine derived its origin entirely from the personal friendship of its Conductors, and was started—as scarcely need be added—not only without any hope of gain, but with the tolerable certainty of loss, it is a matter of some gratification to them that they are now enabled to report their undertaking as in an unexpectedly satisfactory condition, with regard to the financial department.

The sale of back numbers, having increased to an extent far greater than was anticipated, has (somewhat undesirably) caused several parts of Vol I. to be now out of print: it is, therefore, impossible to furnish *complete* series of that volume, except in its bound form; the precaution of reserving a few sets of the latter having been taken.

With respect to the volume now completed, the Editors flatter themselves that an examination of its Index will sufficiently show its value, either from a scientific or a general point of view. To mention special papers would be invidious; but the publication of so many valuable contributions towards a more perfect knowledge of our native Insect-fauna as have appeared in Vol. III. must alone render it of lasting assistance to British Entomologists.

It has been suggested by some of our compatriots, and also by the learned Editor of the "Bericht über Entomologie," that lengthy papers should not be too much subdivided. The Editors will endeavour

to comply with this suggestion—of the importance of which no one can be more aware than themselves; but they may be excused for remarking that in some instances the convenience of the authors has been—and must be—necessarily consulted.

To all friends who have directly or indirectly contributed to raise the Magazine to its present standard the Editors beg to express their feeling of deep obligation;—and, as they still intend to spare no endeavour to increase the utility of the publication, they will feel additionally indebted for any suggestion tending to further that project.

Paternoster Row, 16th April, 1867.

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THE

Entomologist's Monthly Magazine

VOLUME III.

DESCRIPTION OF A BRITISH SPECIES OF *SCOPARIA* (*EUDOREA*) NEW TO SCIENCE.

BY H. G. KNAGGS, M.D., F.L.S.

SCOPARIA BASISTRIGALIS, n. sp. *Alis anticis, apicibus rotundatis et marginibus apicalibus fere verticalibus, sub-rhomboideis, canis, nigro-irroratis; strigis basalibus conspicue nigris; lineis primis costam versus obliquis; secundis denticulatis, albido-marginatis; marginibus apicalibus punctatis; ciliis saturatiore regulariter intersectis: posterioribus candidis, sub-hyalinis, vix. fusco tinctis.*

Exp. alar. fœminis, 9¾‴-10½‴; *maris*, 9‴-9¾‴.

Habitat: Surrey, Sussex, Worcestershire.

Fore-wings in both sexes broad, of rhomboidal shape, having the apex, rounded and the hind margin nearly vertical—ground colour clear greyish white, thickly sprinkled with numerous black atoms. *Basal area* with two short distinct black streaks passing from the base of the wing along the sub-costal and median nervures respectively, the edge to the space preceding the first line generally paler. *First line*, commencing obliquely from the costa, passes backwards and inwards to the orbicular stigma, thence forwards and inwards to meet the claviform stigma, which is incorporated with (not detached from, as in some of the genus) this line, and finally with an S-like bend, reaches the inner margin. *Medial area;* the orbicular and reniform stigmata are situated on patches of dark fuscous colour, the black outline of the latter (the reniform or 8 mark) forming an ∞-like mark. *Second line* rather serrated, two of the serrations situated above the middle being prominently produced towards the hind margin. *Apical area:* in this space the edging of the second line is pale whitish-grey; the upper and lower dark shades usually join; hind margin of wing dotted; the pale cilia cut up at regular intervals with square patches of dark-coloured scales.

1. *S. basistrigalis.* 2. *S. ambigualis.*

Hind-wings silky-white, with a very slight fuscous tint.

The only species with which *Sc. basistrigalis* can possibly be confounded is *Sc. ambigualis*; but the greater width of the fore-wing, giving the appearance of its being actually shorter, the rounded apex, and especially the vertical apical margin, together with the distinct basal streaks, the oblique commencement of the first line, &c., are amply sufficient to separate it from that insect.

I believe that *Sc. basistrigalis* will be found pretty generally mixed up with *Sc. ambigualis* in collections. I detected several examples, both ♂ and ♀, among a number of *Scopariæ* forwarded to me for investigation from Haslemere, by Mr. Barrett. Mr. Bond, a few years since, noticed the insect in some numbers at Tilgate Forest; but, considering it at the time a variety of *ambigualis*, contented himself with the capture of only two or three specimens. Mr. Horton has also sent me this species for identification from Worcester; and I have noticed it mixed up with *Sc. ambigualis* in some of the collections to which I have had access.

I may add that in a future number of the Magazine it is my intention to make an attempt to smooth the difficulties which beset the study of this interesting but much neglected little group; and that Mr. Rye will draw on wood most of our indigenous species, for the purpose of illustrating my proposed paper on the subject.

Kentish Town, *May 9th*, 1866.

THE *LEPIDOPTERA* OF IRELAND.

BY EDWIN BIRCHALL.

Ten years having elapsed since the publication by the Dublin University Zoological and Botanical Association, of lists of Irish *Lepidoptera*, drawn up by the Rev. Joseph Greene and the Rev. A. R. Hogan, together comprising 636 species, I venture to offer the following revised and extended list, in which 961 species are recorded as indigenous, amongst them seven species not known to occur in Great Britain.

Much has yet to be done before a catalogue, even approximately complete, can be prepared; still I hope that a record of the present state of our knowledge of the distribution of *Lepidoptera* in Ireland will not be without value as a basis for future observations, and the sooner it becomes obsolete the better will its purpose be answered.

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

I have been unwilling to reject any reputed indigenous species which could be retained with the least show of reason; and in some

cases species have been retained on the strength of very old and solitary observations; but the authority on which this has been done will, I hope, be held fully to justify the step. That the observations of the late Dr. Ball and Mr. Tardy are in many cases unconfirmed, proves, in my judgment, not the absence of the insect, but merely the want of observers; and until there are resident entomologists in every part of Ireland the indigenous species can never be otherwise than imperfectly known.

Where only one or two localities are named, it is not intended that the reader should infer that the insect does not occur elsewhere, but simply that there was no further information at my disposal.

The list is still a very meagre one compared with that of English *Lepidoptera*; but when it is considered that an addition of upwards of 300 species has resulted from the very partial exploration of small districts in Dublin, Galway, and Kerry; that three-fourths of the counties of Ireland, including the whole of the great province of Ulster, and the extensive coast line of the island, except a small portion near Dublin, are up to the present time *terra incognita*, I think the idea which has been entertained that Ireland was singularly barren and unproductive in this order of insects, must be given up; it has probably arisen from the circumstance that the *Lepidoptera* are not by any means so generally distributed as in England; over a large portion of the island grazing farms now extend, wood of any kind is very scarce, and stone walls take the place of hedges; such districts are not likely to possess a rich lepidopterous fauna; but in very restricted localities, and under more favourable conditions both species and individuals exist in extraordinary numbers. As a rule, if you take a species in Ireland you may take it in plenty, but you run a great risk of overlooking it entirely by missing the precise spot where it alone occurs. The lists of *Tortrices* and *Tineæ* have been drawn up by my friend C. G. Barrett, and though undoubtedly still very incomplete, include 150 species not previously recorded as indigenous.

DIURNI.

Leucophasia sinapis—Abundant near Galway and at Killarney; but has not been noticed in Ulster or Leinster; only a June brood has been observed.

Pieris cratægi—Mr. Greene inserts this species in his list on the authority of Mr. Hely. I have not met with it, and am unable to say where it occurs.

„ brassicæ—Generally distributed.

„ rapæ— do.

„ napi— do.

Anthocharis cardamines—Common in May, 1860. I observed this species in myriads at Sligo, reminding me of the migrating clouds of tropical *Callidryas*.

Gonepteryx rhamni—Killarney; apparently confined to the south of Ireland.

Colias edusa—Common in some seasons on the South and East coast; occurs more rarely north of Dublin. In profusion at Killarney in August, 1865.

„ hyale—In same localities as preceding species, but less frequently.

Argynnis paphia—Common. Is very abundant at Killarney and in the county Wicklow.

„ aglaia—Common; especially so on the sea-coast near Dublin.

„ lathonia—Killarney, in the lane leading from Muckross to Mangerton, near a limestone quarry on the left of the road, August 10, 1864.

Melitæa artemis—Common; Galway, Killarney, County Wicklow.

„ athalia—Killarney, abundant.

Vanessa urticæ—Common.

„ polychloros?—A specimen seen near Galway in 1861, but as the insect was not captured, and has not been observed elsewhere, I insert it doubtfully.

„ Io—Common in Leinster, Munster, and Connaught; but apparently rare in Ulster.

„ antiopa—A specimen captured near Killarney, July, 1865, by W. G. Battersby.

Vanessa atalanta—Common everywhere.

„ cardui—Do.; often to be found on the summits of mountains.

Erebia cassiope—Croagh Patrick, near Westport. The locality for this species is about half way up the mountain on the Westport side, in a grassy hollow where a little hut is erected for the shelter of the pilgrims. I captured a fine series here in June, 1854.

Satyrus ægeria—
„ megæra—
„ semele—
„ janira—
} Generally abundant throughout the island.

„ tithonus—County Wicklow, and near Cork.

„ hyperanthus—Rather local. I observed it in profusion near Galway and in Malahide Park.

Chortobius Davus—Common in Galway, Mayo, and Kerry. All the Irish and Scotch examples of this insect which I have seen are the typical form of *Davus* of Fab.; they may be distinguished from the variety which occurs on the bogs of the north of England by their larger size, and by the more or less complete absence of the ocelli on the under-surface of the hind-wings: the English variety is the *Rothliebii* of German authors.

„ pamphilus—Common everywhere.

Thecla rubi—Common Dublin, Wicklow, and Kerry.

„ quercûs—Do. do.

„ betulæ—Very common in the lanes and roadside hedges of the south and west of Ireland in August, frequenting the flowers of the bramble, and settling the moment the sun is obscured, when it may readily be taken with the fingers; has not been noticed in Ulster or Leinster.

Polyommatus phlæas—Common.

Lycæna ægon—The Murrough of Wicklow, and near Ross Trevor.

„ agestis—Dundrum, near Dublin.

„ alexis—Common everywhere.

„ corydon—Mr. Greene inserts this species on Mr. Hely's authority. I have not met with it.

„ alsus—Very common in Galway; also occurs near Belfast, and on the Portmarnock sand-hills.

„ argiolus—Generally abundant throughout Ireland where the holly, on which the larva feeds, is a very common tree.

Nemeobius lucina—In Mr. Tardy's collection, now incorporated with that of Trinity College, Dublin, there are specimens of this insect, but I am unable to say where captured—most probably in the county Wicklow, a district he searched assiduously for many years. I have not met with the insect.

Thanaos tages—Hitherto only noticed near Galway.

Hesperius sylvanus—The Murrough of Wicklow.

„ linea—Powerscourt and near Cork.

It thus appears that only 43 of the 64 British Butterflies have been observed in Ireland. The 21 absentees may be thus classified, following the divisions of Mr. H. C. Watson's "Cybele Britannica":—

Argynnis Euphrosyne—
„ *Selene*—
Syrichthus alveolus—

} 3 species of the "British Type," so called from the universal diffusion of the species throughout Great Britain. I have little doubt all three will eventually be found in Ireland, especially as they occur in Scotland, from whence Ireland seems, to a large extent, to have derived its insect population.

Thecla w-album—
Lycæna Acis—
„ *Arion*—
Vanessa c-album—
Argynnis Adippe—
Papilio Machaon—

} 5 species of the English type; none of them occur in Scotland except *A. Adippe*. The others are most abundant in the south of England, and all decrease in frequency northwards.

Pieris Daplidice—
Thecla pruni—
Polyommatus Hippothöe—
Lycæna Adonis—
Liminitis Sibylla—
Melitæa Cinxia—
Apatura Iris—
Arge Galathea—
Hesperia Paniscus—
„ *comma*—

} 11 species of the "German Type," also all absent from Scotland, and mostly attached to the south-eastern portion of England.

Hesperia Actæon—One species of the "Atlantic Type." It is not improbable that this insect will be found on the south coast. There is no part of the British Islands in which an Atlantic type of fauna and flora is so strikingly developed as in the south-western portion of Ireland.

Erebia blandina—One species of the "Scottish or Northern Type." As this insect is widely spread over the Northern part of Great Britain, and abounds in Argyleshire almost within sight of the Irish shores, I confidently anticipate its discovery in Ireland. I have never collected in Ulster, where it is most likely to be found.

Enjoying, as Ireland does, a milder climate than any other portion of the British Islands, the absence (if it should prove such) of the foregoing 21 Butterflies, of which 16 are also absent from Scotland, is a remarkable circumstance; and I know of nothing in the physical condition, or in the flora, of the island, to account for it.

In the present imperfect state of our knowledge of Irish *Lepidoptera*, perhaps it is premature even to hazard a conjecture as to the cause; if, however, we suppose the separation of Ireland from England by the formation of St. George's Channel to have taken place previously to the introduction of the bulk of the present fauna, and a connection to have existed with Scotland to a later date, it will offer an explanation of the northern character of the Irish fauna which is very strongly marked even in the extreme south of the island at Killarney, amidst conditions of climate and vegetation offering the most complete contrast with Scotland within the limits of the British islands.

(*To be continued.*)

OBSERVATIONS ON THE ECONOMY, MOULTING, AND PUPATION OF A LARVA OF *NEPTICULA AURELLA*, TOGETHER WITH SOME REMARKS RESPECTING THE HABITS OF THE PARASITE OF THAT SPECIES.

BY CHARLES HEALY.

Early in 1863, I spent some time in the pleasurable study of the economy, &c., of this little bramble miner, and I noticed that it was rarely that any two larvæ agreed in their markings during the period of moulting, and in some few instances the differences were very great.

On several occasions, after carefully following a larva through its moulting, &c., my studies were abruptly terminated, just as the larva was about to enter the pupa state, by the sudden appearance of the larva of a parasitic Hymenopterous insect. The parasitic larva emerges at the back of the head of the *Nepticula* larva, and then, applying its mouth to the hole through which it emerged, it proceeds to absorb the juices of its victim, till there is nothing left of the unfortunate *Nepticula* larva but the dry empty skin. The parasitic larva is then full fed, fat and plump, there being just sufficient nourishment in the body of one larva of *N. aurella* to supply it with the proper amount of food.

The *aurella* larva whose moulting, &c, I am about to describe, was collected in the last week of January, 1863. The day after I had it in my possession, it left off feeding, and remained perfectly quiescent in its mine, when all the colour and markings on the head disappeared, and on the anterior portion of the body of the larva were two reddish-brown lines, at an angle of about 60°, and ending with a dull red blotch; the head and all the parts of the body situate between the two angular lines having a semi-transparent appearance; the remainder of the body dull yellow, the dorsal vessel being invisible.

In this position the larva remained for the space of ten days. At the end of the first week in February, the mouth of the larva became brown, and on the back of the second segment there appeared a square dull reddish patch. The next day the back of this segment became decorated with two faint brown triangular spots, margined with darker; these two triangular spots were followed by a couple of longitudinal lines, having a dull reddish blotch at their bases (the dull red blotch at the ends of the two reddish-brown lines had then disappeared). Two days later a pair of reddish-brown spots became visible on the back of the second segment, and were immediately followed by a small reddish blotch.

On the 10th of February, the entire surface of the mouth turned dark brown, and all the various spots and markings on the anterior portion of the body of the larva became merged in one general dull blotch. The larva then re-commenced feeding, but at first very slowly, and appeared to be in a very weak and languid state. As the food passed into the stomach, the anterior portion of the dorsal vessel (which before the larva began feeding was invisible) became tinged with green, and after a short interval its posterior portion assumed a darker tinge. As soon as the larva has refreshed itself with a little food, it rested for a time, and, during this interval, threw off the old covering of its head. (On one occasion, as soon as a larva began feeding after moulting, I watched it narrowly, from the instant it swallowed the first mouthful of food to the moment it ejected the first pellet of "frass," and found that it occupied precisely half-an-hour, thereby implying that it requires that amount of time, after deglutition, for the food to be digested, the nutritious properties extracted, and the coarse indigestible portion finally ejected as "frass.")

After this partial moult, the larva, as if trying to make up for lost time, fed with remarkable rapidity, its jaws being in constant motion; and as it ate its way forwards, the anterior portion of its body became stouter. By the time the larva had fed for a space of six hours, it had so far extended its mine as to enable it to withdraw half of its body from its old skin, and then the "frass" gradually began to accumulate in the partially thrown-off skin, the latter serving as a receptacle in which the "frass" was deposited; and as the larva moved the extremity of its body about within the walls of its old skin, the "frass" was distinctly observable as it fell pellet by pellet.

The "frass" did not flow in a continuous line to the extremity of the body of the larva, but appeared in pellets at the base of the ante penultimate segment; each pellet then slid gradually down till it arrived near the centre of the penultimate segment, when it seemed to be taken in charge by the branched portions of two darkish coloured muscles, and conducted to the point where the remaining portions of the muscles lay parallel with each other down the posterior portion of the penultimate and the anterior portion of the anal segments; these muscles then immediately expanded, and received the pellet of "frass," and guided it to their extremities, and then deposited it near the middle of the anal segment, out of which it gradually slid, and became intermixed with the other pellets of "frass" in the mine.

(To be continued.)

AN ESSAY TOWARDS A KNOWLEDGE OF BRITISH *HOMOPTERA*.

BY THE REV. T. A. MARSHALL, M.A.

(*Continued from page* 268 *of vol.* 2.)

Subg.—Athysanus, Burm.

Two only of the species referred by authors to this section have fallen in my way, but it is probable that several more will be found to exist in Great Britain, a considerable number being described by Flor and Kirschbaum. That the method of making divisions of intermediate value between genus and species is a bad one, few entomologists will be likely to dispute. It is not, however, so much the object of these sketches to deal with genera and reform systems, as to apply the existing materials, such as they are, to the recognition of our species. The sections of Burmeister are therefore introduced in this place, although they can only be regarded as a provisional and occasionally useful device for ascertaining the names of insects. The single character of distinction in the group *Athysanus* consists in the assumed absence of the membranaceous prolongation of the hemelytra. It is true that in some species this appendage is nearly obliterated, but in others it is plainly to be seen, although small; while some of the genuine *Iassi* are equally defective in this respect. The *Athysani*, in fact, would be as well merged in one or other of the co-sections, according to the form of their vertex and general habit.

14.—*Iassus* (*A.*) *argentatus*, Fab.

Pallide fusco-testaceus. Vertex late rotundatus, angustus, medio non productus; linea inter oculos incurva nigra, cui sæpe additur alia posterior brunnea. Frons nigro-cancellata. Clypeus et lora nigro tenuiter limbata. Pronotum antice linea transversa, medio obtusangula, impressum; post hanc lineam transverse rugulosum. Abdomen nigrum, segmentorum margines et latera (♀ etiam segmenta tria ultima maximam partem) testacea. Hemelytra ♂ abdomen celantia; cellulæ fusco-marginatæ; membrana brunnea:— ♀ abdomine conico, acuminato, breviora, cellulis vix fusco-marginatis; membrana concolor. Pedes pallidi, coxæ et femora plus minus nigro-maculata; tibiæ posticæ intus nigro-lineatæ. Long. ♂ 2, ♀ 3¼; alar exp. ♂ 4, ♀ 5 lin.

Cicada argentata, Fab., Ent. Syst. 4, p. 38:—S. R. p. 77, 72.
Iassus argentatus, Burm., Gen. fig. 2.—Boh., Öfv. 1845, p. 156: Handl. 1845, p. 28.
Iassus interstitialis, Germ., Mag. 4, p. 90.

Apparently an unusual species in this country, but once taken by me in abundance on water plants growing in a shallow pond by the side of the road from Ramsgate to Sandwich, in September.

15.—*Iassus* (*A.*) *stylatus*, Boh.

Pallide fusco-testaceus. Vertex angulatus, productus, sua inter oculos latitudine quarta parte brevior, longior pronoto, apice supra nigro trimaculatus, macula media maxima; inter oculos etiam striolæ 4 breves, sinuatæ, transversim 2 et 2 dispositæ, nigræ; vertex apice albidus. Frons late transversim nigro-trifasciata. Pronotum postice sæpe nigro lituratum. Scutellum vel basi media nigrum, vel concolor. Hemelytra abdominis tertiam tantum partem obtegentia, fusco-testacea, immaculata; alæ abortivæ. Pedes plus minus fusco-maculati et lineati. ♂. Long. 1½ lin.

Athysanus stylatus, Boh., Handl. 1847, p. 31.—Flor, R. L., 2, p. 276.—Kirschbaum, Athysanus—Arten, p. 14, 18.

This species has the facies of a *Deltocephalus*, with its elongate vertex, flattened above, and short body, of which at least two-thirds are uncovered by the hemelytra. It differs widely from the preceding, which has the vertex even more broadly rounded than that of the following sub-genus, and seems very ill-placed in the section *Athysanus*. *A. stylatus* may be found, but very seldom, on the dry parts of Wimbledon Common, in August.

Subg. III.—Iassus, Fab.

The following is a tabular view of the 18 species known to me up to the present date:—

I. Hemelytra apice attenuata, acuminata.
  a. Cellula apicalis longissima, linearis, tota fusca.....*attenuatus*, Germ...(16).
  aa. Cellula apicalis brevis, fusca, macula intus hyalina .....*rupicapra*, n. sp...(17).

II. Hemelytra apice non aut vix attenuata, rotundata.
  A. Vertex medio quam lateribus haud longior; pronoto dimidio nunquam longior.
    a. Caput cum oculis pronoto latius .....*striola*, Fall...(30).
    aa. Caput cum oculis pronoto haud latius.
      b. Vertex medio et lateribus æquilongus, suæ inter oculos latitudinis quadrantem non excedens. Caput cum oculis pronoto angustius. (Minimus, corp. long. 1 lin. Alæ apice infuscatæ.) .....*punctatus*, Fall...(33).

bb. Vertex medio paulo longior quam lateribus, suæ inter oculos latitudinis dimidium æquans. Caput cum oculis pronoto æquilatum.

c. Frons ab antennarum insertione ad clypeum usque sua ipsius inter antennas latitudine brevior. Hemelytra striolis plurimis brevibus, transversis, nigris, sæpe confusis .....*mixtus*, Fab...(21).

cc. Frons ab antennarum insertione ad clypeum usque sua ipsius inter antennas latitudine non brevior. Hemelytra atomis rubris dense conspersa.....*cruentatus*, Fall...(23).

d. Vertex inter oculos maculis 2 nigris rotundis notatus. Pronotum postice læve .....*punctifrons*, Fall...(19).

dd. Vertex maculis rotundis nullis. Pronotum postice transversim rugulosum .....*atomarius*, Fab...(22).

AA. Vertex medio longior quam lateribus, subangulatus.

a. Antennæ corpori longitudine æquales ..... *antennatus*, Boh...(18).

aa. Antennæ corpore breviores.

§ Species parvæ; corp. long. vix ultra 1 lin.

1. Scutellum immaculatum.

* Vertex nigro 4-maculatus, (sed maculæ interdum desunt). Clypeus quadrante brevior quam frontis inter antennas latitudo ... *quadrinotatus* Fab...(28).

** Vertex semper immaculatus. Clypeus non longior quam frontis inter antennas latitudo ...*virescens*, Fall...(27).

2. Scutellum nigro-maculatum.

* Hemelytra transversim irregulariter fusco bifasciata. Vertex

maculis 4 æqualibus, nigris, rotundis .....*variatus*, Fall...(32).

** Hemelytra haud transversim fasciata, rarius longitudinaliter fusco-striata.

† Vertex maculis pluribus quam 4 nigris. Abdomen nigrum. Hemelytra rarius longitudinaliter fusco-striata *sexnotatus*, Fall...(29).

†† Vertex maculis 2 minoribus interocularibus, necnon 2 majoribus in fronte, rotundis nigris. Abdomen flavum, medio supra nigrum. Hemelytra immaculata..*septemnotatus*, Fall...(31).

§§ Species majusculæ: corp. long. 2 lin. et ultra.

1. Hemelytrorum cellulæ nigro-marginatæ, ocellatæ .....*striatulus*, Fall. .(24).

2. Hemelytrorum cellulæ non nigro-marginatæ.

* Frons maculis 4 distinctis nigris .....*splendidulus*, Fab...(20).

** Frons haud nigro distincte maculata.

† Supra pallide viridis, vel sub-rufescens, cellulis immaculatis. Frons haud nigro-lineata. Scutellum immaculatum.....*prasinus*, Fall...(26).

†† Supra rufo-brunneus, cellulis quibusdam obscurioribus, brunneis. Frons nigro-lineata. Scutellum nigro varium .....*subfusculus*, Fall...(25).

(To be continued.)

ADDITIONS TO THE BRITISH FAUNA (*HEMIPTERA*).

BY J. W. DOUGLAS AND JOHN SCOTT.

(*Concluded from page* 276 *of Vol.* 2.)

SECTION II.—*OCULATINA.*

FAMILY 1.—SALDIDÆ.

Genus 1.—SALDA, Fab.

Species 9.*—SALDA MORIO.

SALDA MORIO, *Zett.* Ins. Lap. 267, 3 (1843).

Deep black, shining, without hairs, and generally spotless; the ♂ with yellow legs.

Head—delicately crenate-punctate. *Antennæ* with very fine hairs, some of which project; in the ♂ the 1st joint yellow on the upper side. *Rostrum* black, piceous at the apex; *labrum* yellowish or yellow.

Thorax—Pronotum narrow in front; sides nearly straight, their margin narrowly reflexed; hinder angles prominent; anterior margin and the transverse furrow behind the callosity of the disc with a row of punctures, the callosity with a central fovea. *Scutellum* at the base somewhat flattened, delicately punctured, the central depression sub-quadrate, wide, not very deep, finely shagreened, posterior to this the disc delicately transversely crenate. *Elytra:—Clavus* narrow, punctured more distinctly and more crenate than the corium; *Corium* sometimes with 2 or 3 fine yellow streaks in the middle; *Membrane* concolorous with the corium. *Legs*, in the ♂ yellow, the ends of the *thighs* and *tibiæ* and the last joint of the tarsi, black,—in the ♀ entirely pitchy black; *tibiæ* with short, strong hairs; *tarsi* with fine close hairs.

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

One specimen in Dr. Power's collection, taken in Scotland by Mr. Robert Hislop; four taken at Scarborough by Mr. T. Wilkinson; and one from Mr. Somerville, locality not recorded.

The name of this species is incorrectly quoted by us in the "British Hemiptera" as a synonym of *S. littoralis.*

Species 13.—SALDA FLORI.

SALDA FLORI, *A. Dohrn*, Stett. Ent. Zeit. xxiv., 393 (1863); xxi., t. 1, fig. 11 (1860).

Black, broad-oval. *Head, eyes, pronotum, and scutellum* glossy. *Antennæ* black; 1st joint in both sexes on the apical 3rd, and

in the ♀ the 4th joint, except the base and apex, orange yellow. *Corium* with fine, erect, black hairs; anterior margin entirely yellow, the colour extending broadly and angularly inwards on the basal half. *Legs* yellow-brown.

Head, especially the face, with fine golden hair. *Antennæ* black, finely haired; 1st joint, in both sexes, on the apical 3rd, and the 4th, in the ♀ only, except the extreme base and apex, orange-yellow. *Rostrum* light piceous; *labrum* black, punctured.

Thorax—Pronotum convex, trapezoidal, narrow and constricted in front; sides depressed, flattened, but a little incrassated, the margin scarcely reflexed; anterior callosity large, with one deep impression; the transverse furrow of the disc deep, filled with fine golden hairs; the sides and posterior portion of the disc with erect, fine black hairs. *Scutellum* rather convex, with a few fine golden hairs; the central depression not very deep, foveate. *Elytra* dull velvety-black; *Clavus* with fine, close, appressed golden yellow hairs, and a thin white streak inwardly below the apex of the scutellum; *Corium* broad, outwardly much rounded; anterior margin rather wide and reflexed, yellow throughout; disc with fine, erect black hairs; on the basal half the yellow colour extending from the margin inwardly as far as the nerve, in the form of a long triangle, which is intersected by an oblique black or brown dash, the black ground colour then extending almost at a right angle to the inner side of the yellow margin, like a large blotch, the outer margin of which recedes considerably before the apex, which is left broadly yellow: below the blotch, close to the posterior margin, a conspicuous, large lunate white spot; higher up are two small white spots nearly in a line transversely, another very small one near the apex of the clavus contiguous to a greyish blotch, and one or two more or less distinct on the inner side of the chief nerve. The disc is set with long, rather distant, fine, black, erect hairs. Posterior margin black or piceous. *Membrane* clouded, brownish-yellow, with broad black nerves and one or two blackish spots between them: exterior to the nerves the margin is concolorous with the disc, except that from the first nerve a black blotch extends to the extreme margin, and below the apex of the corium the colour is clear yellow. *Legs* yellow-brown, finely haired; *thighs* with spots on the inner side, light-brown on the 1st and 2nd pairs, black and forming a streak on the 3rd pair; *tibiæ* narrowly black at the apex, *tarsi*, 3rd joint black, piceous at the base.

Abdomen—black, beneath with fine whitish pubescence.

Length 2 lines.

Taken by Dr. Power, near Hammersmith Bridge, in March and May. This is the species of which, in the "British Hemiptera," p. 534, we stated that Dr. Power had taken two specimens which in some respects differed from *S. elegantula*. Dr. Power having captured more examples, we were convinced it was distinct, and proposed to describe it under the name of *S. pulchra;* but Dr. Fieber, having seen two specimens, thinks it is probably *S. Flori* of Dohrn, and although there are slight differences between his description and our examples, we conclude that they are not sufficient to establish a new species.

CRYPTOCERATA.

Section 5.—*CORIXINA.*

Family 1.—CORIXIDÆ.

Genus 1.—Corixa, Geoff.

Species 9.*—Corixa limitata.

Corixa striata, p., *Zett.* Ins. Lap. 284, 2 (1840).

Corisa limitata, *Fieb.* Syn. Coris. No. 25 (1848); Spec. Coris. 35, 42, t. 2. fig. 20, palæ (1851); Europ. Hem. 95, 19 (1861).

Above blackish-brown, with pale yellow transverse markings, slightly shining. *Pronotum* with 7–8 fine yellow lines, mostly entire; *Clavus* with rather wide, parallel, yellow lines throughout; *Corium* with irregular markings, interrupted inwardly and posteriorly, and outwardly on the basal half, by a longitudinal black line; line of the membrane-suture indistinctly yellow. *Tibiæ* of the ♂ short, swollen on the upper-side; *Palæ* of the ♂ short, broad-cultrate, rounded above, oblique at the base.

Head pale yellow; *Crown* sometimes brownish posteriorly; *Face*, in the ♂ the depression obovate, reaching to the frontal angles of the eyes.

Thorax.—*Pronotum* slightly rounded at the sides and apex; disc with 7—8 fine, yellow lines, mostly entire. *Elytra:*—*Clavus* with rather wide, straight, yellow lines throughout, broader and more distinct on the basal half; *Corium* with fine, close, irregular, confused transverse markings, interrupted posteriorly and inwardly by a

longitudinal black streak, and by another finer one on the basal half close to the edge of the anterior marginal channel, to which latter only a few of the transverse black markings extend; anterior marginal channel clear pale yellow, its inner margin with a black line, at the end of the embolium an indistinct dusky spot, and a larger and darker one towards the apex; line of the membrane-suture indistinctly yellow; *Membrane* glossy, with somewhat broad, confused, hieroglyphic markings, more regular, straight, and transverse on the inner margin, the rest of the margins broadly black. *Sternum* black, side lobes pale yellow. *Legs* pale yellow; 1st pair short, curved, in the ♂ much swollen on the upper side; *palæ*, in the ♂ short, broad-cultrate, rounded above but oblique at the base, on the under-side a little sub-angularly widened at the base; in the ♀ roundly-cultrate, narrow, regular; 2nd pair, *tibiæ* indistinctly brownish at the apex; 3rd pair, cilia of the *tarsi* black.

Abdomen—beneath, dusky yellow; in the ♂ the first three or four segments, in the ♀ the first two, except on the sides, black; *genital segments* black at the sides.

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

A few examples taken by Dr. Power in Parkhurst Forest in July, and at Ditchingham, Norfolk, in August.

This species comes next to *C. semistriata*, which it much resembles in many respects.

[We observe in the Entomologist's Monthly Magazine for November that Mr. E. Parfitt has described an insect under the name of *Capsus miniatus* as new to science, and, as he says, returned to him by us as such. We certainly did examine it, and expressed an opinion that it might be extra-European from its having been found in the Nurseries of the Messrs. Veitch, at Exeter, but beyond this we said nothing. Had it remained with us a little longer it would have been forwarded to Dr. Fieber along with other insects we were about to send, in order that he might, if possible, identify it. *Capsus miniatus*, although belonging to the Section Capsina, is not a *Capsus*, but stands near to, if not identical with, the Genus *Dioncus* of Fieber, Europ. Hemiptera 268.]

[It having been pointed out that the name *Sphyracephalus* has been previously used in a Genus of Dipterous insects, we propose to substitute for it that of *Sphyrops*.]

On a new method of collecting *Micro* (and other) *Lepidoptera*.

by C. G. Barrett.

The extreme sensitiveness which many of the *Tineina*, and especially the *Gelechiæ*, exhibit to the slightest breath of wind, must often have attracted attention. Let a *Gelechia* or *Depressaria* be ever so snugly enseonced in a chink of bark, or among grass roots or rubbish, a puff of air is sure to send it skipping and darting about, to find a sheltered place to hide in. For this reason, those species that frequent tree trunks are only to be found on the sheltered sides, where they often creep close into the chinks of the bark for greater security.

This peculiar sensitiveness makes it easy to capture them, by placing the net in a suitable position, and blowing sharply upon the tree trunk, when the moths will start off at once, and be intercepted by the net.

I have adopted this plan with some little success during the last two seasons, the greater portion of species taken being among the *Tineina*, but several other families being represented.

In May I obtained by this method *Ornix torquillella* and *guttea* and *Trifurcula pulverosella*, from apple trunks; *Nepticula argentipedella* and *aurella*, from birch; *Nepticula Tityrella*, from beech; *Lithocolletis tristrigella* and *Schreberella*, *Bucculatrix Boyerella*, and *Nepticula marginicolella*, from elm; and *Eupithecia abbreviata*, *Leptogramma literana*, *Micropteryx Thunbergella*, *Gelechia alcëlla* and *luculella*, *Coleophora murinipennella*, *Bucculatrix ulmella*, *Nepticula atricapitella*, *ruficapitella*, *subbimaculella*, *floslactella*, and *salicis*, from oak; many of them in some numbers.

Nepticula sub-bimaculella continued common on oak trunks in June, and I found a lot of *Gelechia fugitivella* on a wych elm, to the bark of which they bore such a resemblance that it was very difficult to see them until they darted off.

It was in July and August, however, that I found blowing the tree trunks most productive. Elm trunks produced *Cerostoma vittella* commonly; sycamore, *C. sequella*; oak, *C. alpella*; and apple, *C. scabrella*. *Psoricoptera gibbosella* tumbled off the oak trees in numbers, and was to be found till the middle of September. From apple trunks I obtained *Cleora lichenaria*, *Gelechia umbrosella*, and *G. rhombella* in plenty; and, singularly enough, two specimens of *Depressaria pulcherrimella*, almost the only *Depressaria* I ever saw on a tree trunk. *Eudorea resinalis* and *mercuralis*, and *Grapholitha nisana*, occurred on elm trunks: *Eudorea truncicolalis* was plentiful on firs, and *Laverna*

sub-bistrigella on one little group of spruce firs. This species and *L. decorella* were also occasionally to be found on oak trunks, from which also I took *Eudorea cembræ* and *truncicolalis*, *Leptogramma literana*, *Pædisca profundana*, *Grapholitha Paykulliana*, *Tinea argentimaculella*, *Gelechia sororculella*, *Lyellella*, *maculea*, *tricolorella*, *gemmella*, and the pretty novelty, *Knaggsiella*, *Chelariæ conscriptella*, and *Trifurcula atrifrontella;* and once I was startled by blowing off—what I might have seen had I looked more closely,—*Liparis monacha*.

The success of this mode of collecting depends, as will readily be supposed, in a great measure upon the weather. If a steady breeze is blowing, it is often very productive; while, if it is stormy or gusty, hardly a moth can be obtained,—they doubtless get puffs of wind on all sides of the tree; if, on the other hand, it is still and hot, they have no need of the protection of the tree at all.

I hardly need say that some little strength of lungs is almost indispensable. Indeed, it is impossible to avoid some inconvenience from constant puffing; and I have often been almost stupified with headache for a short time, when I have kept too closely at it.

One great advantage of this plan is that such things as *Cleora lichenaria*, *Leptogramma literana*, *Psoricoptera gibbosella*, and *Gelechia fugitivella*, which so exactly resemble the bark or lichens of the tree that it is next to impossible to detect them upon it, can be collected with perfect ease, and those that creep close into the chinks of the bark can be persuaded to come forth, while it is obviously easier to box them in the net than on a tree trunk.

Haslemere, 17*th January*, 1866.

Note on hybernation and moulting of Anthrocera trifolii.—Having never before reared from the egg any of the Burnets, I watched with much interest a brood from a batch of eggs sent me by Dr. Knaggs in the summer of 1864; and I have made a note of one or two things, which struck me as deserving notice. The larvæ were hatched about the end of July, and fed and grew slowly till the beginning of winter. Those I had in 1864 were about 2 lines in length when their hybernation commenced, but another brood which I had in 1865 were half as long again. Having made up their minds that winter was coming, these larvæ congregated together in two or three little companies on the side of their glass cylinder, and spinning—each for itself—a firm foothold of silken threads, put themselves side by side in position for their long fast. Up to this time they had been of a green tint, with rows of black spots, and this colouring was not affected by the *variation in the size*, which in the different years they attained before ceasing to feed;—but for winter wear there came in a new fashion altogether: they became semi-translucent to look at,

and in colour dirty white ; their rows of spots changed to reddish-brown, a pair of small dots only on each segment being black, and their bristles seemed more prominent. And seeing them in this dress at such a time, one could not help thinking that it was meant to assimilate them whilst torpid to the withered stems of their old food plants.

Some time in February they began to part company and to feed again, and not long after—having moulted—they appeared in a greenish-grey coat, with a row of pale primrose spots on each side of the dorsal rows of black X-like spots. Finally the ground colour became much more vivid, either of a bluish-green or else of a rich yellow-green, but the rows of black spots on the back retained their X-like form, and this seems to me to be one of the chief distinctions by which this species may be known from *filipendulæ*, these dorsal rows in the latter being formed of a broad and a narrow black spot alternately. Their cocoons may be distinguished by their colour—that of *trifolii* being yellow, while that of *filipendulæ* is white.

By the way, has it been recorded before that Burnet larvæ cast their skins, not by creeping out of them through a split in front, but simply by standing still, and bursting them open all down the middle of the back? and singular they look just at the change, with half their old coat lying in a crescent-shape on either side of them.—John Hellins, Exeter, *February* 7, 1866.

Note on Lithocolletis mines in Sorbus torminalis.—Last winter I found *Lithocolletis* mines in the upperside of leaves of *Sorbus torminalis*. These produced, as might have been expected, *Lithocolletis corylifoliella*. I have also found the mine of this species in leaves of *Sorbus aria*.—C. G. Barrett, Haslemere, *Jan.* 17, 1866.

Observation on two species of Harma.—In the last part of the "Exotic Butterflies" Mr. Hewitson has figured and described a female insect, belonging to the genus *Harma*, under the name of *H. Hypatha*, and states that it is placed in the British Museum Collection as the female of *H. fumana*, of Westwood ; he also makes some remarks on their non-resemblance, and concludes by considering it a distinct species.

We do not, however, possess the species figured by Mr. Hewitson, and I think the insect which, in our collection bears the name of *H. fumana* ♀, is undoubtedly the female of that species. It agrees with the male even more closely than some of the allied species do.

H. fumana ♀ Westw. differs from *H. Hypatha* ♀ Hew. in having the hinder margin of the front-wings distinctly lobed below the apex : in pattern and coloration it differs as follows :—

Front-wings above with the row of white spots much nearer the centre of the front margin, no red band within the cell.

Hind-wings ; markings much less distinct ; outer margin clear, ochreous, as in the male, with no broad marginal brown border or sub-marginal waved line.

Front-wings below with no central red band, white spots as above.

Hind-wings ; central red band much more irregular and less distinct ; the rest of the markings as in male, but less distinctly defined.—A. G. Butler, Assistant, Zoological Department, British Museum.

Food of Boarmia rhomboidaria.—I wish to substantiate what Mr. Horton says about the food of this insect. Here it occurs in abundance, the larvæ always feeding on ivy. I have reared numbers on this plant, and never found them take other food.—E. Hallett Todd, Windrush, Eastern extremity of the Cotswolds.

Notes on Variation.—Thanks to Messrs. Davis and Ingall for their communications in Nos. 21 and 23 of the "Magazine" respectively. I agree with the latter in preferring constant varieties to a chance aberration from the type.

On referring to my Notes in No. 11 of the "Magazine"—a year ago—I find I omitted one species, *Tephrosia crepuscularia* of Stainton (*biundularia*, Dbd.), which in this locality is subject to a very fine and tolerably constant variation. This consists not in size, but in colour which is an uniform smoky dark grey, in which the indented whitish sub-terminal line is conspicuous.

The species is common here, and I have taken the variety regularly, but in limited numbers, for some years past; and this year I am glad to say I have a few ova from a dark female.

As Stainton, in his Manual, gives Manchester as one of this species' favourite haunts, and as that district is well worked, perhaps some of your readers would kindly inform us if the variety I have described occurs there also.

The numbers in which I have observed the variety may be stated roundly at 1 in 25 or 30 of the usual colouring.—John T. D. Llewelyn, Ynisygerwn, Neath, *April* 11*th*, 1866.

Notes on "double-brooded" insects.—Warmth, when coupled with an abundant supply of good and nourishing food, has clearly so much to do with rapidity of development, that almost any insect may be forced by artificial circumstances into having a second brood during the same season, thus, I lately had *Orgyia gonostigma* producing two, and *Clostera anachoreta* producing three broods in one year. Without doubt a hot summer may and often does perform the experiment naturally for us, and for the same reason (like the "*bijeri rosaria Præsti*") an insect is often double-brooded in a hot climate, when in a colder region there is only one brood in the year. *Polyommatus Argiolus* certainly appears twice a year in the south of England, but seems only to appear once in the north. There seems another and more obscure cause of a second brood, where there is in some individuals a very brief duration in the pupa state, this stage of development seeming almost, as it were, hurried on unnaturally. This never happens to a whole brood, but only to single individuals, and there is some evidence that the reproductive organs are often in these cases not fully perfected. Insufficiency of food seems also to retard development to a certain degree, but its natural effect is probably rather to lessen the size of the specimen—bred specimens of some insects especially are always small, and unusually diminutive examples are sure to be recorded in dry summers. I do not mean to infer that these are the only causes of these effects, but that they are amongst the chief causes I have no doubt. Another curious fact connected with this twofold appearance of some insects is the difference between the size and colouring of the two broods, the most familiar example being that of the common turnip white butterfly, *Pontia rapæ*, but the most striking being that of some species of *Cynipidæ*, the history of which cannot, however, be said to be as yet completely

worked out. As far as colouring is concerned, there seems to me some ground for the hypothesis that light is the chief agent, and that the chief time of its producing this effect is during the larva state. There is much ground from analogy for this belief, and some from actual fact. If we take *Pontia rapæ* for example, we find that the autumn brood, *i.e.* those whose larvæ are exposed to the greatest duration of sunlight, are the most abundantly supplied with pigment scales. For the same reason boreal varieties, where the larvæ are summer feeding, are generally darker than more southern examples. We must bear in mind that light produces its effect in a twofold manner—by intensity and by duration. Now, in any animal whose life is for a year, as the actual quantity of daylight is equal all the world over, intensity alone is brought into play; but this is not the case with a larva living only, perhaps, for one or two summer months. That the chief period in which this is caused is during the larva state I presume from the fact that shutting up pupæ in dark boxes has no evident effect, and that many *Noctuæ* (as *X. lithoxylea* for example), whose pupæ are always excluded from light, are yet strongly subject to boreal variation. That rapidity of development in the pupa state does not produce the difference may be easily proved, as the chrysalides of *P. rapæ*, if kept in a very warm place and perfected, before Christmas even, are always of the light variety or *Metra*. It must be remembered that these thoughts are only given as a possible hypothesis which may lead to the working out of an unsolved problem by calling other experimenters into the field; and it must be looked upon as very fortunate that such a *corpus vile* as *Pontia rapæ* is provided for all who wish to work at the subject.—R. C. R. Jordan.

Occurrence of Stenus glacialis, Heer; a species new to Britain.—My friend Mr. R. Hislop, of Falkirk, has sent to me for examination a specimen of a conspicuous *Stenus*, taken by himself on the 4th of last August, on the Cheviots; and which I am inclined, from the preponderance of characters wherein it agrees with the published description of that insect, to refer to the *S. glacialis* of Heer (Faun. Col. Helv., P. I, fasc. 2, 224, 35; Kraatz, Ins. Deutschl., ii., 787, 58). On account of its size, colour, general appearance, and build,—and especially its very slender legs and antennæ,—Mr. Hislop's insect is *primo visû* strongly suggestive of *S. lustrator*, and its allies with simple tarsi; but a close examination reveals the narrow and small bilobation of the fourth joint of its slender tarsi. It is black, slightly metallic, shining, sparingly and very strongly punctured; with thin long pubescence, and testaceous palpi and legs, the femora (especially of the middle and hinder pair) being broadly fuscous at the apex. The head is wide, with prominent eyes, and very long and slender antennæ, dark at the apex, and set with fine hairs,—the 3rd joint being twice as long as the 4th. The thorax is somewhat strongly contracted behind, with a fore-and-aft abbreviated longitudinal furrow, and other slight irregularities; the elytra are rather depressed at the suture, and about one-third longer than the thorax; and the punctuation of the abdomen, though deep and strong for the most part, nearly vanishes towards the apex.

The long pubescence, especially pointed out by Kraatz as an efficient diagnostic for this species, is not conspicuous in all parts of Mr. Hislop's specimen, which is rather abraded; but, towards the sides of the elytra, and elsewhere, it is very evident.

Kraatz gives 1½ lin. as the size of *S. glacialis* in his diagnosis; commencing however, his description with "Nicht unbedeutend grösser als *St. impressus*,"—for which he gives 2 lin. as the size. The 1½ lin. is evidently a mistake for 2½; Heer giving 2¾. Mr. Hislop's insect is apparently a large female.—E. C. Rye, 284, King's Road, Chelsea.

Note on Butalis incongruella.—April 20th I took about 30 specimens of this insect at Witherslack, with the assistance of some boys; we had only occasional gleams of sunshine, so I got the little fellows each to watch one until it settled down, and then I went and boxed it; it was rather amusing to see them, and reminded me of so many pointer dogs at work, for if the eye were taken off the insect for a moment there was no finding it again, as it would drop down among the withered sprigs of heath.—J. B. Hodgkinson, Preston, *May 12th.*

Chærocampa celerio in the North.—Whilst at Witherslack after some summer birds on 20th April, I had the pleasure of getting a very fine *celerio* that was taken last October, and a few weeks before I got a specimen at Carlisle, taken in October on a window-sill. This specimen had not been so well used.—Id.

Xylomyges conspicillaris.—I have now to announce the capture of two fine specimens of *X. conspicillaris*, one on the 24th, the other on the 27th of April; also the emergence of a crippled example of the same species. I am keeping a ♀ for eggs, but at present have not succeeded in getting any.—E. Horton, Powick, near Worcester, *May 3rd*, 1866.

Occurrence of Spilonota lariciana.—At the same place where I took *Eupithecia lariciata* last year, namely, Lickey Hill, near Bromsgrove, and at the same time (May 24th, 1865,) I beat out from larch three or four *Tortrices*, which I thought at the time were something different from *S. ocellana*, especially as they were all alike, which would not have been likely if they had been merely varieties. I have since ascertained that they are undoubtedly the novelty *Spilonota lariciana.*—Id.

Occurrence of Depressaria capreolella.—My friend, Dr. Hearder, took a few examples of this variety in poorish condition this time last year, one at sallow, the others flying in the sunshine by a warm hedge-side. I saw one yesterday, but had no net with me, and did not secure it.—Id.

Lobophora polycommata at Bristol.—I have as yet done very little in collecting here, but the capture of one *L. polycommata* may be worth mentioning, it being the second example taken in the Bristol district.—Alfred E. Hudd, 1, Gloucester Row, Clifton, *May 3rd*, 1866.

Reviews.

The Practical Entomologist; a Monthly Bulletin published by the Entomological Society of Philadelphia, for the dissemination of valuable knowledge among Agriculturists and Horticulturists.

We have only seen isolated numbers of this useful and somewhat novel periodical (the last, No. 6, for March, 1866, extending to page 56). The enterprising

Society from which it emanates deserves great credit for this attempt to disabuse the minds of agriculturists and horticulturists of the many popular misapprehensions respecting the insect pests by which they are injured and tormented, and to point out to them the real history of these natural enemies, and the most reasonable means of preventing or mitigating the evils they occasion, by an exposition of their modes of life. Our own countrymen engaged in kindred pursuits would probably find much in this periodical to interest and instruct them. We wish the Society every success in its laudable undertaking. The price (50 cents per annum) at which it is issued, cannot possibly recoup the expenses, and, with all justice, the deficit is attempted to be made good by advertisements, which figure largely in the later numbers. We would suggest that a little supervision as to the class of advertisements inserted would be desirable; one or two savour somewhat of quackery.

A Catalogue of Phytophaga (Coleoptera, Pseudotetramera), by the Rev. Hamlet Clark, M.A., F.L.S., Part 1; with an appendix containing descriptions of new species by H. W. Bates and the Rev. H. Clark; Williams and Norgate, London, and A. Deyrolle, Paris; 1866.

To the names of our countrymen, Messrs. Clark and Baly,—so well known in connection with the Phytophagous Coleoptera,—must now be added that of Mr. Bates as a worthy fellow-labourer in the same field,—with the additional distinction that the species he describes so well are of his own taking. The present part of the above Catalogue comprises the *Sagridæ*, *Donacidæ*, *Criocerida*, and *Megalopidæ* of the world (giving many references to authors, synonymy, varieties, and localities),—being the families included in the first volume of the *Monographie des Phytophages* of Lacordaire.

Of these families 975 species are here registered, including 368 not known to the latter author; and of these 158 are described in the appendix. The 2nd part is promised as soon as Mr. Clark is sufficiently recovered from his recent serious illness to be able to attend to Entomological matters.

The benefit of concentrating the attention to any particular group is here exemplified to the fullest extent; and, from the differential characters given, it is evident that no new species have been passed over by the describers.

Entomological Society of London. May 7th, 1866.—W. Wilson Saunders, Esq., F.R.S., Vice-President, in the Chair.

W. Stavenhagen Jones, Esq., of 79½, Gracechurch Street, and P. Green, Esq., of 11, Finsbury Circus, were elected Members.

Mr. Borthwick, of Alloa, sent for exhibition some dipterous larvæ in the stems of wheat, just above the root. These he supposed to be the larvæ of *Musca* (*Chlorops*) *pumilionis*.

Mr. McLachlan exhibited a cluster of four round confluent galls on the leaf of a dead stem of probably *Glechoma hederacea*, found recently at Lewisham; he considered them to have been formed by *Aulax glechomæ*, one of the *Cynipidæ*.

Mr. Bond exhibited, on behalf of Dr. Hearder, a singular variety of *Cabera exanthemaria* (with the colouring of *C. pusaria*).

Mr. Saunders exhibited a singular cone-shaped nest formed of a leaf of some Australian tree, and explained the method of its construction; he considered it to be the nest of a spider. Mr. Stainton remarked that the larvæ of the micro-lepidopterous *Coriscium cuculipennellum* formed similar cones on the leaves of privet. Mr. Saunders also exhibited the case of *Oiketicus* from Australia, formed of twigs arranged in a regular longitudinal manner, and proving that they were constructed in three or four instalments, according to the requirements of the inmate, this latter taking the precaution, when it enlarged the case, to provide beforehand for a considerable increase of size.

Mr. Haward exhibited a collection of insects from Natal.

Mr. Layard, of Cape Town, said that he had been requested by the inhabitants of James Town, St. Helena, to bring before the Society an account of the extraordinary ravages of the white ants in that island. These insects had been introduced some few years previously, and now prevailed to such an alarming extent, that, unless some means were devised for their destruction, the whole of James Town would be ruined. Various remedies had been tried without effect, and the inhabitants had gone to considerable expense in importing cyanized timber from England, but this had proved worthless, owing to the wood being insufficiently prepared.

Mr. Layard also remarked that it was generally understood that the swarming of bees was caused by insufficient room in the hives, but that in South Africa, where large numbers of wild bees, allied to the honey-bee, live in large caverns (the entrance to which they blocked up with a curtain of propolis), they invariably swarm, though there could be scarcely any want of space. Mr. Tegetmeier said that in England it had been found possible to prevent swarming by adding to the size of the hive before the usual period arrived.

Mr. Newman sent for exhibition a number of larvæ, probably of *Hepialus lupulinus*, found by Mr. Whittaker, feeding on the roots of coltsfoot, and infested by a large fungus of the genus *Clavaria*, which had destroyed them; the mycelium of the fungus proceeded from the anterior segments, and equalled in length that of the larvæ. Vide "Entomologist" for May, and the "Field."

Mr. Stainton exhibited a large number of beautiful coloured drawings by Miss Wing, representing the larvæ of various *Tineina* found by him during his recent visit to Cannes and Mentone, including *Acrolepia smilaxella* of Millière, found on *Smilax aspera*, *Hyponomeuta egregiellus* on *Erica scoparia*, *Gelechia biguttella?* on *Dorycnium*, *Prays oleellus* on the olive—the true position of the last-named insect had only been pointed out last year by Herr Kaltenbach of Aix-la-Chapelle, but both in the form and habits of the larvæ, and in the form and even markings of the perfect insect, it was manifestly closely allied to *P. Curtisellus*. Mr. Stainton also exhibited a drawing of a Lepidopterous larva which he had found commonly, gnawing the bark of *Euonymus europæus* in his garden at Lewisham, and which lived in galleries, formed under the "frass" and web left on the spindle-bushes by the last-year's larvæ of *Hyponomeuta euonymellus*; he was uncertain as to what species it would produce.

Mr. Janson exhibited a Coleopterous insect new to Britain, viz., *Throscus elateroides* of Heer; taken by Messrs. Brewer and E. Smith, and Dr. Power, near Rochester.

The Rev. Douglas Timins communicated notes on collecting at Hyères, in the south of France, during the first four months of 1866.

ABOUT AQUATIC *HEMIPTERA*; INCLUDING NOTICES OF NEW BRITISH SPECIES, &c.

BY J. W. DOUGLAS.

The following have been recently taken, mostly in the spring, in the localities named.

Hydrometra paludum, Fab.—About a dozen on an isolated pond at Caterham, and a single one at Eltham. This, one of the largest species, also remains one of the scarcest.

Hydrometra odontogaster, Zett.—This species, new to our lists, has been taken at Gravesend, Lee, and Esher. It is smaller than *H. lacustris*, which it most resembles, but the abdomen is black beneath; in the ♂ the last abdominal segment, on the under-side, is furnished with two short, black, downwardly and forwardly projecting spines, and in the ♀ the first genital segment has a deep transverse furrow. These characters are best seen, in both sexes, by a transverse view, and by them the species is easily distinguished from all others.

Hydrometra argentata, Schum.—Mr. Scott and I were fortunate enough to take several of this, the smallest European species, on a pond at Esher, through which a stream runs. The characteristic silvery scales on the hinder margin of the pronotum, conspicuous enough in life, for the most part got removed by abrasion in the collecting bottle. This may account for the want of any mention of them by Curtis in his description, or of representation in his figure of his *H. apicalis*, which is, nevertheless, identical with *argentata*. Mr. Dale, who furnished Mr. Curtis with the example he described and figured, had also the kindness to give me one, taken at the same time and place, in which a trace of the white scales still exists.

Hydrometra Costæ, H. Schf.—Mr. McLachlan took a single specimen in Perthshire in June last, which I believe to be this species, new to us, but I should like to see more examples and some of each sex. I should therefore be greatly obliged if any collector in Scotland this summer would capture and send to me any *Hydrometræ* he may see, in the hope that this fine species may be among them. It is rather larger than *H. thoracica*, is broadly red on the middle of the pronotum, and is especially wide across the region of the middle coxæ.

Ranatra linearis, Lin.—In clay pits at Lee, and the pupa, covered with mud, in a pond at Esher; so it would seem that the winter is passed by the insects while in an imperfect state.

Notonecta maculata, Fab.—This species, hitherto received only from the West of England, has been found in clay pits at Lee.

Corixa Panzeri, Fieb.—Two or three in a pond at Esher. It is considerably smaller than *C. Geoffroyi*, which in the character of its markings it greatly resembles, but the lines on the pronotum are less in number, straighter, and wider apart.

Corixa affinis, Leach.—One only at Lee.

Corixa distincta, Fieb.—Common at Lee.

Corixa præusta, Fieb.—New to our list. A few taken in one pond at Lee; it has also been found at Cowley by Dr. Power, both in autumn and early spring, but one was first captured by Mr. Scott at Eltham several years ago, and overlooked. It has not occurred since April, although other species then existing with it remained five or six weeks later; hence it may be deemed to be a species that dies early in the season. The first joint of the yellow hinder tarsi is traversed posteriorly by a broad black band (very clearly seen on the under-side), which at once distinguishes this species.

Corixa concinna, Fieb.—Occurs sparingly at Lee and Esher. The first joint of the hinder tarsi has a large blackish spot on its inner side only, not extending across it as in *C. præusta*, but spreading a little only on the second joint, and being covered by the cilia, may be overlooked.

Corixa nigrolineata, Fieb.—Abundant in ponds at Lee, Eltham, Esher, &c., in spring, also in running water at Southampton in September. Distinguished from all its allies by the dusky yellowish (not blackish) cilia of the hinder tarsi.

Corixa semistriata, Fieb.—Scarce at Lee.

Corixa limitata, Fieb.—Common at Lee.

Corixa hieroglyphica, L. Duf.—Common at Lee. A constant and distinguishing character is the blackness of the last joint only of the posterior tarsi.

Corixa Stali, Fieb.—Abundant in a ditch at Gravesend. It is much like the following species, but is rather smaller, and the pleuræ and parapleuræ are yellowish on the outside only.

Corixa lugubris, Fieb.—Common at Gravesend and Lee. This species has the sternum black, like the last mentioned, but the pleuræ and parapleuræ are entirely light yellow.

Mr. Scott took three species of *Corixa* at Dunoon, in May, of which there will be more to say hereafter. Two are new to us; the third differs a little in colour and marking from *C. Douglasi*, Fieb., but as that species was described from a single ♂, and all Mr. Scott's are ♀, there is just room for a doubt about the identity until some males are captured at Dunoon; which event is "on the cards." I should be very glad if beetle-hunters in Scotch waters captured *Corixæ* also, for I have great reason for hope that there would be new species among them.

I believe I do not err in saying that all the *Corixæ* hybernate in the perfect state, in the mud at the bottom of the water, as particles of earthy matter adhere to examples taken in the early spring; but, as Westwood has recorded in his "Introduction," they may sometimes be seen moving about when the surface is covered with ice. In spring and autumn they are most abundant; in summer they are scarce, except in the larva state. All the species love open water of which the bottom is clear clay or mud, free from vegetable growth, although they like to cling to the stems or higher leaves of aquatic plants; some inhabit indifferently running or stagnate water, others only the latter. They often come to the top for air, but their usual habit is to swim rapidly about near the bottom, frequently assembling near the margin, whence they recede quickly into deeper water and to the bottom on the slightest alarm. Therefore, he who would capture them should reach beyond them with his net, force it at once to the bottom, and then draw it towards him. The individuals of a species are not only gregarious, but several species usually live together; yet though they are so mixed, their respective characteristic markings are preserved wonderfully distinct, and the differences in the structure of the palæ of the males, peculiar to each species, are retained with undeviating regularity.

Lee, *June 7th.*

OBSERVATIONS ON THE ECONOMY, MOULTING, AND PUPATION, &c., OF A LARVA OF *NEPTICULA AURELLA*, TOGETHER WITH SOME REMARKS RESPECTING THE HABITS OF THE PARASITE OF THAT SPECIES.

BY CHARLES HEALY.

(*Continued from page* 8.)

At the expiration of twelve hours, the larva succeeded in entirely escaping from its old integument; the "frass," instead of forming a continuous line down the centre of the mine as it had done before the

larva moulted, then assumed a scattered appearance, this change in its arrangement arising from the larva jerking its posterior segments about each time it deposited a pellet of "frass."

The larva continued feeding for ten days longer, by which time the dorsal vessel lost its green appearance, but could be traced by its faint brownish outlines.

As the larva lay in the clear space which it makes in the mine previous to quitting it, it appeared, judging from the movement of the jaws, to be eating something, but though I watched it very closely with a lens, I failed to detect the exact nature of the substance it was apparently swallowing. The larva then being quite full fed bit a hole in the leaf, which hole was exactly of the same shape and form as the front and sides of the head of the larva, and gradually drew its body out of the mine. The larva was then exactly four lines in length, and rather more than half-a-line in width.

(The larva does not always spin up on a leaf or twig, nor even amongst the leaves on the ground, several instances having come under my notice in which the larva has penetrated the damp sand in the breeding jar to the depth of more than an inch, and there spun its cocoon.)

The larva under observation, directly it had crawled on to the surface of the leaf, twisted and tossed itself about, as if not knowing what to make of its new position; these gambles occupied some little time, after which it set about the more serious work of fabricating its cocoon, and began carpeting with silk the part of the leaf on which its body lay curled up, twisting and twining itself about in all kinds of ways, whilst constructing the flooring of its cocoon; when this was done, the larva still keeping its body in the same cramped position and moving its anterior segments backwards and forwards, gradually threw a number of silken filaments over its body, fastening them to the sides of the cocoon flooring, thus imparting a slightly convex form to the cocoon; this formed only the frame-work of the cocoon, but the larva set vigorously to work and continued spinning additional threads till, after nearly nine hours of assiduous labour, it had entirely completed its cocoon.

I find that a larva, if ejected from its cocoon at this period of its existence, is not only unable to spin another cocoon, but does not even possess the power of entering the pupa state, and, after lingering a few days, ultimately dies.

The body of the larva, curled round as it was, occupied nearly the whole of the interior of the cocoon; a fortnight later its body had so

much shrunk that it lay in the centre of the cocoon with much room to spare. If the larva be allowed to remain in its cocoon till this stage of its economy is reached, and it be then turned out, though it has no power to construct another cocoon, it is yet able to assume the pupa state, and being acquainted with this fact, I cut open the cocoon and gently ejected the larva, when, on measuring it, it was found to be only two lines long, and one line wide in its stoutest part, having thus lost just half its length by the peculiar shrinking process it had undergone, and the body was also of a paler yellow than it had been when in constructing the cocoon. At this time it lay quite motionless. The following day the head became slightly swollen, and gradually the four anterior segments assumed the same swollen appearance; the posterior segments also became slightly swollen, but not nearly so much so as the four anterior segments. Doubtless the convex form of the cocoon is designed by the larva to allow ample room for this change in its form.

At this stage I perceived a pale reddish patch at the back of the head, which I apprehended was the first indication of the reddish tuft on the head of the imago.

The swelling of the anterior segments continuing, eventually caused the larval skin to crack, and the larva then began to enter the pupa state. The head had a pale reddish blotch on the back, but on the front only the faint reddish outlines of a couple of spots were indistinctly traceable. The larval skin slowly contracting, ultimately collected in a little heap at the posterior end of the pupa.

(*To be concluded in our next.*)

AN ESSAY TOWARDS A KNOWLEDGE OF BRITISH *HOMOPTERA*.

BY THE REV. T. A. MARSHALL, M.A.

(*Continued from page* 12.)

16.—*Iassus* (*I.*) *attenuatus*, Germ.

Angustus, elongatus, albidus, nitidulus, longitudinaliter testaceo-striatus. Vertex obtuse trigonus, transversus, pronoto brevior; apex striis 2 brevibus punctisque totidem ante oculos lateralibus fuscis, inconspicuis: supra lineis 3 testaceis. Pronotum lineis 5, scutellum 2, longitrorsum ductis, testaceis. Hemelytra abdomine longiora, apice perquam attenuata, lanceolata; nervi albi, interstitiis linearibus, testaceis; cellula apicalis elongata, fusca, cum cellulâ præcedente sub-infuscatâ

lineam longam constituens. Clavi apex interdum infuscatus. Abdomen supra nigrum, basi late, apice anguste, testaceum. Pedes testacei; tarsorum apices, cum linea interiore tibiarum posticarum, fusci. ♂ ♀.

Long. 2—2¼; alar exp. 4 lin.

Iassus attenuatus, Germ. Mag., 4, 91, 31.

? Iassus tenuis, Germ. Mag., 4, 92, 32.

Amblycephalus nervosus, Curt., B. E. 572, No. 7.

Iassus striatulus, Brit. Mus. Collect., nec Fallén.

The apical nervures of the wings are darkened, forming a fuscous cross. The living insect has a pearly or metallic gloss above, and from its pale hue, longitudinal yellowish-brown stripes, and narrow shape, superficially resembles *Delphax lineola*, being also of the same size. The hemelytra have no vestige of the apical membranaceous apendage, and herein resemble those of the division *Athysanus*, Burm. Locally abundant among grasses in several localities of the midland district: on the railway embankment near Leicester,—on the islands near Wakering, Essex (Curtis),—Milford Haven, with the following species. Rare near London.

17.—*Iassus* (*I.*) *rupicapra*, n. sp.

Præcedenti persimilis; differentiis hisce abludit:—Hemelytra tertia parte breviora, apice minus angustata, vix lanceolata, testaceo-hyalina, nervis inconspicuis; cellula apicalis breviter oblonga, fusca, macula intus pallida; corii cellulæ plus minus fusco marginatæ, seu ocellatæ; costa late immaculata. Clavi apex tenuiter nigricans. Abdomen supra nigrum, lateribus et apice segmentorum 2 apicalium testaceis. ♂ ♀.

Long. 1¾; alar. exp. 3¼ lin.

Two sutural black spots, formed by the ends of the clavus, are conspicuous when the wings are closed. The membrane at its interior apex presents a slight hyaline extension, as in *Iassus* proper. Numerous in thick tufts of grass and among marine plants at the base of the cliffs which surround Milford Haven, occurring all the year round.

18.—*Iassus* (*I.*) *antennatus*, Boh.

Pallide brunneus; supra (excepto vertice) nitidus. Abdomen nigrum, lateribus et apice testaceum. Vertex *Deltocephali*, apice nigro bipunctulatus. Antennæ prælongæ, corpori æquales; articulus 2dus basi interdum nigricans. Pronotum transversim rugulosum. Hemelytra abdomine longiora, apice rotundata, perparum angustata, pellucida,

nervis distinctis, flavicantibus : membrana appendiculata. Pedes testacei, tarsis brunneis ; tarsorum posticorum articuli 1—2 apice subtus fusci ; femora postica apice, tibiæ posticæ latere interiore, nigro lineata. ♂ ♀.

Long. $2\frac{1}{4}$; alar. exp. 5 lin.

Thamnotettix antennatus, Boh.. Handl. 1845, 1, p. 35.
I. antennatus, Flor, R. L., 2, p. 335.

Similar in appearance to *I. 4-notatus* Fab., but larger, of a colour more inclining to brown, and with much longer antennæ—the last character separating it easily from all its congeners. Found in abundance on reeds surrounding a pool near Leicester, in August and September.

19.—*Iassus (I.) punctifrons*, Fall.

Flavus, supra pallide brunneus, nitidus ; pectore, atque abdomine supra, nigris. Vertex brevior quam apud præcedentem, apice rotundatus, medio perparum longior quam lateribus, flavus ; maculæ 2 interoculares nigræ, vitta rufo-brunnea plerumque connexæ, (interdum hæ maculæ in lineas productæ medio fere concurrunt) ; frons supra maculis 2 magnis sub-rotundis nigris, utrinque transversim nigro tenuiter cancellata. Pronotum flavum, antice bi-impressum, fascia obscura transversa rufo-brunnea. Hemelytra brunnea, nitida, nervis pallidioribus ; corii margo externus late hyalinus. Pedes testacei ; tibiarum posticarum linea intus (raro), tarsorum posticorum articuli apice, fusci. ♂ ♀.

Long. $1\frac{3}{4}$—2 lin.

Cicada punctifrons, Fall., Hem. 2, p. 42.
Thamnotettix punctifrons, Boh., Handl. 1847, p. 33.
Iassus punctifrons, Flor, R. L., 2, p. 328.

This species is common in Epping Forest, frequenting apparently several different kinds of trees.

(*To be continued.*)

THE *LEPIDOPTERA* OF IRELAND.

BY EDWIN BIRCHALL.

(*Continued from page* 6.)

NOCTURNI.

SMERINTHUS OCELLATUS—Widely distributed, but apparently rare.

„ POPULI—Common everywhere.

ACHERONTIA ATROPOS—Generally distributed, but not so abundant as might have been expected in the metropolis of the potato plant.

Sphinx convolvuli—In 1859 very common in Dublin and adjoining counties.

„ ligustri—Mr. Haliday has found the larvæ, but I am unable to say where.

Deilephila galii—Two specimens said to have been taken on the coast (Mr. Greene's list).

„ euphorbiæ—Inserted in the list by Mr. Greene on Mr. Hely's authority, who observed the larvæ at Killiney. The food plant, *Euphorbia Paralias*, grows abundantly on many parts of the Irish coast.

„ lineata—Two specimens are in the collection of Trinity College, captured near Youghal by the late Dr. Ball; and I possess a pair taken near Killarney in 1864, hovering over a bed of *Petunias*.

Chœrocampa porcellus—Widely distributed and common.

„ elpenor—Do. do. do.

Macroglossa stellatarum—Very common; seems to be on the wing day and night for the greater part of the year. It frequently comes to sugared flowers in the evening, and once, about midnight, it tapped for admission at the lantern of the Bailey Light House, and was secured.

„ bombyliformis—Common in suitable localities, especially in the County Wicklow.

Sesia bembeciformis—Common in the County Wicklow; also occurs at Howth.

„ apiformis—Cork and Waterford; but has not been observed farther north.

„ myopæformis—Dublin and Cork.

„ formicæformis—Mr. Haliday. No information as to locality.

„ tipuliformis—Common near Dublin.

„ scoliæformis?—I have observed traces of a *Sesia* in the trunks of the birch trees at Killarney, which I believe to be this species, but I have not yet obtained the insect.

Cossus ligniperda—Wicklow; apparently scarce.

Hepialus hectus—Wicklow and Killarney; common.

„ lupulinus—Common everywhere.

„ sylvinus—County Wicklow, by Mr. Bristow.

„ velleda—Common everywhere.

„ humuli—Do. do.

Procris statices—Generally distributed, and common.

Zygæna minos (Type) [Plate I., fig. 5 *a*]—Galway. I captured a considerable number of this insect in a pasture near Galway, in July, 1860.

„ nubigena (Variety) [Plate I., fig. 6 *b*]—Galway and Clare; local, but in profusion wherever found. The differences between *minos* and *nubigena* are, I think, sufficient to justify the separation which has been made by continental entomologists, and may be thus stated:—

Minos.	Nubigena.
Imago appears middle of July ...	End of June.
Frequents pastures	Rocky places.
Expanse of wings, 1¼ to 1½ in....	1 in. 2 lines.
Abdomen—velvety—colour steel blue.....	Covered with long, shaggy, dead black hair.
Fore-wings — The red costal streak never meets or overlaps the point of the discal or central streak	Costal streak *always* meets or overlaps the point of the discal streak.
Tendency of variation is towards division of streaks into spots...	Tendency of variation is towards a suffusion of the whole wing with red.

The specimens of *Zygæna* taken in Argyleshire, and noticed in the Zoologist for 1861, p. 7716, as *minos*, are *nubigena*. I possess a pair of them through the kindness of Professor Wyville Thomson.

Zygæna trifolii—Galway; local.

„ filipendulæ—Everywhere; but most common on the eastern side of the island. It occurs on the same ground as *nubigena*, but in comparatively small numbers.

Nola cucullatella—Common.

„ cristulalis—Wicklow, Dublin, and Howth; Mr. Barrett.

„ strigula—Killarney.

Nudaria mundana—Common.

Setina irrorella—Common on the coast.

Calligenia miniata—Galway.

Lithosia mesomella—Mr. Greene's list; locality unknown.

„ aureola—Abundant at Killarney.

„ helveola—Mr. Greene's list; locality unknown.

„ complanula—Generally distributed.

„ rubricollis—Do. do.

„ caniola [Plate I., fig. 4]—Discovered by Mr. Barrett in 1860, on the Hill of Howth; abundant, but extremely local; so

far as at present observed, it only occurs on one closely-sheltered bank, although its food (*Lotus corniculatus*) grows everywhere on the hill. The larva feeds at night on the flowers of the *Lotus*, preferring them to the leaves, though it will eat the latter in confinement. On the Continent it is understood to feed exclusively on *lichens*, frequenting the roofs of houses and churches. *Lichens* of various sorts abound at Howth, but the larvæ do not appear to eat it.

How this South European insect obtained a settlement on one point of the Irish Coast, and in no other part of the British Islands, is a curious problem in Natural History. The extreme sensitiveness of the larvæ to cold, the slightest frost (in confinement) proving fatal, gives the idea of an insect not thoroughly acclimatized; and it does not seem improbable that it has been introduced in the larva state among moss or *lichen* by some of the smugglers for which this part of the coast was formerly notorious, and for whose repression a numerous coast-guard is still maintained, as the entomologist who attempts to use a lantern on the cliffs of Howth will soon find to his cost. The moth appears early in August; it flies for about half-an-hour at dusk, and again in the morning dawn. The males may be attracted abundantly by a bred female, and both sexes come freely to sugar.

Euchelia jacobææ—Very common.
Callimorpha dominula—Mr. Haliday; locality not stated.
Euthemonia russula—Abundant on the heaths of the south and west.
Chelonia plantaginis—Generally distributed.
„ caja—Common.
„ villica—In Mr. Greene's list; I have not met with the insect.
Arctia fuliginosa—Common.
„ mendica—Mr. Greene's list.
„ lubricipeda—Common.
„ menthrastri—Do., especially in the west.
Liparis chrysorrhæa—Common.
„ auriflua—Do.
„ salicis—Do.
„ dispar—Dr. Ball. I have turned out large numbers of the larvæ of this insect among the *Myrica Gale* on the bogs at Killarney.
„ monacha—Not uncommon.
Orgyia pudibunda—Common.
„ antiqua—Do.

Demas coryli—Common.
Trichiura cratægi—Killarney; but seems a scarce insect.
Pœcilocampa populi—Very common.
Eriogaster lanestris—Not scarce.
Bombyx neustria—Common.
„ castrensis—Dr. Ball. I do not know any locality for this insect, and I think it possible Dr. Ball mistook a variety of *neustria* for it, as no Irish specimen is extant.
„ rubi—Common.
„ quercûs (Var. callunæ)—Abundant. I have not met with the true *quercûs* in Ireland.
„ trifolii—Mr. Tardy is said to have found the larvæ. I have not met with the insect myself.
Odonestis potatoria—Common.
Endromis versicolora—Larvæ on alder at Powerscourt.
Saturnia carpini—Common.

70 species only of the 108 British *Nocturni* appear to have yet been noticed in Ireland. The poverty of the list is most marked in the *Sesidæ* and *Lithosidæ*, of which 8 and 11 respectively of the British species are absent.

It may also be noted that all the fen insects—

Macrogaster arundinis
Nudaria senex
Lithosia muscerda
Arctia urticæ
Orgyia cœnosa

appear to be absent.

GEOMETRÆ.

Ourapteryx sambucata—Common.
Epione vespertaria—Wicklow; Mr. Bristow.
„ apiciaria— do. Powerscourt.
Rumia cratægata—Common everywhere.
Venilia maculata—Common, especially at Powerscourt.
Angerona prunaria—Common.
Metrocampa margaritata—Very common.
Ellopia fasciaria—Howth and Killarney.
Eurymene dolobraria—Mr. Haliday's list; locality unknown.
Selenia illunaria—Generally distributed.
„ lunaria—Powerscourt, by Mr. Barrett.
Odontopera bidentata—Common.
Crocallis elinguaria— do.

Ennomos erosaria—Cork and Kerry.
„ angularia—Common.
Himera pennaria— do.
Phigalia pilosaria— do.
Nyssia zonaria—Malahide. Larvæ from the Cheshire sand-hills turned out here have made themselves at home.
Biston hirtaria—Wicklow.
Amphydasis prodromaria—Do.
„ betularia—Common.
Hemerophila abruptaria—County Wicklow.
Cleora viduaria—County Wicklow, by Mr. Bristow.
„ lichenaria—Generally distributed, and common.
Boarmia repandata— do. do., and very common. The variety *conversaria*, Hübner, which has a broad blackish bar across the middle of the wings, is common at Killarney.
„ rhomboidaria—Counties Dublin and Wicklow; but much scarcer than *repandata*.
„ cinctaria—Common at Killarney.
„ roboraria—County Wicklow, by Mr. Bristow.
Tephrosia consonaria—Common; Wicklow and Kerry.
„ crepuscularia—County Wicklow, by Mr. Bristow.
„ biundularia—Dublin and Wicklow.
„ punctulata—Wicklow and Kerry.
Gnophos obscurata—Generally distributed, and common.
Dasydia obfuscata—County Wicklow, by Mr. Bristow.
Pseudopterpna cytisaria—Generally distributed, and common.
Geometra papilionaria—Common at Killarney; also in County Wicklow.
Nemoria viridata—County Wicklow; Mr. Bristow.
Iodis vernaria—County Down; do.
„ lactearia—Generally distributed.
Hemithea thymiaria—Galway.
Ephyra porata—Mr. Greene's list.
„ pendularia—Do.
„ punctaria—County Wicklow.
Hyria auroraria—Common on the heaths of the South and West.
Asthena candidata—Common.
„ sylvata—Wicklow and Galway.
Venusia cambricaria—Powerscourt.

ACIDALIA SCUTULATA—Generally distributed, and common.
„ BISETATA— do. do.
„ TRIGEMINATA—Galway.
„ RUSTICATA—Killarney; Dr. Battersby.
„ OSSEATA— do.

(*To be continued.*)

Captures at Witherslack.—On the 20th of May I paid a visit to Witherslack, and, considering how cold it has been lately, I met with very fair sport. Butterflies were plentiful, including *rhamni*, *Argiolus*, *Lucina*, *rubi*, *Ægeria*, *sinapis*, &c. It turned out a fine warm afternoon, and for the first time I met with *Gelechia velocella*, of which I boxed about 20 specimens. I also captured *Bapta punctata*, 1; *Cidaria suffumata*, 2; *Eupithecia indigata*, 5; *Cochylis ruficiliana*, 6; *Anchylopera siculana*, 2; *Penthina marginana*, 1; *Micropteryx Allionella*, 6; *M. Tunbergella*, 12; *Ennychia octomaculalis*, 2, &c., &c.—J. B. HODGKINSON, 31, Christchurch Street, Preston.

Captures at Lytham.—On the 22nd of May I visited Lytham, and took a few *Gelechia umbrosella* and *desertella*, and found in the shoots of the dwarf sallow a good many larvæ of *Gelechia temerella*. I also found several larvæ of *Depressaria nanatella* in the leaves of the carline thistle; and rather to my surprise, I took a specimen of *Pancalia Lewenhöckella*, the first time I have ever met with it on our coast.—ID.

Acronycta alni bred.—Early in August last, a full-fed larva of *Acronycta alni* was picked up in an orchard here, and given me. That it might have every facility for spinning up, I supplied it with some bits of bark, and with these it formed a strong cocoon, from which, on the 3rd inst., the perfect insect, a very handsome specimen, emerged.—C. G. BARRETT, Haslemere, *June 17th.*

Re-occurrence of Madopa salicalis at Haslemere.—A few specimens of *Madopa salicalis* have again occurred. This insect seems completely to change its locality every year or two. This year it was in a piece of two-years-old underwood, and showed no preference for the long grass of the paths, while in the old localities not a specimen could be found.—ID.

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

BY H. G. KNAGGS, M.D., F.L.S.

THE CATERPILLAR STATE—MANAGEMENT.

(*Continued from page* 278, *Vol.* II.)

Manipulation.—The diversified habits of larvæ, from their exclusion out of the egg forwards, frequently perplex the breeder as to the best means of managing them. To begin with the juveniles: some of them will not take kindly to their food: and this often happens if a substitute have been forced upon them in lieu of

their legitimate diet; they become restless, crawl wildly about, flock to the lightest part of the cage, squeeze themselves through ridiculously small apertures, entangle and suspend themselves hopelessly in festoons, and in fact do anything rather than settle down rationally to their breakfasts. Such individuals should be reared, until more accustomed to their new mode of life, in air-tight jam-pots, the tops of which are covered over with green glass, for the purpose of darkening the interior of the vessel; a condition of things usually promotive of quietude amongst the brood—quietude giving time for reflection, and rise to second thoughts (proverbially best) that the cravings of nature should be satisfied even though the fare set before them be not precisely to their palate, and the apartment suggestive of the converse of their ideas of liberty; moreover, at this, and indeed every stage, they should not be overcrowded.

Then, again, others drop by silken threads on the approach of real or imaginary danger; a wise provision, as I believe, for their preservation against birds and also cannibals, which, of course, could not well follow them down the thread. These, too, are most easily and best fed in air-tight cages; but in their case the green glass cover may be dispensed with.

It is the peculiarity (evidently in some way connected with the well-being of the creatures) of certain larvæ to make their first meal off the egg-shells, or part of them, from which they have recently emerged; others, for some inscrutable reason, shedding and devouring their first skin* before betaking themselves to their more orthodox mode of living. These should be left alone to crawl to their food; indeed it should be put down as a rule that stationary larvæ (especially little ones) should never be meddled with; while crawling larvæ are generally in want of some attention.

Nor must it be forgotten that many small larvæ (and big, too, for that matter) render themselves invisible by mining, entering buds, and spinning together leaves; or elude our vigilance by closely fixing and assimilating themselves to the twigs, stalks, mid-ribs, and edges of the leaves of their food. With such experts to deal with, great circumspection is necessary in the changing process, not only that none of our cares may escape observation, but also that no clumsy handling may bring grief or even demolition to the tender objects of our solicitude. When larvæ are known to have this sort of propensity, it is best to supply them with as small a quantity of fresh food as is consistent with their requirements, and in changing the same to let all parts remain which are in the lest degree suspected of, or capable of, containing occupants.

N.B.—Of course, when pellets of excrement, even though in the case of certain *neophytes* microscopic, are observable, it may be taken for granted that (always excepting the presence of interlopers introduced with the food) our "cares" are availing themselves of their diet.

Having thus touched upon some of the habits of little larvæ which act as obstacles with which the larva-rearer has to contend, let us see in what manner other habits may be turned to account in assisting us in the changing process. Firstly, sometimes a very slight jar or even a puff of breath will dislodge pretty nearly every tenant of the bunch of food,—in which case we can quickly transfer

* Some larvæ also, *Cerura vinula*, for example, eat their cast skins after each moult.

them to the jam-pot, or the cylinder turned topside (muslin end) downwards: in the latter case they will not be long in attaching themselves to the muslin. Secondly, a more or less sharp jar will cause certain of them to lower themselves by threads, by which they may be readily shifted on to the fresh food. Thirdly, a slight touch with a camel's-hair pencil causes others to fall perpendicularly downwards; while a fourth batch exhibits a very keen sense of the proximity of newly-gathered food, and may be left to find their own way from the stale to the fresh supply, and so on.

In conducting the changing process I would impress upon the reader the advisability of first preparing a duplicate cage (whether jam-pot, flower-pot, or cylinder), by "sweetening" it with free currents of dry fresh air, and then stocking it with a proper quantity of appropriate food. In the second place the contents of the cage to be operated on, live-stock and all, should be turned out on a large white meat-dish, an utensil possessing prodigious advantages over the more-often-used sheet of paper, both in point of cleanly whiteness of material and also in smoothness of surface, such as would puzzle even a "lubricipede" to escape from; while a similar attempt on the part of a geometer would be simply preposterous; indeed, the position of most larvæ on the glazed superficies is much that of an incipient skater down on the ice, and gladly as a rule do they avail themselves of the proffered twig: easily, too, may such as spin threads be lifted by their silken appendices with the aid of a camel's hair brush, and transferred to the newly-prepared quarters; while those that sham death can be literally shovelled into their fresh domicile.

The old food having been jarred over the dish, and larvæ which fall transferred, should next be searched over for such as show no disposition to leave go their hold, and these latter may be detached by clipping off *carefully* (for if done with a "*snap*" the larvæ are jerked away) with a pair of scissors the portion of the food on which they rest, and allowing the larvæ with the pieces thus cut off to fall gently on the fresh supply of food; for I hold that, though several kinds of larvæ do not appear to sustain injury from tender handling, it is, as a rule, neither necessary nor desirable to touch them with the fingers.* The old food should not always be thrown away at once, but left on the glazed dish for future examination, in the event of there being amongst it any larvæ which may have eluded us.

In a few instances, these being chiefly among the larvæ of the *Noctuina*, it is necessary to provide hiding-places; for those of *Orthosia*, *Xanthia*, *Noctua*, &c., dead leaves, pieces of bark, broken chip boxes, bits of flannel, &c., may be employed; while for *Agrotis* and a few others a considerable depth of fine earth or sand is necessary.

Larvæ which in Nature hybernate must either be stimulated by warmth and fresh food to feed up unnaturally fast, or else through the winter must be exposed to out-door temperature.

Some hybernating larvæ are full fed before taking up their winter quarters, in which case they will of course feed no more. Others exhibit no desire for food

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* Painfully undesirable indeed is it to handle the larva of *Porthesia chrysorrhœa*, and other hairy larvæ in less degree, for should their easily detached spines become applied to any tender part of our skin, an intolerable irritation is produced, which is very difficult to alleviate. Indeed, on the Continent, the hyperæsthetic symptoms produced by the larva of *Cnethocampa processionea* and *pityocampa* have been known to result even in death.

until the spring. But not a few come forth during the warm days and evenings of winter and early spring to practise with their jaws. These latter, when reared in captivity, require some attention on the part of the breeder. Of a certainty however, as trees and shrubs, with the exception of evergreens, are bereft of foliage in winter, larvæ feeding ordinarily upon them must, if they have to eat at this season, content themselves with other pabulum in the shape of non-deciduous plants, of which *arbutus*, *laurustinus*, ivy, heath, and fir are the greatest favourites, or low growing plants, such as forced seedlings of knotgrass (strongly recommended), chickweed and groundsel, plantain seeds, as well as grasses and mosses; though in the case of some low feeding larvæ, especially geometers (*Acidaliæ*), they are quite satisfied with nibbling during the winter the withered leaves and stems of the plants on which they have been reared; but this does not prevent their keeping a very sharp look-out for the earliest buds that come in spring.

I may just note here that, as water in its metamorphosis to ice is apt to inconveniently expand our vessels, potatoes are serviceable not only as supplying moisture in its place, but also as a provender, it being sometimes found that larvæ, on becoming aware of the presence of the tuber, have availed themselves of it as food.

Hybernating *hairy* larvæ must during the winter be kept dry, or in a well-ventilated place, otherwise the damp seems to hang about their fur, and causes them to be attacked by a white fungus which creeps through their frame and speedily destroys them: smooth larvæ, on the contrary, seem to require the natural dampness of the soil. Most of the hybernating larvæ of the *Noctuæ* require hiding-places, seeming to quickly pine away if not freely supplied, for the purpose, with soil, dead leaves, &c.

Note.—My friend Mr. Gibson strongly recommends that during the winter all cages containing larvæ be placed in front of a window facing the east or north east, so that the inmates may be kept as cool as possible. This he considers of vast importance; and his very great success in rearing hybernating larvæ, so generally looked upon as stumbling-blocks in the path of the breeder, adds much force to his suggestion. As soon, however, as he can procure food, he supplies them with it, and simultaneously endeavours to rouse them to activity with all the natural heat of sun-rays at his command.

A word or two is necessary concerning the treatment of cannibal and viciously disposed larvæ. Some, such as *Cosmia trapetzina*, have such depraved notions of gastronomy that they cannot always be trusted even with their own brothers and sisters,—these must, of course, be fed separately. Others, which devour with avidity the larvæ of other species, feed up harmoniously enough *inter se*, such are the larvæ of the blood-thirsty *Scopelosoma satellitia*, *Taeniocampa miniosa*, and *Crocallis elinguaria*; they must not be stinted in their food, though, for the cravings of a hungry stomach would probably render them conveniently oblivious of the ties of relationship. I suppose, too, they should be supplied with living animal food occasionally; but it seems a horrible thing to recommend, and it is doubtful whether it be absolutely necessary. Again, certain larvæ, though not actually carnivorously disposed, but not naturally meant to live gregariously, act in a quarrelsome, snappish, and vicious manner to other larvæ crossing their path or interfering in any way with their comfort, often by their bite causing the victim to dwindle and eventually die: these individuals also should be placed in solitary

confinement: others not naturally cannibalistic (at least I suppose not), would appear to assume the habit in captivity, as the account of that of *Thecla quercûs* coolly demolishing the pupa of his more advanced brother seems to indicate. A weather eye must be kept open for such customers, and their propensities circumvented.

Then, again, nothing is more common with careless breeders than for the peaceable hawk-moths, "kittens," and other larvæ, when kept on short commons, to nibble off the caudal appendages of their relatives, an operation which I am by no means sure does not originate in their erroneously considering these excrescences to be of a vegetable character.

What a blessing to the slovenly would such larvæ as those of *Glottula pancratii* be! M. Millière thus quotes from a letter of his friend M. Daube:—They eat the leaves of the *Pancratium*, then the flowers, the seeds (if not too forward), and the root, which they attack in the last place; and when they have demolished the bulb, which they void just as if it had been ground up by their powerful mandibles, they eat their frass; and curious to tell, those which are nourished after this strange fashion, undergo their transformations quite as well, and produce imagos quite as fine, as the others!! It is, the only larva which has this peculiarity." I fear that M. Daube is quite right in his latter supposition: at least, no such contented and utilitarian larva has yet been detected in Great Britain.

(*To be continued.*)

On the similarity of the insects of North America and of England.—On receiving lately a box of Lepidopterous insects from an entomological friend in Quebec, it was impossible to help being struck at the first glance with the great similarity between them and our British species. Sixty-six species were sent to me (the only selection being that when an insect was known by my friend to be English it was excluded); of these no less than ten may be classed as decidedly common to the two countries. These were *Vanessa Antiopa*, *Chrysophanus Americana* (*C. Phlæas*), *Deilephila chamænerii* (*D. galii*), *Smerinthus excæcatus* (I think, without doubt, *ocellatus*), *Hydræcia nictitans*, *Mamestra adjuncta* (*M. brassicæ*), *Agrotis tritici Scoliopteryx libatrix*, *Melanippe hastata*, *and Scotosia undulata*. On the other hand, there were eighteen only without any English generic ally: and in making this last selection a rigid exclusiveness has been observed: thus, *Danais Archippus*, *Limenitis Disiphus*, two species of *Neonymphæ*, and three *Saturniæ* (*Io*, *Polyphemus* and *Cecropia*), are amongst the eighteen, as also are *Ellopia ribearia*, *Zerene catenaria*, and *Cidaria diversilineata*, as these three last-named scarcely seem to belong to the genera to which they are referred. The remaining thirty-eight are generically related to our native species, and in many instances the approximation is so close as to suggest specific identity also.

It is the business of entomologists to deal with facts, and not with hypotheses, yet the question of how are we to account for this similarity will obtrude itself upon our minds. Naturalization will account for some part of it, certainly: and the history of this in *Pieris rapæ* has been most admirably traced out by the friend to whom I am indebted for the very specimens now under discussion, Mr. Bowles: thus the *Vanessa* and *Scoliopteryx* may be brought over whilst in their winter sleep and awake in a new country, there to deposit their eggs, but *hastata* and *undulat-*

at least would be difficult to account for on any theory. If there was a distinct centre of creation for the two countries, we must either suppose that *undulata* was created alike in both regions, and Nature reproduced herself, or else if we turn Darwinians for the nonce that *unduluta* was "developed" in both regions; now it seems to me that if we are to take two cells or germs as our starting points, it is but an N'th chance (where N is infinitesimally small) that any process of natural selection should even develope the same order, *Lepidoptera*, in both the centres. How utterly impossible, then, must it be that that they should both develope the same species!

If, on the other hand, the Continents were ever continuous. we have then in our friend *undulata* that often often quoted individual "the oldest inhabitant," and a thorough-going Tory he seems to be, for not a spot or speck is changed on his coat, though he must have lived under different climates and under different circumstances in the two countries from those old days when mammoths were plentiful as blackberries, and long before the time when Adam was a little boy.

Seriously speaking, however, the *undulata* must teach us how vain at present is any attempt at a theory of creation, and how difficult to reconcile with the facts around us. We feel how little we do know, and how truly Tennyson speaks when he calls man—

> "An infant crying for the light,
> And with no language but a cry."

R. C. R. Jordan, M.D., Edgbaston, Birmingham.

Note on the luminosity of Fulgora.—At the *séance* of the Entomological Society of France, 22nd November, 1865, M. Moufflet communicated some details on this question, which has been so frequently asserted and denied by Entomologists; he affirmed that he had seen examples of *Fulgora laternaria* near Soleda, in Mexico, which in the evening emitted a somewhat brilliant light from the cephalic prolongation.

Notes on Moths attracted by Gas Lamps.—While in London, in 1858 and '59, I worked hard many a night in the examination of the gas lamps which light the various roads round the outskirts of London, for the sake of the insects attracted by the lights. Several of my friends have, I know, tried the same plan of collecting since then, and have taken many good things; but a few notes on what was to be done in that locality may still be interesting.

I hardly need say that, for success in this mode of collecting, a dark night is almost indispensable, and a moderately still one nearly equally so. It should also be dry, for moths do not seem to approve of wet lamps. On such suitable nights something may be found at almost any time of the year, although, in the first three months, it is not likely to be anything much rarer than *Phigalia pilosaria*, the *Hibernia*, *Larentia multistrigaria*, &c. In April occurred my first specimen of the then very rare *Camptogramma fluviata*, hybernated of course, but tolerably fine. *Selenia lunaria*, too, made its first appearance In May *Smerinthus populi*, though common, looked a fine thing on a lamp. *Scotosia certata* frequently occurred in the first half of the month. *Selenia lunaria* was still out, and *Drepana hamula*, *Peridea trepida*, *Notodonta dictæa*, and *Dianthœcia carpophaga* made their appearance with *Paraponyx stratiotalis*, which continued to appear till August.

In June, *Smerinthus ocellatus* made its appearance, and *Drepana hamula* was still out. *Ptilodontis palpina* dashed round the lamps in a furious and bewildering manner, or, when settled, looked precisely like a bit of dry stick: and, on one memorable night, *Madopa salicalis* occurred on a lamp at Dulwich. The attitude of this specimen struck me as remarkable. It stood with its wings arched exactly in the style of *Platypteryx lacertula*, but not so much so as *Cilix spinula*.

In this month I found, too, the handsome *Arctia villica*; and *Pyralis fimbrialis* was rather common, and continued out till October. *Eupithecia plumbeolata*, *Pempelia betulæ*, and, oddly enough, *Pterophorus trigonodactylus*, occurred occasionally, while the host of other common things would be wearisome. Much more was this the case in July, when the number of species was really remarkable. Among them were the following:—*Zenzera Æsculi*, *Gastropacha quercifolia*, *Iodis vernaria*, *Acidalia emarginata*, *Cidaria dotata*, *Drepana hamula* (second brood) *Apamea ophiogramma*, *Agrotis corticea*, *Cosmia affinis*, *Tethea subtusa* and *retusa*, *Hadena chenopodii*, which had been out ever since May, *Pyralis glaucinalis*, *Pionea stramentalis*, *Spilodes cinctalis*, *Phycita formosa*, *Myelöis pinguis*, *Pempelia carbonariella*, and even a few common *Tortrices* and *Tineæ*, *Pelurga comitata* (at the end of the month, and plentiful the next), and *Campt. fluviata*, which appeared occasionally till October.

In August, a diminution in the number of species was observable, but the quality was in no degree deteriorated, for in this month I met with the best capture I ever made at a gas lamp, *Sterrha sacraria*, at that time the second or third British specimen, I believe. In this month the second broods of *Ptilodontis palpina*, *Notodonta dictæa*, and many others, made their appearance; with *Hepialus sylvinus*, *Ennomos fuscantaria*, *tiliaria*, and *angularia* (all three out also in September), *Emmelesia unifasciata*, *Phibalapteryx vitalbata*, *Cosmia diffinis* (common, but most lovely), *Cerigo cytherea*, *Catocala nupta*, a grand looking thing on a lamp, *Spilodes sticticalis*, *Myelöis advenella*, *Acrobasis tumidella* and *consociella*, and many more.

In September there was a material decrease in the number of species, but not so of specimens, the lamps being fairly alive with the numbers of *Anthocelis lunosa* and *Luperina testacea*, dashing wildly about all the early part of the night, and afterwards settling down on the lamp frames in plenty. *Hydræcia micacea* was less common, and *Agrotis saucia* and *Xanthia citrago* occurred. For the remainder of the year, besides the species already mentioned, little, except very common things, was to be found.

Occasionally I have been surprised by the appearance of day-flying species, such as *Orgyia antiqua*, *Pyrausta purpuralis*, and others; and once I found a *Vanessa Atalanta* actually on the lamp door, which had been opened when the lamp was lighted. Probably it had been accidentally disturbed from its roost for the night.

My plan of collecting was, generally, to climb the lamp-posts. Moths flying round may often be netted, but somehow it is not very easy; and some may be touched by the net when settled, and then caught, but very many, *especially the good ones*, settle under the lamp, or on some part of the frame-work where they are not easily got at, or even seen, without climbing.

If I had not climbed, on speculation, the lamp on which it was settled, I should

never have taken *Sterrha sacraria*, as it was quite out of view from the ground; and another time, on descending, I found a splendid *Gastropacha quercifolia* on my waistcoat, by which it was actually wiped off the iron without my noticing it. *Notodonta dictæa*, the *Smerinthi*, and many others, get close underneath the lamp, and peep at the flame from below; while the *Phycidæ*, and numbers of other small species, find their way into the flame, and sometimes, though not by any means always, get burned, as was the case with an unfortunate *Agrophila sulphuralis*, of which enough only remained to identify it and tantalize me. Very many species, *Noctuæ* especially, delight in posting themselves on the dark outside of the upright frame which generally supports a lamp, or on the leaded case itself, and settle themselves so closely, that a very near and keen inspection is required to detect them; while *Peridea trepida*, and some of the other "prominents," viewed from the ground, have a most inconvenient resemblance to dead leaves, sticks, and the lumps of mud which are often thrown at the lights by small boys, and individuals under the exhilarating and ennobling (?) influence of intoxicating liquors.

I, therefore, most decidedly recommend the "swarming" plan, as my friends derisively call it; for, although it is not desirable in the case of a newly painted lamp-post, nor easy in that of one a dozen feet high,—straight, smooth, or fluted, with no rest for the feet,—luckily these cases are the exceptions. Any one who feels himself too heavy to climb may, if he thinks proper, carry a ladder, or get some one to carry it for him, for a night's work would tire him without carrying a load; but he must place it very carefully, as the least jar will send many moths away, not to return. An opera glass, too, might probably be useful, though I never tried it or the ladder.

The time to commence the search is about ten o'clock, p.m.; very few things come to lamps sooner, but they continue to appear till dawn, and often settle down towards the latter part of the night, so that all the sport sometimes occurs in the last hour or two, from two to three o'clock a.m. being a capital time.—Charles G. Barrett, Haslemere.

Description of the larva of Acidalia ornata.—I have more than once had eggs of this species, but never succeeded in rearing the larvæ to full-growth. On the 30th last July I received eggs from Mr. Wright, the larvæ from which are at the time I write this still quite small, and not looking likely to come to perfection, although I took some trouble to procure for them plants of *wild* thyme, thinking it might suit them better than the garden sort. However, almost on the same day with Mr. Wright's eggs, I received from the Rev. J. Greene some *larvæ* feeding on *mint*, which had even then (last July) nearly attained their full growth; and from other larvæ of the same brood, Mr. Greene, in the course of last autumn, bred the moths. My small hybernating larvæ are about 4 lines in length, very rugose, and very dark and dingy to look; but with a lens one can see that the back is brownish ochreous, with a pale grey interrupted dorsal line, and five dusky ∧s on the middle segments, with their apices pointing forward. When full-grown the larva is not quite an inch in length, rather slender, almost uniform in bulk throughout: the head slightly notched, the skin rugose; the spiracular region puffed out and puckered. The ground colour of the back is brownish ochreous; the dorsal line fine and

interrupted, darkest near the head, afterwards showing pale grey edged with dusky; sub-dorsal line dark brown, commencing very distinctly on the head. On each segment from five to nine there are two obtuse dark Vs, one pointing forward, the other backwards (their arms reaching nearly to the sub-dorsal line, and terminating in the usual 4 dots), and between them enclosing a blunt diamond of the ground colour, through the centre of which the dark-edged dorsal line shows distinctly. The posterior segments are marked only with the dorsal and sub-dorsal lines, and the usual 4 dots in each, here showing more distinctly as being not confounded with the other markings. The spiracular stripe pale ochreous, freckled and edged below with dusky; the belly pale grey, freckled and mottled in the same way.

Certainly *mint* seems to have suited the growth of these larvæ better than *thyme*, but I perceive that after they have once tasted the latter they will not leave it for another food.—J. Hellins, *February 7th*, 1866.

[N.B.—I always find *A. ornata* amongst wild *marjoram*, not thyme.—H. G.K.]

Eupithecia lariciata near York.—I had the good fortune to capture a long series of the above insect, in very fine condition, in a small larch plantation near York. The first was taken on May 20th. I found them as good at the end of a fortnight as at first, which, with the fact of their being difficult to dislodge from the trees, and that when beaten out they generally drop and remain on the ground, would suggest that the imago is sluggish, or does not fly much, which may account for its comparatively recent discovery as a British species. I obtained a small batch of ova from one female by placing her in a tube containing a sprig of larch. I had tried several others in gauze-covered boxes, but they would not deposit eggs.—T. J. Carrington, Fulford, York, *9th June*, 1866.

Larvæ of Xanthia gilvago at Derby.—I was fortunate enough this morning to beat the larvæ of *X. gilvago* in some numbers off wych-elm, in this neighbourhood.—Geo. Baker, 47, Kedleston Street, Derby, *June 7th*, 1866.

Eupithecia plumbeolata and Eup. valerianata bred.—On the 12th of this month I bred *E. plumbeolata* from larvæ taken last season off the *Melampyrum pratense*; also at the same time *E. valerianata* from larvæ taken on *Valeriana officinalis* last July.—Id., *June* 18, 1866.

Economy of Gelechia cerealella.—"A grain of wheat or of barley contains the precise quantity of food necessary to nourish the larva from its birth till it is full fed. If we open a grain which contains a larva just ready to change, we find it is nothing but a husk; the entire farinaceous substance has been devoured. In the cavity then occupied by the larva, which is the most spacious apartment it has had in its life, we find some brown or yellowish particles, which are its excrements. If we open a grain inhabited by a younger and smaller larva, we find that there is more or less of the substance of the grain still to be consumed, according to the size of the larva. But what is remarkable is, that in the latter case we find at least as much, and probably more excrement, and in large pellets, than we find in a grain tenanted by an older larva. If we bear in mind that the grain has no perceptible opening—no place by which the larva could extrude its excrement, we may conclude that at first it feeds with little economy, and that afterwards it is driven to eat

over again what it has already eaten, and perhaps to repeat this process more than once." (Reaumur, Memoires II., pp. 490-491.) This curious notice of economy of material in the larva of *Gelechia cerealella* has not, that I am aware of, been verified by any subsequent writer. I stumbled upon it quite by accident just as I was writing the last sentence of the General Observations on the genus *Gelechia* for the 10th volume of the Natural History of the *Tineina*.—H. T. Stainton, Mountsfield, Lewisham, S.E., *May* 18*th*, 1866.

Proposed accounts of Entomological excursions.—I fancy it would be interesting to English readers to learn what our districts, which are of so different a character from England's, produce in *Lepidoptera*. How would it answer were I in each month to write out a full account of the most productive excursion? I can only account for our not having such notices, as far as I can recollect at this moment, in our German periodicals, by supposing that one fears to make a communication which should not be of sufficient interest; hence we have accounts of excursions to the Alps, to the Riesengebirge, &c., but none of excursions in the immediate neighbourhood of towns in the plain. In the Intelligencer there are, indeed, many such; but as it appears to me they are generally written by beginners, who therefore confine their attention to a few butterflies.—P. C. Zeller, Meseritz, Prussia, *May* 15*th*, 1866.

Occurrence of Lathridius filum, Aubé; a species new to Britain.—I have taken a species of *Lathridius* here, under the following circumstances:—Two years ago I wished to dry specimens of some of the species of *Aconite* cultivated in the Botanic Garden; and accordingly gathered a few examples from plants growing here. The plants were put in drying paper, and left untouched for some time,—absence from home preventing my changing the papers. On returning, I found the specimens moulded and useless, and several examples of a beetle among them. Beetles and plants were immediately destroyed, with the exception of two of the former; as I desired to rid myself of what I thought a pest. These specimens were in February shown by me to Mr. D. Sharp, who at once recognised them as belonging to a species new to Britain; and by careful examination of the old drying paper, which had been left undisturbed, numerous other examples were discovered. The *Aconites* were not British species, but had been for some time in cultivation; and there are but few exotic specimens in my herbarium. I do not think, therefore, that the insect can have been introduced in any way from abroad. The drying paper and remains of the *Aconites* have again (June) yielded a few specimens.—W. R. McNab, Royal Botanic Gardens, Edinburgh, *June* 11*th*, 1866.

[Mr. McNab has kindly sent me some examples of the insect above recorded, which I have no difficulty in referring to the *Lathridius filum* of Aubé, Ann. de la Soc. Ent. de France, 2me Série, 1850, 334, 44; a species much resembling *L. filiformis*, Gyll., but differing from that insect in being even more linear in shape, with its thorax more cordate, less widely margined, and with a small but distinct and rounded impression on the disc. M. Aubé mentions that it was detected by M. Guérin Méneville, who bred it from a fungus received from Algeria: the species, however, is probably as much entitled to rank as British as many of its easily introduced allies.—E. C. R.]

Occurrence of Meligethes ochropus, a species new to Britain.—In May last I took a large bright-looking *Meligethes* on the sea-banks near Hartley, which I at once referred to *ochropus*, Schüp. Sturm, Ins. Deutsch, xvi. 23. Tab. ccevi. fig. h. H.; and, having recently submitted the specimen to Mr. Crotch, he has confirmed my opinion; remarking that he has examples of the same insect taken in the London district.—Thos. Jno. Bold, Long Benton, Newcastle-on-Tyne, *March 26th*, 1866.

Note on Meligethes Kunzei, a species not included in the British list of Coleoptera.—In examining my specimens (taken in the London district) of *Meligethes* allied to *distinctus*, *memnonius*, &c., I find one that agrees very well with Erichson's description of *M. Kunzei* (Ins. Deut. iii., 182, 15). It resembles *difficilis* in size and build, but has even more widely and strongly punctured elytra, of which the pubescence is very fine and scanty: it is, moreover, of a deeper black colour, without any trace of greenish reflections on the head and thorax; and the anterior tibiæ are not so strongly denticulated, the teeth being finer and blunter. Erichson appears to have originally had some doubts whether *M. Kunzei* was specifically distinct from *difficilis*, but to have finally determined that their diagnostic characters were constant and sufficient. Both these insects resemble *M. ochropus* (recorded in the present No. by my friend Mr. T. J. Bold),—a species not uncommon in the London district, and long known both to Mr. Waterhouse and myself; but not brought forward on account of a slight difficulty in connection with the Erichsonian types examined by Mr. Waterhouse.—E. C. Rye, 284, King's Road, Chelsea, S.W.

Review.

Ailanthiculture; or the Prospect of a new English Industry. By Alexander Wallace, M.D., Oxon., M.R.C.P., Lond. (Transactions of the Entomological Society of London, 1866, 3rd ser., vol 5, pp. 185-245. The Society, or Longman and Co.)

It is now about ten years since the repeated failures of the silk-crop in Europe induced sericiculturists to look about them for some other silk-producing species which should in some way be able to supply the place of the *Bombyx mori*. Amongst those species experimented upon with so much success in France by M. Guérin Méneville and others, *Bombyx cynthia*, the Ailanthus silkworm, has probably found more favour than any other, producing a silk, inferior in fineness and gloss to the old-fashioned sort, but to the durability of which there is said to be no end; and in Paris, fabrics woven from this silk are publicly sold. In England, Lady Dorothy Nevill and others had made, to a certain extent successful, trials of this novel kind of sericiculture, but it was probably not carried on to any considerable extent until the author of the above-mentioned paper tried it on an extended scale on the railway bank at Colchester, he having planted half a mile of the bank with Ailanthus trees to the number of about 2,300, and in this valuable paper, to which was awarded one of the prizes offered by the Entomological Society of London for the best essays on Utilitarian Entomology, Dr. Wallace details minutely the plan pursued, and gives copious extracts from the many notices on the same subject published in France, winding up with a discussion of the events which led to the introduction of

this new silkworm, and of the prospects of its ultimate success, regarding which latter point we will allow him to speak for himself.

"Fortunate will it be for England,—fortunate, indeed, for Ireland, if land, "hitherto valueless, can be so tended as to furnish, with little care and slight cost, "a fabric warm and durable. Fortunate will it be for women and children (espe- "cially for workhouse habitués) if another health-giving industry be opened up for "their nimble fingers."

"I cannot but be deeply struck with the remarkable chain of events which "have preceded these novel projects, and I feel confident that at no very distant "period Ailanthiculture will take high rank among English industries."

As to whether this day-dream will ever be realised, is not for us to say; both the insect and its food-tree are perfectly hardy in this climate, and it is to be hoped that when we shall have overcome the (in England) hitherto unconquered difficulty in winding the silk from off the cocoons, Dr. Wallace may, in watching the development of a new kind of manufacture, earn the reward he so justly merits.

Entomological Society of London. 4th June, 1866.—Sir John Lubbock, Bart., F.R.S., President, in the Chair.

The President announced that Mr. W. Wilson Saunders had invited the Members to an excursion at Reigate on the 6th of July.

Osbert Salvin, Esq., M.A., F.L.S., of Bolton's Grove, Brompton, and T. Turner, Esq., of Exeter, were elected Ordinary Members; and Count Mniszech, of Rue Balzac, Paris, was elected a Foreign Member.

Prof. Brayley communicated an extract from the report of Mr. Consul Zohrab to Government, respecting the occurrence of a venomous spider amongst growing wheat at Berdiansk, from the attacks of which many persons had suffered severely.

Mr. McLachlan made some observations concerning a caddis-worm case containing a dead pupa, which had been found attached to the extremity of a rush, two feet above the surface of the water. He remarked that the instinct of the larva had been at fault, for when it had fixed its case previously to assuming the pupa-state, it had not taken into consideration the growth of the rush, and had thus been carried out of its element.

Mr. Pascoe exhibited a number of *Coleoptera*, chiefly from ant's-nests, sent to the Rev. H. Clark by the Rev. G. Bostock, of Freemantle, Western Australia; they included two new species of *Articerus*, a singular insect (*Ectrephes formicarum*, Pasc.) with somewhat the form of *Paussus*, species of *Anthicus*, &c.; descriptions of these were laid before the Meeting.

Prof. Westwood exhibited coloured drawings and read descriptions of various species of *Goliathidæ*, including *G. Kirkianus* of Gray, from the Zambesi, *G. Fornassinii* of Bertolini, &c., &c.

Mr. Stainton mentioned that from galls on *Gypsophila saxifraga*, recently found at Mentone, he had bred a species of *Gelechia* very closely allied to *leucomelanella*, and remarked on the difficulties attending the discrimination of those species of this genus which fed on *Caryophyllaceæ*.

Mr. C. A. Wilson, of Adelaide, communicated further notes on South Australian *Buprestidæ*.

NEW SPECIES OF BUTTERFLIES FROM GUATEMALA AND PANAMÁ.

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

(SUPPLEMENT.)

According to the promise made in the first volume of this Magazine, p. 205, I now proceed to describe a further series of species of butterflies from Guatemala and Panamá, received from the collectors of Messrs. Salvin and Godman. These descriptions, as well as those already given, it is scarcely necessary to remark, are merely preliminary; it being the intention of Mr. Salvin to publish a more complete faunistic work on the Diurnal *Lepidoptera* of the countries he explored, wherein will be figured a large number of the new species.

Some of the species now described are from Costa Rica and Veragua.

84.—Hesperocharis crocea.

Exp. 2″ 4.‴ Light yellow, deepening in tint towards the apex of the fore-wing; outer half of the hind-wing clear saffron-yellow. Fore-wing triangular, apex pointed, outer border a little incurved: hind-wing elongated at the anal angle, outer border a little incurved near the anal angle, then rounded outwards. Wings, beneath, deeper yellow than above, apical part of the fore-wing and the whole of the hind-wing saffron-yellow; destitute of the dusky lines which distinguish other species of the genus; sides of prothorax and breast reddish-saffron, a small spot at the root of the hind-wing sub-costal nervure bright red. This species exhibits the short clavate antennæ and peculiar neuration of the genus *Hesperocharis*, notwithstanding the absence of the characteristic dusky lines beneath.

From Costa Rica, Central America.

85.—Hesperocharis costaricensis.

Exp. 2″ 1.‴ White, tinged with greenish-yellow above towards the fore-wing apex, where the nervures are dusky olivaceous; beneath, pale buff, except the basal three-fourths of the fore-wing, which are white. Fore-wing triangular, pointed, outer border distinctly incurved; hind-wing produced, and obtusely pointed at the anal angle, outer border regularly and slightly rounded. Under-side of hind-wing with the nervures, a zig-zag line near to the outer border, and an oblique streak extending from the base to the origin of the third median branch, faintly dusky. The costa of the hind-wing strongly dilated at the base.

Inhabits Costa Rica.

86.—Olyras Theon.

♂. 4.″ Near *O. Crathis*. Fore-wing more broadly rounded at the apex, with outer margin a little incurved after the middle. Hind-wing much less angular and longer, the length of the lower radial nervure being $6\frac{3}{4}'''$ instead of $5\frac{1}{2}'''$ as in *O. Crathis*. Colours very similar; fore-wing crossed by three transparent, yellowish, macular belts (besides an oblong spot at hind angle), but the first belt across the cell is very oblique and narrow, and is not continued between the branches of the median nervure except as a round spot near outer margin. The longitudinal spots forming the second belt and the costal spot of the third belt are very much longer than in *O. Crathis*, and the black outer margin is very much narrower, both in the fore- and hind-wings. The underside differs in the disc of the hind-wings being dull brownish-tawny, without a trace of yellow tinge either on membrane or nervures; the number of oblong shining white spots near the costa is three instead of two.

Guatemala.

87.—Thyridia Melantho.

♂. Exp. 3″ 8.‴ Resembles closely, in size, form of wings, and neuration, *Th. Ædesia*. Differs conspicuously in colours, the hind-wings being of a rich orange-tawny instead of *isabelle*-colour, and the fore-wings being of a deep black, with semi-transparent spots scarcely tinged with pale greenish-yellow. The spots are much smaller than in *Th. Ædesia*, there being two confined within the cell (the basal one small and dusted with black), and three sub-apical in the same relative positions as in *Th. Ædesia*, but less rounded, as well as smaller. The hind-wings have a black border and spot over the end of the cell; the border has three or four small white spots, and is broad and indistinctly limited towards the apex. Antennæ black, club yellow. Underneath: same as above, except that the black outer-borders have a continuous row of white spots.

Panamá.

88.—Dircenna xenos.

♂. Exp. 2″ 9.‴ In size and general appearance resembles a small male of *Thyridia Jemima*, Hubn., but differs remarkably in important points of structure. The terminal fork of the fore-wing sub-costal nervure is much farther removed from the apex, and the second sub-costal branch arises from near the end of the cell; the recurrent nervule in the fore-wing arises from the middle, instead of the lower, disco-cellular, and is absent altogether from the hind-wing; the corneous receptacle for the pencil of hairs in the hind-wing is broad, and resem-

bles that of the section of *Ithomia*, to which *I. Hyala*, *Diasia*, &c., belong. The colour and markings are the same as in tawny specimens of *D. Jemima*, but the dark borders form only a very narrow and ill-defined edging, and there is no pale yellowish tinge on the disc of the wings. The antennæ are yellowish, with the base black.

Costa Rica.

89.—Ithomia Hippocrenis.

♂. Exp. 2.″ Closely allied to *I. Diasia*, Hewits. (Exot. Butt., Ith. f. 28) and belonging to the same section, in which the males have an oblong vessel near the costa of the hind-wings filled with long hairs. The wings are hyaline with black borders, and the fore-wing has a black streak across the middle and another over the end of the cell; but the latter in *I. Hippocrenis* forms a broad spot, very wide on the costa, and the two radial nervures are white near the base. The black space behind the median nervure is much narrower and longer than in *I. Diasia*; the wing is more elongated, and the outer border rounded. Beneath: the borders of the wings are all rufous. The antennæ are black; the collar is red, and the thorax streaked with white.

Panamá.

90.—Ithomia heraldica.

♂ ♀. Exp. 2″ 5.‴ Closely allied to *I. Iphianassa* (Dbldy. & Hew.), but quite distinct from all the local forms of that species. The neuration of the hind-wing differs from that of *I. Iphianassa* in the middle disco-cellular running much less obliquely towards the apex, and the whole wing is shorter. The fore-wing differs in being very much broader, and in having an upper disco-cellular of considerable length, whilst this nervule in *I. Iphianassa* is so short as to be scarcely visible.

The fore-wing is blackish-brown, with an elongated diaphanous stripe extending from the base to near the hind angle, a second oblique discoidal belt consisting of two elongated spots, a third sub-apical belt also of three spots, and an apical row of three round spots; the basal stripe and middle macular belt are bordered with dark tawny, which colour also occupies the basal half of the costal area; the other macular belt is yellowish, the apical spots whitish. Antennæ black, club tawny-yellow. Collar dark fulvous, thorax and wing lappets black lineated with grey. The hind-wing is reddish-tawny, paler, and diaphanous in the middle, and having a dentated narrow black border. Beneath: all the dark parts are ruddy-tawny; fore-wing with five rounded white spots at the apex, hind-wing with six white marginal spots, and basal streak yellow.

Costa Rica.

In the "Proceedings of the Zoological Society" for 1863 (p. 245, pl. xxix., f. 5), I described a local form of *I. Iphianassa* brought home by Messrs. Godman and Salvin from Panamá. I have since found that this form, *I. Iphianassa*, var. *panamensis*, agrees very closely with Fabricius' description of his *Heliconia Lycaste* in Entom. Systematica III. I. 161, 497. Mr. Tryon Reakirt, of Philadelphia, has received this species from Kansas, much beyond the northern tropic.*

91.—Ithomia adelphina.

I. virginiana, Hewits. Exot. Butt. *Ithomia*, f. 112 (?).

This species is closely allied to *I. virginiana*, Hewits. loc cit. f. 54, and it is probable the same as represented in fig. 112 of the same work. Its chief difference from *I. virginiana* consists in the dark parts of the under-surface being of a deep black hue, including the outer border of the hind-wings; these parts in the true *I. virginiana* being of a muddy-tawny hue. There is also a difference in the extent of the orange-tawny spot of the upper-side of the fore-wing, which in *Ith. virginiana* extends as far as, or beyond, the second median branch, and in *I. adelphina* does not reach the first median branch.

I. virginiana inhabits Mexico and Guatemala; *Ith. adelphina* the Isthmus of Panamá and New Granada; they may therefore be considered local forms of one and the same stock; the differences, however, are constant and well-marked, and the two forms must be designated by separate names.

92.—Ithomia (Oleria) xanthina.

♂. Exp. 1″ 10.‴ Allied to *I. Gazoria*, Godt., *and I. Zemira*, Hewits. Wings blackish; fore-wing with an elongate triangular basal spot, and an oblong sub-apical one yellowish-hyaline, the former sulphur-yellow and sub-opaque in the middle. Hind-wing with a broad discal stripe of the same colour (also opaque and sulphur-yellow in the middle), extending to the abdominal edge. The broad outer borders have a row of white spots in both wings. Beneath: the same. Antennæ black; collar and wing-lappets reddish.

Panamá.

(To be continued.)

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* An interesting form of the group to which *I. heraldica* and *I. Iphianassa* belong is the following, which I alluded to in the Proceedings Zool. Soc. loc. cit. as a local form of *I. Iphianassa*. Its differences are too well marked to allow of its being considered as merely a local form of that species.

Ith. Spruceana. Similar to the var. of *I. Iphianassa* figured in Hewits. Exot. Butt. Ith. f. 92, differs, however, in having a distinct upper disco-cellular nervule in the fore-wings (♂ & ♀), in the cell spot of the fore-wing being prolonged towards the base, and in the hind-wings being free from all trace of black spot at the end of the cell. The colours are nearly the same, but the black border of the fore-wings is scarcely widened at the apex. Western foot of Chimborazo, alt. 3—4,000 feet. Sent home in considerable numbers by Dr. Spruce.

REMARKS ON THE DISTINCTIVENESS OF CERTAIN SPECIES OF *ERYCINA*.

BY A. G. BUTLER, F.Z.S.

I find in the "Annales de la Société Entomologique de France," Tom. VI., p. 419 (1837), that *Erycina Butes* of Clerck, and *E. Rhetus* of Cramer, are placed by M. Morisse as synonyms of *E. Licarsis* of Godart.

In the "Genera of Diurnal Lepidoptera," *E. Butes* being the older name, has been adopted as the specific title, and *E. Licarsis* placed as the synonym, *E. Rhetus* of Cramer being very properly considered as a distinct species.

Although the *Licarsis* of Godart may be identical with *E. Butes*, I do not think that the *Licarsis* of Fabricius can be the same, as his description does not suit that insect; and, moreover, he quotes *E. Rhetus* of Cramer as his species: with regard to the *Licarsis* of Morisse, I am fully convinced, from a careful examination of the two insects, that it is quite distinct from *E. Butes*.

It is very probable that Fabricius' species may be distinct even from Cramer's insect, as the description does not at all agree with his figure; it runs as follows:—

"*Alæ anticæ supra atræ, fasciis duabus albis, subtus concolores, lineola punctoque baseos rubris. Posticæ supra atræ fasciis duabus obliquis, albis, posteriore obsoleta. Cauda elongata, obtusa, punctis aliquot obsoletis, albis. Ad angulum ani puncta duo rubra.*

Subtus concolores at inter maculas anales puncta duo parva cyanea."

This description more nearly approaches *E. Butes* than the other species. Fabricius, however, makes no mention of the brilliant blue which is always found upon the hind-wings of that insect, and his description of the anal spots is rather vague.

M. Morisse evidently considers his *Licarsis* to be the Brazilian form of *Butes*. He says—

"Les individus du Brésil ont les bandes blanches, un peu plus larges et moins teintées de bleu."

There are, however, several specimens of *Butes* from Rio Janeiro in the National Collection, and it is impossible to distinguish them from Venezuelan specimens.

The species figured by Dr. Boisduval, Sp. Gén. Lép. pl. 20, f. 6, is undoubtedly the true *Butes*.

The following description of the insect will, I think, show how very distinct *E. Butes* and *E. Licarsis* are from one another:—

E. Butes, *Clerck, Icon.*, pl. 46, t. 6 (1759).

Alæ anticæ supra atræ, fasciis duabus angustis albis cæruleo tinctis; macula basali rubra: posticæ atræ fasciis duabus, interna brevi albi, externa cærulea ad caudæ extimum continuata; macula, fasciave brevi anali iridescente rubra, punctisque duabus tribusve indistinctis albis serie undulata positis; cauda elongata, obtusa, nigro-acuminata; corpus nigro-fuscum, thorace cæruleo.

Alæ subtus atræ, fasciis albis velut supra dispositis, macula anali rubra, punctisque tribus analibus albis: corpus fuscum, abdomine a latere rubro-punctato: exp. alar. unc. $1\frac{7}{16}$.

Hab. Brazil, Venezuela.

E. Licarsis, *Morisse, Annales de la Société Entomologique de France* Tom. VI., pl. 24, f. 1 (1837).

Alæ anticæ supra atræ, fasciis duabus latis obliquis albis, macula basali rubra: posticæ atræ cauda elongata cærulea albo-acuminata; fasciis duabus albis, interna lata angulum analem approximante, externa apicali, obsoleta; fascia anali parva iridescente rubra, punctisque tribus albis distinctis serie obliqua positis.

Alæ subtus fasciis posticarum iridescentibus, cauda nigra: corpus abdomine a latere rubro: exp. alar. unc. $1\frac{1}{2}$.

Hab. Brazil.

Both of these species are figured as *E. Rhetus* of Cramer in "Swainson's Zoological Illustrations."

OBSERVATIONS ON *TINEINA*.*

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

Incurvaria masculella.—On the 20th of June, 1864, Mr. Healy sent me a small case-bearer, which he had found at Snaresbrook on the 16th of that month. It was then mining the leaves of the wild rose, making a small whitish-green blotch; and, afterwards, it appropriated the upper and lower cuticle of its blotch mine in the construction of its first case.

Mr. Healy only collected three of these larvæ, but found many rose leaves with indications of where the larvæ had been. By the 1st of July, these larvæ had enlarged their cases on one side only, in the true *Incurvaria* fashion.

In the spring of 1865, these larvæ produced *Incurvaria masculella;* thus this species also feeds on rose. I have an impression that it feeds on nearly all sorts of shrubs and young trees.

* These were intended to appear in the Entomologist's Annual for 1866, but were unavoidably excluded from want of space.

Micropteryx unimaculella.—Early in March, 1864, Mr. Healy kindly sent me pupæ of this species, from which I bred a nice series. It is ordinarily one of the most opaque of the group, and the bred specimens have a very fine appearance. Mr. Healy bred upwards of 80 specimens, all of which were *unimaculella;* the larvæ were collected by him at Wimbledon at the end of April and beginning of May, 1863. Mr. Healy says the larvæ were identically the same with those described as Nos. 8 and 9, Ent. Ann., 1862, p. 124.

I have no doubt whatever that *semipurpurella*, *purpurella*, *salopiella*, and *unimaculella*, are all good, true, and distinct species, and am disposed to believe others of the group will yet be detected. The continental specimens I have of *amentella* do not seem to accord with any of our species.

Micropteryx fastuosella.—I visited Manton Copse, near Marlborough, the first week in June, hoping again to meet with these larvæ in the nut leaves, but was entirely disappointed. I neither saw a single larva, nor even a leaf that had been mined by the larvæ, yet I looked on the very bushes where I had met with them in 1863.*

It is well known that a leaf mined by a *Micropteryx* larva will remain *in situ* for weeks and weeks after the larva has quitted it; and as I could not have been too early, for the leaves were rather more expanded than in 1863, we have here an instance of the *apparent disappearance of an insect.*

With reference to the habits of some of the larvæ of this genus, I may remark, that when they quit their mines and descend to the earth, they sometimes penetrate beneath the surface to a considerable distance; thus, in February, 1865, Mr. T. Wilkinson wrote to me as follows:—

"I am much afraid that I shall not breed any *Micropteryx* this spring, as I believe that most of the larvæ which I had collected escaped out of the bottom of the flower-pot before I was aware of the fact of their going such a depth into the mould; this, no doubt, accounts for my non-success of last year with them."

Cerostoma nemorella.—When at Bideford in May, 1865, I collected these larvæ pretty freely by beating the honeysuckle towards dusk; at that time of day they come up to the top of the plant to feed on the leaves. Mr. Healy had called my attention to the fact that it had been recorded that the larvæ of this species fed on the *bark* of the honeysuckle, but that, according to his experience, they fed on the leaves

* Visiting the same locality this year, June 13th, I found a few nut leaves which had been tenanted by these larvæ, but was too late to find any larvæ still in them.

(and I can now confirm this from my own observations). Mr. Jeffrey informs me that the *young* larvæ of this species are extremely like the young larvæ of the common *C. xylostella.*

Theristis caudella.—On the 10th of May, 1865, Mr. Dorville wrote to me that he had induced a specimen of this insect to lay some eggs, and had the young larvæ then feeding.

The female deposited her eggs on the inside of the leaves of the expanding bud on the 6th and 7th of April, and the larvæ hatched on the 18th.

Mr. Dorville kindly sent me some of the larvæ, which fed up with great ease before the end of June. It will be remembered, that in the Entomologist's Annual for 1865, p. 132, it is noticed that larvæ of this species occurred near Saffron Walden, at the end of July and beginning of August.

Eidophasia Messingiella.—Of this pretty species Mr. Jeffrey took a single specimen in a lane, near Saffron Walden, in the summer of 1864.

About the third week in June, 1865, Mr. Hodgkinson met with this insect at Wildbottoms flying amongst *Equisetum;* he took about 100 specimens between 4 and 7 p.m., the dry weather having made the swamp traversable.

Mr. Hodgkinson says that they seem to be attached to the *Equisetum*, that they are extremely local, and never leave the spots where that plant grows.*

Depressaria capreolella.—I have bred specimens of this species from larvæ received from Dr. Schläger, of Jena., in the middle of June, 1865, feeding on *Falcaria Rivini.* This larva was "Green, with the dorsal and sub-dorsal lines slightly darker; the head black; the second segment black, inclining to brownish-black at the front and sides; the first pair of anterior legs black; the second and third pair pale green." It will be remembered that this insect was bred June 26th, 1855, from a larva found by Mr. Douglas near Mickleham on *Pimpinella saxifraga* (Ent. Annual, 1856, p. 50).

Depressaria carduella.—Through the kindness of Mr. Hodgkinson I have received the larva of this species, and have thus been able to describe it; and Miss Wing has made an excellent portrait, both of the larva and its mode of feeding. Mr. Gregson, also, very kindly sent me a sketch of the larva, and its mode of feeding, lest by any chance I should have been away from home whilst the larva was figurable.

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* I have found this species in the marshes of the Darenth.—R. McL.

Mr. Hodgkinson meets with these larvæ the first week in June, at Witherslack, in Westmoreland, on a high rocky situation amongst stunted thistles not above 8 or 9 inches high; they must be no great rarity there, as in the season of 1864, Mr. Hodgkinson had 41 in the pupa state. The specimen forwarded to me, after being figured, duly entered the pupa state, and the moth appeared on the 2nd of July.*

Gelechia desertella.—When at Bideford in May, 1865, I gathered some little pieces of moss on the sand hills at Northam Burrows; on the 31st of May, I bred from amongst this moss a specimen of *Gelechia desertella*, and, on searching amongst the moss, I found a firm sand cocoon, in which the pupa must have been reposing when I collected the moss.

Gelechia alëella.—Mr. Healy informs me that a friend of his has bred this species from larvæ which fed in the moss growing at the root of an oak tree in the autumn. This insect is the *Tinea scalella* of Scopoli, whose name, by the law of priority, must supersede the Fabrician name of *alëella.*

(*To be continued.*)

THE *LEPIDOPTERA* OF IRELAND.

BY EDWIN BIRCHALL.

(*Continued from page* 37.)

ACIDALIA INCANARIA—Common.
„ PROMUTATA—Cork and Kerry; common at Howth and Malahide.
„ SUBSERICEATA—Howth; common.
„ IMMUTATA—Killarney; do.
„ REMUTATA—Do., and Wicklow.
„ FUMATA—Widely distributed.
„ IMITARIA—Cork and Kerry.
„ STRIGILATA—County Wicklow; Mr. Bristow.
„ ADVERSATA—Common.
„ INORNATA—Kingstown, Killarney.
TIMANDRA AMATARIA—Galway and Kerry.
CABERA PUSARIA—Common everywhere.
„ EXANTHEMARIA—Do.
CORYCIA TEMERATA—Killarney; abundant.
„ TAMINATA—Do. do.
MACARIA NOTATA—Do. do.
„ LITURATA—Widely distributed.

* This year Mr. Hodgkinson has again kindly sent me a supply of the larva of this species.

Halia wavaria—Widely distributed.
Strenia clathrata— do. do.
Panagra petraria—Wicklow; Mr. Bristow.
Numeria pulveraria—Powerscourt.
Scodiona belgiaria—Widely distributed, and common.
Selidosema plumaria—Common at Killarney.
Fidonia atomaria—Common everywhere.
„ piniaria—Mr. Greene's list: locality unknown. I have not met with the insect.
Scoria dealbata—Killarney.
Sterrha sacraria— do. one specimen, 1864.
Aspilates strigilaria—do., very abundant.
„ citraria—Powerscourt.
„ gilvaria— do. and Galway.
Abraxas grossulariata—Common.
„ ulmata—County Wicklow; Mr. Bristow.
Ligdia adustata—Counties Wicklow and Galway.
Lomaspilis marginata—Common.
Hybernia rupicapraria— do.
„ leucophæaria— do.
„ aurantiaria— do.
„ progemmaria— do.
„ defoliaria— do.
Anisopteryx æscularia— do.
Cheimatobia brumata— do.
Oporabia dilutata— do.
Larentia didymata— do.
„ multistrigata—Dublin
„ cæsiata—Generally distributed.
„ salicata—Killarney, by Dr. Wallace; also Galway.
„ olivata—Common.
„ pectinitaria—do.
Emmelesia alchemillata—Common.
„ albulata— do.
„ decolorata—Powerscourt.
„ tæniata—Common at Killarney; may be beaten freely from holly trees, but I believe only seeks them for the purpose of concealment.

The larvæ, at present unknown, will probably be found to feed on the seed-vessels of *Silene inflata*, which is a common plant in the district.

Emmelesia unifasciata—Taken at Kingstown by Mr. Greene.
„ ericetata—Mourne Mountain; very local.
„ blandiata—Common near Galway; also at Killarney, by Dr. Wallace.
Eupithecia venosata—Generally distributed; very common at Howth.
„ pulchellata—Kingstown; Mr. Greene.
„ centaureata—Common.
„ succenturiata—Howth.
„ subfulvata—Common.
„ subumbrata—Galway; common.
„ plumbeolata—Killarney; do.
„ isogrammata— do. do.
„ pygmæata—County Wicklow, Galway, and Portarmnock.
„ arceuthata—Killarney.
„ satyrata—Generally distributed and common.
„ castigata— do. do. do.
„ denotata—Killarney; Dr. Wallace.
„ innotata—Wicklow; Mr. Bristow.
„ constrictata—Generally distributed and common
„ nanata— do. do. do.
„ subnotata— do. do. do.
„ vulgata— do. do. do.
„ expallidata—Wicklow; Mr. Bristow.
„ absynthiata—Common.
„ minutata— do.
„ assimilata— do. Dublin.
„ virgaureata— do.
„ trisignata—Howth.
„ tenuiata—Killarney.
„ abbreviata—Common.
„ exiguata—Wicklow and Dublin.
„ sobrinata—Commonly at Kingstown, by Mr. Greene.
„ pumilata—Generally distributed and common.
„ coronata—Dublin and Wicklow.
„ rectangulata—do. do.
„ debiliata—Very abundant at Killarney.
Lobophora sexalata—Dr. Bull; locality unknown.
„ viretata—Common at Killarney.
Thera simulata—Common.
Ypsipetes impluviata—Pupa at Rathfarnham, under moss on Alders, by Mr. Greene.

YPSIPETES ELUTATA—Generally distributed and common.
MELANTHIA RUBIGINATA—Dublin and Wicklow; not uncommon.
„ OCELLATA— do. do. do.
„ ALBICILLATA—Wicklow, Kerry, and Galway.
MELANIPPE HASTATA—Killarney; common.
„ TRISTATA—Widely distributed and common.
„ UNANGULATA—Belfast; Mr. Bristow.
„ RIVATA—Cork; Mr. Clear.
„ SUBTRISTATA—Common.
„ MONTANATA—Very common.
„ GALIATA— do. on the Coast.
„ FLUCTUATA—Very common.
ANTICLEA BADIATA— do.
„ DERIVATA—Wicklow; common.
COREMIA MUNITATA—Belfast; Mr. Bristow.
„ PROPUGNATA—Powerscourt; abundant.
„ FERRUGATA—Generally distributed and common.
„ UNIDENTARIA— do. do.
„ QUADRIFASCIARIA—A specimen in the Belfast Museum; locality unknown.
CAMPTOGRAMMA BILINEATA—Generally distributed and very common.
„ FLUVIATA—Howth and Malahide.
PHIBALAPTERYX LIGNATA—County Wicklow; Mr. Bristow.
SCOTOSIA DUBITATA—Kingstown, by Mr. Greene.
„ CERTATA—Malahide.
„ UNDULATA—Powerscourt.
CIDARIA PSITTACATA—Common at Ivy in County Wicklow.
„ MIATA— do. do. do. also at Howth.
„ CORYLATA—County Wicklow, common.
„ RUSSATA— do. do.
„ IMMANATA—Killarney and Galway; abundant.
„ SUFFUMATA—Abundant and generally distributed.
„ SILACEATA— do. do.
„ PRUNATA— do. do.
„ TESTATA— do. do.
„ POPULATA— do. do.
„ FULVATA— do. do.
„ PYRALIATA—Powerscourt and Howth.
„ DOTATA—Cork, Kingstown, and Powerscourt.
PELURGA COMITATA—Common at Howth.

EUBOLIA CERVINARIA—Common at Howth.

„ MENSURARIA—Common.

„ PALUMBARIA— do.

„ BIPUNCTARIA—Mr. Greene's list; no locality given.

„ LINEOLATA—On Mangerton Mountain, near Killarney, at a considerable elevation; a strange locality for this coast-loving insect.

CARSIA IMBUTATA—Howth.

ANAITIS PLAGIATA.—Generally distributed and common.

CHESIAS SPARTIATA—Mr. Tardy's collection.

TANAGRA CHÆROPHYLLATA—Very common.

192 species of the 269 *Geometræ* in the British list. Of the genus *Phibalapteryx* there is only one representative. 12 of the British *Acidaliæ*, and 16 of the British *Eupithecieæ*, have not yet been observed in Ireland.

(*To be continued.*)

OBSERVATIONS ON THE ECONOMY, MOULTING, AND PUPATION, &c., OF A LARVA OF *NEPTICULA AURELLA*, TOGETHER WITH SOME REMARKS RESPECTING THE HABITS OF THE PARASITE OF THAT SPECIES.

BY CHARLES HEALY.

(*Concluded from page* 29.)

The pupa presented a very pretty appearance, the head, thorax, and wing-cases being enclosed, as it were, in a covering of very thin white glass, the abdomen being of a pale sulphur-yellow; the pupa was then exceedingly tender, and could only be touched with the greatest caution. About three parts down the dorsal surface of the abdomen a pale brown patch was observable, and on the back of the head were two parallel chains of dusky coloured dots; after two days the eyes became pale brown, and the two parallel chains of dusky spots disappeared, and their place was occupied by a pale reddish patch, and three little dark spots were visible near the base of the thorax. The colour of the abdomen gradually deepened to orange-yellow; the next day the spots near the base of the thorax disappeared, and also the brown patch on the abdomen. The pupa, which had hitherto remained inactive, now wriggled its abdomen about, and the parts of the pupa having now become much firmer, it could be turned about and examined with less risk of injury.

No further change took place in the markings of the pupa till about the middle of the month of March, when the brown abdominal patch re-appeared, and showed through the ventral surface; the next day two short projections were observed at the posterior end of the abdomen; these proved to be the ends of the wing-cases, which I had previously noticed were gradually retiring over the sides of the pupa; the following day the eyes, which had been slowly deepening in colour, turned quite black, and the ventral surface of the pupa became partially split open, and down the centre of the portion so split open, several faint dusky spots were dimly traceable (these spots, I believe, were caused by the thoracic, and a portion of the abdominal ganglia, faintly shadowing through the body of the pupa).

The next day a rather thick dark streak appeared down the centre of the thorax, and two days later, this streak was crowned by a little circular dusky spot; the brown patch on the dorsal surface of the abdomen shrank lower down, and the feet of the future imago slowly began to separate themselves from the pupa; the following day the dusky streak, which had appeared three days previously down the centre of the thorax, became reduced to a mere line, and instead of being crowned, as before, by a little circular dusky spot, the place of the latter was occupied by two short parallel lines; a small cluster of three dusky spots also appeared on the centre of the abdomen.

On the 2nd of March the thorax became free of all markings, and one of three dusky spots on the back of the abdomen disappeared, and the other two soon followed it, and the light brown abdominal patch (which had become reduced to a mere speck) had almost disappeared, having shrunk down to the extreme end of the abdomen, from which it ultimately retired altogether.

Seven days later a dark spot was observable on each side of the base of the thorax; these spots gradually enlarging, finally became blended into one dark coloured blotch, which slowly spread over the thorax, head, and wing-cases, turning them shining black; after which, the deeper colour spread to the abdomen, though the latter only became slightly discoloured in comparison with the head, thorax, and wing-cases, on which the usual markings of the imago gradually made their appearance.

On the 3rd of April the pupa skin, splitting at the back of the head, enabled the imago to effect its escape by leaving the skin behind it on the leaf; it hurried up the side of the cage, and unfolded its wings to dry.

For three days, every time the glass cover of the jar was raised, the imago raced up the side of the jar at its very hardest, anxious to effect its escape; by the end, however, of the fourth day, it was not quite so lively in its movements. On the evening of the sixth day, its movements were confined to little jerky flights amongst the lower part of the jar; and on the 7th and last day of its existence, it was only capable of fluttering about the bottom of the jar in a feeble state, and ultimately expired with its wings fully expanded.

Notes on Coleoptera at Loch Rannoch; including two species new to Britain, and description of a new Oxypoda.—Having recently visited this now well-known Entomological hunting-ground in pursuit of beetles, under somewhat different conditions as to weather, and at a rather later time of the year, as compared with the trip recorded in Vol. II. by Mr. Sharp and myself, I have hurriedly written a few remarks which I hope may prove not altogether uninteresting to Coleopterists who have not worked in the Highlands. As before, I was not left in solitude during my stay; being joined soon after arriving at Camachgouran by the Rev. T. A. Marshall (from whose pen I can promise a notice of the *Homoptera*, *&c.*, observed during his visit),—and, after a time, by Messrs. T. Blackburn and Geldart. The general insect productions of the district had, therefore, rather a warm time of it, all being fish (so to speak) that came to our nets; though fish in the flesh was scarce, as, indeed, was everything eatable and potable,—barring oatmeal and water. We heard rumours, moreover, of other collectors at Glencoe, some 25 miles distant; and our own immediate district had been already worked by Messrs. Crotch and Sharp in the spring; so that it will be readily understood that the indigenous Gaels were quite accustomed to the ways of Entomologists: their familiarity, indeed, almost verging upon contempt, *e.g.*, a spasmodic effort on my part to obtain meat from Kinloch produced a parcel by the mail cart directed "To the *flyman* at Camachgouran."

Of course, the majority of the *Coleoptera* observed were of the same species as we remarked last year; some, however, then abundant, were conspicuously rare on the present occasion, notably the whole of the *Elateridæ*, for which I expect an earlier journey must be made. *En revanche*, I found a few that I had not succeeded in capturing during my former visit. First of these, I may notice *Dendrophagus crenatus* (of which two were taken by my friend, Mr. R. Hislop, here last year); many visits to the saw-pit at Dall, undertaken chiefly in the hope of getting it, finally rewarded me with one specimen of this elegant creature, which I found coursing rapidly towards evening over a bare fir log, one of many stripped of their bark by me.

Here also, on unbarked and licheny larches, I found *Rhagium indagator* in great profusion, running and prying about in the hot sunshine; and was much struck with the great resemblance between the tints of the insect and the trees, in the crevices of the bark of which, especially near the ground, stragglers of *Dictyopterus Aurora* were still to be seen. This species turned up in some numbers in its old habitat among the damp pine chips under the logs, accompanied by its Lampyriform

larvæ, one of which I observed making a meal of a defunct *Geotrupes;* and the perfect insect was taken flying rather freely towards evening, and more sparingly in the middle of the day. On the logs I captured the fragile *Dircæa lævigata*, *Elater pomorum*, a few *Pytho depressus* (whose forked-tail larva abounded under bark, with that of the ever present *Rhagium*), and divers wandering *Clerus formicarius*, the latter much resembling a large exotic ant. Here also, among the damp chips, were *Trechus rubens* (as before), and *Pterostichus orinomus*, which I also found under stones at the Loch side and on the mountain slopes.

With these, in fungoid growth, *Hister succicola*, *Triplax russica*, and *Philonthus succicola* occurred (one of the Staph. with two five-jointed tarsi to one of its hind-legs), accompanied by hosts of the beautiful though common *Bolitobius atricapillus*. Towards evening, divers *Tomici* (*bidens* and *acuminatus*) and *Cis festivus* were to be taken wandering on barked logs; and the welcome sight of powdery black fungus assured the presence of *Liodes*, very many specimens of *castanea*, *glabra*, and *humeralis* lurking in such growth, and whole families of them haunting the mouldy chips and dirt immediately beneath the trees whereon it occurred. *Astinomus*, *Pissodes*, *Hylobius*, *Hylastes*, *Rhizophagus*, and *Epuræa pusilla* in swarms, were exposed by turning over newly-sawn planks; all being, indeed, more or less common everywhere. *Astinomus*, judging from the freshness and perfect condition of some of my specimens, appeared to be just emerging from pupa, though the insect had been observed for months. I found several live pupæ under bark, and was startled one morning at 5 a.m. (broad sunlight) by seeing a fine male of the beetle fly down upon my modest bed (and dining) room window, which his horns nearly spanned. *Asemum* was not so intrusive as formerly, though common enough, lurking in the deep layers and cracks of fir bark; it is so abundant as to be well known to the wood-cutters, who call it the "soft timberman."

There were but few unbarked logs to be found within some miles of the village: but by pertinacious hunting I contrived to find here and there one fit to work,—the best things obtained therefrom being *Epuræa angustula* (2), *Omalium inflatum* (4), *Xyloterus lineatus* (several), *Quedius xanthopus* (rare), *Q. lævigatus* (common), *Bolitochara obliqua*, *Homalota pilosa*, *H. immersa*, *Placusa sp.*, *Phlœocharis*, *Leptusa analis* (not rare), *Philonthus splendidulus*, &c. I also found a fine male of *Homalota fusco-femorata*, Wat. (*picipes*, Thoms.), very like *occulta*, but readily distinguishable by the abrupt central triangular notch in its upper penultimate abdominal segment. The *Quedii* are easier to see than catch (except a wide beating-net be held beneath the log when ripping off the bark), as they drop and race off directly their hiding-places are exposed. I obtained many mature pupæ, but failed to rear the insects satisfactorily in a box, as they require a *point d'appui* to assist them in shuffling off their mortal coil.

Stumps left in the ground were productive in a less degree, and not easy to discover with bark on. Those recently cut had the accustomed *Asemum*, *Ips 4-punctata*, &c., on their turpentine-oozing upper surface; and the older ones produced *Melanotus castanipes*, *Rhyncolus chloropus* (abundant), *Agathidium rotundatum* (common), and *Liodes*, *Quedius*, *Leptusa*, &c., with two species of *Cerylon*. Once I found *Bradycellus collaris* under bark,—a curious locality, only to be equalled by finding a fine large black *Malthodes* (near *marginatus*) and *Sulpingus ater* in moss on the top of one of the mountains.

On stripping the bark from moderately recent stumps, I was much gratified at being able to see so easily the relations of *Ips*, *Rhizophagus*, and *Epurœa* with regard to *Hylurgus* and *Hylastes*, as mentioned by M. Perris in the French Annales. The galleries of the latter insects, carried down to the sappy living wood, were thronged with species of the three first-mentioned genera, as well as by their legitimate tenants; and I even caught a *Rhizophagus* (*ferrugineus*) with its head and thorax sunk into the rear of a sickly *Hylurgus piniperda*. Bulky specimens of *Ips*, piratically intent, seemed quite blocked up in the narrow channels of *Hylastes'* larvæ.

Generally, sweeping was but of little use. No *Ceuthorhynchus* save *cricæ* gladdened my eyes; though at Longniddry, on my way north, I got upwards of 50 of the rare *C. hirtulus*. The *Telephori* were nothing like so common as before;—*T. paludosus*, *elongatus*, *testaceus*, and the much vexed 21 sp.*—?, being the chief (and sparse) representatives of the genus. One or two species of *Malthodes*, and *Scymnus nigrinus*, occurred under fir trees; the curious little *Anthonomus* mentioned in my former notes was still common in marshy places, certainly off dwarf sallow only, and never varying; *Saperda scalaris*, a gorgeous sight, fell to my net off alder bushes on the banks of the rapid burn; and *Cryptocephalus* 10-*punctatus* was to be found on dwarf sallow as before;—an additional insight into its habits being afforded by my observing that it does not care much for rain, as I took several specimens (in cop.) during showers. In the very hot sunshine this insect absolutely flies almost as sharp as a *Cicindela* when approached. *C. lineola* could only be found by me in its ordinary striped condition, and that but sparingly: and *Thyamis holsatica*, as before, represented the *Halticidæ*. A few *Diacanthus impressus*, vars. of female *Campylus*, *Elater nigrinus*, and *Sericosomus brunneus* were the chief of the *Elateridæ*; except some females of *Corymbites cupreus*, which sex was very rare last year, though hundreds of males were to be had. *Donacia aquatica*, also, was much less common than heretofore.

Agarics on old birches produced *Cis bidentatus*, *nitidus*, and *lineatocribratus* in swarms; one puffy little white fungus containing four or five *Thymalus limbatus*.

Hunting among stones by the burn-side, I found *Helophorus arvernicus*, *Parnus auriculatus*, *Bledius subterraneus*, *Hydræna riparia*, and a *Homalota*, which I hope will turn out to be *cambrica*; also the pretty *Coccinella* 5-*punctata*, running rapidly among the *Lotus* plants, to the red calyx of which it bears a superficial resemblance in colour.

I was much surprised to find no less than eleven specimens of *Anisotoma dubia* (in all its varieties) under a stone on the sandy spit at Dall; though last year I found a single example under similar circumstances. The habits of the members of this genus are certainly as erratic (tending to "fluky" captures) as those of *Tachinus elongatulus*, which I found crawling on a wall, and also under a stone on the hill side; one can never be sure of a locality for this species.

Carabus glabratus, *Amara bifrons*, *Silpha nigrita*, *Otiorhynchus maurus* and *rugifrons* occurred in the paths; *Alcochara brevipennis*, *Stenus fuscipes*, and *Ocalea picata* in moss; *Ptinus crenatus* in numbers in my bedroom woodwork; *Cetonia æneа* flying *passim*; and sheep dung produced myriads of the *Aphodius* known to us as *lapponum*, *A. putridus*, *A. depressus*, &c., accompanied (on the high ground) by *Deliphrum tectum*, *Autalia puncticollis*, *Tachinus proximus*, *T. pallipes*, *T. flavipes*, &c.

By exploring a tall mountain behind Cross Craig, known to the aborigines as "Grayvel" (signifying "rough," as I was informed, and amply deserving that adjective), several insects came to light which were not to be had elsewhere; *Miscodera arctica* at the summit, *Calathus micropterus* and *C. nubigena*, the usual *Patrobus septentrionis* and *P. clavipes* (abundantly), *Otiorhynchus maurus*, *Trechus obtusus*, *Oxypoda aterrima* (Wat. Cat.), *Homalota tibialis*, *H. nitidula*, and the insect previously recorded as *Schistoglossa viduata*, but which is not that species (of which I only know of two examples,—one in Mr. Crotch's possession, taken by Mr. Wollaston, and the other in Mr. Waterhouse's cabinet), but an apparently undescribed *Homalota* (*Atheta*, Thom.), being all taken here, with *Tachinus elongatulus*, *Mycetoporus nanus*, &c.

Turning over stones, and shaking the rough moss between them, produced *Anthophagus alpinus* in numbers (with many cornuted males), *Arpedium brachypterum* and *Geodromicus globulicollis* in some quantity, and *Stenus geniculatus*, *Bythinus securiger*, and the *Lesteva* formerly brought forward as *monticola* (but which appears to be undescribed) more sparingly.

Here also I found, in moss near the summit, a specimen of an insect about the size and build of *Mycetoporus punctus* (Mr. Marshall also found one, but much smaller than mine), but which, from the structure of its maxillary palpi, is evidently a *Bryoporus*, and I think must be referred to *B. rufus*, Er. (Gen. et Spec. Staph., 273, 8), a species new to Britain, of which it appears to be a not previously noticed dark variety. It is almost pitchy-black in colour, with the edges of the thorax and elytra and margins of the abdominal segments lighter; and, as far as colour goes, would seem to fit better with the descriptions of the already recorded *B. cernuus*, which is noticed as varying from black with red elytra to almost entirely red; but the proximity of its thoracic punctures to the fore and hind margins,—the greater length of its elytra, the punctuation of the striæ of which is somewhat obsolete, and of the interstices both irregular and obsolete,—and the evident thickening of its antennæ (Er., loc. cit., p. 273; a character not noticed by Kraatz or Thomson), all point to *B. rufus*; of which, although no dark form has been recorded, a variety with the head and breast pitchy-black is given by Erichson.

I also found, on the summit of the same mountain, some specimens of a very small and (when alive) almost entirely pale *Oxypoda*, identical with a species sent me some time ago by Mr. Morris Young, which I am inclined to refer to the *O. soror* of Thomson (Ofv., 1855; Skand. Col., iii., 24, 1), a species also new to our lists. Its entirely testaceous hue, except a very slight infuscation in the middle of the abdomen, scarcely perceptible (if at all) when alive, but becoming darker and spreading after death,—short elytra, which are not so long as the thorax,—and long antennæ, which are distinctly as long as the head and thorax, and are but slightly thickened towards the apex,—readily distinguish it from all our other small testaceous species.

Under stones near the top of "Grayvel," I took a few examples of another *Oxypoda*, allied to *lentula*, Er., but with somewhat more the form of *longiuscula*, Er., and which, imagining it to be undescribed, I characterize as follows:

O. RUFICOLA (n. sp.): *elongata, sub-parallela, nigra, sub-opaca, tenuiter sericeo-pubescens, elytris depressiusculis, antennis pedibusque piceo-nigris, his genubus tarsisque vix dilutioribus.* Long. 1¼ lin.

Compared with *O. lentula*, it is of a rather deeper black colour, with longer antennæ, the joints of which are not quite so transverse,—the thorax not so wide,—the elytra longer, the head more inclined to be parallel-sided, not being widest behind and contracted in front, as in that species,—and the tarsi (especially the hinder pair) longer and thinner. There is another insect, *O. islandica*, Kraatz (Stett. Ent. Zeit., 1857, 285), also allied to *O. lentula*; but which, from its shorter elytra, fusco-testaceous apex, &c., cannot be identical with *O. rupicola*. Compared with *O. longiuscula*, the species now being described may be known by its uniformly black colour, smaller size, and shorter and slighter antennæ, the joints of which are less conic. *O. rupicola* must also be closely allied to *O. obscura*, Kraatz (Ins. Deuts. II., 1057); from which, however, it seems by description to be sufficiently distinguishable through its smaller size, darker legs, the dark base to its antennæ (which are, moreover, less stout, and have the apical joint especially less broad), its narrower head, &c.—E. C. Rye, 284, King's Road, Chelsea, S.W., 17*th July*, 1866.

Cryptocephalus 10-*punctatus in Staffordshire*.—I have much pleasure in recording the capture (I believe for the first time in England) of *Cryptocephalus* 10-*punctatus*, Linn. in Staffordshire. My friend, Mr. Harris, of Burton, happened to show me, about a fortnight since, a *Cryptocephalus* that he said was new to him, and as he had found only one specimen, he thought by chance it might be a variety.

I so liked the look of it that I agreed to make an excursion with him on purpose to take some more.

The day we went was unfortunately very windy, but I managed to take three and Mr. Harris one. On coming home and looking at last year's Annual, I found it was the insect taken by Messrs. Rye and Sharp last year at Rannoch, *C.* 10-*punctatus* of Linnæus. Two of my specimens are yellow with black spots; the other is the black variety, with red spots on the forehead. We found the insect on birch, accompanied by *Cryptocephalus flavilabris*, *lineola*, and *labiatus*, *Elater balteatus*, *Sericosomus brunneus*, *Magdalinus carbonarius*, *Luperus rufipes*, and *flavipes*, *&c.*—W. Garneys, Repton, *June* 23*rd*, 1866.

Capture of rare Coleoptera in London.—The following three rather rare species of *Coleoptera* have been recently taken in the court-yard of the British Museum, viz., *Homalota hepatica*, male and female, and *Calodera umbrosa*, by myself; and *Deleaster dichröus* by my brother Frederick; this last insect was found under a stone in a damp situation.—Edwd. Waterhouse, British Museum, *July* 17*th*, 1866.

Query respecting Lithosia caniola.—Mr. Birchall states that this species is found "on one point of the Irish Coast, and in no other part of the British Islands."

The first British specimens of this species that I saw, were in a box of *Lepidoptera* which Mr. King brought here. Nearly all the insects in this box were unset, and he assured me they were all taken near Torquay. They were mostly in very bad condition. Mr. King told me that these *Lithosiæ* were caught on the coast near Torquay, and he supposed them to be faded specimens of one of the common species.

Has Mr. Birchall any doubts about the correctness of Mr. King's statement? and if so, where does he suppose Mr. King's specimens were taken?—Henry Doubleday, Epping, *July* 14*th*, 1866.

Note on Notonecta maculata and other water-Hemiptera.—In the last number of "The Entomologist's Monthly Magazine," my friend Mr. Douglas records the capture, in clay pits at Lee, of *Notonecta maculata*, a species which, he says, had hitherto been received only from the West of England. It was common here, years ago, in the gravel pits on the edge of the forest; quite as common, I think, as *N. glauca* and *furcata*. *Ranatra linearis* and *Naucoris cimicoides* were also common in the same pits, most of which are now filled up and the land cultivated.—*Id.*

Occurrence of Sisyra Dalii and S. terminalis near Reigate.—On the occasion of the Entomological Society's excursion to Reigate on the 6th inst., I captured four examples of *Sisyra Dalii* (vide Ent. Mo. Mag., vol. 2, p. 268) by beating the bushes on the banks of the river Mole. These are not so large as the specimens I had previously seen, of Mr. Dale's capturing, and thus the comparison of sizes already given (*loc. cit.*) is scarcely correct. A subsequent visit to the same locality has produced three more, and I also found *S. terminalis* rather commonly; but the generally distributed *S. fuscata* was represented by a single individual only; probably the Mole is too turbid and sluggish a stream for the latter species. Both *S. Dalii* and *S. terminalis* are at present known only as British, but I can scarcely suppose that they do not occur on the Continent, where they are probably overlooked, being undoubtedly confined to particular streams.—R. McLachlan, Forest Hill, *July* 14*th*, 1866.

Description of the larva of Leucania pallens, with notes on its habits, &c.—After many attempts to rear this species from eggs, I have at length succeeded, much to my satisfaction. The moth is common enough, yet the larva is not often found by collectors, even when specially searching for grass-feeders, as I have had ample proof through many seasons. Eggs, however, can readily be obtained, and friends have supplied me with them in previous years that duly hatched, but the young larvæ always died or escaped when a few days old. When they leave the eggs they are exceedingly active and restless, evincing no desire for food, but seem bent on escaping from confinement; possibly the proper species of grass not having been supplied, previous broods having been placed on *Triticum repens* and *Dactylus glomeratus*.

I am indebted to Mr. D'Orville for a further supply of eggs in September, 1865, which hatched during their transit by post, and the young larvæ were put on a tuft of *Aira cæspitosa*, and after a day or two of incessant exercise they settled to their food, eating only the cuticle or green portions of the blades, leaving transparent patches on the grass.

They appeared to hybernate in December, but as they were kept within doors all the winter, their hybernation was but partial, for I observed them once or twice on the tops of the grass in January and February, at that time about half-an-inch long, and much darker in colour than most of their congeners at that stage of growth.

When nearly an inch long they ate the grass through, generally from the tops downwards, remaining on it by day if their glass covering was shaded, but otherwise hiding close to the roots.

The most forward one was full grown by the 14th March, and the latest by 30th May, 1866, the perfect insects appearing from June 4th to July 9th. The larvæ are cylindrical, ground colour ochreous, greyish, or greyish-ochreous, with a whitish dorsal line outlined with dark grey running through the middle of an oval shape of brownish-grey on each segment.

Sub-dorsal line whitish, margined above with a greyish stripe, and below by a thin brownish line, and after an interval of the ground colour, another fine line of brown, edged below with a thin line of pale ochreous, followed by a broad stripe of greyish, the black spiracles being along its lower edge; below is a broad stripe of pale ochreous; belly and fore-legs ochreous-grey; ordinary dots along the back dark brown, and very small. Head mottled with grey-brown.—W. Buckler, Emsworth.

Description of the larva of Acidalia contiguaria.—Through the kindness of Messrs. Greening and Bond, Mr. Buckler and myself have had the pleasure of rearing the larva of this species this season.

The larva, after hybernation, at the beginning of April, was about half-an-inch in length; and at that time, although rugose, and presenting a most decided wave-like appearance, was not at all so plainly marked as it afterwards became. The ground colour was a warm ochreous-brown above, and a dark chocolate brown beneath; and on the middle segments was a row of elongated diamond-shaped markings, slightly darker than the ground colour, with the four usual dots on each segment blackish; along the spiracular region the dark and light shades of brown met in a sort of zig-zag line.

About April 20th the larva moulted for the last time, and after that continued to feed for about four weeks.

When full-fed it was about three-quarters of an inch in length, belonging to the shorter and thicker type of *Acidalia* larvæ, rather flattened below, slightly tapering from tail to head, rugose; the head small and bifid. The back of a buff-brown, brighter on the head and three following segments; a dark sub-dorsal (but no dorsal) line on these same segments; at segment five the sub-dorsal line ceases, and the dorsal row of dark-brown elongated diamonds begins; this contracts to a double dorsal line, but is much darker, on the hinder segments; the usual dots black, emitting bristles; the spiracular region puffed and puckered, bordered below with a broad irregular stripe of dark brown; the centre of the belly of an ochreous-brown.

When disturbed the larva draws back the front segments, but I did not see it twist into a coil.

Understanding that the food must be *Empetrum nigrum*, we troubled our friends to send us a supply of this plant out of Yorkshire, and then soon found that ling, whitethorn-buds and *Polygonum aviculare* were just as acceptable! The two moths emerged on June 27th and July 5th.—J. Hellins, *July 12th.*

Trochilium chrysidiforme at Folkestone.—During three weeks' stay at Folkestone, I met with several fine specimens of this beautiful clearwing.—E. Meek, 5, King Street, Old Ford Road, N.E.

Note on the food-plant of Lycæna Corydon.—The larva of *L. Corydon* is frequently said to feed on the bird's-foot trefoil (*Lotus corniculatus*), but I strongly suspect that it has never been found on that plant. The food of the species is *Hippocrepis comosa*, a plant closely resembling *Lotus corniculatus* in the flowers, but differing widely from it in the leaf and legume. This plant is confined to chalk and limestone districts. In the neighbourhood of Cambridge we get the larvæ in abundance on the *Hippocrepis*, and lately I have been trying to make them take kindly to the *Lotus*. I mixed some of these two plants together, and found that, while they eat up every morsel of the *Hippocrepis*, they left the *Lotus*. The leaves of this latter, however, had minute notches, as if the larva had tasted them, found out their mistake, and passed on; but though I made my larvæ fast, they still refused to feed on it. This preference that the larva shows for the chalk plant, and its reluctance to touch the widely distributed one, throws much light on the distribution of the butterfly. I might mention, as an instance of how easily these two plants may be mistaken, that the other day, when I told an entomologist (who has sent these larvæ all over England) my opinion about the food-plant of this insect, he replied, "Why! I have never seen the larva on anything else but bird's-foot trefoil." I found, however, that those he had in his possession were all feeding on *Hippocrepis*. It would be well if entomologists would pay a little more attention to botany.—J. Gedge, Cambridge.

[We shall be glad to hear from other observers on the same subject.—Eds.]

Remarks on Dr. Jordan's notes "On the similarity of the insects of North America and of England."

The subject of the similarity of the insects of northern Europe and the temperate and boreal portions of the North American continent has attracted the attention of entomologists, ever since the natural productions of America became familiar to us, and it is now known that upwards of three hundred North American species of all orders are considered as absolutely identical with European forms while numerous others are so closely allied as to be the subjects of remark. Before proceeding further, it may be as well to enumerate the various "theories of creation," one or other of which is most congenial to this or that mind. Firstly, we have the original hypothesis of a comprehensive creation, which included all forms now living, as well as those now extinct, many of which have left their testimonies in the rocks as the sole indication of their existence at periods more or less remote. Secondly, the idea of special separate centres of contemporaneous creations has its adherents. Thirdly, there is the theory of progressive creation, either continuous or *per saltus*. Fourthly, the "origin of species by means of natural selection," or the Darwinian theory, more or less modified. In another place (Trans. Ent. Soc., ser. 3, vol. ii., p. 466) I have stated that, although, perhaps, not prepared to accept the latter hypothesis in its entirety, I still look upon it as a reasonable manner of accounting for phænomena which are otherwise inexplicable, and have brought forward the subject of Dr. Jordan's notes in support of my opinion. In scrutinising Dr. J.'s remarks, it appears that, while he is, at all events, not ready to accept either of the two last mentioned theories, and is still, like all of us, "crying for the light," he is yet decidedly opposed to give a favourable reception to "natural

selection." In saying, that if we support this theory, we must suppose that a certain species was developed in both regions, he will, I know, pardon me if I state that the "developmental" idea is misunderstood. It is not necessary for a moment to imagine that a dual development has taken place. On the contrary, may we not surmise, that long before that remote period when the bed of the Atlantic had no existence as such, and when the dry land was continuous between what we now term Europe and America, this species had already spread itself over a vast area; and that, when the outlying boundaries of the region peculiar to it had become separated by an immense expanse of ocean, it still continued to preserve its peculiarities intact? I think so. Natural selection does not work in a regular manner, but is most capricious and uncertain in its effects, as is well exemplified in the human race; for do we not find that the Hebrew nation, dispersed as it is from one end of the globe to the other, has preserved from remote historic times, and still preserves, under all conditions of surrounding circumstances, its physical characteristics? whereas the inhabitants of the States of America have already, in very few generations, acquired national physical peculiarities of the most marked nature. The occurrence, therefore, of an identical form in two widely separated districts, does not prove that it was "developed" in both, but rather that it is slow to become affected by various changes in surrounding conditions, in contradistinction to those forms which, there is every reason to believe, readily adapt themselves to organic physical changes, and are highly susceptible of alterations in conditions. I must protest against the assertion that "it is the business of entomologists to deal with facts and not with hypotheses." When the matter is purely descriptive entomology, the more facts are adhered to, and hypotheses dispensed with, the better; but when on a subject of phænomena similar to that which we are now considering, it is our duty to enquire how these facts became facts, and if we are precluded from perfectly satisfying ourselves as to these points, we should lean towards that hypothesis which, to our individual inward conviction, seems the most reasonable. Above all, we should never become conservatives in science, allowing traditional and educational influences to weigh against a comparatively recent idea, *because it is recent*. The days in which naturalists occupied themselves *exclusively* in mechanical descriptive work, or in "facts" only, are fast passing away, and the time has commenced in which facts are no longer considered as valuable for their intrinsic merits alone, but as guides to point out the intricate path of philosophical enquiry. The physician does not seek to cure a disease through a simple knowledge of the symptoms; he first seeks rather to ascertain the probable cause, as evidenced by the symptoms or facts. I know of no more expressive, more trite, language bearing on this point, than the following extract from a lecture delivered by the Rev. Charles Kingsley at the Royal Institution. He says, "I can conceive few human states "more enviable than that of the man to whom, watching for his life under the tropic "forest, Isis shall for a moment lift the sacred veil, and show him, once and for "ever, the thing he dreamed not of—some law, or even mere hint of a law, explaining one fact; but explaining it with a thousand more, connecting them all with "each other, and with the mighty whole, till order and meaning shoot through "some old chaos of scattered observations."—Robert McLachlan, Forest Hill, *2nd July*, 1866.

Entomological Society of London. 2nd July, 1866.—Sir John Lubbock, Bart., F.R.S., President, in the Chair.

The Hon. Thomas De Grey, M.P., of Arlington Street, Piccadilly, and Merton Hall, Thetford, and Christopher Ward, Esq., of Halifax, were elected Members.

The President invited the Members to spend the day with him at Farnborough, on Saturday, the 11th of August next.

Mr. Stainton exhibited a seed-head of *Typha latifolia* which had been sent to him by the Hon. T. De Grey, and which was infested with the larvæ of *Laverna phragmitella*; and also a series of the *Gelechia* bred from the galls of *Gypsophila saxifraga*. He mentioned that he had received a letter from M. Millière, stating that the rye crops near St Etienne, in France, had suffered greatly from the ravages of a larva which he (Mr. S.) believed to be that of *Ochsenheimeria taurella*.

Mr. Bond exhibited an example of *Dianthœcia cæsia*, specimens of which had recently been taken by Messrs. Gregson and Hopley, in the Isle of Man; and specimens of *Sesia philanthiformis* bred from pupæ sent by Mr. Greening from the same locality: together with a *Phycita* which he thought might be new. He further exhibited a series of remarkably large examples of *Papilio Machaon*, and stated that most of those bred this year were very fine.

Mr. Edwin Shepherd exhibited an old example of *Dianthœcia cæsia* from the late Mr. Bentley's collection, which was said to have been captured in Yorkshire; it was identical in appearance with the Isle of Man specimens.

Mr. E. Saunders exhibited some *Lepidoptera* from Mexico, including a fine gynandromorphous example of a species of *Euterpe*.

Mr. Stevens exhibited specimens of *Dicranocephala Wallichii* from Northern India, and *D. Bowringii* from Southern China.

The Rev. Douglas Timins sent some notes on the larvæ of *Charaxes Jasius* and *Melitæa provencialis*, which he had bred in England from continental larvæ.

Mr. Pascoe made some further remarks on the insects found in cylindrical holes in the snow fields of Switzerland (see Proceedings for April 3rd, 1865, Ent. Month. Mag., Vol. I., p. 284), in connection with a paper by Mr. Albert Müller, in the July number of the "Zoologist," in which he referred to Von Tschudi's "Thierleben der Alpenwelt," p. 465, the latter stating that insects fly on the snow, apparently for the purpose of absorbing oxygen.

Professor Brayley alluded to an old idea that melting snow contained free oxygen.

Professor Westwood stated that bees, during sunny weather, when the snow was on the ground, had a habit of settling on it, and were thus killed.

The President called attention to a paper by M. Balbiani on the generation of *Aphides*, published in the June number of the "Comptes Rendus," in which the author advances the theory that these insects are true hermaphrodites.

Professor Westwood mentioned, in regard to this subject, that he had been much puzzled at observing, that on some rose-trees which were placed away from any overhanging trees or shrubs, the young buds, morning after morning, were each occupied by a fat *apterous Aphis*, although the plants had all been carefully cleaned on the preceding day. He could not imagine by what means they had come there. Mr. Edward Sheppard said he had observed similar occurrences.

THE *LEPIDOPTERA* OF IRELAND.

BY EDWIN BIRCHALL.

(*Continued from page* 61.)

NOCTUÆ.

THYATIRA DERASA—Very common, Killarney, Wicklow, Galway, Howth.
„ BATIS— do. do.
CYMATOPHORA DUPLARIS—Killarney.
„ FLUCTUOSA—Do.
„ DILUTA—Do.
„ OR—Dr. Bull. No locality known to me.
„ OCULARIS—Powerscourt; Mr. Greene.
„ FLAVICORNIS—Common.
BRYOPHILA PERLA— do.
ACRONYCTA TRIDENS—Dublin and Galway.
„ PSI—Common.
„ LEPORINA—Wicklow and Kerry; common.
„ ACERIS—Galway.
„ MEGACEPHALA—Common.
„ ALNI—Wicklow; one specimen.
„ LIGUSTRI—Galway; not uncommon.
„ RUMICIS—Very common.
„ MYRICÆ—Killarney, by Dr. Battersby.
LEUCANIA CONIGERA—Very common, and generally distributed.
„ LITHARGYRIA—Do. do.
„ OBSOLETA—County Wicklow; Mr. Bristow.
„ LITTORALIS—Common on the Eastern coast.
„ PUDORINA—Abundant at Killarney.
„ COMMA—Very common.
„ IMPURA— do.
„ PALLENS— do.
„ PHRAGMITIDIS—Said to have been taken near Belfast.
NONAGRIA DESPECTA—Galway and County Wicklow; common.
„ FULVA—Widely distributed.
„ CONCOLOR—Mr. Greene's list.
„ TYPHÆ—Wicklow; Mr. Bristow.
GORTYNA FLAVAGO—Common, and widely distributed.
HYDRŒCIA NICTITANS—Do. do.
„ PETASITIS—Howth; Mr. Dunlop.
„ MICACEA—Common, and widely distributed.
AXYLIA PUTRIS— do. do.

Xylophasia rurea—Common, and widely distributed.

„ lithoxylea—Do. do.

„ sublustris—Very abundant near Galway; also taken near Dublin, by Mr. Barrett.

„ polyodon—Common everywhere.

„ hepatica—Powerscourt.

Neuria saponariæ—Mr. Greene's list; no locality known to me.

Heliophobus popularis—Generally distributed and common.

Charæas graminis— do. do.

Cerigo cytherea— do. do.

Luperina testacea— do. do.

„ cespitis—Abundant on the coast near Dublin.

Mamestra abjecta—Abundant on the coast near Waterford.

„ anceps—Common on the Dublin coast.

„ albicolon—Do. do.

„ furva— do. do.

„ brassicæ—Common everywhere.

„ persicariæ—Near Dublin; Mr. Shield.

Apamea basilinea—Generally distributed, and common.

„ gemina—Very common near Galway.

„ unanimis—Dublin and Wicklow.

„ ophiogramma—One specimen in the collection of Trinity College, captured by Mr. Tardy; locality unknown.

„ oculea—Common everywhere.

Miana strigilis— do. do.

„ fasciuncula—Do. do.

„ literosa—Common on the coast.

„ furuncula—Very abundant. The variety *rufuncula* of Haworth occurs commonly at Howth. The wings are uniformly clay-coloured, without lines or spots, and the insect has a strong superficial resemblance to *Nonagria concolor*.

„ expolita—Common near Galway. The Irish specimens are smaller and much more richly coloured than any English ones I have seen.

Celæna haworthii—Common on the Dublin and Wicklow mountains.

Grammesia trilinea—Common in most places.

Caradrina blanda— do. do.

„ cubicularis—Do. do.

Rusina tenebrosa— do. do.

Agrotis valligera—Abundant on the coast.

„ suffusa—Wicklow and Howth.

Agrotis saucia—Dublin, in 1865.
„ segetum—Too common everywhere.
„ lunigera—Common at Howth; has also occurred at Cork.
„ exclamationis—Abundant everywhere.
„ corticea—Widely distributed, and not uncommon.
„ ripæ—Malahide sand-hills.
„ cursoria—Do., very abundant.
„ nigricans—Do., and Howth.
„ tritici—Common everywhere on the coast.
„ aquilina—Malahide sand-hills.
„ obelisca—Abundant at Howth; frequents the higher slopes of the hill, where it may be taken freely from the Ragwort flowers in August, in company with *lunigera*. Although *tritici* swarms at the foot of the hill and along the shore, it rarely intrudes on the more aristocratic society of the higher levels.
„ agathina—Howth and Wicklow. Taken not uncommonly by sweeping the heath at night, in August and September.
„ porphyrea—Very common at Howth, secreting itself by day among the broken limestone shale.
„ præcox—Common on the sand-hills of the Dublin coast.
„ ravida—Mr. Greene's list; locality of capture unknown to me.
„ lucernea—Very common at Howth.
Triphæna janthina—Abundant in most localities.
„ fimbria— do. do.
„ interjecta— do. do.
„ subsequa—I captured two specimens of this rare species at sugar near Galway, in August, 1858.
„ orbona—Common everywhere.
„ pronuba—Do. do.
Noctua glareosa—Widely distributed, and frequently common.
„ augur— do. do.
„ plecta— do. do.
„ c-nigrum— do. do.
„ ditrapezium—I captured a pair at sugar near Galway, in July, 1857.
„ triangulum—Common in most localities.
„ brunnea— do. do.
„ festiva— do. do.

NOCTUA DAHLII—Howth and Killarney.
„ RUBI—Howth, abundant.
„ UMBROSA—Common in most places.
„ BAJA— do. do.
„ NEGLECTA—Galway.
„ XANTHOGRAPHA—Common everywhere.

(*To be continued.*)

DESCRIPTIONS OF SOME NEW SPECIES OF DIURNAL *LEPIDOPTERA* IN THE COLLECTION OF THE BRITISH MUSEUM.

BY ARTHUR GARDINER BUTLER, F.Z.S.

1.—APATURA ATHALIA, n. sp.

♂. Alæ supra fuscæ, margine postico brunneo; *anticæ*, apice nitente, punctis quinque minimis sub-apicalibus albis; cellâ fasciis duabus rufo-fuscis, altera media, altera terminali ornatâ; margine postico fasciis duabus nigris sub-marginato: *posticæ*, margine postico fasciâ nigrâ marginato, fasciâque lunulatâ, sub-marginato; puncto uno rufo-cincto apud angulum analem: *corpus* olivaceo-fuscum, antennis fuscis, rubro-acuminatis.

Alæ subtus pallidiores, fasciis duabus mediis fuscis, fascia externa paulum indistincta: *anticæ*, cellâ, fasciis duabus rufis nigro-cinctis ornatâ; puncto uno basali nigro, tribusque sub-apicalibus albis, imo nigro-cincto; macula apud marginem posticum oblonga, ochreo-cincta, sub nervula mediana secunda posita; fasciis duabus altera sub-anali, altera sub-marginali lunulata, fuscis: *posticæ*, cella, maculis duabus ferrugineis nigro-cinctis, quarum una apud angulum analem nigra rufo-cincta, punctoque nigro; margine postico linea fusca marginato lunulisque fuscis indistinctis sub-marginato: *corpus* ochreo-fuscum. *Alar. exp.*, unc. $2\frac{1}{8}$.

♀. Alæ supra; area basali ochreo-varia, apicali ochrea, fascia media fuscescente; fascia media irregulari de maculis hastatis formata, post posticarum cellam ochreo-confusa: margine postico fasciis duabus fuscis sub-marginato: *anticæ* punctis sex albis, apud apicem nigro-cinctis; macula apud angulum analem parva nigra ochreo-cincta: *posticæ* similiter maculatæ.

Alæ subtus mari simillimæ, pallidiores autem, fasciaque media alba. *Alar. exp.* unc. $2\frac{1}{16}$.

Hab., Celebes.

This species is allied to *A. parvata* (Moore), N. India; *A. Nakula* (Moore), Jarva; and *A. Parisatis* (Westwood), India and China.

2.—Dædalma inconspicua, n. sp.

Alæ anticæ apice sub-sinuato ; margine postico subapice angulato, medio sinuato ; margine anali obliquo : posticæ margine postico inter venas sinuato ; margine anali caudis duabus longis, externa majori.

Alæ supra fuscæ : *corpus* fuscum præ-rufescens.

Alæ anticæ subtus rubro-irroratæ basi fuscæ ; fascia irregulari fusca post cellam posita, maculaque apud apicem costali ; margine postico fusco inter venas convexitatibus elevatis ; macula apud marginem analem fusca : *posticæ* fuscæ ochreo-variæ ; strigis, lunulis, maculisque ochreo-argenteis scriptæ : *corpus* fuscum, palpis antennisque ferrugineis. *Alar. exp.* unc $2\frac{1}{16}$.

Hab., Quito.

Closely allied to *D. Dinias* (Hewitson), especially in the form and underside marking of the hind-wings ; indeed, unless both male and female of that insect had been figured, I should have been tempted to consider the two insects as sexes of the same species.

3.—Debis Embolima, n. sp.

Debis Embolima, Walker, M.S.

Alæ supra olivaceo-fuscæ : *posticæ* margine postico fusco linea media pallida marginato, maculisque quatuor apicalibus sub-marginato : *corpus* olivaceo-fuscum, antennis flavescentibus apice nigro-fasciato.

Alæ anticæ subtus, area basali olivaceo-fusca, fasciis duabus irregularibus violaceis apud basim positis, externa fusco-interrupta ; area apicali ochrea violaceo olivaceoque variegata ; ocellis quatuor violaceis nigro-pupillatis inter venas positis ; margine postico lineis duabus marginato : *posticæ* olivaceo-fuscæ, fascia media præ-pallidescente, irregulari angulata, medio latissima, linea fusca ochreaque utrinque marginata ; area basali fascia lata ocellata violacea ocellis nigris flavo-cinctis inter venas positis, prima, tertia et quarta albo-pupillatis, aliis argenteo-irroratis, prima et quarta maximis : *corpus* pallidè fuscum. *Alar. exp.* unc. $2\frac{7}{16}$.

Hab., Ceylon.

4.—Cyllo Crameri, n. sp.

Alæ supra fuscæ, *anticæ* fascia media flava de costæ medio ad angulum analem currente : costa valde convexa : *posticæ* elongatæ nervulo mediano primo longissimo.

Alæ subtus fuscæ, præter apices cinereo-variæ : *anticæ* fascia media ochrea pallida apud angulum analem flavescente ; margine interiori ochreo ; margine postico rufescenti-ochreo ; costa albido varia ; ocello

uno sub-apicali duplice, nigro, albo-pupillato flavoque cincto, oculo minori præposito: *posticæ* linea media fuscescente de costæ media ad nervulam medianam secundam currente; ocello magno sub-apicali ovali nigro, albo-pupillato, flavoque cincto; ocellis tribus minoribus similibus inter nervulos medianos positis; margine postico linea sub-marginali irregulari fusca: *corpus* fuscum. *Alar. exp.* unc. 3 (circ.).

Hab., Oceania; exact locality undecided.

Allied to *Cyllo Constantia* (Cramer), but smaller, and with less continuous sub-marginal ocelli.

5.—Cœnonympha ceres, n. sp.

Alæ supra pallide ochreæ: *corpus* pallidum.

Alæ anticæ subtus rufescentes, basi pallidæ; margine antico basique cinereis; fascia transversa ochreo-ferruginea post cellam posita; fascia lata sub-apicali indistincta cinerascente: *posticæ* pallidè cinereæ basi fuscescentes; fascia media, valde irregulari, ochrea, pallida; punctis duabus sub-marginalibus nigris inter nervulos medianos positis, ochreoque pallido circumcinctis: *corpus* ochreo-cinereum. *Alar. exp.* unc. $1\frac{1}{2}$.

Hab., California.

This species is closely allied to *C. californica* (Westwood); but, as far as I can judge from the small number of specimens of allied species in the National Collection, it is quite distinct from that insect.

OBSERVATIONS ON *TINEINA*.

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

(*Concluded from page* 57.)

Gelechia tenebrella and *tenebrosella*.—In the Stettin Entomol. Zeitung for 1864, p. 158, is an interesting notice of these insects by Herr A. Gartner, of Brünn. That writer discovered the larvæ in the roots of *Rumex acetosella*, sometimes burrowing beneath the bark of the root, but more plentiful in the lowermost shoots which spring from the root of the plant, in an excavation made in the centre of the shoot and spun over with silk; here the larvæ may be found in the autumn, and also in the spring. By the 10th of May most of the larvæ had already attained the pupa state.

The larva is described as of a carmine red, a little paler posteriorly, and sometimes also paler anteriorly; the head pitchy-brown, and the thoracic shield of the same colour, divided by a paler line; the anal segment bears a small pale brown plate; ordinary spots brown; spiracles brown; the belly reddish-white.

The perfect insects appeared in June; those with dark antennæ were all males, those with white-tipped antennæ were all females, whence the author concludes that *tenebrosella* is the female of *tenebrella*, and calls upon all those who doubt, to satisfy themselves, by breeding the insect, of the correctness of his determination.

Cleodora striatella.—In the Wiener Entomologische Monatschrift for 1864, at p. 29, is a notice of this insect by Herr Gartner, of Brünn. That entomologist had observed that the perfect insects of *striatella* frequented a "wood-meadow," which was thickly studded with the flowers of *Anthemis tinctoria*, and that specimens were constantly to be noticed reposing on these flowers. Herr Gartner drew the conclusion that the larvæ must feed in the seed-heads of the *Anthemis tinctoria*, and seeking in the autumn found a larva feeding in the receptacle. He then collected a number of the seed-heads of this plant, and was agreeably surprised to breed from them both *Cleodora striatella* and *Parasia paucipunctella*.

The larva of *Cleodora striatella* quits the head of the plant when full fed; it is described as white or brownish-white, with three rust-red lines along the back, interrupted between the segments; the head reddish-brown; the thoracic plate shining brownish, divided by a slender pale line.

The larva of *Parasia paucipunctella* (a species not yet known to occur with us) does not quit the seed-head; it is extremely similar to the other known larvæ of the genus *Parasia*—shining-white, with a dark brown head, and dark brown plate, divided in the middle, on the second segment.

It will be remembered that the larva of *Parasia paucipunctella* was detected at Ratisbon by Herr Hofmann in October, 1860, in the heads of *Anthemis tinctoria* (Ent. Annual, 1861, p. 118; 1862, p. 130). I had the pleasure of rearing a fine series of the insect from larvæ sent me by Herr Hofmann.

Butalis incongruella.—Dr. Jordan has met with this insect on the Lickey Hills near Birmingham; I visited the locality in September, hoping to meet with the larva, but was not successful in finding it.

Rösslerstammia Erxlebella.—When at Hanover in September, 1865, I saw bred specimens of this insect in the collection of Herr Glitz. In the Ent. Annual, 1857, p. 125, I observed that "Some years ago Mr. T. Wilkinson found this in plenty at the end of May and beginning of June in Leigh Wood, near Bristol, on the leaves of some *lime* trees; frequently *in copulâ* on the leaves, also freely on the wing. Mr. Wilkin-

son is inclined to think there is a second brood towards the end of August and beginning of September, but not nearly so numerous as in May, and rarely met with except by beating."

Herr Glitz informed me that the larvæ fed on the leaves of the lime; when young they are miners, but when about half-grown, they come out of the mines and gnaw the under-side of the leaf. There are two broods in the year.

Glyphipteryx Haworthana.—Mr. Barrett has met with this species near Haslemere, and Professor Zeller, who had not previously seen it alive, found it in a marshy place near Meseritz, where he also obtained *Crambus alienellus* (Stettin Ent. Zeitung, 1865, p. 41).

Antispila Pfeifferella.—It appears from Mr. Healy's observations that the larva of this species buries itself and its case underground; all the larvæ retiring beneath the sand at the bottom of the jar in which the larvæ were. Mr. Healey adds (23/11/64) "They took their cases with them, and then turned to pupæ; I cannot state how it was effected, never having caught them in the act. That a case-bearing larva can take its case underground I have had proof of in *Adela Degeerella*, for three full fed larvæ of that species having disappeared mysteriously in a jar, where I had placed them on some mould, I turned the earth over, and found one larvæ just under the surface, another about the centre, and the third had actually penetrated to the bottom of the jar." (See Zoologist, p. 9065).

Mr. Healy, who bred hundreds of the closely allied *Antispila Treitschkeella*, remarked, that none of the larvæ of that species went beneath the surface of the mould.

Gracilaria falconipennella.—This insect has always hitherto remained a great rarity in this country; but last autumn Mr. Barrett had the good fortune to obtain three specimens by beating thatch at Haslemere. From his known perseverance and skill, I have no doubt he will soon find the larva.

Gracilaria elongella.—When I visited, with Dr. Jordan, the Lickey Hills, near Birmingham, last September, we met with several *Gracilaria* cones on the leaves of the birch, from which specimens of *G. elongella* made their appearance. This food for the larvæ of this species had already been noticed by Mr. E. C. Buxton (Ent. Annual, 1856, p. 55).

Ornix larvæ on *Pyrus torminalis.*—In the autumn of 1864, Mr. Healy discovered two cones of an *Ornix* on a tree of *Pyrus torminalis* growing in Epping Forest. In September, 1865, Dr. Jordan, whilst

searching near Teignmouth for the larvæ of *Ornix devoniella*, observed the same cone-formations on the leaves of the *Pyrus torminalis*, but was too late to find the larvæ. The subject is one well worthy of further observation.

Coleophora apicella.—In the autumn of 1864, the Rev. Henry Burney handed over to my custody some *Coleophora* larvæ which he had collected on the seeds of *Stellaria graminea;* from these I had the good fortune to breed five specimens on the 16th and 17th of June, 1865. These specimens were undoubtedly *apicella*, but the males have the anterior wings broader than the females, and the original *apicella* was described from a female specimen. Before describing the insect *de novo*, I should like to see an extensive series of bred specimens. Unfortunately Mr. Burney did not meet with the larvæ during the season of 1865.

Elachista ochrëella.—On the 23rd August, 1865, I received from Mr. Scott some *Elachista* larvæ, collected by him in a species of *Poa* (*?*) at Stockton Forest, near York. The mines were long, flat (or only very slightly puckered), and of a whitish-brown. It was expected that these larvæ would have produced *E. ochrëella*, but unfortunately nothing was bred from them.

Lithocolletis nigrescentella.—Nearly three years ago I received from Mr. Sang the following communication, which should have been noticed ere this in the pages of the Entomologist's Annual, but had got accidentally overlooked, "I think I shall now prove to your satisfaction that *nigrescentella* and *Bremiella* are forms of the same species. They appear to be very variable in colour and markings, the ground colour varying from that of the figure in the Annual of 1856 to the dark olive of *nigrescentella*. I bred none so dull in colour as that figured in the Natural History of the *Tineina*, vol. 2, p. 4, fig. 3; the bright ones have broader margins of black to the spots than you figure. The convincing specimen is marked, so that the left wing is *Bremiella*, and the right wing is *nigrescentella*.

"The specimens with the light ground colours copulate with those of the darker ground colour, but the difference in colour is not sexual; those with the darker ground colour are the more numerous.

"I bred two of an allied species from clover found on the coast. Are these *insignitella?*"

And in the following year Mr. Sang added some additional observations, thus: "I have bred a number of the *Lithocolletis* from clover (which I wrote about last year), and see no real difference between

them and *Bremiella*, which I am having out as well. They are, in my opinion, both alike, as I find that the same varieties and colourings are assumed by both the clover and the vetch insect. If anything, the clover ones are the brighter, and the vetch ones have more of the *nigrescentella* pattern among them."

On this subject I may remark, that Professor Frey has bred *Bremiella* repeatedly, both from *Vicia* and from *Trifolium*, but that *insignitella* appears to feed only on *Trifolium*, and not on *Vicia*.

Nepticula decentella, Herrich Schäffer.—On the 19th June, 1865, I received, under this name, a number of pupæ of a *Nepticula* from my kind friend Herr Anton Schmid, of Frankfort on the Main, who had collected the cocoons in the crevices of the bark of sycamore trees. From these I have bred a fine series of the perfect insects, all of which have the tuft of the head yellow, so that it cannot be identified with the *decentella* of Herrich-Schäffer and Von Heinemann; the former saying "capillis nigerrimis," and the latter "die Kopf-haare tief schwarz." These specimens differ somewhat from my best specimen of *sericopeza*, being larger, glossier-looking, with the ground colour of the anterior wings not so black, so that I should not be at all surprised if the *Nepticulæ* of the sycamore were to prove distinct from that of the common maple. *Sericopeza* is still so scarce in our collections that a good series is a great desideratum.

Nepticula basiguttella, Heinemann (Zoologist, 1863, p. 8358.—Of this species Professor Frey and I found (September 25th, 1865) that the larvæ had been rather plentiful at Wilhelmsbad, near Frankfort on the Main, on oak trees, on which the larvæ of *Tischeria dodonæa* was tolerably common.

Mr. C. Miller once found a mined oak leaf in this country, which I believe bears the mark of *Nepticula basiguttella*, the whole width of the mine being entirely filled up with dark green excrement. Probably we may be more likely to find it in localities where *Tischeria dodonæa* occurs, as the two species were in company at Wilhelmsbad.

AN ESSAY TOWARDS A KNOWLEDGE OF BRITISH *HOMOPTERA*.

BY THE REV. T. A. MARSHALL, M.A.

(*Continued from page* 31.)

20.—*Iassus (I.) splendidulus*, Fab.

Niger; abdominis segmenta flavo-marginata. Caput, pronotum, scutellum, flava. Vertex apice nigro quadri-maculatus: frons transversim nigro-cancellata, cancellis medio interruptis. Pronotum antice

punctis 6-7, striisque 4 obscurioribus disci longitudinalibus, fuscis. Scutellum flavissimum, maculis duabus triangularibus magnis, duabusque parvis rotundis, nigris. Hemelytra pellucida, pallide brunnea, auro sub-nitida; nervi albidi; cellulæ quædam fusco-nebulosæ. Pedes testacei, tibiis plus minus fusco-maculatis. ♂ ♀.

Long. $1\frac{3}{4}$-2; alar. exp. 5 lin.

Cicada splendidula, Fab., S. R., 79, 83. Fall., Hem. 2, p. 43. Act. Holm. 1806, p. 29.

Iassus splendidulus, Flor., R. L., 2, p. 356.

? Cicada nitidula, Turton, Syst. Nat., 2, p. 598, is given as a syn. in Mr. Walker's Catalogue (*Iassus* No. 14), but this is obviously *Eupteryx nitidulus*, Lin., figured in Donovan's Engl. Insects, vol. 8, tab. 288, fig. 1.

One of our handsomest species, very nearly allied in structure to the following, but distinguished by its size, and by the bright yellow scutellum, which at once catches the eye. It is common in woods in Northamptonshire and Leicestershire, and occurs occasionally near London.

21.—*Iassus* (*I.*) *mixtus*, Fab.

Niger; abdominis segmenta flavo-marginata. Vertex, pronotum, scutellum, flava, nigro-varia. Vertex punctis 6 minutis transversim antice marginatus; postice puncta 4 inter oculos arcuatim disposita, nigra. Frons nigra, flavo-cancellata, interdum autem maximam partem flava. Pronotum maculis incurvis discalibus fuscis irregulariter notatum; postice (in emortuo) sub-cæruleum. Scutellum basi maculis 4, quarum exteriores 2 triquetræ, grandes, interiores parvæ; ad apicem maculis 2, nigris: sed hæc pictura instabilis. Hemelytra pellucida, nitida, pallide brunnea, striolis minutis transversis fuscis plus minus dense notata: costa, et maculæ disci nonnullæ, hyalinæ. Pedes testacei; tibiæ posticæ ad basin spinarum nigro-punctatæ; anticæ basi, femorumque anticorum annuli duo, nigri: tarsi apice nigri. ♂ ♀.

Long. $2\frac{1}{2}$-3; alar. exp. 6 lin.

Var. a. Hemelytra striolis fuscis tam dense obsita, ut (præter maculas solitas hyalinas) tota atra evadant.

Cicada mixta, Fab., S. R., 86, 7.

Iassus reticulatus, H. Sch., D. Ins., 130, 11; *nec* Fall., Thunb.

I. mixtus, Flor, R. L., 2, p. 322. Burm., Gen., fig. 8 (hemelytron).

? Cicada nervosa, Fall., Hem., 2, p. 39.

Aphrodes marmorata, Hardy, Tynes. Trans., 1, p. 427.

This and the next are the largest of our species; they are both common in woods, on birch, hazel, oak, &c., and are easily confounded. *I. mixtus* is a trifle smaller and narrower than *atomarius*, its hemelytra are much more darkened with transverse streaks, and present several distinct hyaline spots. In *atomarius* they are uniformly pale brown, with obscure, short, fuscous, transverse striæ; and the fore-thighs have only one black ring, or sometimes half a ring, near the apex.

22.—*Iassus* (*I.*) *atomarius*, Fab.

Præcedenti sat similis. Vertex, pronotum, scutellum, fusco-testacea, plus minus atomis vel striolis fuscis irrorata, ♂; ♀ supra fere immaculata. Frons nigra, tenuiter utrinque flavo-cancellata; supra clypeum fascia transversa flava. Striga utrinque inter oculos obliqua, nigra. Scutellum punctis 2 mediis fuscis. Hemelytra pallide brunnea, pellucida, striolis fuscis transversis plus minus dense obsita, ♂; ♀ fere immaculata. ♂ ♀. Long. 3-3½; alar. exp. 6½-7 lin.

Cercopis atomaria, Fab., S. R., 97, 48.
Cicada reticulata, Thunb., Act. Ups., 4, 21, 37. Fall., Hem., 2, p. 40; *nec* H. Sch.
Cicada lineata, Fab., Ent. Syst., 4, 36.
I. atomarius, Flor, R. L., 2, p. 326.

Common in the London District; Surbiton; Birch Wood, &c. It nearly resembles *I. plebeius*, Fall. (according to that author), which, however, differs in the straight suture of the hemelytra, and is therefore an *Athysanus:* it is given in catalogues as British, but I have never captured a specimen, and those commonly named *plebeius* in collections are *I. mixtus*, Fab.

23.—*Iassus* (*I.*) *cruentatus*, Fall.

Flavo-brunneus, atomis sanguineis plus minus dense irroratus. Frons maculis 2 nigris rotundis. Pedes flavi, sanguineo-punctati; tibiæ posticæ linea interiore nigra. Long. 2½ lin.

Cicada cruentata, Fall., Hem., 2, 41.
Thamnotettix cruentatus, Zett., Ins. Lapp., 293, 5.
Iassus cruentatus, Flor, R. L., 2, p. 330.

This species can hardly be mistaken, being dusted all over with blood-red specks. It must be rare in this country; I have only seen one specimen, which is in the collection of Mr. Douglas.

24.—*Iassus* (*I.*) *striatulus*, Fall.

Niger; caput, pronotum, scutellum, flavo-fusca, maculis nigris plus

minus obsita. Linea nigra oculos connectit, ante quam linea alia antice angulata ducitur; inter oculos maculæ 2 nigræ. Frons nigro-cancellata. Clypeus et lora nigra, flavo-varia; sed facies tota sæpe nigra. Hemelytra flavida, nervis pallidis, nigro tenuiter marginatis, hinc ocellatis. Femora antica nigra, apice et annulo flavis: postica flava, striola subtus nigra; tibiæ extus flavæ, intus nigræ.

Long. $1\frac{1}{2}$-2 lin.

A single specimen is in Mr. Douglas' collection.

25.—*Iassus* (*I.*) *subfusculus*, Fall.

Niger, supra brunneus. Abdominis segmenta nonnulla (♂) angulis posterioribus testaceis,—(♀) segmenta 2 ultima subtus testacea. Vertex apice utrinque striola transversa, incurva, fusca. Frons fusco-cancellata. Clypeus basi et apice niger. Pronotum fusco irregulariter notatum. Scutellum vel immaculatum, vel medio nigro-binotatum, et ad angulos anteriores maculis 2 triangularibus nigris. Hemelytra brunnea, immaculata, sub-pellucida. Allæ infuscatæ. Pedes testacei; femora et tibiæ posteriores nigro-lineatæ et punctatæ. ♂ ♀.

Long. 2; alar. exp. 5 lines.

Cicada subfuscula, Fall., Hem., 2, p. 44.
Iassus pectoralis, Germ., Mag., 4, p. 91.
Iassus subfusculus, Flor, R. L., 2, p. 354.
Iassus subfusculus of the Brit. Mus. coll. is *I. prasinus*, Flor.

Common in woods. Very similar to *prasinus*, q. v.

(*To be continued.*)

NEW SPECIES OF BUTTERFLIES FROM GUATEMALA AND PANAMÁ.

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

(SUPPLEMENT.)

(*Continued from page* 52.)

93.—Ithomia (Ceratinia) callispila.

♂. Exp. 2″ 9‴. Allied to *I.* (*Ceratinia*) *mergelena* (Hew. Ex. Butt. *Ith.* f. 53), but differing greatly in colours and pattern. Like *I. mergelena*, the recurrent nervule of the hind-wing proceeds from the middle disco-cellular, instead of the lower, as in *Ith.* (*Cerat.*) *ninonia* and the allied species. Fore-wing brown-black, with a triangular basal spot not reaching the costa orange-tawny, and thirteen large light yellow spots, the latter arranged as follows:—an elongate one across the end of

the cell and touching the costa, five arranged in a strongly curved line beyond the middle of the wing, and seven along the apex and outer margin. Hind-wing entirely orange-tawny, except two dark brown spots, one at the apex and one below the lower disco-cellular nervule; there is also a sub-costal dark brown streak. Beneath: same as above, except that there is a row of small white spots close to the hind-wing outer margin, becoming obsolete towards the anal angle. Antennæ yellow, base black, collar and wing lappets orange-tawny.

Costa Rica.

94.—Tithorea umbratilis.

♀. Exp. 3″ 6‴. In shape of wings precisely similar to *T. Harmonia* (Cram.), to which species it is most closely allied. The fore-wings, however, are wholly of a dark brown colour, with yellow spots, and the hind-wings have not a black discoidal stripe. The yellow spots of the fore-wings are 14 in number, one of them, irregular in shape, occupies the end of the cell, and is accompanied by a smaller spot on the costal side of the sub-costal nervure; four are arranged in an oblique row near the apex, as in *T. Harmonia;* the rest are placed very irregularly between the sub-costal nervure and the hind angle. The hind-wings are of a reddish-fulvous, with a costal stripe and hind borders black; the only trace of a discoidal stripe consists in two small spots between the branches of the median nervure and between the last branch and the lower radial nervure. The antennæ are fulvous, with the base black: the collar is very dark chesnut-red, and the wing-lappets are black; this latter character distinguishes the species thoroughly from all the local forms of *T. Harmonia.*

Panamá.

95.—Heliconius octavia.

Allied to *H. hecalesia* Hewits. (Exot. Butt. Hel. fig. 6), and closely resembling it in colours. Wings more elongated and narrower, the fore-wing costa being strongly arched and the apex broadly obtuse, with the outer margin slightly incurved, less scalloped, and destitute (as well as the hind-wings) of white edging in the sinuses. Ground colour of the fore-wing above deep blackish-brown, as in *H. hecalesia*, but having a broad central dark orange-tawny stripe, extending from the base to near the middle, and the yellow spots, of which there are two belts between the middle and the apex, obliquely elongated. Hind-wing dark orange-tawny, with a dark brown outer border of nearly uniform width, and marked with five moderately small and squarish

yellow spots. Beneath: same pattern as above, but the orange-tawny colour replaced by pale reddish-brown, changing into lilac on the disc of the hind-wing; a row of small whitish spots close to the outer border of the hind-wing.

Table land of Guatemala, near Duenas.

96.—Heliconius formosus.

Closely resembling *H. octavia*, having the same elongated shape of fore-wing with elongated yellow spots and outer margin, destitute of white edging; but the base of the fore-wing wholly blackish-brown, and the dark border of the hind-wing gradually increasing in width from the anal angle to the apex. The hind-wing beneath is of the same ruddy colour as above, with the exception of a lilacine stripe across the disc: the row of pale spots is close to the outer margin, as in *H. octavia*.

Isthmus of Panamá.

97.—Heliconius melicerta.

Exp. 3″ 9‴. Closely allied to *H. sylvana* (Cramer); but larger, fore-wing broader, more broadly rounded at the apex, without incurvure of outer margin; outer margins of all wings slightly scalloped, and with short white fringe in the sinuses. Black; basal third of fore-wing, to the middle of cell and first median branch, orange-tawny; to this succeeds a large yellow spot deeply indented in the middle of its outer edge, and distant from the outer margin, where (near the anal angle) are two or three yellow spots; there is also a line of three yellow spots near the apex. In the middle of the cell is a large black spot, over the end of the cell another rather smaller spot, and between the first and second median branches a very small spot. The hind-wing has the basal half orange-tawny and the outer half black, with a yellow spot near the apex. Beneath: the same, except that the hind-wing has the base of the costa yellowish, and a series of short white marginal streaks, two between each nervure; also two larger white spots near the apex and distant from the margin. Antennæ black; club and apical part of the shaft, beneath, pale tawny.

The separation between the orange-tawny and black portions of the hind-wing is well defined in some examples, but rather broken in others, and showing, near the middle, traces of the black, discoidal, macular stripe, as in *H. sylvana*.

Isthmus of Panamá; also found in the neighbourhood of Santa Martha, New Granada, whence Mr. Bouchard recently sent home

a series of examples. These latter being all nearly alike, and sent without admixture of other allied forms, induce me to think the present a decidedly distinct species of *Heliconius*.

98.—Heliconius albucilla.

Exp. 3″ 9‴. Very closely allied to *H. melicerta*, differing in nothing but the following points:—The central spot of the fore-wing white instead of yellow, the spot nearest the hind-angle orange-tawny. Hind-wing orange-tawny, with a narrow black outer margin, and a narrowish, continuous, black, discal stripe.

Panamá.

99.—Eueides leucomma.

♂. Closely allied to *Eu. lybia*, Fab., agreeing with it in size and shape of wings, but the latter a little shorter, and the fore-wing more broadly rounded at the apex. Colour black, with an orange-tawny vitta and the inner margin of the fore-wing, and a very broad stripe on the hind-wing, occupying the whole middle part of the wing, black; apical part of the fore-wing crossed by a short belt or elongate spot of pure white, divided by three dusky nervures. Wings beneath; same as above, but paler, and costa of hind-wing paler tawny at the base; the outer border of hind-wing has a row of broad and indistinct pale ashy lunules. Antennæ black; collar with four tawny spots; abdomen tawny.

Panamá.

(*To be continued.*)

Rock Lepidoptera of the Isle of Man.—Situated in the heart of the British Islands, sea-girt, yet land-surrounded, and of a temperature more equal than any other in the home-group of Great Britain, it might with reason be anticipated that on this charming island many species were to be found which would well repay the investigation of the naturalist; and a very few days' experience of its capabilities warranted Mr. Gregson (to whose persevering research and liberal information Mr. Greening and myself owe the good fortune of our visit) in forecasting the great and important success attending even a short study of one of the characteristic localities of almost a *terra incognita*. As a proof of the careless way in which the island has hitherto been "worked," I extract the following from the popular and interesting shilling "Guide to the Isle of Man,"—where, speaking of its Natural History, we are told that "*the Entomology of the island is not attractive.*"

Collecting the rarities on which we were chiefly bent—(*Sesia philanthiformis* and the new *Dianthœcia*)—may, without self-complacency, be stated to be no work for Parlour Naturalists; and unfortunately,—woman's rights notwithstanding,—no lady-collector can ever aspire to such exciting and interesting mental and bodily elevation. Essentially rock species, to this, possibly, may be attributed the great

scarcity of the clear-wing, and the entire absence from our lists of the *Noctua*. They are not only rock species, but evidently select certain *aspects* amidst these almost inaccessible masses of clay slate.

Our time became divided into a search for *S. philanthiformis*, in its pupal stage, during the day; and the new *Dianthœcia* pending the twilight half-hour it devotes to flower-hovering; with, of course, the concurrent opportunities attending each pursuit.

And first, concerning *S. philanthiformis*. The decorative *Armeria maritima*,—the sea-pink, or common thrift of our garden, blossoms out at this period of the year in great clusters from any crack or crevice where enough soil has lodged to support its not very exacting existence. It is not "the blossom," however, which *we* seek; to us the "canker" presents the greatest temptations; and if, amongst these flowers, an infected stem is apparent—especially a stunted one with a brown eye, it becomes our desperate effort to clamber, crawl, and reach it somehow; and often our fate to discover, when found, and carefully and gently examined, a last year's empty cocoon, or a this year's empty pupa-shell, beautifully displayed at the opening of its silken cell. Occasionally, however, the little bright brown being is himself in the—vegetable. This examination is often accomplished while clinging to the jagged shelves of these portentous rocks, holding on by a toe or two, one elbow or both, and a waistcoat; while the seething waters explode alarmingly in their caverns many hundred feet below; with, however, this small crumb of comfort to any accomplished diver, that the ocean is said to be as many fathoms deep close to the rocks as it is in mid-channel. A week of this sort of hunting sufficed to set up great blisters on my feet; melancholy scars on my shins; an almost pulpy state of finger-tips, through climbing and picking; several important openings in lower garments, not contemplated by their fabricator; and, to descend still further into detail and fact, quite wore out three pairs of stockings and one pair of boots. These noble rocks have, notwithstanding, much to be said in their favour. Chiefly of tenacious grey slate, each jag, however small, ensures a safe footing—or *toe*-ing would be the better word; for they would be but poor cragsmen who always expect an entire foot to stand between them and annihilation. Other less fortunate animals than ourselves may serve to illustrate the danger. For instance, while exploring one morning, we discovered first, the dried and bleaching carcass of a sheep, and then that of a cow; both having toppled over from above, victims to injudicious browsing: and Mr. Gregson, on some more elevated pinnacle, found the remains of a lamb: some large falcon had evidently been enjoying his meal to the musical reverberations of the rock-harmoniums played upon by the sea-gods below.

The twilight 'vantage-ground for the capture of the *Dianthœcia* having been carefully selected during the day,—at the approach of the eventful half-hour it elects to sip from the fresh-opened flowers of the *Silene maritima*,—we set out to occupy our hazardous shelf; and, with ready-poised net, control our ardour, and wait, wait, wait, until they come within its sweep. An insect so instantaneously scared I never knew. It is impossible this singular timidity can be through its experience of man. The least movement of a limb, and "*cæsia*" is off. Possibly it may be thus everlastingly alert by reason of dodging the numberless bats which skim along the perpendicular sides of the rocks out of which hang those festoons it most affects.

Superb examples of *D. capsophila*, together with a pleasing *var.* of *A. segetum*, much frequent the blossoms of the *Silene* at the same time; and, one evening, I missed thirteen insects before taking a single example of the new *Noctua*,—so very averse were they to come within reach, and so impossible was it to move a step one way or another, and save one's neck. These fastnesses present another advantage not to be underrated. You are submitted to no reflections from astonished "natives." Seldom during day-time, and never at dusk, were these solemn solitudes disturbed by any other sound than the almost mocking voice of the clamorous waves below,—often to the fancy uttered as in shouts of taunting laughter, or syllabled so significantly as to cause you to look around and imagine the said "natives" before alluded to not so far off after all.

In conclusion, I may state that amongst the collateral advantages afforded us by our search for these rarities were a presumed new *Phycis*, allied to *dilutella*; some fine examples of *Sciaphila Colquhounana*; *Sericoris littorana* in profusion; some rare species of *Eupœciliæ*; *Butalis grandipennella*; *Gelechia vicinella*; and many others too numerous to mention.—Edward Hopley, 14, South Bank, Regent's Park, *June 22nd*, 1866.

Note on the larva of Acidalia circellata.—I obtained a few eggs of this insect on the 15th of July. They hatched on the 23rd, and are now nearly full fed. I am feeding them on *Polygonum aviculare*. I notice a strange feature among them; on removing the lid of the box in which they are feeding, they commence rocking themselves to and fro. Is this noticeable in any other species? Chas. Campbell, 145, Lower Moss Lane, Hulme, Manchester, *August 10th*, 1866.

[Many young larvæ have this habit.—H. G. K.]

Acidalia subsericeata or mancuniata (?) bred.—After having distributed among some of my friends the eggs deposited by about 20 females of this species, I have just bred a fairish quantity of the perfect insect. The eggs were deposited from the 22nd to the 25th of June, and hatched in about five days. The larvæ commenced pupation on the 12th July, and the perfect insects began to appear on the 26th, thus passing through all their stages in one month's time. They were, of course, forced. Food-plant, *Polygonum aviculare*.—Id.

[Will Mr. Campbell kindly forward a specimen of his insect for determination? Mr. Batty has this year again reared *A. mancuniata*.—H. G. K.]

Hadena suasa bred.—I obtained some eggs from a moth captured on the 21st June; they hatched on the 27th, and are all now gone down. I sent the larvæ to Mr. Newman for description. This insect has been very plentiful here this, as well as last, season. On the date given above, I captured about 70 at sugar, returning home without having occasion to light my lamp. The larvæ feed freely on knot-grass, lettuce, plantain, &c.—Id.

Notes on Rhopalocera at High Wycombe.—As the district round High Wycombe is not very extensively known to the entomological world, the names of a few of the more local British species of *Rhopalocera* found in it may be interesting.

Colias Edusa was taken here a few years ago, but has not since been seen.

Arge Galathea is very plentiful in one or two localities.

Cynthia cardui was very abundant last year, and is just re-appearing.

Vanessa Polychloros has been taken once; a brood of larvæ having been found on an elm tree.

Nemeobius Lucina is always plentiful.

Lycæna Corydon ditto

L. Agestis ditto

L. comma, found plentifully in one locality.

Thirty-seven species in all have been captured within a five mile radius. The note in the last number of the Magazine about the food-plant of *L. Corydon* was interesting; the species is abundant here, particularly on one hill which abounds with *Hippocrepis comosa*. I am sorry I shall not be at High Wycombe next year, or I should certainly try to assist in settling the question.

I have duplicates of the following to spare, for any who like to send to me for them:—*A. Paphia*, *H. Semele* ♂, *A. Galathea*, *L. Corydon*, *L. Agestis*, *L. comma*. —Henry Ullyett, High Wycombe, *August*, 1866.

Re-discovery of Sericoris euphorbiana.—I have the pleasure to record the capture, by myself, of this hitherto unique species at Folkestone, last July.—E. Meek, 5, King Street, Old Ford, N.E., *August 6th*, 1866.

Capture of Catoptria microgrammana at Folkestone.—I also had the good fortune to secure a few specimens of this rare insect at the same time and place referred to in the above note on *S. euphorbiana*.—Id.

[This so-called *Catoptria* is surely a *Dicrorampha:* in facies and habits (frequenting *Ononis* by day) it reminds one of *D. ulicetana*.—H. G. K.]

The food-plant of Lycæna Corydon.—It is well known that the larvæ of *Lycæna Corydon* are generally found upon *Hippocrepis comosa*, but they must also feed on other plants.

Six or seven years since this butterfly appeared in an open part of the forest; and a year or two afterwards was common in several localities in this neighbourhood—some of them five or six miles apart. It was plentiful in the forest near Loughton, and in clover fields here.

I believe no *Hippocrepis* grows within twenty miles of this place. Boisduval says, that in France the larvæ feed on *Lotus*, *Saintfoin*, and some of the trefoils, as well as on the *Hippocrepis*.

I have placed larvæ upon the common *Lotus corniculatus*, but they would not eat it; but this and *Ornithopus perpusillus* are the only leguminous plants that are common in our forest where *L. Corydon* is found, except *Ononis spinosa*, upon which the larva of *L. Alexis* feeds.—Henry Doubleday, Epping, *August 8th*, 1866.

Gelechia arundinetella.—On the 11th inst. I found this insect in a swampy place here, among *Carex riparia* or *paludosa*. The specimens are wasted, but recognizable. Hitherto, this species has been found in this country only at Hackney and Cambridge, and abroad at Glogau, where it was first detected by Zeller in 1849. The larva mines in the leaves of the *Carices* above mentioned.—J. W. Douglas, Lee, *August* 14th.

Hemiptera and Hymenoptera of Freshwater Bay, Pembrokeshire.—Last Saturday I met with *Tytthus insignis*, D. and S., and its larvæ, at Freshwater Bay, Pembrokeshire, on the sand hills, at the roots of thick clumps of grass. See p. 247 of Vol. 2 of this Magazine. The only other locality where it has been found is the Common at Esher. I take this opportunity of mentioning some other captures which I have made at the above first-rate and little known sand hills. Of the *Hemiptera*, *Pseudophlœus Fallenii*, Schill., occurs commonly; *Neides depressus*, Fieb.; *Berytus clavipes*, Fab., and *B. montivagus*, Bremi; *Metacanthus punctipes*, Germ., in great profusion; *Chorosoma Schillingi*, Schml., rarely; *Coranus subapterus*, Deg., commonly; *Zosmerus capitatus*, Wolff, and *Z. quadratus*, Fieb.; *Cymus glandicolor*, Hahn, commonly; *Derœocoris bipunctatus*, Fab., and many others not worth mentioning. The *Hymenoptera* of the same district are interesting, including very large specimens of *Tiphia femorata*, Fab., and numerous *Pompilidæ*, which I have not yet determined. Of the *Ichneumonidæ* I took the rare *Cremastus geminus*, Grav. (many specimens), and a fine *Anomalon*. Of the *Braconidæ* I noticed *Hormius moniliatus*, Nees, in plenty; *Bracon*, several species; *Orgilus obscurator*, Halid., commonly; *Meteorus ictericus*, Nees, in societies of a dozen or more at the roots of grass. A curious little insect of the group *Evaniidæ*, *Pachylomma buccata*, Bréb., frequents the runs of a cockroach, *Blatta* or *Ectobius nigripes*, Ste., which swarms on the sand hills. I suspect that the *Pachylomma* is a parasite of the *Blatta*, since we know that *Brachygaster fulvipes*, Curt. (another of the *Evaniidæ*), infests the common house *Blatta orientalis*. I found the *Blatta nigripes* also on the Chesil Bank. Time and space forbid me to extend this notice any further than to mention that, on the same day, I took four more of my recently discovered *Tettigometra* (Homopterous), shortly to be described, and also discovered the long sought for haunts of *Acocephalus histrionicus*, see p. 179 of Vol. 2, and captured two specimens. —T. A. Marshall, Milford, S. Wales, *August*, 1866.

New British Amara.—I have to record the capture of *Amara alpina*, Fab., Dej., a species new to Britain. In M. de Marseul's "Catalogue of European Coleoptera," it is placed in the sub-genus *Cyrtonotus*.

A. alpina is, in size, about 4½ lines (being decidedly smaller than *aulica*), pitchy, with the base of the antennæ, the femora and the tibiæ ferruginous. On the head, between the bases of the antennæ, are two deep impressions. The thorax is short and broad, with a divided, deep, and thickly-punctured pit on each side at the base. The elytra are punctate-striate.

A. alpina may readily be distinguished from the other British *Cyrtonoti* by its smaller size and much more parallel shape. It bears a superficial resemblance to *A. apricaria*, but may easily be divided from that insect by the deep impressions on the front of its head; by the punctured space on its thorax being smaller, and containing deeper punctures; and by its superior size and more elongate form. Several varieties of this species, as regards colour, are mentioned by Gyllenhal and Thomson; my specimen differs from the type in having reddish elytra, with the suture broadly but obscurely darker, although it is perfectly mature.

I took a single specimen of the above insect on Grayvel, a mountain in Perthshire, about 3,000 feet above sea level, early in July this year.—T. Blackburn, Grassmeade, Southfields, Wandsworth, S.W., *August*, 1866.

New British Homalium.—I have great pleasure in recording the capture of *Homalium Heerii*, Heer, 571, a species new to Britain.

This insect is very closely allied to *H. iopterum*, but presents the following distinctive characteristics. It is a little smaller and more linear; the thorax is rather more contracted behind, and more invariably bi-foveolate, and the punctuation of the head, thorax, and elytra, is much closer than in *iopterum*, while in the latter species it is much deeper than in *Heerii*.

Heer, in his description, omits to remark on the *closeness* of the punctuation of *Heerii*, though he says that that insect is punctured "minus profunde" than *lucidum* (*iopterum*, Steph.), and does not notice its thoracic foveæ,—but the latter is a variable character.

I took this insect, not uncommonly, from fungi on rotten birch trees near Loch Rannoch, in July of this year.—Id.

New British Epuræa.—I have lately met with *Epuræa variegata*, Herbst (Er., 146), an insect new to Britain.

This species is likened to *E. obsoleta* by Erichson. It is, however, a little smaller, rather broader, and less depressed. Its colour is a full red; antennæ concolorous with the elytra, having the apical joint of the club slightly narrower than the two preceding; thorax short and broad, rounded at the sides, but contracted in the hinder fourth part, very widely margined, straighter behind than in *obsoleta*, with the hinder angles somewhat acutely produced; elytra broadly margined, with a large dark brown central spot, and the apex generally dark.

Erichson describes the joints of the club of the antennæ as of equal size, and fails to notice that the thorax is not quite regularly rounded at the sides, but is rather more contracted behind than the mere word "rounded" would imply; otherwise his description of *E. variegata* and my specimens agree.

I took four examples of this insect, from fungi on rotten birch trees, near Loch Rannoch, in Perthshire, in July this year.—Id.

Notes on Scotch Coleoptera.—The following account of my captures in North Perthshire, in July of this year, may prove not uninteresting to some readers of the Magazine. Those who have read Mr. Rye's "Notes on *Coleoptera* at Loch Rannoch," and observed that I joined him "after a time," will scarcely expect a good report, especially if they know anything of that gentleman's exhaustive method of collecting. I can add few to the list of captures in the forest, as I had to walk miles in search of the few unbarked logs that I found, and they were not, when detected, of the best quality, or, I suppose, they would not have been left. I obtained, in much smaller numbers, several of the species mentioned by Mr. Rye as occurring in the forest, including three specimens of *Homalota fusco-femorata*, and also, from cracks in the stumps of felled fir trees, *Ischnoglossa corticalis*, *Scydmænus exilis*, and *Euplectus bicolor*. In the forest one *Agathidium rhinoceros*, Sharp, also occurred (under bark of a log), and *Quedius lateralis*; and, when I sugared there for *Lepidoptera*, *Dromius agilis* and *Carabus glabratus* were frequent visitors at the banquet, preceded, before dusk, on *old* sugar, by numbers of *Cetonia æneа*.

On the ground where *Cryptocephalus* 10-*punctatus* occurred, I looked for that insect in vain after the first days of my stay, the brood evidently being *passé;* but near the same place the handsome *Trichius fasciatus* began to be met with sitting on thistle-flowers and orchids *after* four o'clock, p.m., while *Strangalia* 4-*fasciata* might be found flying about the rotten birch stumps.

Near Pitlochry, *Diacanthus æneus* occurred. Besides many of the species mentioned by Mr. Rye, I found at the sawpit at Dall, *Hallomenus humeralis* somewhat commonly, in the fungoid growth under a large log. *Quedius fulvicollis* occurred on the damp margins of ponds and streams; and to the fauna of the "modest bedroom" I can add *Cryptophagus cellaris*.

On "Grayvel," I captured two specimens of *Bolitobius inclinans* hiding under stones, about a thousand feet apart in altitude,—a little higher still, *Oxypoda aterrima* (besides most of the species already mentioned as occurring there), and on the summit *Amara alpina*, a species new to Britain. (See ante.)

Near the foot of Cross Craig is a birch wood, which I found very productive. On an old rotten birch stump a specimen of *Athous undulatus* occurred, and agarics produced (in addition to the species of *Cis* mentioned by Mr. Rye) *Epurœa variegata*, a species new to Britain. (See ante.)

I also found, in similar situations, some very interesting specimens of *E. deleta*, many of them being double the size of an average Southern type; and the series which I now have in my cabinet proves *E. deleta* to be, in point of size, one of our most variable beetles. So singular, indeed, was this variation, that till I brought my insects home, and the truth was forced upon me, I considered the larger specimens specifically distinct from the smaller.

In the above list I have carefully avoided repeating the names of species mentioned in Mr. Rye's list, otherwise mine would be much longer than it is.—Id.

Masses of Diptera collected on twigs of alder.—Dr. McCullough brought home with him, from a fishing excursion, a small branch of alder on which was collected a solid mass of flies about eight or ten inches long by three to five thick, and containing probably several thousand individuals. He said that he observed on the twigs numerous similar collections, but the one brought was much the largest. These twigs, though four or five feet above the water, were so placed that they might be drawn into it when the stream was very full. On examining the mass, I found it contained nothing but flies, some few still alive, but most of them dead; and small bundles of their eggs, but nothing to serve as a point of attraction, nor any *débris*, to indicate that they had been collected from the surface of the water. The eggs were obviously laid, as we often see insects lay their eggs, simply because the parent fly was unable to extricate itself, and must deposit them there or not at all.

What I should like to know is, were the flies gathered from the surface of the stream, or were they collected in some other way, and is the phenomenon well known? The date of the observation was about June 9th. I send specimens of the fly for determination.—Algernon Chapman, M.D., Joint Counties Asylum, Abergavenny, *July* 10*th*, 1866.

[The insect is *Atherix ibis*. Vide *Insecta Britannica, Diptera*, Vol I., p. 70, where Mr. Walker states as follows:—

"The female of this fly is gregarious, and attaches its eggs in large clusters "to boughs hanging over streams, and there remains, and shortly dies. The "cluster is generally pear-shaped, and sometimes contains many thousands of dead "flies, and continually receives accessions by new comers settling upon it. When "the larva is hatched it falls into the water, its future residence; it has a forked "tail about one-third of the length of the body, and has the power of raising itself "in the water by an incessant undulating motion in a vertical plane."

See also Proc. Ent. Soc. London, 1848, Aug. 7th; where is reported the exhibition by the late Mr. J. F. Stephens of a large mass of this fly, about two inches in diameter, found by the Rev. F. W. Hope on the banks of the Severn, at Berwick, near Shrewsbury. This mass was composed of an immense number of individuals, closely adhering together around a small branch.

In the Proc. of 2nd July, 1849, is, also, the following note :—

"Mr. Westwood showed some flies and their eggs, part of a cluster of sixty or "seventy found in a tuft of hawthorn, about twelve miles from Derby, and sent to "him by Mr. Spencer, who had remarked that each fly seemed to remain as a "protector over the eggs it had deposited. They were identified as *Atherix ibis*."—Eds.]

Offer of Nyssia zonaria, &c.—Having duplicates of *N. zonaria*, as well as of *Liparis salicis* and *Cicindela hybrida*, I shall be happy to supply any collector with some of each of these insects (as long as my stock lasts), on receipt of a box and return postage.—E. L. Ragonot, 5, Clifton Crescent, Clifton Park, Birkenhead.

Sialis fuliginosa in Dorsetshire.—Mr. Dale showed me examples of this species captured near his own residence at Glanville's Wootton, which do not differ from the individuals from Rannoch (vol. 2, p. 107). In these the character of the position of one of the transverse nervules (as represented in the figure) holds good, notwithstanding that, as I before mentioned, the neuration of *Sialis* is scarcely ever precisely identical even on the two sides of the same individual.—R. McLachlan, Forest Hill.

Cannibalism of the larvæ of Coccinella.—A few evenings since I came upon a whitethorn hedge at Lewisham, which was abundantly tenanted by the larvæ of the common two-spotted lady-bird, *Coccinella bipunctata*. Whether their usual food (*Aphides, &c.*) had run short, or whether they preferred a pabulum that afforded a greater supply of nutriment with less trouble, I cannot say, but any way I observed numerous larvæ busily engaged in sucking the juices of such of their own kindred as had recently turned to pupæ: their heads being deeply ensconced in the interiors of their helpless companions.—*Id.*

Clisiocampa castrensis.—I have found the larvæ of *C. castrensis* in abundance at Mersea and St. Osyth, near here. I have no doubt it occurs all round the Essex coast. I had hoped to have plenty for disposal, but confinement does not appear to suit them, as great numbers died; and although they were amply supplied with what is said to be their proper food, they did not thrive well.—Henry Laver, Colchester, *Aug. 1st*, 1866.

Note on Bombyx quercûs.—A few days since I saw a *B. quercûs* emerge, and on testing a fluid observed on the head, I found it gave a decided alkaline reaction to litmus-paper. This alkaline fluid may probably account for the easy exit of moths through such tough things as some cocoons are.—Id.

Entomological Society of London. 6th August, 1866.—Prof. Westwood, M.A., F.L.S., Vice-President, in the Chair.

It was proposed by Mr. Pascoe, seconded by Mr. Stevens, and carried by acclamation, that the cordial thanks of the Society be given to W. Wilson Saunders, Esq., for his entertainment at Reigate on the 6th ult.

Mr. Stevens exhibited a collection of insects of all orders, sent from Bahia by Mr. Reed, including some fine *Cicindelidæ*, *&c.* He also exhibited species of the genus *Pogonostoma*, collected in Madagascar by Mr. Gerrard, and some *Cetoniadæ* from Sierra Leone.

Mr. D'Orville sent for exhibition an example of *Cabera pusaria* (male) with the wings entirely of a silky lead colour, the body retaining its ordinary white appearance; this had been captured in his own garden at Alphington, near Exeter.

Mr. Bond exhibited a series of *Eudorea basistrigalis*, Knaggs (Ent. Mo. Mag., vol. 3, p. 1), and some remarkable varieties of *E. ambigualis* from Mr. Barrett, of Haslemere; also examples of the rare *Catoptria microgrammana* taken by Mr. Meek at Folkestone, and two specimens of the hitherto unique *Sericoris euphorbiana* also taken by Mr. Meek at the same locality.

Mr. McLachlan exhibited a collection of cases of caddis-flies recently received from Bavaria and Basle (those from the latter locality given to him by Mr. A. Müller); including some remarkable forms of the case of *Halesus digitatus;* that of *Enoicyla pusilla* (of which the larva lives out of the water); and a singular case (of uncertain genus, possibly *Brachycentrus,*) formed of vegetable matters neatly arranged transversely, so as to form a partially angular tube, closed by a solid operculum, in the centre of which are four small holes to admit the water; &c., &c.

Mr. Janson exhibited a box of rare British *Coleoptera* taken by Charles Turner in the New Forest, including two fine examples of *Velleius dilatatus* which had been found in the burrows of *Cossus ligniperda.*

Professor Westwood mentioned that having at the last meeting expressed an opinion that the singular insect then described by Mr. Pascoe under the name of *Ectrephes formicarum* might pertain to the *Paussidæ*, he had since examined the parts of the mouth, and had arrived at the conclusion that it had no relationship with that family, and was, in fact, of doubtful location. He also read an extract from the Journal of the Society of Arts respecting the recent swarms of locusts in Algeria, they having prevailed to such an extent as to cause a famine, the water-courses being blocked up with their dead bodies, and the military having been employed to mitigate the bad effects by clearing them away. With respect to the *Ailanthus* silkworm (*Attacus Cynthia*), he remarked that he saw no prospect of obtaining a second brood this season from those reared by him.

It was announced that the next (September) meeting would be the last held in the rooms now occupied by the Society; that after then it would meet in the apartments of the Linnean Society at Burlington House; due notice would be given of the necessary alterations of the days of meeting, &c.

A FEW WORDS ABOUT *GELECHIA TRIANNULELLA*.

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

This insect was figured by Herrich-Schäffer on the 63rd plate of the fifth volume of his Schmetterlinge von Europa, in the year 1853; in the following year, at p. 201 of the letter-press, the brief description of it appeared, Herrich-Schäffer quoting as a doubtful synonyme the *inornatella* of Douglas. We there read—

"Testaceo fusca, inter costas elevatas obscurior, punctis limbalibus et tribus disci, utrinque albido terminatis, nigerrimis.

"Habit of *cinerella*, yet with the wings much narrower and longer, even narrower than in *lineolella*, but not with so oblique a hind margin. The colour is of a fresher brown, more inclining to coppery-red that in *cinerella*, the nervures and the two dividing lines of the cilia not so distinct as in *lineolella*. All the three typical spots are produced lengthwise, especially that towards the inner margin, which is nearer the base, and dashed with whitish at both ends.

"Both sexes from Hungary, the female with the wings still narrower, four specimens; also from Switzerland, from Mons. de la Harpe."

In 1856, a brief notice of the same insect appeared in Frey's Tineen und Pterophoren der Schweiz.

"Alis ant. testaceo-fuscis, inter venas elevatas obscurioribus, punctis disci atque marginis postici utrinque albido terminatis, nigerrimis. Cf. H. S. ♀, 6 lin.

"I only saw a single female specimen. As this was not quite fresh, I use Herrich-Schäffer's description [which he then quotes].

"This species, found in Hungary, was obtained by Laharpe in the neighbourhood of Lausanne; but as it appears, only a single specimen."

The diagnosis above given is supposed to be copied from Herrich-Schäffer, only a few words being altered to make it more uniform with the other diagnoses in Professor Frey's work; in this transposition of words a slight alteration has, however, been effected in their sense. The careful reader will perceive that Herrich-Schäffer had informed us that the "three spots of the disc are each terminated with whitish;" in Frey's diagnosis the whitish terminations are also appended to the hinder marginal spots, a meaning of which possibly Herrich-Schäffer's words are capable, but clearly not that which was intended by him.

In the month of April, 1856, I visited Chartres, in order to make the personal acquaintance of Monsieur Achille Guenée, and when I returned to Paris in the evening I brought with me some few visible memorials of my visit; amongst these was a specimen of an insect,

with which I had been much struck when I first saw it in M. Guenée's collection, and of which I dotted down the note "like *rufescens*, but with three ocellated spots." It was given to me with the name *inulella* (*?*).

In the autumn of the same year (1856), I received a letter from Monsieur Pierre Millière, of Lyons, in which there occurs the following passage:

"I have just discovered at Lyons two species of *Micro-Lepidoptera* new for France; these are *Diasemia Ramburialis*, H. S., Gue., and *Anacampsis triannulella*, H. S. The latter I bred from the larva, of which the habits are very interesting."

In February, 1858, Monsieur Millière sent me a box of insects, in which were two specimens of this *triannulella;* my correspondent adding "of which I hope soon to give you the history of the earlier stages."

These specimens were identical with that I had received from M. Guenée under the doubtful name of *inulella.*

In February, 1863, I paid my first visit to Monsieur Millière at Lyons. In looking through his collection, I dotted down sundry notes, and amongst others the following: "*Gelechia trimaculella*—larva rolls leaves of *Convolvulus sepium* in October, imago in November."

I am disposed now to think that *trimaculella* was a slip of the pen, or rather of the pencil for *triannulella.*

In April, 1863, there appeared in the Wiener Entomologische Monatschrift, p. 131, the following notice by Dr. Rössler, of Wiesbaden:

"*Gelechia triannulella*, H.-S., fig. 458.—The late Vigelius first found this moth in his garden, which lies on the southern slope of the pleasure grounds here. He beat it in early spring from some low box-bordering. I met with it quite fresh and in first-rate condition on a grass plat in the town on 6th of April, and amongst grass in the Salzthal. At the end of June, 1862, I was in a stone quarry, which had a very warm aspect towards the south, and there, on some bushes of "*Ackerwinde*" (*Convolvulus arvensis*), I found a leaf which was turned down at the margin (just as the larva of *Hypsolophus quadrinellus* treats the leaves of *Origanum vulgare*), and fastened by some threads, and being eaten, appeared to be the abode of a larva. On closer investigation, a larva endeavoured to make its escape by running rapidly backwards, which in form and markings reminded one forcibly of the larva of *Gelechia terrella*, so beautifully figured by Fischer von Röslerstamm. It was attenuated at each end, especially at the three

anterior segments (spindle-shaped), broad and flat in the middle. The ground colour of a rich blackish red-brown, with whitish markings. The anterior half of the body with the belly and back red-brown, the incisions of the joints white, also the rings round the belly, the two first of which appear as collars. The posterior half of the body, viz., the seven last segments, have the back red-brown, without any such rings, but with a whitish dorsal stripe and the sides are white, on which, beginning each time between the legs and directed anteriorly, are four stouter and one fainter oblique streaks of the dark ground colour. The belly of the anterior half of the body is red-brown, of the posterior half whitish. Head small, dark brown; legs of the colour of the adjoining part of the body.

"The change to the pupa state took place within the abode of the larva, and the imago appeared eight days afterwards.

"Probably, from what has been mentioned above, there are two broods in the year, and the other brood passes the winter in the pupa state."

The new part of the Stettin Entomologische Zeitung, 1866, 7-9 (received here yesterday), contains a very interesting notice by Dr. Steudel, of Kochendorf (p. 312), headed—

Gelechia sepiella, *n. sp.*

"The writer bred last summer, from a larva feeding on *Convolvulus sepium*, a *Gelechia*, which he was unable to 'determine. It wandered, therefore, along with other *Micro-Lepidoptera*, in the autumn to Frankfort for determination by Herr von Heyden, who, with his usual goodness, determined my *Micro-Lepidoptera*, incited me to a scientific occupation with this group, and freely gave me of the riches of his collection. Eight days before his death, so painfully felt by surviving entomologists, I received back the *Gelechia* in question with the notice, that neither the Frankfort entomologists, nor Professor Frey, of Zurich, to whom he had sent the insect, knew it, and that the latter pronounced it to be a new species, which, probably on account of the neuration of the wings, ought to be arranged near *Gelechia rufescens*. I give, therefore, a description of the insect and its larva, and observe that I bred three specimens, one of which was spoilt in setting, and that none of them shewed any essential differences in colour, marking, or size.

"Capite, palpis, alisque anterioribus cinnamomeis; alis anterioribus sub-acutis, elongatis, radice discoque concoloribus, apice dilutiore; punctis tribus disci nigris albo-notatis, duobus oblique transversis ante, tertio post medium in vena transversa; venis post cellulam mediam nigro-squamatis, margine nigro-punctato. 8 lin."

The entire description is too long to be given here, but the following extract will serve as a specimen of the care with which it has been written:

"The colour of the anterior wings is a dull cinnamon-brown, towards the apex paler from the scattered yellowish scales, especially on the costa. At $\frac{2}{5}$ of the length of the wing are two elongate black spots, obliquely placed, the lower one nearer the base, on the fold; both are surrounded by an incomplete white ring. Just beyond the middle of the wing on the transverse vein, in the same line with the upper of the two previous spots, is a third larger spot, but not so deep black, in an oval, white, almost complete ring. Beyond this the veins are clothed with black scales, as also the ends of the veins in the hind margin; sometimes also there are black marginal spots on the costa before the apex."

All of which applies most excellently to my specimens of *Gelechia triannulella*.

Dr. Steudel's notice of the larva is as follows:

"The larva feeds on *Convolvulus sepium*, and turns the top of the leaf by a horizontal fold upwards, and fastens it flatly to the upper side of the leaf. In this triangular abode it eats a portion of the parenchyma; on the leaf being disturbed it quits its abode by a hasty, springing movement at one end of the fold, like the larvæ of the genus *Depressaria*, or like the similar larva of *Hypsolophus Schmidiellus* (*Durdhamellus*). By this means three of the larvæ which I found escaped, and a fourth was injured and killed in the attempt to catch it hastily. If I am not mistaken, I found the larvæ in July, and the perfect insect appeared in September.

"The larva is rather elongate, thickened anteriorly, the head brown-black, the thoracic segment of the same colour, with paler shield anteriorly and three white spots posteriorly; the second to fifth segments thickened, dark brown, the third segment with a series of raised white spots anteriorly, the fourth unicolorous, the fifth with lateral white spots anteriorly, beyond that the body is of a rather paler brown, with a white dorsal line, and with oblique white streaks on the sides. The anterior legs are black, the prolegs and belly are dirty dark green."

From the foregoing descriptions it is evident that the larva of *triannulella* is closely allied to those of *rufescens* and *lutatella*, which are so extremely similar that it is hardly possible to distinguish them. I am strongly disposed to fancy that the larvæ of *cinerella*, *tripunctella*

maculosella, *lineolella*, and *inornatella*, will be found to be all very similar. *Cinerella* is an insect generally distributed and not rare, yet the larva is still (September, 1866) totally unknown to us. My friend, Monsieur Millière, has lately bred a species closely allied to the Alpine *tripunctella*, of which I believe he will shortly publish the transformations in his valuable "Iconographie et Description de Chenilles et Lépidopterès inedits:" and with this observation I will conclude these "few words about *Gelechia triannulella*."

Mountsfield, Lewisham, *September* 11*th*, 1866.

DESCRIPTION OF A NEW SPECIES OF *CRYPTOPHAGUS*; AND NOTE ON THE OCCURRENCE OF ANOTHER SPECIES OF THAT GENUS NEW TO BRITAIN.

BY E. C. RYE.

CRYPTOPHAGUS WATERHOUSEI, n. sp.

Elongatulus, leviter convexus, densè subtiliterque punctatus, pube breviori depressâ densè vestitus, fusco-testaceus, capite thoraceque ferrugineis, hoc basin versus fortiter angustato, angulisque anterioribus fortiter prominulis, cyathiformibus, posticè laminatis acutèque productis; dente laterali quasi prominentiâ anteriore confuso. Long. $1\frac{1}{5}$ lin.

A single example of this exceedingly distinct species was taken in one of the open corridors leading to the Crystal Palace in May, 1857, by Mr. Waterhouse, to whom I have dedicated it. This specimen, luckily (on account of its Parmecosomiform build) a male, with four-jointed posterior and dilated anterior tarsi, represents the *Cryptophagus* 16 *sp.*—(*?*) of that gentleman's Catalogue.

It is intermediate in size and general appearance between *C. acutangulus* and *C. vini*, from both of which species, and, indeed, from all others which I have seen, or to the descriptions whereof I can refer, it differs considerably in the structure of its thorax. In the latter insect, which it most resembles in this respect (but from which its larger size, more cylindrical shape, finer punctuation and closer and shorter pubescence would amply separate it), the thorax has the anterior angles (the *dentes anteriores* of Erichson) widely dilated and cyathiform, behind which the sides, which are finely but distinctly crenulate, are slightly emarginate and then contracted behind; the usual lateral denticle (*dens posterior* of Erichson) of *Cryptophagus* being absent. In *C. Waterhousei* the equally dilated and cyathiform anterior angles are continued behind

in almost a straight line, parallel with the sides of the thorax, until they terminate in a minute and acute point; the whole projection occupying about a third of the lateral length, and suggesting the idea of the *dens posterior* being amalgamated with the prominence of the anterior angle. Below the acute point above mentioned, the sides (which are strongly and straightly narrowed behind) are exceedingly finely crenulated; the margins, as compared with those of *C. vini*, being indeed almost entire. In other respects this insect is conspicuous by the almost cylindrical shape of its elytra, which are closely and delicately punctured, and thickly clothed with short pubescence.

Another species of this genus, *C. fuscicornis* (Sturm, Deutschl. Ins., xvi, 97, 18; Er., Ins. Deutschl., iii., 358, 10), must, I think, be added to our lists, as I have found a specimen, agreeing in the majority of its characters with Erichson's diagnosis, among some *Cryptophagi* belonging to Mr. D. Sharp, and taken by him in the London district. It is $\frac{3}{4}$ lin. long, rather smaller than any *C. dentatus*, from which the much stronger and wider punctuation of its elytra, its somewhat more cylindrical shape and the structure of its thorax distinguish it; the anterior angles being strongly prominent, and terminating behind in a *sharp* tooth, and the lateral tooth being situated at the *middle* of the sides, which are more narrowed behind it, and less strongly crenulated.

I am, however, compelled to bring this species forward with a certain amount of doubt, not only on account of its pubescence being too long to accord exactly with Erichson's description, but also because it has been already introduced as British by my friend Mr. G. R. Crotch, who has recently, in another place, withdrawn his exponent of it as only an abnormal *C. dentatus* (with any form of which Mr. Sharp's insect cannot, however, be possibly confounded), and because the sole representative of it in the European collection of the British Museum* (sent, I believe, by Dr. Kraatz), is without doubt wrongly so named, having the anterior angles of the thorax not sufficiently prominent, and not acute behind, with the lateral tooth situated above the middle, and the punctuation of the elytra not sufficiently strong. Mr. Sharp's insect somewhat closely resembles specimens of *C. quercinus*, Kr., in the Brit. Mus. Coll.; differing, however, from these in its smaller size, the more evident contraction of its thorax behind, and the stronger punctuation of its elytra.

* It is somewhat consoling to the "Britisher," often despised by cosmopolitan coleopterists for confining his study to the productions of his own country, to find that the extension of range frequently entails an extension of error, as proved by the constantly occurring instances of erroneous Continental "types," even when sent by the best "authorities." Wishing recently to see Continental specimens of *Epurœa variegata*, I duly received five; whereof one was *æstiva*, and the remainder *pusilla*.—E. C. R.

AN ESSAY TOWARDS A KNOWLEDGE OF BRITISH *HOMOPTERA*.

BY THE REV. T. A. MARSHALL, M.A.

(*Continued from page* 85.)

26.—*Iassus* (*I.*) *prasinus*, Fall.

Fusco-flavus vel pallide viridis, interdum sub-rufescens. Abdomen nigrum, segmentis flavo-marginatis; ♀ subtus totum, ♂ apice tantum, flavescens. Vertex immaculatus. Frons obscure fusco-cancellata. Pronotum, scutellum, hemelytra, flavescentia, sub-nitida, immaculata: hæc abdomine longiora, sub-pellucida, membrana leviter infuscata: nervi concolores. Alæ infuscatæ. Pedes testacei; tibiæ ad basin spinarum nigro punctæ; posticæ intus nigro-lineatæ: ungues fusci. ♂ ♀. Long. $2\frac{1}{2}$; alar. exp. $5\frac{1}{2}$ lin.

Cicada prasina, Fall., Hem., 2, p. 40: Act. Holm., 1806, p. 27.
Iassus prasinus, Flor, R. L., 2, p. 352.
Iassus subfusculus of the Brit. Mus. Collection.
Aphrodes sulphurea, Curt., B. E., 633, No. 10.

Flor (l. c.) says that *Cicada prasina*, Fab., Ent. Syst., 4, 38, and S. R., 77, 70,—although quoted as a synonym by Fallén (l. c.),—is not the present insect, but a *Bythoscopus*. He does not, however, give the reasons for this conclusion. The Fabrician enigma is as follows: "Flavo-viridis: alis cærulescentibus." The pale colour, rather larger size, and immaculate upper surface, suffice to distinguish both sexes from *subfusculus*. The males are further separated by their external genital apparatus. In *prasinus* the laminæ genitales are unusually long, three times the length of the valvula; in *subfusculus* they are only half as long again as the same organ.

On various trees in woods, throughout the kingdom; perhaps the easiest to meet with of all the larger *Iassi*. The following species are smaller, resembling *Eupteryx*.

27.—*Iassus* (*I.*) *virescens*, Fall.

Angustus, pallide flavus vel flavo-viridis. Abdominis segmenta 5 prima supra medio nigra, vel nigro-limbata, lateribus late pallidis; cætera flaventia. Hemelytra pellucida, nitida, abdomine longiora (♂), vel paulo breviora (♀). Vertex acutangulus, apice obtuso, sua inter oculos latitudine vix brevior, pronoto longitudine æqualis. Tibiæ posticæ ad basin spinarum vix fusco punctatæ; tarsi apice fusci. Anus ♀ apice albido setosus. ♂ ♀. Long. 2-$2\frac{1}{4}$; alar. exp. $3\frac{1}{2}$ lin.

Cicada virescens, Fall., Act. Holm., 1806, p. 33; Hem., 2, p. 52.
Iassus virescens, Flor, R. L., 2, p. 333 (?)

When this species was made out I had not Flor's work before me: the perusal of his description makes me now rather doubtful as to the correctness of the identification. Fallén's diagnosis (with which my 13 specimens agree) is as follows :—"Viridis, supra immaculata; capitis apice obtusissimo [i. e., as compared with *Pediopsis*]; alis albicantibus. *C. punctata* vix minor. Supra virescens, nitida, post mortem flavescens. Caput impunctatum [i. e., without black spots]. Antennæ longiusculæ. Elytra corpore longiora, exalbida; nervis tenuibus, viridibus. Abdomen supra atrum, subtus sæpe virescens. Tibiæ nigro-punctatæ." Flor mentions a black dot upon the genæ, which I cannot discern, and speaks of variations which my examples do not present.

This species is from an osier bed on the banks of the Soare, near Aylstone, Leicestershire. It differs from 4-*notatus*, Fab., in the longer vertex, narrower and longer body, abdomen only black in the middle above, colour after death more ochreous, and absence of black spots on the frons and vertex.

28.—*Iassus* (*I.*) *quadrinotatus*, Fab.

Statura præcedentis. Pallide viridis, capite magis flavo. Abdomen ♂ nigrum; ♀ nigrum, flavo-marginatum. Vertex pronoto quadrante brevior, porrectus, apice rotundato. Maculæ duæ verticis, duæque frontis, rotundæ, nigræ: posteriores nonnunquam parvæ,—sed caput aliquando immaculatum. Sub antennarum insertione, in genis, punctum nigrum; facies tota sæpe linea tenui nigra circumscripta. Antennarum articulus 2^us^ plerumque niger. Hemelytra pellucida, nitida, viridia, nervis flavis. Pedes flavi; tibiæ posticæ nigro punctatæ et lineatæ; coxæ saepius, femora raro, fusco-notata; femora antica extus, postica intus, linea nigra,—sæpissime obsoleta. ♂ ♀.

Long. $1\frac{3}{4}$-2; alar. exp. 4 lin.

Cicada 4-*notata*, Fab., S. R., p. 78.

Iassus 4-*punctatus*, Germ., Fn., 14, tab. 15.

Iassus 4-*notatus*, Flor, R. L., 2, p. 336.

Thamnotettix spilotocephalus, Hardy, Tyneside Trans., 1, p. 424 (according to the type in the Brit. Mus.).

This* species is less common than *sexnotatus*, but still sufficiently abundant in damp grassy places throughout the kingdom.

(*To be continued.*)

* The above insect, and many others of the smaller and softer *Cicadas* (ex. gr., *Deltocephalus*, *Eupteryx*), are often infested by an oval parasite, destitute of limbs, and immoveably attached to the abdomen or sides of the pronotum by a peduncle. The parasite first appears on the young larva, and is then pale coloured, but grows with the growth of its victim, and finishes by becoming black. The *Cicada* is often malformed, owing to the constant presence of this excrescence, equal in size to its own head, but which does not appear to cause death. I have observed this fact a hundred times; and have read accounts of it in books, but nothing satisfactory.—T. A. M.

THE *LEPIDOPTERA* OF IRELAND.

BY EDWIN BIRCHALL.

(*Continued from page* 76.)

TÆNIOCAMPA GOTHICA—Common everywhere

„ RUBRICOSA—County Wicklow; Mr. Bristow.

„ INSTABILIS—Common.

„ POPULETI—Wicklow and Killarney.

„ STABILIS—Common.

„ GRACILIS—Killarney.

„ MUNDA—Do.

„ CRUDA—Very common.

ORTHOSIA YPSILON—County Wicklow.

„ LOTA—Common, and widely distributed.

„ MACILENTA—Do. do.

ANTHOCELIS RUFINA—Do. do.

„ PISTACINA—Do. do.

„ LUNOSA—Do. do.

„ LITURA—Do. do.

CERASTIS VACCINII—Do. do.

„ SPADICEA—County Wicklow; Mr. Bristow.

SCOPELOSOMA SATELLITIA—Common.

DASYCAMPA RUBIGINEA—Widely distributed. I have taken specimens at Dublin, Tullamore, and Killarney.

HOPORINA CROCEAGO—County Wicklow.

XANTHIA CITRAGO— do.

„ CERAGO do. common.

„ SILAGO—Wicklow and Dublin; not uncommon.

„ AURAGO—Mr. Haughton; locality unknown.

„ FERRUGINEA—Common everywhere.

EUPERIA FULVAGO—Mr. Greene's list; no locality known to me.

COSMIA TRAPEZINA—Common everywhere.

„ AFFINIS—Powerscourt.

DIANTHŒCIA CARPOPHAGA—Mr. Greene's list. All the Irish specimens which I have seen are referable to the following species:—

„ CAPSOPHILA (pl. 1, fig. 9)—First captured by Mr. Barrett in June, 1860. See Zoologist, p. 7324. Occurs commonly on the hill of Howth, but has not yet been found elsewhere.* The larva feeds on the unripe seeds of *Silene maritima* from June to August; and the moth, though

* This insect has been taken during the present summer, near Waterford by Dr. Wright, and in the Isle of Man by Mr. Hopley and others.—E. B.

only single-brooded, is on the wing for the greater part of the same period. There has been much discussion as to the claims of this insect to be considered a species distinct from *carpophaga*, some of the darker varieties of which from Scotland approach *capsophila* both in form and colour. The larvæ of *carpophaga* and *capsophila*, like the perfect insects, differ principally in colour, *capsophila* in both cases being darker. The larvæ of *capsincola* and *conspersa* are, however, equally difficult to separate; and these slight variations in the larva state seem to be characteristic of the *Dianthæciæ*, and alone are insufficient to enable us to discriminate the species. Some may suppose that the common origin of the various species of the genus is indicated by these slight differences in the larva state; but for the purposes of classification, *carpophaga* and *capsophila* seem to me abundantly distinct, and must be so recorded.

Dianthœcia capsincola—Generally distributed, and common.

„ cucubali—Howth and Killarney; not uncommon.

„ barrettii (pl. 1, fig. 7)—This fine insect, discovered at Howth by Mr. Barrett in June, 1861, and described by H. Doubleday in Entomologist's Annual for 1864, p. 124, is not known to have occurred either in England or upon the Continent. Four specimens have been captured—the first, a male, by Mr. Barrett, and the others, one male and two females, by myself. The larva has not yet been discovered; it will probably be found to feed either on the leaves or seeds of *Silene maritima* in July.

„ conspersa—Belfast; Mr. Bristow.

„ compta (pl. 1, fig. 8)—A pair of this well-known species, taken in Ireland by Mr. Tardy, are in the collection of Trinity College; but I am unable to indicate the exact locality of their capture. The insect has long been a reputed British species, and I confidently anticipate its admission to our lists when Dublin collectors bestir themselves a little. Ireland appears to be peculiarly rich in the genus *Dianthœcia*, producing seven species, whilst only four are known to occur in Great Britain.

Hecatera dysodea—Mr. Greene's list; locality not stated.

„ serena—County Wicklow and Howth.

Polia chi—Generally distributed, and common.

„ flavocincta—County Wicklow.

Dasypolia templi—Common at Howth.
Epunda lutulenta—County Wicklow; Mr. Bristow.
„ viminalis—Belfast; also at Killarney.
„ lichenea—Common at Howth.
Miselia oxyacanthæ—Abundant in most places.
Agriopis aprilina—Dublin and Wicklow; common.
Phlogophora meticulosa—Common everywhere.
Euplexia lucipara— do. do.
Aplecta herbida—Widely distributed, and common in many places.
„ nebulosa— do. do.
Hadena satura—County Wicklow; one specimen by Mr. Bristow.
„ adusta—Very common, and widely distributed.
„ protea—County Wicklow; common.
„ dentina—Widely distributed, and often very common.
„ chenopodii—Near Dublin, by Mr. Greene.
„ suasa—County Wicklow; not common.
„ oleracea—Common.
„ pisi— do.
„ thalassina— do.
„ contigua—Wicklow and Killarney; common.
„ genistæ—County Wicklow; not common.
„ rectilinea—Killarney; not common.
Xylocampa lithoriza—Common in the County Wicklow.
Calocampa vetusta— do. do. and Dublin.
„ exoleta do. do. do.
Xylina rhizolitha—Common at Killarney; also occurs in the County Wicklow, but rarely.
„ petrificata—Widely distributed, and frequently abundant. I once saw an ivy bush near Tullamore, the flowers of which were swarming with this insect.
Cucullia verbasci—Dublin and Wicklow; common.
„ chamomillæ— do. do.
„ umbratica—Generally distributed, and common.
Anarta myrtilli— do. do.
Erastria fuscula—In profusion at Killarney.
Bankia argentula— do. do.
Hydrelia unca do. do.

Any one who has traversed the bogs of the County Kerry in the early part of June, will not soon forget the astonishing numbers of the three last-named insects, which rise around him as he pushes his way through the thick growth of *Myrica gale*.

Abrostola urticæ—Widely distributed, and common.

„ triplasia— do. do.

Plusia chrysitis— do. do.

„ bractea—County Wicklow.

„ festucæ—Widely distributed, and common.

„ iota— do. do.

„ v.-aureum— do. do.

„ gamma— do. do.

Gonoptera libatrix—Widely distributed, and common.

Amphipyra pyramidea—Killarney; common.

„ tragopogonis—Generally distributed, and common.

Mania typica— do. do.

„ maura do. do.

Stilbia anomala—Howth; not uncommon.

Catocala fraxini—A specimen captured at Kingstown by Mr. Greene.

„ nupta—Dr. Ball; locality unknown to me.

Ophiodes lunaris—Two specimens captured at Killarney by the late P. Bouchard, in 1864.

Euclidia mi—Widely distributed, and common.

„ glyphica—Do. do.

Phytometra ænea—Do. do.

Although the foregoing list contains 200 of the 304 British species of *Noctuæ*, I look upon it as still very incomplete. It may be noted that of the *Heliothidæ* only one species, *Anarta myrtilli*, has been observed; and it is possible that the cloudy skies of Ireland are ill adapted to the habits of this sun-loving family; but whilst hundreds of square miles of bog and marsh remain unexplored, it is impossible to believe that 13 of the British *Leucanidæ* are not to be found in Ireland. The probability is that a proper search would result in the discovery, not only of most of these insects, but of other and unknown species.

Irish specimens of *Noctuæ* are generally more richly coloured and darker than specimens captured in England, as is also the case with *Noctuæ* from Scotland. Possibly the moister climate of the northern and western portions of the United Kingdom may, in some degree, account for this; but, taken in connection with the occurrence of such species as *Acronycta myricæ*, and *Hadena rectilinea*, in the extreme south of Ireland, this similarity between Scotch and Irish insects seems to point to the northern origin of many of the Irish *Lepidoptera*.

DREPANULÆ.*

PLATYPTERYX LACERTULA—Common. Wicklow and Kerry.
„ FALCULA— do. Kerry.
CILIX SPINULA—Common.

PSEUDO-BOMBYCES.

DICRANURA VINULA—Common.
„ FURCULA—Not uncommon, and widely distributed.
„ BIFIDA— do. do.
PETASIA CASSINEA—Dr. Ball.
PYGÆRA BUCEPHALA—Very common.
CLOSTERA CURTULA—Larvæ near Clonmel.
„ ANACHORETA—Larvæ turned out at Howth, are, I believe likely to effect a permanent settlement.
„ RECLUSA—Generally distributed.
PTILODONTIS PALPINA—County Wicklow; Mr. Bristow.
NOTODONTA CAMELINA—Abundant at Powerscourt and Killarney.
„ BICOLORA—Several specimens taken by the late Mr. Bouchard.
„ DICTÆA—County Wicklow; not uncommon.
„ DICTÆOIDES— do. do.
„ DROMEDARIUS— do. do.
„ TRITOPHUS—Larvæ at Howth on alder; by Mr. Shield.
„ ZICZAC—Not uncommon.
„ TREPIDA—Not uncommon in County Wicklow.
„ CHAONIA—I have a specimen taken at Killarney. It has also occurred in the County Wicklow.
„ DODONEA—Not uncommon at Killarney.
DILOBA CÆRULEOCEPHALA—Generally distributed, but apparently not abundant.

(To be continued.)

Notes on the Catalogue of Irish Lepidoptera.—The great interest with which I have studied the valuable Catalogue of Irish *Lepidoptera* by my friend Mr. Birchall, must be my excuse for the following remarks:—Firstly, I wish to know why *P. Actæon* should be called an Atlantic insect? The only two English localities are on the coast of Devon (Sidmouth) and in Dorset (Lulworth). Both are washed by the British Channel. I have taken it at Frankfort-on-the-Maine, which may be called Central Europe.

* We accidentally omitted to place the *Drepanulæ* and *Pseudo-Bombyces* before the *Noctuæ*.—EDS.

I would also observe that *Melitæa Cinxia* is stated in the "Manual" to occur at Falkland, in Fifeshire.

My other remark is on *Lithosia caniola*. Mr. Doubleday has well reminded us already that it was taken at Torquay; but, independently of this, instead of being surprised at its occurrence in Ireland, I would fain hope that more instances of the insects of Southern Europe turning up there may yet be found; for we must bear in mind that Ireland claims as her own several plants from Spain, &c., unknown to England; such is, for example, *Ononis reclinata*, *Erica Mediterranea*, and *Erica Mackaiana*. Give two other instances: *Erica vagans* is found in Cornwall also; *Naias flexilis* and *Dabœcia polifolia* occur only at Connemara. Analogy leads us, therefore, rather to look out for more instances than to feel surprised at this one.—R. C. R. Jordan, Birmingham, *August*, 1866.

[We presume that in his remarks on the distribution of the Irish Butterflies, Mr. Birchall has followed the admirable system of geographical divisions used in Watson's "Cybele Britannica" and Moore's "Cybele Hibernica for the plants of these islands.

In Mr. Stainton's "Notes on the Geographical Distribution of the British Butterflies" (Trans. Ent. Soc. 2 series, vol. 5, pp. 229—235), published subsequently to the "Manual," no mention is made of the occurrence of *M. Cinxia* in Scotland, he having learnt that the reputed Fifeshire *Cinxia* were only *Artemis*.—Eds.]

Lithosia caniola.—In reply to Mr. Doubleday's remarks (p. 67, vol. ii.), I can only say, if I have done Mr. King an injustice I am sorry for it; but I did not think the finding specimens of *Lithosia caniola* in his boxes, taken in connection with the circumstance that no subsequent capture of the insect in the supposed locality has been made, sufficient to establish the fact of its occurrence at Torquay, and I therefore omitted all reference to it.—Edwin Birchall, Bradford, *Sept. 3rd.*

Occurrence of Lithosia caniola at Waterford.—Since my remarks on this insect were written (p. 33), it has been taken on the coast near Waterford by Dr. E. P. Wright, of Dublin.—Id.

Acidalia mancuniata.—Mr. Campbell has obligingly forwarded for inspection a long series of both bred and caught examples of the insect referred to by him at page 90. They pertain undoubtedly to the species to which the above name was applied.—H. G. Knaggs, Kentish Town, *August 27th.*

Occurrence of the larva of Cidaria (?) sagittata.—I have this season again noticed larvæ of *C. sagittata* in plenty. They feed on *Thalictrum flavum*, which grows abundantly by the sides of our fen drains, eating the seeds and partly bitten older leaves. Should not this insect class with some of the genus *Eupithecia* rather than with *Cidaria*?—A. Fryer, Chatteris, Cambridgeshire, *August*, 1866.

Capture of Aplasta ononaria, Fuessly; a genus and species of Geometridæ new to Britain.—On or about the 18th July last, I captured a specimen of *A. ononaria* in the Warren at Folkestone, amongst *Ononis arvensis*. My opinion is, that a week later would be a better time for the species.—B. Piffard, Hemel-Hempstead, 10*th September*, 1866.

[This is a very interesting addition to the English fauna. *Aplasta* belongs to the *Fidonidæ*, and at one time the single species was placed in *Fidonia*. Guenée places the genus before (of the European genera) *Strenia*. In Staudinger's catalogue it comes next after *Scoria*. *A. ononaria* is common in some localities not very far distant from Paris, and is also found in North Germany. The larva, which has long been known, feeds on *Ononis;* and, according to Duponchel, it remains a very short time in the chrysalis state, the moth appearing all through the summer; hence it is inferred that there is a succession of broods. In Guenée's *Phalénites*, vol. ii., p. 105, a *lapsus calami* occurs. In the generic description are the words "*Larv. ignot.*," yet immediately below it is fully characterized.—Eds.]

Agrotis agathina and Cirrædia xerampelina near York.—I captured a few very fine specimens of *A. agathina* on the night of August 25th, by searching the flowers of *Calluna vulgaris* near York. By digging for pupæ at Ash trees, I was rewarded with a beautiful pair of *C. xerampelina*, a male on August 21st, and a female on August 25th.—T. J. Carrington, Fulford, York, *September 12th*, 1866.

Capture of Emmelesia bifasciata.—In the first week of August I went to an old hedge on our marshes with the intention of finding an odd specimen of this insect, as it appeared to me a very suitable place; I was not long in starting game, and by continuous attention for a week, and by dint of hard work with a heavy stick, I managed to secure about forty specimens, of which, however, very few were in fine condition, and the best part of the job was that no other moths annoyed me, for those which did turn out, or rather were made to come out, were all *bifasciata*. The hedge is in a fair way for being destroyed. I got a good many eggs, but the larvæ all died young.—J. B. Hodgkinson, *September 12th*, 1866.

Another extraordinary variety of Cabera pusaria.—About a fortnight since I obtained what I believed to be an example of *Lithostege nivearia*. It differed, however, sufficiently from a specimen I had previously, that I did not feel *confident*, though I had not much doubt that I had rightly named it.

On reading, however, an account in this month's Ent. Mon. Mag. of Mr. D'Orville's specimen of *C. pusaria* "of a silky lead colour, the body retaining its ordinary white appearance," my insect was immediately suggested to me. I should thus describe it—

Spread of wings 1″ 3‴. Fore-wings: ground colour white, so closely dusted with grey as to give apparently an almost *even* ground colour of leaden-grey, the tone resembling that of *A. Ashworthii*. Hind-wings: the same, but paler at the base; the whole with a very satin-like gloss. Body nearly white. Two of the curved lines common to *pusaria* are faintly indicated on the hind-wings, but I cannot trace them on the fore-wings. The fringes are white.—W. O. Hammond, St. Alban's Court, near Wingham, *Sept.* 1*st*, 1866.

Capture of Leptogramma Boscana and L. scabrana; with notes.—I have the pleasure to announce that I have again been successful in taking *L. Boscana*, having found it rather freely this year. The last year I met with it in any numbers was 1858, since which time I have never seen more than two or three specimens in a

season, and some years none at all. They began to come out in the second week of July, and the larvæ of *scabrana*, about half grown, are now feeding in precisely the same way on the same elms. The larvæ of the two species are not to be distinguished from each other. I recorded, in 1858, the breeding of one *scabrana* apparently identical with *Boscana*. I have now to record the *capture* of two decided *scabrana* in company with *Boscana*; one of these I sent to Mr. Doubleday. My attempts to procure eggs of either species have all proved futile, and I should be glad of any hints from practical entomologists on the subject of breeding *Tortrices* from the egg.—E. Horton, Powick, *Sept. 5th*, 1866.

The re-discovery of Sericoris euphorbiana.—With regard to this, I have to mention that I took the species (one specimen) at Malvern, May 28th, 1861, and sent it to Mr. Stainton, who named it for me.—*Id.*

Scarcity of Macroglossa stellatarum in 1866.—In reply to "H. U." I beg to say, that I have not observed *M. stellatarum* this season, and that I predicted its scarcity in the autumn of last year, from having examined a good number of females of the second brood and found them all destitute of ova.—*Id.*

Scarcity of Macroglossa stellatarum.—I have observed this insect two or three times only this season: last year it was in greater plenty than in any year since 1808.—J. C. Dale, Glanville's Wootton Sherbourne, *September 9th.*

Ennomos alniaria bred.—Yesterday morning I bred from the larva that Mr. Hellins sent me to figure, a most splendid specimen of *Ennomos alniaria*.—W. Buckler, Emsworth, *August 29th*, 1866.

Ennomos alniaria bred.—I have been successful in rearing *E. alniaria* from the eggs obtained last year by Mr. Lacy, of Gosport.—J. Hellins, *September 18th.*

Agrophila sulphuralis at Exeter.—Mr. Barrett's mention of this species, as being found by him in a lamp, reminds me that on one of the last days in July, 1865, Mr. Norcombe told me he had, the night before, seen a specimen of *sulphuralis* settled on a lamp in front of the County Prison—not twenty steps from my house.

The time was about 11 p.m.,—too late, he thought, to knock me up,—and unfortunately he had neither pin nor pill-box with him; so after having a good long look at the moth, he slid down the lamp-post to consider what he should do, and presently had the mortification to see *sulphuralis* knocked off its perch by some bouncing *Noctua*, and fly away, but he told me he had looked long enough at it to be quite sure of the species.—Id., *July 12th.*

Stauropus fagi at Exeter.—I took a wasted male of this species sitting in the middle of one of the lower panes of my dining-room window, at about nine a.m. on the 28th of last month: the night had been sultry, and a lamp was burning in the room till after midnight, but I had not noticed the moth knocking at the window.—Id.

Notes on Cidaria immanata.—In the beginning of September last year, Mr. Birchall kindly sent me a batch of eggs of this species. Having cut out the part of the pill-box on which the eggs were deposited, I pinned it to a bit of wood, which I stuck in a flower-pot with a plant of *Fragaria vesca*. During the winter I noticed that the eggs were washed off the card, and fell upon the earth in the pot below; however, they were not injured by this change of position, and on the 20th March, 1866, I noticed one larva had been hatched. At this time the flower-pot was unluckily upset by the gardener, who did his best to replace the earth, &c., without saying anything to me, consequently, out of the whole batch I obtained but four larvæ in all. This small brood has, however, given me great satisfaction, for they fed up well, and have produced four good specimens of the moth; three of them being the type *immanata*, and the fourth being the variety *marmorata* of Haworth. —Id.

Note respecting a species of Apatania.—In my "*Trichoptera Britannica*," pp. 74, 75, I mention a species of *Apatania* taken at the little lake in Arundel Park, which I considered to be probably distinct from *A. vestita*, but of which I had only seen females. I have now visited the locality four times—thrice in August, once in June—and have taken probably near one hundred specimens; still *all are females*, most of them full of ova, which they deposit freely. The occurrence of this sex only is to me inexplicable; and one is almost led to suspect that this species may be able to dispense, partially or entirely, with the companionship of males,—as is known to be the case in some few species of other Orders, and, as there is strong reason to believe, prevails also in many more (*e.g.*, several species of *Tenthredinidæ*). I still adhere to the opinion that it is distinct from *A. vestita*, and name it provisionally *A. muliebris*.

The occurrence of an *Apatania* at Arundel is additionally interesting, because that genus is alpine or sub-alpine in its habits; it may be remarked, however, that the little lake springs out of the chalk, and the water of it is very cold.

A slight correction is necessary with respect to *A. vestita*. Kolenati takes the name from Zetterstedt, whose species, though probably of this genus, is yet unsatisfactorily determined. That my *vestita* is the same as Kolenati's I have no doubt; for, contrary to his usual custom, in his generic description he describes the appendices of *A. vestita*, and these agree precisely with the British species.—R. McLachlan, Forest Hill.

Note on Lepidoptera attracted by blackberries.—As I found sugar comparatively unproductive last autumn, while *Noctuæ* were flying at the same time in plenty about the blackberries on the hedges, I turned my attention to them, and with results that I think deserve a passing notice.

In consequence of the long continued hot weather, the blackberries were remarkably abundant and sweet, and therefore, I suppose, more attractive to insects than usual, for the abundance of moths upon them was surprising. *Xanthia cerago*, *silago*, and *ferruginea*, *Anthocelis rufina*, *Orthosia lota* and *macilenta*, *Glœa vaccinii*, *Miselia oxyacanthæ* and *Phlogophora meticulosa* were in great abundance; *Anthocelis litura* and *pistacina*, *Scopelosoma satellitia*, *Agrotis suffusa* and *segetum*, *Hadena*

protea and *Chariptera aprilina* were common enough, and *Glœa spadicea*, *Gonoptera libatrix*, and even wasted *Amphipyra pyramidea*, were occasionally to be met with. But besides these common things, I obtained several *Hoporina croceago*, *Xylina rhizolitha* and *petrificata*, *Calocampa vetusta*, and *Epunda nigra*.

The *Geometræ* were represented by *Cidaria psittacata* and *russata*; *Scopula ferrugalis* was common and very lively, seldom waiting to be boxed, but flying frantically round the lantern; *Pterophorus pterodactylus* was excessively abundant,—more so, I think, than any other moth,—and one specimen of *Sarrothripa Revayana* suffered the penalty of his weakness for sweets.

The moths appeared to have some means of piercing the skin of the fruit; their trunks were constantly to be seen penetrating it, while their bodies were fairly distended with juice. I have seen as many as six *Anthocelis rufina* on one bunch, and believe that the shrivelled and withered branches so commonly to be seen were due (with the assistance of plenty of wasps) to the abundance and greediness of the moths.

This mode of collecting has one great advantage—it can be continued until very late. Instead of retiring, as moths generally do, from the sugar as soon as they have made a meal, they continue on the blackberries as though they could never have enough, and are almost as plentiful at eleven o'clock as in the first part of the evening. Later I did not try.—Charles G. Barrett, Haslemere.

Nemeobius Lucina.—This species occurs here in an extensive copse intersected with deep valleys. It frequents the bottoms of these valleys, where it flits about over the underwood, almost always returning to one particular spray; indeed, certain bushes, and even twigs, seem to be especially to their taste, since if one be taken another soon occupies its place. In this way one alder-bush afforded me two or three specimens, and a little oak-bush, in a particularly warm and pleasant corner, was always sure to have a fresh tenant in a few hours, or, at any rate, in a day or two after the previous occupant had been captured. Occasionally, though rarely, a specimen would settle on a spurge-bloom, the only flower they appeared to affect.—C. G. Barrett, Haslemere.

Note on Hermaphrodites.—The following two instances of hermaphroditism seem not to be mentioned by Dr. Hagen in his catalogues in the Stettiner Entomologische Zeitung for 1861 and 1863, and as the completion of such valuable records ought always to be one of the aims of the student of entomology, I give the entire passages as contained in Dr. F. A. Nickerl's "Synopsis der Lepidoptern Fauna Boehmens," Prague, 1850, inferring that English readers generally have no ready access to this work.

Dr. Nickerl mentions of *Satyrus Semele*, L.—"My collection contains a very fine hermaphrodite taken near Prague, the right half of which is male, whilst the left is female." Op. cit., p. 15.

The same author says of *Lycæna Argus*, L.—"An hermaphrodite, taken near Prague by Herr Maloch, painter, the left half of which, viewed from above, shows the colouring of the female, whilst the right half produces the colouring of the male, is in my collection. A bluish stripe extends from the base (Innenwinkel) of

the left hind-wing towards the hind margin, so that the wing is divided into two brown patches (Felder), the lower of which has also the appearance of being powdered with some bluish scales near the inner margin of the wing (Hinterleibsklappe)." Op. cit., p. 19.—Albert Müller, Penge, 11*th September*, 1866.

How to find the larvæ of Gelechia costella.—In hedges where *Solanum dulcamara* (Bitter-sweet, or very frequently called simply Nightshade,) grows, the larvæ of *G. costella* may readily be met with in the months of August, September, and October; they are perhaps the most frequent in the first half of the latter month.

The habit of the larva is varied; in the first place we meet with them as leaf-miners. Now *Acrolepia pygmæana* is often abundant as a leaf-miner on the same plant. How, then, are we to distinguish the mines of the two species? The mine of the *Acrolepia* remains flat, and is of an uniform pale green; whereas the mine of *Gelechia costella* (which is almost invariably at the edge of the leaf,) is more or less puckered, and with a brownish tinge. Besides these differences in the mine, a glance at the larvæ abundantly enables us to distinguish them, as the *Acrolepia* larva is of an unicolorous pale green, and the *costella* larva has a very conspicuous black plate on the second segment, which can be readily seen whilst the larva is still within its mine.

Secondly, we meet with the larva of *costella* feeding between united leaves, and forming yellowish-green blotches in the upper leaf.

Thirdly, we find it boring in the stems of the *Solanum*; if we find the terminal leaves of a shoot of *Solanum dulcamara* are withered, and we split down the stem of the shoot, we shall find that it has been excavated, and we shall not need to split far before we discover, snugly ensconced in the stem, the larva we are seeking. At other times it betrays its presence in the stem by the little pellets of excrement which are ejected frequently at the base of a leaf stalk.

In the month of October last year, having noticed that none of the collections of my German friends possessed this insect, I assiduously sought for the larvæ, and distributed them to various parts of Germany, Switzerland, and Holland: whilst thus seeking, I noticed that many of these October larvæ were *quite small*, and this suggested to me the idea they would perhaps hybernate in the larva state.

I have always looked upon *Gelechia costella* as a most exceptional species in the genus from its late appearance in the perfect state, having frequently bred it in November; but larvæ which were quite small as late as the 9th of October, could scarcely attain the perfect state before December.

England and Holland (whence I have seen one specimen) are the only two countries known to produce this species; but in a box of insects which Monsieur Millière, of Lyons, was lately so kind as to send me, I found specimens of a closely allied species, which he had bred from larvæ feeding on *Hyoscyamus albus* at Cannes. Those who have the opportunity of searching in this country amongst henbane (*Hyoscyamus niger*) would do well to turn their attention to that plant.—H. T. Stainton, Mountsfield, Lewisham, S.E., *September* 14*th*, 1866.

Nepticula centifoliella; a species new to Britain.—In the month of April last I was asked to name some insects for Mr. W. C. Boyd, of Cheshunt, and was

agreeably surprised to find, that amongst the *Nepticulæ* bred by him from larvæ collected in his own neighbourhood, were several specimens of *Nepticula centifoliella*. Since we first began to breed insects of this genus some fifteen years ago, so much had been done in many parts of the country without *centifoliella* turning up, that I had almost abandoned the idea of our finding it here.—Id.

Gracilaria fidella, Reutti.—The day is long gone by when an English entomologist religiously abstained from looking for a Continental species in this country till by some accident a single specimen had been picked up, when immediately it became his bounden duty to search and hunt for the insect because it had been found; an inverted process, for it would at any time have appeared more natural to seek in order to find, than to follow the Hibernian policy of "when found, then seek." The larva of this hop-feeding *Gracilaria*, to which our attention was called a few years ago by the late deeply lamented Senator V. Heyden, forms cones by turning down the tips of the hop leaves towards the under side; like others of its genus, it is a larva without character, unicolorous pale green.

V. Heyden found the larva at Freiburg, in the Breisgau (the locality where Reutti had met with the perfect insect), on wild hops, afterwards at Speyer on cultivated hops, and published a notice of it in the Stettin Entom. Zeitung for 1862, p. 360. In 1864, Herr Venus, of Dresden, sent me some larvæ of this species, but they unfortunately arrived when I was from home, and I did not see the larvæ, and the hop leaves were quite withered before I returned home. Professor Fritzsche, of Freiberg, told me last September, that the insect was not uncommon in his neighbourhood, and last evening I had the pleasure of receiving several of the larvæ from Herr Hofmann, of Ratisbon.

The period given by Von Heyden for the larva is the end of August, but the date of those sent from Dresden, in 1864 (September 15th), and the fact of my describing a living larva this morning, shows that in the middle of September one is still in time to look for this larva.—Id.

Occurrence of Eupœcilia curvistrigana near Barnstaple.—Of this handsome *Tortrix* I captured two specimens in the neighbourhood of the above locality,—one by beating, from mixed herbage in the day time; the other flying along a lane at dusk.—E. G. Meek, 5, King Street, Old Ford Road, *September 15th*, 1866.

Lepidoptera in North Perthshire.—In the September No. of the Magazine a paper was published, in which I gave a sketch of the result, as regards *Coleoptera*, of an expedition into the North of Perthshire, which I made in company with my friend Mr. E. M. Geldart. Our "game," however, was threefold. I believe Mr. Geldart intends publishing some notes on the *Diptera* that we met with, and I propose to give now a brief sketch of our operations in pursuit of *Lepidoptera*. I know not whether to blame the season, or the *Coleoptera* and *Diptera*, or ourselves; but certainly something or somebody deserves blame for the paucity of our captures among the butterflies and moths.

In the *Rhopalocera* of course few species could be expected. *C. Davus* swarmed everywhere, and the var. *Typhon* was by no means scarce. Near the foot of Grayvel we found *E. Cassiope* out in abundance (at least a thousand feet lower in

locality, and nearly a month later in the year than it is taken in Cumberland), and, towards the close of July, *E. Blandina* occurred commonly in the glades of a wood behind Camachgouran.

The *Sphingina* were represented by a solitary specimen of *A. Atropos*, which my companion met with near Dall.

Among the *Bombycina* we captured several species, *N. plantaginis* occasionally on the Moors, and *E. russula* not uncommonly where we took *E. Blandina*.

The *Noctuæ* presented an unexpected blank. The average "take" at sugar (which we applied to about fifty trees every night but two,) was two specimens, which generally were *Noctua festiva* or *conflua*, or *R. tenebrosa*. However, besides these we secured several of *H. rectilinea*, and single specimens of *C. duplaris* and *A. tincta*. The species of *Aplecta* were just coming out when we left. On the 20th of July we "started" and missed two specimens of *A. occulta*. *Plusia interrogationis* occurred commonly on all the Moors, and Mr. Geldart took *Anarta melanopa* (on the summit of Schiehallion) and *Plusia festucæ* (near the foot of Cross Craig).

Of the *Geometræ* we took several that pleased us. *D. obfuscata* occurred not very uncommonly (but, contrary to its reputation, flying slowly) on the sides of rocky roads about Camachgouran. *E. fasciaria* was very abundant over the whole district; *F. brunneata* swarmed in the Black Forest (where *E. indigata* also occurred); on the summits of Schiehallion and Grayvel (but not on Cross Craig) we took *P. trepidaria* sparingly; on most mountains *C. munitata*, *L. salicaria*, and *L. flavicinctaria* were common; near the foot of Cross Craig *E. cricetaria* was not unfrequent, and in every spot *L. cæsiata* swarmed in countless thousands. Besides these we took, in various localities, *T. firmaria*, *E. blandiata*, *L. tristata*, and *C. imbutata*.

The *Pyrales* were not common. *S. alpinalis* occurred frequently on and near Grayvel flying rapidly over almost inaccessible slopes, and elsewhere we captured *Eud. lineolalis*, *muralis*, and *alpinalis*.

In the Black Forest *Coccyx ustomaculana* was taken sparingly, with *Tortrix icterana* and *Ant. corticana* and *prælongana*, and on the top of Grayvel *Sericoris alternana* fell to our lot occasionally; where I also took a species which appeared to be *Sericoris herbana*.

Tinea ochraceëlla was, of course, common at dusk about nests of *Formica rufa* and *T. flavescentella* occurred in a house. *Œcophora similella* was common in a shed at Camachgouran, and from sallows and birches beside a mountain stream, we beat *Argyresthia glaucinella* and *retinella* respectively, while *Argyresthia Gædartella* fell to our lot high up on the mountains.—T. Blackburn, Grassmeade, Southfields, Wandsworth.

Leistus montanus in Scotland.—I omitted to mention in the September No. of the Magazine that, while in Scotland, in July last, I took a fine specimen of *L. montanus* on the summit of Schiehallion.—Id.

Coleoptera in Japan.—I found a fine *Velleius* yesterday disputing the sweets of a Cossus-burrow with an enormous hornet. My *Curculios* of this season amount to 140 species, all taken within a radius of six miles. Collections in Japan are at present necessarily very local ones.—G. Lewis, Nagasaki, *5th July*, 1866.

Hemiptera at Loch Rannoch.—The following short list of species taken in June and July in this locality may interest some readers. At that time insects of this order were, of course, few, not being fully developed. *Rhacognathus punctatus*, L., on sallow, near the place were *Cryptocephalus* 10-*punctatus* is found. Mr. Rye also secured one. *Sehirus biguttatus*. *Miris holsatus*, F., and *ruficornis*, Fall., both equally common. *Drymus brunneus*, Sahlb., and *Scolopostethus affinis*, Schill., sole representatives of the *Lygæidæ*. *Sphyrops ambulans*, Fall., abundant. *Lygus pratensis*, F., and *campestris*, L. *Rhopalotomus ater*, L. A single ♂ of *Zygonotus pselaphiformis*, Curt. *Agalliastes pulicarius*, Fall. *Salda morio*, Zett., one ♂ taken on the beach of the Loch, in company with hundreds of *S. littoralis*, L. *Salda riparia*, Fall., and *Salda saltatoria*, L., in wet places of the moor, and on mountain sides. Besides the above, there are several which I cannot determine from "British Hemiptera," and which probably are novelties. Among them are a new *Lopomorphus; Nabis* allied to *limbatus*, Dahlb., with very short hemelytra, but fully developed, abundant in a field close to the Loch, males and females constantly seen in copula; two new species of *Salda* from the mountains; a pretty *Globiceps* (?) with grass-green hemelytra, and black head and pronotum, the latter with two yellow spots; a large *Psallus* (?), rosy-coloured and black, on birch trees; *Corixa* from peat ponds, not yet examined; *Hydrometra Costæ*, H. Sch., with the pronotum broadly rufescent (from ditto); *Dervocoris* and *Litosoma*, not yet examined. At Tummel Bridge, near the Inn, I captured four females of a *Zygonotus*, probably new, and saw the winged males, which unluckily escaped.—T. A. Marshall, Milford, S. Wales.

Homoptera at Rannoch.—The general result of some weeks' hunting for these little obscurities in and about the Black Wood is rather disappointing. It would appear that the sum total of our species is more nearly reckoned up than in the case of any other order, judging from the very few novelties that occurred. These, as might have been expected, belong chiefly to *Delphax*. There are from 3 to 5 species not before noticed, but they require much labour, and cannot be dealt with in this place. *Cixius* was represented by *nervosus*, *contaminatus*, and a large dark species with very long hemelytra, and which does not agree with any description. A single *leporinus* also occurred. *Ulopa obtecta* at the roots of heather; and *Megophthalmus scanicus* frequent on the ground. The ♂ of the latter was observed in copulâ with *pallidipennis*, Curt., thus confirming the theory of their identity. *Tettigonia viridis* and *Euacanthus interruptus* were both to be found occasionally; the latter is abundant on Ailsa Craig, about the last place where any one would look for it, feeding on fern. *Idiocerus* larvæ, probably *populi*, were on poplars; and *Pediopsis fruticola* on every birch. One birch tree at Tummel Bridge produced nothing but the yellow variety, in unlimited quantity, while the tenants of the surrounding trees were all brown. Copious expectorations denoted everywhere the presence of *Ptyelus*. *Acocephalus rusticus* and *agrestis* were hardly to be found; but the pretty *bifasciatus* was in profusion, both sexes in equal numbers; I took about forty in one spot in half-an-hour. *Deltocephalus* was represented by *socialis* and *abdominalis*, abundant near the shores of the Loch. The closest search for *Iassus* produced only a few of *subfusculus*, a number of *punctifrons*, and a black species near *fenestratus*, H. Sch. The last I proceed to describe, after vain attempts to identify it.

Iassus (?) *corniculus*, n. sp. Deep black, with obscure testaceous specks and striæ. Vertex obtusangular, one-third as long as its breadth between the eyes, less than half the length of the pronotum, black, with about six testaceous specks, the two largest on the middle of its hinder edge. Frons convex, the length of one of its sides (from the antenna to the clypeus) equal to its breadth between the antennæ; black, with about six obscure, imperfect, transverse testaceous stripes, widely interrupted in the middle, and traces of a longitudinal streak near the clypeus. Rostrum black. On the black clypeus and genæ are three or four testaceous specks. Pronotum transversely cordiform, produced and rounded in front, faintly and widely emarginate behind, very finely wrinkled transversely, and with many short, irregular, transverse, testaceous marks. Scutellum with a medial impressed transverse line; black, with very obscure testaceous marks. Hemelytra somewhat shining, longer than the abdomen, the nervures testaceous; cells of the clavus and corium sharply and rather broadly margined with black, leaving a hyaline space in the middle of each cell, and thus forming ocellated spots: membrane blackish, the two nervures obscurely testaceous. Abdomen wholly black, or with the margins of some of the segments narrowly pale. Under-side and legs black: the knees, some spots on the fore tibiæ, the four anterior tarsi, the outer edge of the hind tibiæ, and their spines, with the apex of the second and third joints of the hind tarsi, dull testaceous: the spines of the hind tibiæ are set in black punctures. Eyes black, margined with dull testaceous. Genital processes of the ♂ divergent, not projecting beyond the abdomen; laminæ genitales of the ♀ with black apical bristles. ♂ ♀. Long. 1-1¼; alar. exp. 3¼ lin.

On *Pteris aquilina* in open places where the heather had been burned, rather common, together with its larvæ, in July.

The species of *Eupteryx* were very scarce, limited to *citrinellus*, Zett., on grasses near the Loch, and *vittatus*, Lin., occurring, strangely enough, near a mountain top.—Id.

Entomological Society of London. 3rd September, 1866.—Sir John Lubbock, Bart., F.R.S., President, in the Chair.

Monsieur Depuiset, of Rue des Saints-Pères, Paris, was elected a Foreign Member.

It was moved by Prof. Westwood, seconded by Mr. Stevens, and carried unanimously, "That the cordial thanks of the Society be given to the President for his entertainment at Farnborough on the 11th ultimo."

Mr. A. F. Sheppard exhibited, on behalf of Mr. Gregson, a box of *Lepidoptera* from the Isle of Man; including *Sesia philanthiformis*, *Dianthœcia cæsia*, *D. carpophaga*, and *D. capsophila* (which latter Mr. Gregson considered a variety of *carpophaga*), *Sciaphila Colquhounana*, *Sericoris littorana*, *Eupœcilia albicapitana*, *Gelechia leucomelanella* and *vicinella* (which Mr. Gregson was inclined to think identical), &c.

Mr. Stainton exhibited *Gelechia vicinella* bred by Mr. Gregson from *Silene*, and *G. atrella* bred by Mr. Jeffrey from *Hypericum*. The larva of the latter species bored down the stem, and Mr. Stainton remarked that he was greatly surprised at the food-plant, because, judging from analogy, *G. atrella* should feed on a leguminous plant, after the manner of *anthyllidella* and allies.

Mr. Janson exhibited a box of *Coleoptera* collected by Mr. Gloyne in the neighbourhood of George Town, Jamaica.

Mr. Bond exhibited a series of the *Ailanthus* silkworm moth, bred by Dr. Wallace, varying greatly in size, the largest measuring 6½ inches in expanse, and the smallest not more than 3 inches. The Secretary stated that Dr. Wallace would be happy to show his *Ailanthus* plantations at Colchester to any Member, provided he received a day's notice.

Professor Westwood said that he had found wasps very destructive to the young larvæ of the new silkworm.

Mr. S. J. Wilkinson read an extract from the Report of Mr. Consul Lay, at Chefoo (received from Prof. Brayley) respecting the quantity of "brown silk" grown annually in that province. It was not stated what species produced this silk.

Mr. S. Stevens exhibited a house-fly to which no less than six *Chelifers* had attached themselves.

Mr. E. S. Haines sent for exhibition a curious variety of *Cidaria fluctuata*, resembling the *C. costovata* of Haworth.

Mr. Stainton exhibited a series of *Micro-Lepidoptera* received from M. Millière, of Lyons, amongst which were the *Depressaria rutana* of Fabr., bred from *Ruta angustifolia*, and a new *Gelechia*, resembling *G. costella*, bred from *Hyoscyamus albus*.

Mr. Pascoe read a description of *Anastetha raripila*, a new genus and species of *Tmesisterninæ*, recently received from Queensland. He mentioned, with respect to the presumed Australian origin of the fauna of New Guinea according to the views of Mr. Wallace, that the *Coleoptera* of the two countries did not appear to confirm this origin; for instance, a hundred species of *Tmesisterninæ* had been found in New Guinea, whereas, only three were known from Australia; others had been found in New Caledonia, presenting certain peculiarities *inter se*.

Mr. Trimen communicated a paper on the *Rhopalocera* of the Island of Mauritius. He enumerated twenty-five species. He considered that this portion of the Mauritian fauna was decidedly of African origin, most of the species being identical with those found in South Africa and Madagascar.

Mr. Wilson communicated some further notes on South Australian *Buprestidæ*.

Mr. Schrader, of Shanghae, sent drawings and description of the metamorphoses of a species of *Geometridæ* found upon the willow in the neighbourhood of Shanghae. Mr. Moore recognised it as a species of *Agathia*.

Mr. Smith read a paper on certain *Hymenoptera* from Catagallo, South America, sent to him by Mr. Peckolt. The most interesting amongst these was the female of *Trigona*, a genus of which the males had only previously been noticed. These females had enormously developed abdomens when in a gravid condition, and in this respect resembled the same sex of *Termes*. There was also an ant parasitic in the nests of *Trigona*.

Mr. McLachlan remarked, that the new genus of exotic *Trichoptera*, described by him in the last part of the Transactions under the name of *Sciops*, is identical with *Hydromanicus* of Brauer, published in the last vol. of the Verhandlungen der Zool. bot. Gesellschaft in Wien. The latter name has priority.

The next Meeting of the Society will be held in the Linnean Society's Rooms at Burlington House on the 5th of November.

DESCRIPTIONS OF NEW SPECIES, &c., OF *BRACHELYTRA*.

BY E. C. RYE.

HOMALOTA SAUNDERSI, nov. spec.

Nigra, nitida; antennis validioribus, nigro-piceis, basi fuscis; elytris fusco-testaceis; pedibus rufo-testaceis; thorace transverso, æquali; abdomine supra segmentis (2-4) *anterioribus parcè subtiliterque punctatis, posterioribus* (5-6) *lævigatis.*

♂. *Abdominis supra segmentum sextum medio dentibus duobus latis, incurvatis, apice quasi truncatis, spinâque utrinque validâ, acutâ, intus curvatâ, paulo ultra dentes medianos porrectâ, instructum.*

Long. corp., $1\frac{1}{3}$ *lin.*

Two male examples of this apparently undescribed species were taken in a sand pit near Reigate by Mr. J A. Brewer; in deference to whose wishes I have dedicated it to Mr. W. W. Saunders, of that town, whose claims to entomological distinction are well known.

It is very closely allied to *H. dilaticornis*, Kraatz; the general structure of the two insects, and especially that of the antennæ (except that the apical joint is a trifle longer in *H. Saundersi*), being almost identical; it differs, however, from that species in its rather larger size, darker colour, and more strongly punctured elytra, and in the sexual characters. In the male of *H. dilaticornis* the sixth abdominal segment has a very slight spine on each side, and on its upper-surface (as described by Kraatz) two medial tubercles, which are, as it were, continued and flattened behind into two discs (which, meeting in the middle of the hinder margin, form a gentle emargination), the whole reaching further backwards than the apex of the lateral spines. In certain lights (and this appears to me the more correct description) the two tubercles appear to be situated at some distance within the hinder margin of the segment, which is flattened, and exhibits an ordinary slight central emargination. It is to such an aspect that the "6*ième. segment échanchré*" of Fairmaire, Faun. Ent. Fr., p. 419, must be referred,—though *primo visû* at variance with Kraatz.

In *H. Saundersi* the two medial tubercles assume the form of wide and apically truncated tooth-like elevations, projecting beyond the apical margin. The lateral teeth, also, are longer and more robust, reaching, at their points, slightly beyond the middle elevations.

HOMALOTA ATRICILLA, Er.

Herr Scriba (Berlin Ent. Zeit., 10 [1866], p. 289) points out that *H. puncticeps*, Thoms., is distinct from this species; and that Herr

Baudi's remark, quoted by Dr. Kraatz (ib., 1 [1857], p. 75), as to the Erichsonian description being from a not fully coloured specimen, is correct. Dr. Kraatz (loc. cit., and in Ins. Deutschl., ii, p. 1060) has erroneously stated that *H. atricilla* and *H. puncticeps* were specifically identical, on the authority of a fully coloured example of the former received from Herr Baudi, and that the latter name should be sunk. Mr. Waterhouse, in his Catalogue (p. 18), has remarked this Kraatzian decision; but his inversion of the two names, and the note of exclamation following *atricilla*, sufficiently indicate his opinion on the point.

Herr Scriba also points out that *H. flavipes*, Thoms. (which Dr. Kraatz, Berl. Ent. Zeit., v., 1861, p. 219, mentions as being allied to, if not identical with *H. puncticeps*), is identical with *H. atricilla;* and I think there can be no doubt but that he is correct in this opinion, as the differences pointed out by me in Ent. Annual, 1864, p. 43, between *H. puncticeps* and *H. maritima* (a name given by Mr. Waterhouse to Thomson's *flavipes*, on account of Gravenhorst's prior use of the latter specific appellation) are entirely in accordance with Herr Scriba's observations with regard to these insects.

Their synonymy will, therefore, now stand as follows:

Homalota puncticeps, Thoms. (*Halobrechtha*); Kraatz; Waterh. (but not of Cat.).
atricilla, Ktz., nec Er.
algæ, Hardy and Bold.
anthracina, Fairm.
algicola, Woll., M.S. (teste Dom. Scriba).

Homalota atricilla, Er.
maritima, Waterh. (Proc. Ent. Soc.).
flavipes, Thoms., nec Erav.
algæ var., Hardy and Bold.
puncticeps, Wat. Cat., nec Thoms.

Homalota picea, Mots.

This species, attributed to Britain only in De Marseul's Catalogue (as mentioned by me in Ent. Annual, 1866), and unknown to English coleopterists, is thus characterized by Motschulsky in the Bull. de la Soc. Imp. des Nat. de Mosc., 1858 (vol. 31, pt. 2), p. 254, 222.

"—— Voisine de la *H. oblita*, Aubé [? Erichs.], mais plus étroite "et de couleur plus foncée. Noire, corselet, élytres et pattes rem- "brunies, tarses et genous d'un testacé sâle. Tête arrondie, convexe, "lisse et luisante. Corselet plus large que la tête, transversale, arrondi "sur les côtes, finement ponctué. Elytres un peu plus larges que le

" corselet, et moitié plus longues, carrées, distinctement ponctuées, et " recouvertes d'une pubescence grisâtre, peu serrée comme le corselet. " Abdomen etranglé à la base, luisant, les bords des premiers segments " seulement ponctuées. Antennes plus longues que la tête et le corselet " réunis ; 2me article un peu plus court que le 1er, mais le double plus " longue que le 4me ; les suivants conique, le dernier un peu plus longue " que les deux précédents réunis, acuminé.

" Angleterre.

" Parmi les espèces décrites par Stephens il n'y en a pas une seule " que puisse être rapportée à celle que je viens de décrire."

HOMALOTA EREMITA, nov. spec.

Parallela, nigra seu picco-nigra ; abdominis apice excepto, parum nitida ; pube flavescenti depressâ vestita ; pedibus picco-rufis, femoribus plerumque infuscatis ; antennis picescentibus, basi plerumque dilutioribus ; thorace transverso, convexiusculo, basi obsolete foveolato, medioque sæpe late obsoleteque canaliculato, capite paulo latiori, elytris longitudine æquali ; his depressiusculis, marginisque apicalis medio obsoletissime sæpe impressis ; abdomine supra segmentis (2-4) *anterioribus confertim subtiliter, posterioribus* (5-6) *parcius, punctatis.*

Sexûs differentia haud conspicua. *Long.* $1\frac{1}{3}$-$1\frac{2}{3}$ *lin.*

To this species (which belongs to Thomson's section *Atheta*) must be referred the insects erroneously recorded in former numbers of this Journal as *Schistoglossa viduata*, to which it bears great resemblance ; differing (apart from generic characters) in its average larger size, wider head and thorax, shorter elytra,—which are, moreover, not quite so thickly punctured,—and more elongate antennæ. There are, besides, no evident male characters, as in that insect ; except, perhaps, a scarcely perceptible increase of punctuation on the upper surface of the penultimate abdominal segment. Some specimens, however, exhibit a slight depression (only visible in certain lights) in the middle of the apical margin of the elytra, and which may possibly be a sexual indication.

Of our other British species the only one to which it can be likened is *Homalota tibialis*, from which its larger size, longer antennæ, rather longer elytra, more convex and usually more evidently foveolated thorax, and duller appearance, will readily separate it.

This insect appears to be common in the northern parts of the kingdom, especially in elevated districts, as will have been observed from the notices of its capture. Mr. Sharp has found it abundantly in the Edinburgh district ; and it was not by any means scarce under stones, &c., on the sides and summit of " Grayvell " and Cross Craig at Rannoch, when I was there in July last.

Stenus elevatus, Mots., Bull. de Mosc., 1857, 511, 44.

It seems to me, from Motschulsky's description (loc. cit.), that the above species (taken near Paris) is synonymous with (and, of course, long subsequent in date to) the *S. ossium* of Stephens; as it appears to be of the size, form, and colour of *S. subæneus* (*gonymelas*, Steph.), but with the punctuation closer and less strong. The specific name seems to be given from the inequalities of surface of the elytra; which, viewed in certain lights, assume the form described by Motschulsky.

Our common insect appears to be incumbered with a long tail of dignities; as *impressipennis*, Duv., *carinifrons*, Fairm., and *sardous*, Kr., have all been laid to its account, besides the above.

Lesteva Sharpi, nov. spec.

Fusco-picea, abdomine nigricante; longius flavescenti-pubescens, minus crebre sat fortiter punctata; antennis longioribus pedibusque rufis; thorace longiori; elytris (*aliquando dilutioribus*) *hoc duplo longioribus, postice dilatatis.* *Long.* 2⅓ *lin.*

This insect, formerly brought forward (and, as I conceive, in error) as *L. monticola*, has been taken by Mr. Sharp in various Scotch localities (especially, with Mr. Henderson, in numbers, at Garcloch-head), and by myself and Mr. T. Blackburn at Rannoch.

It is distinguished from *L. bicolor* by its rather longer antennæ, which are of a clearer red; its longer thorax; the rather wider and stronger punctuation and evidently longer pubescence of its thorax and elytra; and the greater width behind of its abdomen and elytra, which latter are (possibly from this width) apparently shorter than in *L. bicolor*. It is, moreover, altogether rather more bulky, and of a somewhat lighter tone of colour. The head is more strongly and not quite so closely punctured; and has the two depressions between the eyes more strongly marked, so that the middle elevation is more definite.

Its larger size, much coarser punctuation, and rather stouter antennæ, at once distinguish it from *L. pubescens*.

The punctuation of the elytra in *L. monticola* (to which it must be very closely allied) should be *finer* than in *L. bicolor*, and the hinder angles of the thorax not so acute as in that species. *L. Sharpi* cannot, therefore, I think be identical with the former, as its punctuation is rather stronger throughout than in *L. bicolor*, and I fail to detect any less acuteness in its hinder thoracic angles, compared with that species. The pubescence, moreover, is yellowish, instead of grey, as in *L. monticola*.

The following somewhat vague description of *L. oblonga*, Mots. (Bull. de Mosc., 1857, 493), shows that *L. Sharpi* can have no connection with that species. "Size of *L. bicolor*, but narrower, which "makes it (and especially its head and thorax) appear more elongate. "Colour generally clearer and more reddish. Antennæ half-again as "long as the head and thorax; the latter of which is as long as wide, and "rather cordate, with the posterior angles acute. Elytra more than "double as long as the thorax, and more finely punctured. Scutellum "visibly punctured."

Since the above description was in print, I have received from Mr. Crotch a copy of the second edition of his Catalogue, wherein he places next to *L. bicolor* a species under the name *collina*, Hal., which, from the synonymical reference to *muscorum*, Sh. (probably in error for *monticola*, Sharp), I presume is intended to represent the insect last described by me. I do not, however, withdraw my description; as the only reference to *L. collina* (and which is not accompanied by any description) appears to be in the Nat. Hist. Review; where, in a report of the Proceedings at a meeting of the Dublin Nat. Hist. Society, it is said that Mr. Haliday exhibited specimens of a *Lesteva* from the hills allied to *bicolor*, but with shorter elytra, and thought they were varieties of that species, but that they might be distinguished by the name of *collina*.

As *L. bicolor* actually does vary somewhat in the length of its elytra, and the character of their shortness (the only one given) would equally apply to *L. pubescens*, I consider it impossible to adopt Mr. Haliday's name for this insect.

284, King's Road, Chelsea, S.W., *October*, 1866.

AN ESSAY TOWARDS A KNOWLEDGE OF BRITISH *HOMOPTERA*.

BY THE REV. T. A. MARSHALL, M.A.

(*Continued from page* 104.)

29.—Iassus (I.) sexnotatus, Fall.

Præcedenti similis, minor. Flavus; abdomen nigrum, segmentis flavo-marginatis, subtus interdum flavum. Vertex minus porrectus quam apud præcedentem, nigro quadri-maculatus; maculæ 2 majores, rotundæ, in ipso apice approximatæ, 2 minores, distantiores, ad marginem pronoti posticum sitæ. Inter hæc macularum paria linea utrinque brevis, transversa, ad oculos excurrit. Frons plus minus nigro cancellata; limbus etiam genarum clypeique tenuiter niger. Pronotum

postice sæpe fusco-nubeculosum. Scutellum apud angulos anticos nigrum, vel medio tantum flavum, vel denique totum nigrum. Hemelytra flavo-hyalina, plus minus fusco irregulariter longitrorsum notata. Pedes flavi: femora antica nigro-varia: tibiæ posticæ ad basin spinarum nigro-punctatæ; tarsi nigro annulati. ♂ ♀.

Long. 1-1½; alar. exp. 3¾ lin.

Cicada 6-*notata*, Fall., Act. Holm., 1806, p. 34; Hem. 2, p. 47.
Eupteryx 6-*notata*, Curt., B.E., 640, No. 10.
Iassus 6-*notatus*, Flor, R. L., 2, p. 341.

Variations from the typical form are numerous; the black spots on the vertex often coalesce, or are absent; in dark examples the hemelytra are almost entirely fuscous; and in one specimen the pronotum is black, with a pale medial line. See also No. 32, *I. variatus*.

Perhaps the commonest of British *Homoptera*. It may be found everywhere in grassy places, often in prodigious numbers. It has been observed throughout Europe, from Lapland to the Mediterranean.

30.—Iassus (I.) striola, Germ.

Post mortem fusco-flavus. Vertex brevissimus, fere ut in *Bythoscopis*, medio vix longior quam lateribus. Prope verticis apicem linea tenuis nigra oculos connectit, sub qua linea altera, bis arcuata, frontem supra determinat. Frons tenuiter nigro cancellata et circumcincta. Clypeus medio niger. Abdomen cæruleo-nigrum, incisuris flavis; ♀ ad latera etiam flavescens. Pedes pallidi. ♂ ♀. Long. 1¾ lin.

Cicada striola, Fall., Act. Holm., 1806, p. 31; Hem. 2, p. 44.
I. striola, Germ., Fn., 15. Flor., R. L., 2, p. 315.
I. frenatus, Germ., Mag., 4, p. 86.

Not common, but taken by Mr. Douglas in the London district, and by Mr. Bold near Newcastle.

31.—Iassus (I.) septem-notatus, Fall.

Aureo-flavus; abdomen supra medio nigrum. Vertex pronoto triente brevior, nigro 4-maculatus: maculæ 2 majores in ipso apice, sub-quadratæ, 2 minores ad marginem pronoti posticum sitæ. Frons apice nigra. Scutellum ad angulos anteriores nigro-bimaculatum. Hemelytra albida, pellucida; clavus ad marginem interiorem, et corii spatium discale elongatum, aureo-flava. Clavi sutura tenuiter fusca. Pedes flavi; tibiæ posticæ nigro-punctatæ. ♂ ♀.

Long. 1⅓; alar. exp. 3¼ lin.

Cicada 7-*notata*, Fall., Act. Holm., 1806, p. 35; Hem. 2, p. 49.
? Iassus 7-*notatus*, Flor, R. L., 2, p. 339.

The above description applies to all the British specimens I have seen, and agrees with that of Fallén. Flor mentions dark varieties which do not seem to occur with us.

Locally abundant on willows. In an osier-bed near Leicester. Found also by Mr. Bold in the north of England.

32.—Iassus (I.) variatus, Fall.

Præcedenti affinis. Flavus; abdomen supra nigrum. Vertex pronoto triente brevior, nigro 4-maculatus: maculæ 2 in ipso apice, 2 minores, distantiores, ad marginem pronoti posticum sitæ. Frons flava, immaculata, nigro tenuiter circumcincta. Scutellum angulis anterioribus nigris; interdum fere totum nigrum. Hemelytra hyalina; clavus plus minus flavus, intus et apice infuscatus; margo clavi suturalis anguste fuscus, medio albo-interruptus: corium pellucidum, lituris 2 transversis (hac ante, illa post medium), et margine interiore, infuscatis vel brunneis; membrana pallide brunnea. Pedes flavi. ♂ ♀.

Long. $1\frac{1}{2}$-2; alar. exp. $3\frac{3}{4}$ lin.

Cicada variata, Fall., Hem., 2, p. 48.
Iassus 6-*notatus*, var., Flor, R. L., 2, p. 341.

On oak trees in Leicestershire, Bardon Hill and Buddon Wood; rather scarce. According to Flor, this insect is a large variety of 6-*notatus*; it differs, however, not only in size, colours, and general appearance, but also in habitat.

33.—Iassus (I.) punctatus, Fall.

Facies *Eupterygis*. Niger, supra pallide viridis. Vertex perbrevis, medio vix longior quam lateribus, pronoto tribus partibus brevior. Scutellum antice, pronotum postice, rarius nigro-bimaculata. Hemelytra viridia, sub-pellucida: clavus et corium maculis 5-6 irregularibus nigricantibus, quarum una semper clavi apicem, altera tres cellas super membranam apicales pro parte occupat. Alarum apex, cum vena unica, infuscatus. Pedes pallidi. ♂ ♀. Long. 1; alar. exp. $3\frac{1}{2}$ lin.

Cicada punctata, Fall., Hem., 2, p. 55.
Iass. punctatus, Flor, R. L., 2, p. 320.
Eupteryx clypeata, Curt., B. E., 640, No. 12.

This insect varies in being sometimes pale salmon-coloured, or rosy, instead of green, above, and the spots on the hemelytra are evanescent. The most constant markings are those of the three apical cells of the corium (forming incomplete ocellated spots), and the black sub-apical streak formed by a single vein of the wings, and which is surrounded

by a light fuscous shade. When the hemelytra are closed, but not otherwise, Curtis' description of *clypeata* (l. c.) will be seen to apply, if a well marked specimen be examined.

In hedges, near Weybridge; and in woods, Leicestershire; not common.

34.—Iassus (I.) cornículus, n. sp.

See p. 119, where a query (?) has, by mistake, been attached to the genus, of which there is not the slightest doubt.

(*To be continued.*)

THE *LEPIDOPTERA* OF IRELAND.

BY EDWIN BIRCHALL.

(*Continued from page* 108.)

DELTOIDES.

Hypena proboscidalis—Common.
„ rostralis—Mr. Greene's list; locality unknown.
„ crassalis—Common in the South.
Schrankia turfosalis— do. Killarney.
Rivula sericealis—Abundant, and widely distributed.
Herminia barbalis—Mr. Greene's list; locality unknown.
„ tarsipennalis—Galway.
„ grisealis—Kingstown.

PYRALIDES.

Pyralis farinalis—Common everywhere.
Aglossa pinguinalis— do.
Pyrausta punicealis—Mr. Greene's list.
„ purpuralis—Common.
„ ostrinalis— do.
Rhodaria sanguinalis—Galway; abundant, but local.
Herbula cespitalis—Common, and widely distributed.
Ennychia octomaculalis—Do. do.
Endotricha flammealis—Galway.
Cataclysta lemnalis—Common.
Paraponyx stratiotalis—Do.
Hydrocampa nymphæalis—Do.
„ stagnalis—Do.

Botys pandalis—Galway.
„ verticalis—Mr. Greene's list; locality unknown.
„ fuscalis—Common everywhere.
„ urticalis— do. do.
Ebulea crocealis—Dublin, Wicklow, Galway, Howth.
„ sambucalis—Common.
Pionea forficalis—Common everywhere.
„ stramentalis—Common; Cavan and Killarney.
Spilodes sticticalis—Howth; by Dr Wright.
Scopula lutealis—Howth; Mr. Barrett.
„ olivalis—Common everywhere.
„ prunalis— do. do.
„ ferrugalis—Abundant on the coast near Dublin.
Stenopteryx hybridalis—Common in most places.
Scoparia ambigualis—Powerscourt; common.
„ cembralis—Howth in July.
„ pyralalis—Common everywhere.
„ muralis—Belfast; Mr. Hogan.
„ lineolalis—Galway in August. Howth; by Mr. Shield.
„ mercuralis—Common.
„ cratægalis—Howth in July.
„ resinalis—Powerscourt in August.
„ coarctalis—Dublin, Howth, August and September; and in May and June hybernated specimens.

CRAMBITES.

Crambus pratellus—Common everywhere.
„ adippellus—Killarney; by P. Bouchard.
„ hamellus— do. do.
„ pascuellus—Common everywhere.
„ margaritellus—Galway.
„ pinetellus—Killarney; and at Blarney, by Mr. Hogan.
„ perlellus—Very Abundant.
„ selasellus—Belfast; Mr. Hogan.
„ tristellus—Very common.
„ geniculellus—Abundant on the Dublin coast.
„ culmellus—Common everywhere.
„ hortuellus— do.
Schænobius forficellus—Killarney.
Anerastia lotella—Malahide, Portmarnock; common.

Homæosoma sinuella—Howth; common.
„ nimbella—Malahide, Howth, and Wicklow coast.
„ nebulella— do.
„ eluviella—Howth.
Ephestia elutella—Very common.
Phycis carbonariella—Generally distributed and common.
„ dilutella—Galway and Howth; June, July, and August.
„ ornatella—Howth in September.
Melia sociella—Common everywhere.
Galleria cerealla—Common.
Meliphora alveariella—Common.

TORTRICES.

Halias prasinana—Wicklow.
„ quercana—Wicklow. Inserted in Mr. Hogan's list on the authority of Mr. Tardy, but supposed to be an error.
Tortrix pyrastrana—Dublin; common.
„ cratægana—Killarney.
„ xylosteana—Dublin and Wicklow; plentiful.
„ rosana— do. do.
„ heparana— do. do. common. Cork (?).
„ ribeana—Generally common.
„ corylana—Mr. Hogan's list; probably near Cork.
„ unifasciana—Wicklow; common. Belfast (?).
„ viburnana—Killarney.
„ icterana—Howth and Sutton, near Dublin.
„ viridana—Generally common.
„ ministrana—Newtownlimavady Co Derry.
„ adjunctana—Howth.
Dichelia grotiana—Powerscourt; common.
Amphysa gerningiana—Wicklow Mountains (?).
Leptogramma literana—Killarney.
Peronea favillaceana—Howth.
„ rufana— do.
„ mixtana—Powerscourt.
„ schalleriana—Wicklow Mountains (?).
„ permutana—Howth, on the cliffs.
„ variegana— do. plentiful.
„ cristana—Belfast.
„ umbrana—Wicklow Mountains (?).
„ ferrugana— do. do. and Killarney.

Peronea tristana—Belfast.
„ aspersana—Howth.
Teras caudana—Blarney Co Cork, and Belfast.
„ contaminana—Belfast, Howth.
Dictyopteryx loeflingiana—Galway.
„ holmiana—Belfast.
„ bergmanniana—Common everywhere.
Argyrotoza conwayana—Abundant in Galway and Wicklow.
Ptycholoma lecheana—Killarney.
Penthina betulætana—Wicklow Mountains; Holywood Co Down.
„ prælongana—Killarney.
„ pruniana—Abundant everywhere.
„ cnyosbana—Dublin and Cork (?).
„ ochromelana—Killarney.
„ sauciana— do.
Spilonota ameenana—Howth; abundant on the Sandhills.
„ suffusana—Belfast.
„ roborana—Howth; common.
Pardia tripunctana—Counties Dublin and Wicklow.
Aspis udmanniana—Dublin coast; common.
Sericoris littorana—Howth; plentiful at the foot of the cliffs.
„ cespitana— do. abundant at the top of the cliffs.
„ conchana—Howth.
„ lacunana—Common everywhere.
„ urticana— do. do.
Mixodia schulziana—Howth; Mourne Mountains Co Down.
Roxana arcuana—Cork (?).
Euchromia purpurana—Howth.
Orthotænia antiquana— do. Wicklow Mountains.
Cnephasia lepidana—Galway.
„ musculana—Wicklow Mountains.
Sciaphila subjectana—Common everywhere; the variety (?) *passivana* is common at Howth.
„ virgaureana—Dublin coast; common.
„ alternana—Howth; Wicklow (?).
„ hybridana—Dublin.
„ colquhounana—Howth; on the cliffs.
Sphaleroptera ictericana—Killarney.
Capua ochraceana—Killarney, Wicklow Mountains.

(*To be continued.*)

SYNOPSIS OF THE GENUS *BOREUS*.

BY DR. H. A. HAGEN (of Königsberg).

1.—B. HIEMALIS, Linné.

Bronze-brown; beak, antennæ, legs, wings, appendices of the male, and borer of the female, clear brown, the antennæ dark brown at the apex; wings of the male long, acute, curved, and pectinated internally; first abdominal segment of the male with an erect transverse fold in the middle above, long, rather longer than broad; second segment with a similar fold, but smaller, almost in the form of a tubercule; lamina below the appendices long, triangular, elliptic at the apex.

Habitat: Germany, Hanover, East Prussia.

2.—B. WESTWOODII, Hagen.

Bronzy-green; beak, antennæ, legs, wings, appendices of the male, and borer of the female, yellow; antennæ and legs dark brown at the apex; first abdominal segment of the male with a fold, as in *B. hiemalis;* second segment with a quadrate fold, smaller; lamina broader; slightly grooved at the apex.

Habitat: Germany, Finland, England.

This is the species figured by Westwood in the frontispiece to his "Introduction," and probably also that described by Curtis and Stephens.

3.—B. NIVORIUNDUS, Asa Fitch.

Similar to *B. hiemalis;* differs in the wings of the male, which are broader, shorter, and less curved; first and second segments above without a fold; abdomen above clothed with a fine grey pubescence.

Habitat: North America (New York).

4.—B. BRUMALIS, Asa Fitch.

Uniform shining black; wings of the male blackish-brown, long, slender, rather strongly pectinated, especially at the apex; first and second segments without a fold; lamina broad, emarginate at the apex.

Habitat: North America (New York, Washington).

I have compared the males and females of all four species, and also Fitch's types. The size is nearly the same in all; *B. hiemalis* is the largest, *B. brumalis* the smallest, the others intermediate; but the differences are slight.

NEW SPECIES OF BUTTERFLIES FROM GUATEMALA AND PANAMÁ.

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

(SUPPLEMENT.)

(*Continued from page* 88.)

100.—Eresia pœcilina.

♀. Exp. 2″ 6‴. Very similar to *E. Ithomioïdes*, Hewits. (Exot. Butt. Eres. f. 20). Wings broader; dark brown, fore-wing with an ochreous-yellow spot within the end of the cell, and a large number of similar spots arranged in rows beyond the cell; a row of six spots (separated only by the dusky nervures) extends from the middle of the costa, and two spots lie below the median nervure, two parallel rows lie parallel to the outer border, but not extending to the apex, where there is a single row of three spots. Hind-wing dark brown, with the disc and abdominal border occupied by a large rounded orange-tawny spot; a row of yellow sub-marginal spots, and three spots lying more inward, near the apex. Beneath: the same, except that the hind-wing has the base of the costa ochreous, and has no yellow spots, except the sub-marginal row. Antennæ pale ochreous, base black. Abdomen tawny.

Veragua.

101.—Melitæa nigrella.

Exp. 1″ 3‴. ♂. Wings elongate, fore-wing pointed at the apex, with the outer margin gently and regularly curved outwards, from the apex to the hind-angle. Hind-wing anal angle not passing the apex of the abdomen. Wings above: sooty-brown, with three or four pale brown spots on the disk of the fore-wing; hind-wing with a pale brown belt across the disc. Beneath: fore-wing brown, with a few dusky lines; darker in the middle; a large triangular spot in middle of hind-margin, and two near the apex, pallid. Hind-wing light brown, darker towards middle of outer margin, crossed by a number of short flexuous darker streaks, and having a row of black dots parallel to the outer margin.

Guatemala; central valleys. A small, obscure species, quite distinct from any previously described.

102.—Melitæa atronia.

Exp. 1″ 6‴. ♀. Wings broad, dark brown, crossed near the base of fore-wing with flexuous bars of blackish-brown; hind-wing with a sub-marginal row of short, curved, pale brown lines. Fore-wing with the apex truncate, and deeply incurved in the middle of the outer margin: hind-wing with a distinct emargination at the apex, and outer

margin scalloped; between some of the nervures of the fore-wing, beyond the middle, is a small light brown spot. Beneath: fore-wing dull brown in the middle, lighter towards the margins; dark lines as above, the spaces between some of them lighter than the ground colour. Hind-wing paler, and with a few scarcely perceptible markings.

Duenas; Guatemala.

103.—Catagramma faustina.

Exp. 2″ 2‴. ♂. Nearest allied to *C. Atacama*, Hewits. (Exot. Butt. Cat. f. 1, 2); smaller, fore-wing more acute. Black; fore-wing crossed in the middle by a broad orange-yellow belt; base of wing with a glossy blue spot. Hind-wing with a large triangular glossy-blue spot extending in a point nearly to the base of the wing.

Beneath: black; fore-wing with two short streaks at the base, and a sub-apical belt ochreous-yellow; the orange-yellow belt as above; close to the apex a glossy blue macular line. Hind-wing crossed by five ochreous-yellow stripes, all of equal breadth; the black space between the third and fourth stripe is rather broader than the rest, and has a central row of seven rounded, equal-sized and equi-distant glossy light blue spots: near the anal angle is a sub-marginal light blue line thickened in the middle.

This very distinct and grand new species was received from the Isthmus of Panamá.

104.—Catagramma guatemalena.

♂. Exp. 2″. Closely allied to *C. Tolima*, Hewits. (Exot. Butt. Cat. f. 7, 8); differs chiefly in the basal third of the fore-wing beneath, being black, with two ochreous stripes, and in the two black central spots of the hind-wing, beneath, being united in the middle, with two black sub-marginal stripes on the outer limb, separated by a narrow yellow stripe. Above: black; fore-wing with a basal blue streak at base of cell, and a central orange belt, rather narrower than represented in Hewitson's figure loc. cit. Hind-wing with a large glossy dark blue spot on the anal portion of the wing scarcely passing the median nervure; sinuses of the wing near anal angle edged with white.

Beneath: fore-wing as above, except that the basal black part has two yellow streaks, and the apex also a yellow, followed by a blue streak: hind-wing as in *C. Tolima*, except that the black stripes are broader, the second from the base approaching nearer the costa, where there is an orange costal spot;* that the two black central

* This orange costal spot, an excellent specific character, is omitted from Mr. Hewitson's figure of *C. Tolima*. Its omission is probably an oversight, as it exists in my specimen of the species.

spots are united in the middle ; and that there are two, instead of one, sub-marginal black stripes, separated, except near the apex, by the yellow ground colour, the exterior stripe being a narrow and abbreviated glossy-blue line.

Guatemala ; central valleys.

105.—Catagramma pacifica.

♂. Exp. 1″ 9‴. Very similar to *C. guatemalena* and *C. Tolima*, smaller orange belt of fore-wing much narrower ; under-side of fore-wing black, crossed by an orange belt as above, and having *three* ochreous streaks at the base and an ochreous and blue streak at the apex. Hind-wing beneath pale ochreous, second (from the base) black stripe reaching the costa, and without orange costal spot ; black stripes all narrow, central black spots widely separated, black ring surrounding both the spots widely separated from the sub-marginal black stripe, and the blue line of the latter extending from the middle of the abdominal edge to the costa near the apex.

Pacific slopes of Guatemala.

106.—Eunica augusta.

Nearest allied to *Eu. Cælina* Godt., the underside of the hind-wing scarcely differing ; but distinguished in both sexes by a clear white belt across the fore-wing. The outer borders of the wings rather more deeply scalloped. Expans. 2″ 4‴ ♂. Deep black. Fore-wing to beyond the middle rich glossy dark blue ; beyond the middle an oblique white belt (crossed by black nervures), beginning in the costa and terminating below the median nervure, followed by a spot behind the second median branch, and tinged along the edges with bluish. Hind-wing with a small patch of blue near the base. Beneath : fore-wing closely resembling *Eu. Cælina ;* fore-wing having a rounded black spot in the middle of the cell ; white belt nearly the same as above, crossed by a row of black spots (some of them pupilled with grey), and followed by a sub-marginal row of small black circumflexes. Hind-wing scarcely differing from *Eu. Cælina.*

♀. A little larger than the male ; dark glossy green, with the exception of the apex of the fore-wing (beyond the white belt) and the outer margin of the hind-wing, which are greenish-black. Beneath : the same as in the male.

Guatemala : Polochic valley.

107.—Heterochroa phylaca.

Expans. 3″. ♀. Closely resembling in the pattern of the under-

surface *H. Iphicla*: the underside of the hind-wing offers no difference, except that the anal angle has two parallel blackish lines in place of the black spots. The upper surface differs from that of *H. Iphicla* and all others of the same group in the tawny-orange spot of the fore-wing extending to the first median branch; the nervures crossing it are black; it is very broad on the costa, and is there divided by an oblique spot of the dark brown ground colour of the wings: the central belt of the wings is pure white.

Guatemala: Polochic valley.

(To be continued.)

Description of the larva of Hadena suasa.—I have been much indebted to the assiduity of Mr. Batty, of Sheffield, who kindly sent me, in July last, some larvæ of this species in different stages of growth, reared from eggs on broad-leaved plantain; they, however, seemed afterwards equally partial to *Polygonum aviculare*, and fed up rapidly, retaining their colours and markings throughout their growth. They were full fed and had gone to earth by the 28th of July, and on the 23rd of August one moth emerged, greatly to my surprise, and is a dark smoky-brown specimen.

The larvæ are uniformly cylindrical until nearly full grown, and then become a little tapering towards the head; ground colour green or yellowish-green, most minutely irrorated more or less with yellowish atoms; the dorsal line rather indistinct, and slightly darker than the ground colour; the sub-dorsal line absent in some, but present in others as a fine black, rather oblique streak on each segment, terminating at the hindermost tubercular dot; the dots are black, and arranged on the back in the usual trapezoid form; the spiracular line is composed of a black fusiform mark on each segment, with the white spiracles on their lower edges, brilliantly contrasted by a stripe of bright yellow below along the side; the belly and feet green; the head and dull plate on second segment brownish.

There is a variety in which the ground colour is brown or olive-brown, the dorsal line strongly marked as a double dark brown line vanishing at the hind part of each segment in some, and in others running continuously through a darkish brown triangle or diamond on each segment; individuals occurring with either form.

The sub-dorsal appears as a series of oblique dark brown streaks, each streak commencing a little on one side of the segment in advance, and abruptly terminated on the next by the hinder trapezoidal tubercular dot, the dots are black, and placed on small yellowish specks. Along the side of each segment is a triangular shape of dark brown, their bases bounded by the black fusiform marks containing the white spiracles, and immediately followed by a bright yellow stripe, its lower edge gradually tinged with the brownish colour of the belly and legs.—W. Buckler, Emsworth, *August*, 1866.

Description of the larva of Hepialus sylvinus.—My kind friend, Dr. Knaggs, most obligingly sent me two larvæ of this interesting species, which he found feeding on the roots of dock, and which were full grown by the 10th July, 1866.

Each excavated a mine or trench from the outside of the root, and in a spiral direction, closing it over with gnawings spun together with silk. The cocoon was formed of the same materials, but a little more compactly at the upper end of the mine, and near the surface of the earth. A few hours before the moth appeared, the anterior portion of the pupa was projected above ground; it being, like its congeners, furnished with rings of hooked bristles for that purpose. The perfect insect appeared on Sept. 10th.

The larva being whitish and very shining, may be compared to polished ivory; it is about an inch to an inch and a quarter in length, with the segments deeply divided, and the folds or wrinkles deeply cut. The head is orange-brown, with the mouth black. A plate of brownish-orange on the second segment, and marks of the same tint on the back of the third and fourth segments, and also on the anterior legs. The spiracles are dark brown, all the other parts being immaculate. A few scattered fine hairs visible with a lens.—Id., *September 20th.*

Description of the larva of Leucania conigera.—On the 17th May, 1865, I received six larvæ of this species from Mr. Dorney of Brighton, which he collected for me on a very wet night, while they were feeding on *Triticum repens* and other grasses; three of them were of a bright ochreous tint, and the others an almost uniform grey variety. They were all cylindrical in form, tapering but very little anteriorly, and an inch and a half long.

In the first mentioned the colour of the back is deep ochreous, the dorsal line pale sulphur-yellow, enclosed on either side by a black line, and well defined in its entire length. The sub-dorsal line rather broad, of equal width, and uninterruptedly black throughout, followed by a pale yellow line, finely edged below with black; next, a stripe of pale ochreous, then another pale yellow line finely edged above with black, and followed by a broad stripe of deep ochreous, and broadly edged with black both above and below, the black spiracles being along the lower edge. Above the feet is a stripe of pale dull ochreous, the belly and pro-legs being slightly darker, the anterior pairs of black dots visible only, on the back of each segment. The head brownish, streaked, and mottled with black.

The other variety is of a brownish-grey tint, with all the lines and stripes less distinct, but all disposed in the same order as above described; but the yellow lines of the former are, in these, represented by lines of grey, and the ground colour of the back is brownish-grey.

The dorsal line is grey edged with black, and the sub-dorsal is a continuous line of grey-brown, edged with blackish lines above and below, but interrupted above and nearly continuous below. The lateral lines and stripes are devoid of black, and delicately defined with brown edges.

The larvæ fed until the end of May, and the moths emerged between the 8th and 12th of July following.—Id.

An unusual food-plant for Sphinx ligustri.—One day in July last I was in company with Mr. Barrett in Woolmer Forest, Hampshire, when he found a full-grown larva of *S. ligustri* feeding on *holly*, in a situation where this tree abounded, but far from any privet, lilac, or ash.

With reference to this subject, I find a notice in the Stettin Ent. Zeitung for 1865, p. 111, by Herr Gustav Weymer, in Elberfeld, in which he says: "One would imagine the natural history of this moth so fully investigated, that nothing new remained to be discovered. Yet this is not so, inasmuch as the larva sometimes lives on holly (*Ilex aquifolium*), which otherwise furnishes food for no other *Lepidopteron* (a species of *Lithocolletis* excepted); a fact which appears to have been noticed by no one else in Germany. This evergreen shrub, which is not mentioned by Wilde in his work on German plants, but which Esper says occurs in the southern parts of Germany, grows not rarely in all woods in this neighbourhood, and, indeed, is abundant as an undergrowth on isolated mountain ridges, where yet higher trees are also found. In places in this region formerly felled, but again reverted to wildness, *S. ligustri* is often found on the above-named plant." Taken in connection with Mr. Barrett's larva, this notice is interesting; but Herr Weymer has surely overlooked *Lycæna Argiolus* and *Grapholita nævana*, which occur abundantly on holly. An error has also occurred about the *Lithocolletis* on this plant: possibly some confusion with *L. messaniella* on *Quercus ilex* has arisen; or perhaps he has mistaken the abundant mines of the dipterous *Phytomyza aquifolie* for those of a *Lithocolletis*.—R. McLachlan, Forest Hill, 3*rd October*, 1866.

Captures near Rugby.—The immediate neighbourhood of Rugby seems to be very poor in *Rhopalocera* and *Geometræ*, and I had no opportunity of getting *Noctuæ*. Most of the undermentioned captures were taken either at Frankton Wood, or in the woods adjoining Coombe Abbey, near Brandon; each of these localities being about six miles from Rugby.

Argynnis Paphia, Adippe, Euphrosyne, and *Selene*, at Coombe in June and July.
Thecla quercûs, Thanaos Tages, and *Pamphila Sylvanus*, also common at Coombe.
Sesia fuciformis, common at Coombe, hovering over the flowers of "Ragged Robin," (*Lychnis flos-cuculi*), and "Bugle," (*Ajuja reptans*) June 9th to 14th.
Trochilium tipuliforme and *Ino Statices*, Coombe, June.
Metrocampa margaritata, Boarmia abietaria, and *Macaria liturata*, by beating at Frankton, June 30th.
Ephyra punctaria and *Asthena sylvata*, by beating at Coombe, June 14th.
Strenia clathrata, common on some of the railway banks, May 22nd to 28th.
Fidonia piniaria, one at Frankton, June 7th.
Emmelesia albulata, very common in meadows among *Rhinanthus crista-galli*.
Eupithecia lariciata, Frankton Wood and Causton Spiring: plenty by beating larch trunks, June 4th to 30th.
Drepana falcula, by beating at Frankton, June 4th.
Heliodes arbuti, common in a meadow, June 2nd to 7th.
Euclidia glyphica, on railway and canal banks, May 28th to June 22nd.
Pyralis purpuralis, common on railway banks at Coombe, May 26th to June 14th.

G. B. Longstaff, Southfields, Wandsworth, *August 8th*, 1866.

Deilephila celerio in Westmoreland.—A specimen of *D. celerio* has been sent to me from Kendal; it was taken in a tan yard last autum. This is the third specimen that has come into my possession this season.—J. B. Hodgkinson, Preston, *October 8th*.

Euchromia rufana in Lancashire.—I found this insect in a fresh locality on the coast, and it appears to stir most at mid-day, under a hot sun. I could see no special food-plants for the larva to feed on; *Lotus corniculatus* abounded, and most probably it will be found to feed on it. The females occurred in the proportion of about one in a score. I should be glad if any one would send me *Eu. purpurana* from different localities to compare.—Id.

Occurrence of Eromene ocellea near Dumfries.—During my last visit to Scotland, a beautiful example of one of the *Crambidæ*, which I have since learned to be *Eromene ocellea*, was shown to me by Mr. Lennon, its captor, who kindly entrusted it to me for the purpose of getting it named. It was captured at light in the first week of September, 1865, at the Crichton Institution, about a mile from Dumfries. The specimen is in fine condition.—George J. Hearder, Powick, *October 1st*, 1866.

Capture of Anthophagus pyrenæus, Ch. Bris., new to Britain.—In a series of *Anthophagi* collected last July during my visit to North Perthshire, I have detected a few specimens that answer to M. Brisout's description of the above-named insect,—which has recently been separated from *A. alpinus*. Whether the two species be really distinct is perhaps open to doubt, as the male characters in *alpinus* are notoriously subject to modifications of development; but I think it should be borne in mind that continental naturalists are more likely to form a correct estimate of the relative values of specific characters in this large genus than we are, who only meet with two or three of its species in our own land. The following is a rough description of *A. pyrenæus*.

A. pyrenæus, Ch. Bris., closely allied to *A. alpinus*, and hitherto confounded with it. It differs as follows: Thorax a little more contracted behind; elytra and thorax somewhat more deeply punctured. In the male the head is more deeply emarginate; mandibles much larger and more suddenly dilated at the base; frontal horns longer, more slender, and inclined somewhat outwards.—T. Blackburn, Grassmeade, Southfields, Wandsworth, S.W.

Note on Philonthus tenuicornis, Muls.; a species not previously recorded as British.—Herr Scriba (Berl. Ent. Zeit., 10, 1866, p. 293,) records the capture of this insect at Ober-lais, and states that it is separated from *P. carbonarius*, Gyll., by its more slender antennæ, of which the penultimate joints are as long as broad, and by the 6th abdominal segment of the male not being emarginate beneath. He remarks that the insect has a wide range, as he possesses specimens from Allgäu, Rhine district, and *Ireland*. The descriptions of *punctiventris*, *tenuicornis*, and *temporalis* do not seem to me to admit of accurate discrimination. Mr. Crotch, in the second edition of his catalogue, assigns the *P. punctiventris* of Wat. Cat. as a synonym to *P. tenuicornis*. This cannot be correct, if Herr Scriba be right; as the 6th abdominal segment of the ♂ of our *punctiventris* is very distinctly emarginate.—E. C. Rye, 284, King's Road, Chelsea.

Notes from the Berlin Transactions on the habits of Leptinus, &c.—Herr Eichhoff (Berl. Ent. Zeit., 10, 1866, p. 294) records the fact that *Leptinus testaceus* lives in the nests of a large, black, white-tailed *Bombus* (which he queries as *B. terrestris*).

He states that there were but two or three nests in which he did not find the beetle, out of 30 that he examined; and that some contained 20 or 30 specimens. His remark that this extremely active beetle may easily be overlooked, on account of similarly formed and coloured *Acari* occurring in similar places, reminds me of the only occasion of my seeing it alive, viz., at Mickleham, in a nest of *Formica fuliginosa* at the root of a beech-tree, when I was particularly struck by its Acaroid facies and rapid motion. My friend Mr. J. Scott once took it in some numbers out of a little round hole in an otherwise apparently sound oak at Purley, high up from the ground, and full of rotten vegetable mould.

Herr Eichhoff also notes that he mostly found *Cryptophagus setulosus* (in great plenty) and *C. pubescens* in the same nests; the latter being still commoner in those of *Vespa vulgaris*. He adds that in the bee-nests *Antherophagus nigricornis* almost never failed to appear, and that *A. silaceus* and *pallens* occurred by single specimens.

Another interesting observation of Herr Eichhoff is that he took ♂ of the form *flavicollis* of *Conopalpus testaceus* in copulâ with the type ♀.

Herr Gerhardt (loc. cit., p. 296) gives *Teesdalia nudicaulis* (a cruciferous plant allied to the candytuft, and found in sandy places in England and Scotland) as the plant for *Ceuth. pumilio*, Gyll. (*Poweri*, mihi); and records the capture of *Necrophorus gallicus* in company with *N. fossor* (*interruptus*), a somewhat significant occurrence, considering the specific relations of the two insects, which I do not believe are any more distinct from each other than are *N. ruspator* and *N. microcephalus*, taken together by me at Rannoch.

He also mentions that many mountain *Otiorhynchi*, including *septentrionis*, were common on *Vaccinium myrtillus* about ten o'clock at night; and gives *Petasites officinalis* as the plant for *Entomoscelis adonidis*, heretofore reputed British.—Id.

Note on ovoid substances adhering to water-frequenting Curculionidæ.—A few seasons since, while dragging the ditches near Winchester for Water-beetles, I came upon a thriving colony of *Bagöus tempestivus*; and, as it was the first time I had met with it in plenty, I took home about fifty specimens, killing them, as usual, with hot water. On examination, I found adhering to the greater number of examples from two to six small objects, resembling on a reduced scale the egg of the silkworm, which I conjectured accordingly to have been deposited there by some insect. Some of the shells were broken, others still full; but, unfortunately for further development, all were boiled in the process of killing above-mentioned.

Having had an opportunity lately of forwarding specimens to Mr. D. Sharp, that gentleman has been at the trouble of detaching one of these objects, and examining it under a microscope; and has favoured me with his opinion, which I take the liberty of transcribing: "I have come to the conclusion that it is either an egg or a case of eggs (owing to its being so dry, it is impossible to say which): under a power of 250, and treated with acetic acid, it is evident that it consists of a capsule and granular fatty and albuminous matter;—just what is found in all eggs."

I should be glad to know if any of your correspondents have observed any similar occurrences, and to have the opinion of experienced entomologists on the subject.—W. Tylden, Stanford, near Hythe.

Occurrence of Lissodema ærata, Muls. ; a species of Coleoptera new to Britain.—When looking over my *Sulpinyidæ* last spring, I detected in the space assigned to *S. ater* a specimen that had evidently no right to be there. Mr. Crotch was here lately, and I submitted my puzzle to his inspection. He named it *Lissodema ærata*, Muls. The creature was taken at Girrick, Berwickshire.—R. Hislop, Blair Bank, Falkirk, *September*, 1866.

Scotch Coleoptera.—In July last, when sweeping under the old red sandstone cliffs on the coast to the north of Arbroath, I was pleased to pick up as a Scotch novelty, *Ochina hederæ*, which had dropped from some overhanging ivy. *Miarus campanulæ* was not uncommon upon *Vicia cracca* in the same neighbourhood. *Campanula rotundifolia* was not in flower at the time; and, although I swept *C. glomerata*, the insect was not to be found on it. The impressed penultimate segment of the abdomen of the ♂ is armed with two strong teeth.

In Berwickshire I got *Triphyllus suturalis*, not previously in the Scottish list; and *Tetratoma fungorum*, which has not yet occurred in the north, I believe, for at least thirty years.—Id.

Note on Phryganidæ found in Caves.—At the meeting of the Entomological Society on the 2nd October, 1865 (Ent. Mo. Mag. ii., p. 143), I exhibited certain *Phryganidæ* (*Stenophylax*) found by the Rev. G. F. Browne in ice-caves in Switzerland. I find that the partiality of these insects for caves had already been noticed by Kolenati, for in the Appendix to the second part of his work on *Trichoptera*, p. 279, in naming some additional localities for his *Stenophylax striatus* (*hieroglyphicus*, Steph.) he says, "Gresten in cavernis (Schleicher, Strohmayer), Moravicæ in caverna devonico-calcarea prope Ochotz (18 Sept. Kolenati)." Mr. Browne's examples were said to have been found in "hermetically sealed ice-caves," and in this lies the difficulty of imagining how they effected an entrance, an enigma to be solved by Swiss entomologists. Taking into consideration the above remarks by Kolenati, and the propensity that *S. hieroglyphicus* exhibits to enter the passages of houses, stables, &c., in England, it may be probable that some undiscovered means of entry existed in these ice-caves, and that the insects only exhibited their natural habits in concealing themselves therein.—R. McLachlan, Forest Hill, 12*th October*, 1866.

Occurrence of Lestes macrostigma, Eversmann, in the island of Corsica.—Amongst a few *Neuroptera* collected in Corsica by the Rev. T. A. Marshall, I find an example of *Lestes macrostigma*; a species not included in the list of the *Odonata* of that island by M. de Sélys Longchamps, published in the Annales de la Soc. Ent. de France for 1864, p. 35—37. Mr. Marshall says it was common in the botanic garden in Ajaccio. It has, however, been previously reported from Sardinia, and also from Sicily.—Id.

Reviews.

The Record of Zoological Literature (1865); Vol. II. Edited by Albert C. L. G. Günther, M.A., M.D., &c. London: John Van Voorst; 1866.

Last year we had occasion to notice the first volume of this invaluable Record—a bulky tome extending to 634 pages. Some idea of the enormous increase in the number of publications in the various branches of Zoology may be gathered from

the fact that the present volume ends at page 798; and yet we fancy that the notices of works and papers are more condensed here than in the first volume. Many of the long tables, &c., are advantageously omitted; for the aim of this work is not to enter into details of differential characters, but to show the student of any branch of Zoology what has been done and where to find it; for the rest he must of necessity refer to the papers themselves. Some slight changes in the editorship of some divisions have been made since last year; but the Insecta are still recorded by Mr. Dallas. This section of the work alone extends to 330 pages, against 270 last year. The cost of compiling and printing such a record must of necessity be very considerable, and we sincerely trust that the enterprising publisher may meet with such a return as to render its continuation in future years a certainty. To the zoological worker in any class this Record is indispensable. With the assistance of it, and Hagen's "Bibliotheca Entomologica," no describing entomologist can pardonably be ignorant of what has been done in his particular branch of study, excepting so far as regards publications of almost simultaneous appearance. We think it worthy of consideration as to whether it would not be more advantageous to all parties if it were published in two or more separate divisions.

We remark that some of the notices bear more of the character of critical reviews than of simple records; this we think out of place. No doubt the temptation is very strong for the recorder, when he has to notice works treating on his own particular group, and perhaps antagonistic to his own views, to express an opinion thereon; but we submit that there are other channels for this purpose, and that this work should be a Record, as its name implies, and nothing more; space would also be saved by this means.

British Bees: an introduction to the study of the Natural History and Economy of the Bees indigenous to the British Isles. By W. E. Shuckard. Lovell Reeve & Co.; 1866.

This volume is the second hitherto published of a proposed series of introductory hand-books upon British Insects (and which series extends, also, to other classes besides the *Insecta*) originated by the late Mr. Lovell Reeve, and intended to be carried on by the present firm of Reeve and Co., who certainly deserve the highest commendation for the care bestowed upon their work; inasmuch as the minor details of printing, paper, and general method of treatment, added to the quantity of matter and the very low price, render the two volumes that have as yet appeared superior in those respects to any others published on the same subjects in this country. Both this volume and its predecessor ("British Beetles;" written,—as will have been observed in our advertising columns,—by one of the conductors of this Journal) contain numerous well-engraved wood-drawings of dissections, &c., and no less than sixteen coloured steel plates of six figures each (thus figuring nearly one hundred typical species), executed by Mr. E. W. Robinson with all his usual elegance, aided by considerable "character" as to facies.

A work on *Hymenoptera*, and especially on such a tribe of that order as the *Anthophila*, written by Mr. Shuckard (whose essay on the *Fossores* has taken such a deservedly high and permanent rank in the literature of Entomology), could not fail to contain a vast quantity of interesting matter treated in a readable way: the

present volume contains, moreover, some slight improvements in arrangement (differing, however, in a very trifling degree from that usually adopted by British Hymenopterists, and consisting mainly of mere inversion); but we can in justice only give to it this faint commendation, though desiring to extend a warmer welcome to its author on his re-appearance after so long an interval.

Passing over the numerous glaring violations of ordinary rules of grammatical construction, and the somewhat eccentric system of punctuation exhibited in "British Bees," there remain some grave objections to it as an Introductory Handbook for the present generation which we are compelled to take.

First of these, is the apparently systematic neglect of the work of Mr. F. Smith. To write a book on British bees, wherein no notice (save a few curt and depreciatory lines) of that gentleman's labours should appear, is strongly suggestive of the representation of the play of Hamlet with the character of Hamlet left out; and the omission is the more remarkable as the conviction is forced upon the reader acquainted with both books that if Mr. Smith's "Catalogue of British Bees" had not been written, Mr. Shuckard's "British Bees" would not have appeared,—at all events in its present form.

A second, and more important, fault is that Mr. Shuckard's book is about twenty or thirty years behind the age we live in (not to put the date back by centuries instead of tens, as might be inferred from the expression at p. 132—"Aristotle's descriptions can be clearly recognised"). If it be not, how (except on the hypothesis of a systematic determination to ignore Mr. Smith's species,—which can scarcely be correct, as *some* of them are retained) are we to account for the absence therefrom of the following thirty-three species,—all but the last whereof (which was registered in one of the recent Entomologist's Annuals) are duly recorded in Mr. Smith's Catalogue?—*Prosopis punctulatissima*, Smith; *Sphecodes rufescens*, Foureroy; *S. subquadratus*, Smith; *Halictus zonulus*, Smith, Nylander; *H. maculatus*, Smith, Nyl.; *H. prasinus*, Smith; *H. gramineus*, Smith; *H. longulus*, Smith; *H. subfasciatus*, Nyl.; *H. interruptus*, Panz.; *Andrena eximia*, Smith; *A. ferox*, Smith; *A. similis*, Smith; *A. bicolor*, Fab.; *A. simillima*, Smith; *A. fucata*, Smith; *A. clypeata*, Smith; *A. constricta*, Smith; *A. aprilina*, Smith; *A. extricata*, Smith; *A. polita*, Smith; *A. fulvescens*, Smith; *A. analis*, Panz.; *A. nigrifrons*, Smith; *A. argentata*, Smith, Nyl.; *Nomada baccata*, Smith; *N. rubra*, Smith; *N. mistura*, Smith; *N. atrata*, Smith; *Megachile versicolor*, Smith; *M. Pyrina*, St. Farg.; *Bombus collinus*, Smith; and *Bombus pomorum*, Panz. In the ten years that have elapsed since the publication of Mr. Smith's Catalogue cause for many alterations and additions must necessarily have arisen: but surely *all* these were not wrongly brought forward, and to omit them in the idea of diverting attention from the evident use that has been made of that Catalogue reminds one of the fable of the fancied hiding of the hunted ostrich by a simple head-in-sand insertion. To make up for this deficiency, Mr. Shuckard (beyond one or two slight alterations in nomenclature, inverting Mr. Smith's synonyms) produces only the following four species:—*Calioxys inermis*, Kirby; *Andrena zonalis*, Kirby (known to be ♂ *Rosæ*, Panz.); *Bombus Harrisellus*, Kirby (known to be only a var. of *B. subterraneus*, with which it has been taken *in cop.*); and *Anthocopa papaveris*, Latr. The specimens of the latter in the Brit. Mus. Cabinet, upon the authority of which Mr.

Shuckard has introduced it, appear to have been taken at Nice;—and are, moreover, mixed with the males of *Osmia adunca*, Panz., a species not found in Britain. The little leaf-cutter bee, *Megachile argentata*, is repeatedly to be seen doing duty for *Anthocopa*, both in British and foreign collections.

It may be objected, also, that the greater part of the first half of the volume, however interesting to a general reader, is out of place in what is intended for a working hand-book; the chapter on geographical distribution being, moreover, largely indebted to (if not entirely compiled from) Mr. Smith's paper on the Geographical Distribution of *Hymenoptera*, published in the Proceedings of the Linnæan Society.

Mr. Shuckard, also, does not appear to have a very clear idea of the correct method of referring to an author; thus, *Prosopis cornuta* should be quoted as of Smith, not of Kirby; *Halictus flavipes*, Fabricius, not Kirby; *Osmia pilicornis*, Smith, not Bainbridge; and *Andrena longipes*, Smith, not Shuckard. With reference to the two latter insects is a somewhat puerile note at p. 211, applying the term "buccaneering" to the suppression of reference to Messrs. Bainbridge and Shuckard as their "original authority" respectively. Surely Mr. Shuckard must know better than to suppose that distributing an insect with a manuscript name attached is such a publication as can be referred to. The first describer may (and in common courtesy will always) make such reference; but all subsequent quotations attribute the insect to its first published description. The term "buccaneering,"—itself conceived in bad taste,—is here singularly inappropriate. Mr. Smith, in first describing *A. longipes* (Zool., v., p. 1740), refers to it correctly as *A. longipes*, Shuckard, and mentions that gentleman's first discovery of it. But, in his monograph, he was obliged to refer to his own description, as being the first. As regards *O. pilicornis*, a reference to its first description by Mr. Smith (Zool., iv., p. 1568) will shew that he first received it from Mr. Walcott with the name *pilicornis* in MS., accompanied by a request not to publish it with Mr. Walcott's name attached, as he had the insect from Capt. Blomer, who he believed first captured it. Mr. Smith appears to have been unaware of Mr. Bainbridge's claims (if any) in the matter; and (especially since the latter's MS. name happens to have been given to the insect) no discourtesy can therefore be laid to his charge.

There are many other points exciting adverse remark; such as the incorrectness of the synonomy of the *Bombi*,—the objectionable reference to the discovery by Nylander of specific characters in the ventral plates of the abdomen in *Cœlioxys*;—which,—if, as Mr. Shuckard admits, he has had no opportunity to examine,—it would have been better to have passed over in silence than to stigmatize (in two instances) as "supposed," &c.

Considering that an injustice has been done by this volume to one of our hardest working and foremost Entomologists, we have devoted more of our space to this review than can usually be afforded; and we conclude with Mr. Shuckard's grandiose peroration to his half-page of adverse reference to Mr. Smith's work (p. 169);—"It is in no spirit of captiousness that these objections are made; they are deduced from collocations *whose* conspicuous incoherence is patent to the most superficial observation" (!!).

THE *LEPIDOPTERA* OF IRELAND.

BY EDWIN BIRCHALL.

(*Continued from page* 131.)

CLEPSIS RUSTICANA—Killarney.
BACTRA LANCEOLANA—Howth; abundantly.
„ FURFURANA—Killarney.
PHOXOPTERYX SICULANA—Do.
„ UNCANA—Belfast.
„ BIARCUANA—Galway.
„ MYRTILLANA—Wicklow Mountains, Belfast.
„ LUNDANA—Common everywhere.
„ MITTERBACHERIANA—Roebuck, near Dublin, Belfast, Galway.
GRAPHOLITA PAYKULLIANA—Wicklow Mountains.
„ NISANA—Killarney.
„ NIGROMACULANA—Howth, Wicklow (?).
„ TRIMACULANA—Dublin, Wicklow (?).
„ PENKLERIANA—Belfast.
„ NÆVANA—Belfast.
„ GEMINANA—Wicklow Mountains.
PHLÆODES TETRAQUETRANA—Generally common.
„ IMMUNDANA—Wicklow Mountains.
HYPERMECIA ANGUSTANA—Killarney.
BATODES ANGUSTIORANA—Dublin, Killarney; common.
PÆDISCA CORTICANA—Howth.
„ SOLANDRIANA—Do., Killarney.
EPHIPPIPHORA BIMACULANA—Belfast (?).
„ CIRSIANA—Coast near Dublin.
„ SCUTULANA—Dublin, Galway.
„ BRUNNICHIANA—Howth (abundant), Wicklow Mountains, Dingle Co. Kerry.
„ TRIGEMINANA—Howth; plentiful.
OLINDIA ULMANA—Galway.
SEMASIA SPINIANA—Howth.
„ JANTHINANA—Cork (?), Wicklow Mountains (?).
„ RUFILLANA—Galway.
„ WŒBERANA—Belfast.
COCCYX VACCINIANA—Howth.
RETINEA PINIVORANA—Holywood Co. Down, Galway.
CARPOCAPSA POMONANA—Cork (?).

Endopisa nebritana—Wicklow Mountains.
Stigmonota perlepidana—Raheny, Co. Dublin.
" regiana—Roebuck, near Dublin.
" germarana—Killarney.
Dichrorampha petiverana—Howth (abundant), Cork (?).
" ulicana—On the slopes of the Drogheda railway, near Dublin.
" saturnana—Howth.
" plumbagana—Drogheda Railway, near Dublin.
" acuminatana—Howth.
" senectana— do. and Galway; common.
" simpliciana—Sutton, near Dublin.
" consortana— do.
Pyrodes rediana—Dublin, Holywood, Co. Down.
Catoptria albersana—Killarney.
" ulicetana—Abundant everywhere.
" microgrammana—Near Wicklow.
" hypericana—Wicklow Mountains.
" parvulana—Howth.
" hohenwarthiana—Howth.
Trycheris mediana—Generally distributed.
Choreutes scintillulana—Holywood, Co. Down.
Xylopoda fabriciana—Abundant everywhere.
Lobesia reliquana—Killarney.
Eupœcilia albicapitana—Howth. [Plate I., fig. 1.]
" atricapitana— do. and other parts of the Dublin coast.
" maculosana—Howth.
" hybridellana— do.
" angustana—Generally distributed.
" subroseana—Killarney.
Xanthosetia zœgana—Generally distributed.
" hamana— do. do.
Argyrolepia baumanniana—Galway and Belfast.
" badiana—Howth.
" cnicana— do.
Cochylis francillana— do. abundant.
" dilucidana— do. and Sutton.
" stramineana— do. common, Belfast.
Aphelia pratana— do. and Wicklow Mountains.
Tortricodes hyemana—Lambay.

TINEÆ.

Diurnea fagella—Wicklow Mountains; common. Belfast (?).
Psyche roboricolella—Howth; the cases on the rocks in profusion.
Psychoides verhuellella—Killarney.
Diplodoma marginipunctella—Wicklow Mountains.
Ochsenheimeria birdella—Portmarnock, Dingle Bay, Holywood.
Scardia choargella—Holywood.
„ emortuella—Dublin and Howth.
„ granella—Dublin and Belfast.
„ cloacella— do. do.
„ arcella—Belfast.
Tinea ferruginella—Howth; on the cliffs.
„ rusticella— do. and Dublin.
„ tapetzella—Common everywhere.
„ misella—Dublin; in cellars and vaults among the matted growth of fungus on the walls.
„ pellionella—Common everywhere.
„ dubiella—Dublin
„ fuscipunctella—Dublin; common.
„ pallescentella— do.
„ merdella—Dublin; in houses.
„ biselliella— do.
„ nigripunctella—Dublin.
„ confusella—Howth; the only known British locality. It flits around and runs up the stems of the grass on the cliffs, and probably feeds on fungi in the same situations. [Plate I. fig. 3.]
Lampronia quadripunctella—Howth.
„ luzella—Howth.
„ prælatella—Killarney.
„ rubiella— do. and Holywood.
Incurvaria masculella—Malahide, Wicklow Mountains, Belfast.
„ zinckenella—Killarney.
„ capitella—Belfast.
Micropteryx calthella—Wicklow Mountains.
„ seppella—Of general occurrence.
„ allionella—Lough Bray, Co. Dublin; Blackstones, Co. Kerry.
„ semipurpurella—Wicklow Mountains.
„ unimaculella— do. do.
„ subpurpurella— do. do.

Nemophora swammerdammella—Wicklow Mountains.
„ schwarziella— do. do. Lough Bray.
„ metaxella—Belfast.
Adela degeerella—Killarney.
Swammerdamia comptella—Cork, Wicklow Mountains, Galway.
„ cæsiella—Dublin Coast (common), Galway.
„ pyrella—Dublin and Howth; common.
Scythropia cratægella—Cork (?).
Yponomeuta padella—Belfast.
„ cognatella—Dublin, Holywood, Blarney.
„ evonymella—Belfast.
Prays curtisella—Belfast and Howth.
Plutella xylostella—Abundant everywhere.
„ porrectella—Dublin; in gardens.
„ annulatella—Howth; on the cliffs; much more brightly coloured than specimens taken in England.
Cerostoma radiella—Wicklow Mountains.
„ costella—Killarney.
Harpipteryx harpella—Belfast (?).
Phibalocera quercella—Generally common.
Depressaria costosella—Howth; abundant.
„ liturella— do. and Kerry.
„ umbellella— do.
„ assimilella— do.
„ nanatella— do.
„ atomella— do.
„ arenella — do.
„ subpropinquella—Raheney Co Dublin.
„ rhodochrella—Howth.
„ alstrœmeriella—Dublin coast.
„ vaccinella—Wicklow Mountains, Clonmel.
„ capreolella—Howth.
„ conterminella—Howth.
„ ocellella—Belfast.
„ yeatiella—Howth.
„ applanella—Abundant everywhere.
„ rotundella—Howth; at the foot of the cliffs.
„ nevosella—Dingle, Howth.
„ heracliella—Common everywhere.

(*To be continued.*)

AN ESSAY TOWARDS A KNOWLEDGE OF BRITISH *HOMOPTERA*.

BY THE REV. T. A. MARSHALL, M.A.

(*Continued from page* 128.)

Genus Tettigometra, Latr.

Belongs to the *Fulgorina*, but was not known in time to be inserted in its place. For full description of the genus, see Flor, Die Rhynchoten Livlands, vol. ii., p. 96, and Signoret, Ann. de la Soc. Ent. de Fr., 4me série, t. 6, 1866, p. 140. It is sufficient here to remark that it differs at first sight from our five other genera of *Fulgorina* by its strong resemblance to *Ptyelus* and *Acocephalus*. Ocelli minute, placed at the internal basal angle of the eyes, above the antennæ. Antennæ 2-, rarely 3-jointed; basal joint short, globuliform, 2nd joint very minute, or obsolete, last joint twice as long as the first, stout, with a short seta inserted on its hinder side. Hemelytra coriaceous, strongly punctured, *furnished at the base with a large moveable plate*, analogous to the *squamula* of *Hymenoptera*.

Fieber has published in the Verhandl. Zool. Bot. Gesellsch. in Wien, 1865, Bd. 15, pp. 561-572, a paper entitled "Synopse der Europ. Arten *Tettigometra*," containing 23 species, not one of which agrees with the British form. Signoret's article above referred to altogether ignores Fieber's descriptions of the year before, but includes one or two species (out of 25), unseen by Fieber; and one of these is apparently the insect with which we have to deal in this place.

Tettigometra impressopunctata (Dufour ?) Signoret.

Fusco-flava, brunnea, vel sub-olivacea, dense et minus profunde punctata, pectore albo nigroque, abdomine nigro. Vertex pronoto longior, deplanatus, medio late et minus profunde rotundo-foveatus: in medio hujus foveæ carina basalis abbreviata,—ita ut verticem fere tricarinatum dicas. Frons supra plana, clypeum versus leviter intumescens, supra rufescens, fascia inter oculos lata, utrinque abbreviata, nigra; inter antennas ad clypeum usque, alba; clypeus niger; rostrum fuscum apice nigro. Pronotum late transversum, basi arcuata, medio emarginata. Scutellum convexum, magnum, triangulare, punctatum, punctis mediis in rugas transversas confluentibus. Hemelytra æqualiter punctata, coriacea, unicolora, *striola suturali brevi* (*ultra clavi apicem*) *nigra*. Alæ amplæ, hyalinæ, nervis fuscis. Pedes concolores; spinarum apices in tibiis posticis nigri; ungues fusci.

Long. 2; alar. exp. 4 lin.

T. impressopunctata, Signoret, l. c., p. 150—Dufour? Ann. Soc. Ent., 1846, Bull. xlvii (note).

The insects of this genus vary almost like our common *Ptyelus*, but the present species may be at once known by the constant *black mark upon the suture*. The varieties mentioned are (1) green, (2) with the humeral squamula black, (3) with a brown scutellum having two apical yellow dots, (4) with a medial yellow band on the scutellum; but those I have taken are all of one type, differing merely in the general tint of the surface, and in having the anterior edge of the scutellum more or less darkened.

Discovered last year on the sand hills at Freshwater Bay, Pembrokeshire, in a sheltered hollow, thinly covered with thyme and short grass, where it is common,* but appears to be restricted to a small area. It is a sluggish insect, concealing itself on the ground, and not easily detected. Viewed from above it might pass, at a small distance, for a *Ptyelus*, but the tricoloured frons beneath is very conspicuous. I believe no insect of this genus has ever before been recorded as British. The present species (according to Signoret) occurs also near Paris, and on both sides of the Mediterranean.

Genus Agallia, Curt.

This genus was proposed by Curtis in the 1st vol. of the Entomological Magazine, p. 193, but the characters given do not determine with any precision its relation to the rest of the group. The species bear a superficial resemblance to *Idiocerus*, being much broader in front than behind, and having the vertex reduced to a more or less narrow lunule. They have, however, most of the characters of *Iassus*, differing in the position of the ocelli, which are not more distant from each other than they are from the eyes, and are placed on the upper part of the frons, instead of at the junction of the frons and vertex. For a full description of the genus see Flor, "Die Rhynchoten Livlands," vol. ii., p. 548, and cf. p. 365. I am only acquainted with two British species, as follows:—

(1) Pronotum transversim rugulosum.....*A. venosa*, Fall.
(2) Pronotum parce et subtiliter punctatum.. *A. consobrina*, Curt.

1.—*Agallia venosa*, Fall.

Pallide testacea; caput, pronotum, scutellum, nigro fuscoque varia. Vertex pronoto tripio brevior, medio longior quam lateribus; maculæ 2 in ipso apice rotundæ, magnæ, nigræ, quas inter linea longitudinalis nigra vel fusca in frontem descendit, ibique mox bifurcata (♀), utrinque

* I have a few duplicates to distribute.—T. A. M.

in spatium triangulare supra antennas positum excurrit. Hæc spatia triangularia ocellos includunt. Apud ♂, linea frontalis simplex est, et tantum inferne latior. Frons utrinque longitrorsum nigro punctata. Pronotum duplo latius quam longius, antice subtiliter, postice fortius transversim rugulosum: in margine antico maculæ 2 rotundæ, nigræ; post has alteræ 2 maculæ irregulares, ad basin usque productæ, medio etiam linea vel macula oblonga, nigræ. Scutellum apud angulos anticos maculis 2 triquetris, medio punctis 2 nigris. Hemelytra abdomine vix longiora, pellucida, nervis fortibus, fuscis, basi hic illic decoloratis; clavus subtiliter punctulatus; clavi sutura fusca, bis pallido interrupta. Abdomen vel totum nigrum, vel segmentis supra pallida marginatis, subtus pallidum. Pedes pallidi; femora antica subtus nigro punctata; postica linea inferiore nigra; tibiæ anticæ nigro-annulatæ. ♂ ♀.

Long. $1\frac{1}{4}$; alar. exp. $2\frac{3}{4}$ lin.

Var. *a*.—Pallida. Præter verticis pronotique maculas geminatas nigras pictura cætera evanescit, vel tinctu ferrugineo leviter adumbratur.

Cicada venosa, Fall., Hem. 2, p. 38.
Agallia venosa, Flor, R. L., 2, p. 550.
? Iassus puncticeps, Germ., Mag. 4, p. 86.

The above description is from well-coloured specimens, but most of those I have taken belong to the pale variety. It is common on our sandy sea-shores, near Deal, and on the Pembrokeshire coast. Mr. Bold has also sent me a very dark individual from Northumberland.

2.—*Agallia consobrina*, Curt.

Pallide testacea; caput, pronotum, scutellum, nigro ferrugineoque varia. Vertex medio non longior quam lateribus, pronoto plus triplo brevior. Maculæ 2 verticis rotundæ, nigræ, inter quas linea duplex ferruginea in frontem ad clypeum usque descendit. Utrinque inter oculos spatium ferrugineum sub-triangulare ocellos includit. Frons utrinque longitrorsum ferrugineo punctata. Pronotum subtiliter punctatum, minime rugulosum: in margine antico maculæ 4 parvæ fuscæ vel nigræ in arcum dispositæ; macula media oblonga, duæque basales magnæ, triangulares, ferrugineæ. Scutellum præcedentis. Hemelytra longiora et angustiora, disci tantum et apicis nervis fuscescentibus, costa et basi late decoloratis; clavi margo suturalis bis fusco maculatus. Pedes pallidi; femora et tibiæ plus minus fusco picta; tibiæ posticæ ad spinarum basin fusco punctatæ. ♂ ♀. Long. $1\frac{1}{2}$-2; alar. exp. $3\frac{1}{2}$ lin.

Agallia consobrina, Curt., Ent. Mag., 1, p. 193.

Its variations are trifling; the ferrugineous pattern of the head

and pronotum may be more or less dark, and the discal cells of the hemelytra are subject to be partially suffused with fuscous along the nervures.

A common species in many places, but it does not seem to occur mixed with the preceding on the sea coast. Abundant in the Midland district, apparently frequenting thistles, for I once took at least a dozen from the same plant.

(To be continued.)

NEW SPECIES OF BUTTERFLIES FROM GUATEMALA AND PANAMÁ.

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

(SUPPLEMENT.)

(*Concluded from page* 136.)

108.—Paphia aureola.

♂. Expans. 2″ 11‴. Very similar in form, colours and markings of the under-surface to *P. Anassa*, Felder. Apex of the fore-wing distinctly produced, and outer margin straight from the apex to very near the hind angle, where it is rounded outwards; emargination of the inner margin very slight; hind-wing tailless, a projecting point existing in the place of the tail. Upper surface of both wings black, with an olive-green tinge, and with a broadish common belt of a pale glossy green hue extending from the costa of the fore-wing to the anal angle of the hind-wing, the belt in the hind-wing being marginal. Beneath: very similar to *P. Morvus*, dark brown, with a leaden pearly lustre, and irrorated in places with black and grey; an oblique streak from the fore-wing apex towards the disc, and large spots near the costa and inner margin, pale brown.

109.—Paphia chrysophana.

♂. Expans. 2″ 2‴. Fore-wing triangular, costa arched, apical and posterior angles both pointed, outer border forming nearly a straight line, being only slightly incurved: hind-wing with a moderately elongate slender tail. Fore-wing with the outer portion deep black, richly glossed with blue, and having a golden fulvous spot near the end of the cell; basal half of the wing rich metallic golden fulvous glossed with blue. Hind-wing rich golden fulvous glossed with blue, outer margins dusky-brown also glossed with rich blue, a row of sub-marginal black spots between the base of the tail and the anal angle. Beneath

all wings brownish, minutely irrorated with pale lilac and dark brown, sub-marginal spots of the hind-wing edged internally with grey and white.

♀. Expans. 2″ 2‴. Same form of wings as the ♂. Outer portion of fore-wing dark brown, with a short belt beyond the cell tawny-white; basal half of the wing tawny-white, becoming tawny-yellow towards the base. Hind-wing tawny-yellow, with a very narrow brown outer border, in which is a row of black spots. Beneath: pale testaceous-tawny, irrorated with olive-brown in patches: sub-marginal spots as in the ♂.

A very distinct species, allied to *P. Rhyphæa*. Panamá and Veragua.

110.—Taygetis sylvia.

♂. Expans. 2″ 4‴—2″ 7‴. Fore-wing obtuse at the apex, outer margin slightly rounded outwards; hind-wing not angulated, but outer margin strongly scalloped. Above: brown, with two very fine marginal parallel dusky lines. Beneath: lighter brown, with a broad, common outer border, much paler, and separated from the basal part of both wings by a whitish belt, edged on the inside with darker brown. Within the pale limb there is a row of five small ocelli on fore-wing, with yellowish irides and white pupils, and a row of six rather larger ones on the hind-wing, also with yellowish irides and white pupils; but the second and fifth are larger and black. The basal part of the wings is uniform brown, becoming darker near the whitish belt. Towards the base of each wing there is a brown line, and towards the outer margin, a much dentated finer brown line; close to the outer margin runs the same fine double brown line that is visible above, the space between which is pale.

Panamá; also Upper Amazons. The species resembles the smaller and more clearly marked individuals of *T. Andromeda* (Cram. 96A); but the fore-wing outer border of *T. Andromeda* is always angulated near the apex.

111.—Mesosemia carissima.

♂. Expans. 1″ 6‴. Fore-wing obtusely triangular; hind-wing with the outer margin a little produced in the middle, and slightly incurved between the produced part and the apex. Above: blackish-brown, fore-wing with a black ocellus, having a yellowish iris and three small blue pupils, one larger in the middle, and two smaller on the outer side; hind-wing with the middle part occupied by a large rich

blue, rounded spot. Beneath: lighter brown, black ocellus of fore-wing surrounded by two yellowish rings separated by a dark brown one, the whole encircled by a broader dusky ring open at the median nervure, and prolonged externally to near the inner margin; apical portion of the wing crossed by two broad indistinct dark brown belts, one of them marginal: hind-wing with a small black ocellus in the cell, having two blue pupils and a yellowish iris; the ocellus followed by a pale bar extending across the wing, and margined with dark brown, outer half of the wing darker brown, with a curved sub-marginal row of bluish-grey spots.

♀. Expans. 1″ 7‴. Paler brown than the ♂; the upper-surface of the fore-wing offering the same design as the under-surface in the ♂; blue patch of the hind-wing truncated on the basal side. Beneath: pale brown.

Veragua.

112.—Charis argyrodines.

♂. Exp. 10″ 12‴. Closely allied to the North American *Ch. Ceneus*, Lin. (*Virginiensis*, Boisd. et Leconte), agreeing with it in colours both above and beneath, but differing in the fore-wing being much more elongate and pointed. Above: obscure dark brown crossed by numerous short fine dark streaks, which are generally connected together as fine waved lines; towards the outer margins is a row of small black spots, and there are two extremely fine and indistinct silvery lines, the inner one of which is strongly waved; the fringe is dark brown, indistinctly spotted with ashy. Beneath: tawny-yellow, the fine black streaks and spots more distinct than on the upper surface; silvery lines much broader. Eyes naked.

Guatemala: also Nicaragua.

113.—Mesene argentea.

♂. Exp. 1″ 2‴. Similar in shape to *M. Phareus*, Cramer, wings pure glossy-white with narrow black margins, except the inner margin of the fore-wing, and basal half of costa of hind-wing; base of wings saffron-yellow, antennæ and thorax black, collar saffron, abdomen white.

Guatemala; Polochic valley.

114.—Eurygona Chrysippe.

♂. Exp. 1″ 1‴. Closely allied to *Eu. Eumenes*, (Hewits. Exot. Butt. Eur. f. 18), having a sub-marginal row of black spots on the under side of hind-wing, but without dark line across the wings. Above: blackish-brown, with a large rounded spot on the fore-wing

extending from the inner margin to the middle of the cell, and the whole central area of the hind-wing clear orange-tawny: wings beneath yellowish-buff.

Veragua.

115.—Symmachia rubina.

♂. Exp. 1″ 2‴. Bright orange, fore-wing with the apical half, a streak across the base and a spot within the cell, deep black; the apical black portion with six ochreous-white streaks, viz., two transverse from costa to the median nervure, and four longitudinal, two near the apical margin, and the other two more inward and between the marginal ones; hind-wing with a single black spot at the apex; head, thorax, and base of abdomen above deep black; collar and sides of the prothorax ochreous; apical half of the abdomen orange. Wings, beneath, the same but paler, and costa of fore-wing black at the base; face, palpi, and legs, pale ochreous.

Panamá.

116.—Metapheles (n. g.) Dinora.

♂. Exp. 1″ 10‴. Fore-wing triangular, costa nearly straight, outer margin bowed outwards; hind-wing sub-triangular, and angle slightly produced, pointed; outer margin bowed outwards; blue-black glossed with brilliant silky-blue; fore-wing with a large triangular basal spot and a sub-apical belt; hind-wing with the whole central area transparent, veins bordered with blue-black; antennæ slender, black; body glossy-blue; abdomen beneath striped with orange. Wing-cells extremely short, fore-wing upper radial, and first branch of the sub-costal arising together at the end of the cell, middle and lower disco-cellulars of the same length: hind-wing upper radial arising at a distance from the end of the cell.

The new genus *Metapheles* differs from *Pheles* in the shortness of the wing-cells, length of the fore-wing middle disco-cellular, and position of the sub-costal branches, the second being emitted far beyond the end of the cell in the fore-wing. In the brevity of the cells the genus resembles *Brachyglenis* (Felder), but in this group the fore-wing upper radial arises after the end of the cell.

Veragua.

117.—Theope basilea.

♀. Exp. 1″ 1‴. Nearest allied to *Th. Lyteа* of South Brazil. Wings above deep black, with a large angular spot at the base and a

short streak towards the apex of the fore-wing, and the abdominal half of the hind-wing rich blue; nervures, and a sub-marginal row of short streaks on the hind border of hind-wing black. Beneath: brownish-tawny with a blackish line (as in *Th. Lytæa*, Hbn. Z. 901–2), extending from the costa (near the apex) of the fore-wing to the middle of the abdominal edge of the hind-wing: fore-wing with two white spots in the cell; hind-wing with two black spots encircled with white near the anal angle.

Panamá.

118.—Nymphidium præclarum.

♀. Exp. 2″ 3‴. Wings above dark brown; fore-wing crossed in the middle by a broad buff-coloured belt very much bent towards the outer margin; basal part of the wing with five pale buff, oblong rings, outer border with a sub-marginal line, and near the hind angle with a broader flexuous stripe, also pale buff. Hind-wing pale buff with the base, two sub-marginal rows of quadrate spots (the inner one interrupted near the middle), and outer margin dark brown. Beneath: the same in colour, but base of fore-wing buff, and outer row of black spots on hind-wing coherent with the margin.

Panamá.

119.—Nymphidium Dorilis.

♂. Exp. 1″ 7‴. In shape similar to *N. Gela*, Hewits. Wings above ruddy-brown, crossed by a somewhat narrow reddish-tawny belt extending from the fore-wing upper radial nervure to the hind-wing abdominal margin. Fore-wing cell crossed by six pale lines, in pairs, and the space between the median and sub-median nervures also crossed by four similar lines; outer margin of both wings with a line of tawny-coloured circles enclosing dark brown spots. Beneath: the same as above, but very much paler.

Panamá.

CORRIGENDA.

1. *Dircenna Callipero* ♂, Bates, Proc. Zool. Soc., p. 243, pl. xxix, f. 4.
   ♀ = *Ithomia Balboa*, id. id. p. 245.

The ♂ of this species has the robust form of thorax and head of the genus *Dircenna*, and in the neuration of the hind-wing closely resembles *D. Epidero* and *D. Lenea*; the palpi, however, are not more hairy than in the true *Ithomiæ*, and I doubt if the genus *Dircenna* can be maintained.

2. *Ithomia Dorilla*, Bates, Ent. Monthly Mag., vol. i, p. 35.

This is a dark, strongly-marked form of *I. Azara* (Hew., Exot. Butt. *Ith.* f. 23). *I. Azara* is from the River Napo; *I. Dorilla* from the Isthmus of Panamá.

3. *Synchlöe Tellias*, Bates, Ent. Monthly Mag., vol. i., p. 84.
= var. of *S. Lacinia*, Hübn. Zut. f. 899-900.

Synchlöe Lacinia is an extremely variable species in the number and form of its spots, both tawny-orange and white.

4. *Pronophila lætifica*, Bates, Ent. Monthly Mag., vol. i., p. 164.
= *P. tauropolis*, Dbldy. and Hewits., Gen. Diurn. Lep. pl. 66, f. 1.

A FEW WORDS ON THE GALL-MAKING *APHIDES* OF THE ELM.

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

At the meeting of the Entomological Society, held on the 5th November, Mr. F. Smith exhibited some large galls formed by one of the *Aphidæ*, and found at Deal on the elm. On the 24th of last July, I observed numbers of these galls on some small elm bushes (not, I think, *Ulmus campestris*), on the banks of the Thames near Hampton Court. They were either formed of modified leaf-buds, or each of a leaf itself, but as at that time they were fully developed it was impossible to say which. Each was either at or near the extremity of a twig. In size they varied from that of a walnut to that of a medium sized potato; of an irregular shape, and green externally, turning to rosy on the side exposed to the sun. They were hollow, and each had a large hole on one side. Internally they were half full of liquid, which, as the weather had been tolerably dry, I imagined to be sap, and they contained also a large amount of the peculiar whitish powder, that always accompanies gall-making *Aphidæ*. There were comparatively few *Aphides* present, and these of the apterous form; but Mr. Smith, in his galls, found many fully developed winged individuals.

As it seems to be uncertain if this species had been previously observed in Britain, a short account of it may be interesting. It first appears to have been noticed by Claude Joseph Geoffroy, who published an account of the galls in a paper that I have not seen, in the Memoirs of the French Academy for 1724; this notice also gives observations on the viviparous reproduction of *Aphides*, and is quoted by Reaumur. The latter author, on pl. 25, (figs. 4–7) of the third volume of his "Memoires," (1737) gives very recognizable figures of the galls, and

at p. 299 he states his having observed them himself. De Geer also mentions and figures them, and named the insect *Aphis gallarum ulmi*. Etienne Louis Geoffroy, in his "Histoire abrégée des Insectes," vol. i. p. 494, (1764) refers the insect to the *Aphis ulmi* of Linnæus, (Faun. Suec. ed. 1, No. 705). Geoffroy says: "On trouve ce puceron en grande quantité sur l'orme; il pique la substance des feuilles, pour y déposer ses œufs, et le suc venant à s'extravaser, forme des vesicules souvent très-grosses, creuses en dedans, qui tiennent à la feuille par un pédicule quelquefois assez étroit. Au bout de quelque tems, les petits pucerons éclosent dans l'intérieur de cette espéce de nid, et après être grossis ils font une ouverture à la vesicule, dont ils sortent." In 1770, Von Gleichen, in his "Versuch einer Geschichte der Blattläuse und Blattlausfresser des Ulmenbaums," gives a long account of *Ulmus* galls. Kaltenbach extracts the most interesting remarks, which may be translated as follows. "In the beginning of May, as soon as the leaves of elm have attained about half their size, they are already beset with innumerable little knobs. One rarely opens one of these knobs without finding within a small brown animal. Only in its slow gait does it differ from a lifeless atom. I have to thank my strong lens for enabling me to recognise it as a plant-louse. In the first week in June, the mother commences to deposit her young. At this time one cannot open a gall without finding from twenty to forty young ones deposited by the mother. Above forty I have never seen. The beginning of the third week in June is the customary time when the whole posterity of a mother plant-louse have moulted for the last time and are seen with wings. At this period the bladders are filled equally with insects and cast-skins. The state of the mother then strikes one as being very lamentable; her hitherto vigorous body is now crumpled and shrivelled up like an empty bladder. One finds no hard excrement in the galls, but their inner walls look as if sprinkled with water, which perhaps proceeds from the watery nature of their excrement." Kaltenbach, to whose work I have referred above, ("Monographie der Familien der Pflanzenläuse, 1843-4), describes an insect under the name of *Tetraneura ulmi*, (p. 189-193), and remarks that the galls vary in size from that of a pea to that of a bean, which would also seem to apply to Gleichen's description. Kaltenbach refers to Geoffroy and Reaumur, and says that he has not been able to find differences between the inhabitants of the small and large galls, though the discrepancy in the sizes is very great. The galls found by me and Mr. Smith are certainly the same as those of the two Geoffroys, Reaumur, and De Geer. I have said that the galls when found were

half full of liquid. Kaltenbach in a foot-note to Gleichen's mention of the watery appearance says, speaking, I presume, of the pseudo-galls of his *Schizoneura ulmi*, — "there is often such a quantity of a whitish thick honey-dew present, that one could fill a middle-sized thimble with it." The liquid in my galls seemed too thin and transparent for honey-dew, and I was rather inclined to refer it to the exuded sap of the tree.

For two reasons I believe that the small galls of Gleichen and Kaltenbach are formed by a different species of *Aphidæ* to that which causes the large galls. Firstly, the discrepancy in the size of the galls is very great. Secondly, the winged *Aphides* found by Mr. Smith are certainly not a species of *Tetraneura*, to which genus Kaltenbach refers his, but belong to *Schizoneura*. Of this latter genus Kaltenbach gives only two species, one he considers to be the true *Aphis ulmi* of Linnæus, which rolls up the leaves of the elm, and which is evidently distinct from that of the larger galls; the other he names *S. Reaumurii*, which lives externally on lime. Our insect is then *Schizoneura gallarum-ulmi* of De Geer, but I know not if it has received other names.

Probably next season observers will be on the look-out for these curious galls. They are very pretty objects when fresh, but in drying shrivel up to half their previous size, and change colour. The curled leaves infested by the allied species have probably been noticed by all; they are altogether analogous to those blotched and disfigured leaves so common on currant bushes.

NOTES ON THE BRITISH SPECIES OF *ENNOMOS*.

BY THE REV. JOHN HELLINS, M.A.

It has already been announced that I succeeded in obtaining moths from the eggs of *alniaria*, which were kindly sent me last year by Mr. G. H. Lacy; and I have now put together a few notes on the various stages both of that, and also of the other species: for the generosity of my friends in supplying me with eggs has enabled me to rear them all side by side.

The eggs of *fuscantaria*, *erosaria*, and *tiliaria* resemble one another in these points—that they are all somewhat of the shape of a brick, with the edges and corners rather blunted, and are deposited evenly side by side in rows of various lengths. They are distinguished as follows:—

Fuscantaria: the most slender-looking in outline; measuring about 13 to the $\frac{1}{4}$ inch; colour a pale dull green, showing silvery in the

light, and not changing till just before the hatching of the larvæ, when they become more silvery; the whole surface pitted, but glossy, one end surrounded with a rim, which shows like pearly-white beads. Sometimes nearly 50 in a row, with the beaded ends all one way.

Erosaria: rather shorter than the last, otherwise of the same size, about 13 measuring ¼ inch. Colour when first laid, a dull but full green; afterwards changing to a pale brown, and again becoming greenish before the appearance of the larvæ. Surface more roughly pitted than in *fuscantaria*, but still glossy; one end surrounded with a beaded rim. I have counted 25 in a row.

Tiliaria: larger than the other two, about 11 eggs measuring ¼ inch. Colour light green when first laid, afterwards a deep brown, becoming silvery just at last. Surface slightly pitted, but glossy; without the beaded rim at one end. Deposited apparently in rows of no more than 7 or 8.

The eggs of *angularia* and *alniaria* are of another form, being cylindrical, though still elongated, with one end rounded, and the other flattened and surrounded with the beaded rim; and instead of lying flat they are deposited on their rounded ends, and stand up in a slanting position.

Angularia: deposited with great regularity, both in rank and file, all slanting the same way, each egg standing apart from the others, so that about 8 are contained in ¼ inch. Colour a dull green, apparently not changing till shortly before the larvæ are hatched, when they assume a reddish tinge. The surface slightly pitted, glossy; the beaded rim of a dirty pinkish-white. I have one batch of 5 rows, with 8 or 9 eggs in each.

Alniaria: eggs rather larger than the last, slightly flattened. Colour a dark brown, apparently not changing till they become paler at last; glossy; the beaded rim round the top (which is pitted), is of a pure white. The nine eggs sent me by Mr. Lacy were deposited two and two in a little long cluster, with sufficient indication of arrangement to show that had the moth not been pinned, she might have deposited them in the same way as *angularia*.

The following are the dates which I have recorded for the various species this season:—

Angularia: began to hatch during the last week in April; fed freely on birch; only one dying in the larval state; they had all spun up by June 14th. The moths emerged during the last week of June and the first of July.

Erosaria: began to hatch May 13th; by the 18th I had 4 larvæ, when I placed the eggs out of doors, and a sudden fall of temperature

destroyed the vitality of all that were left. Before now I have succeeded in obtaining but one moth out of a large brood of larvæ, which seemed to feed and spin up well; but these four went steadily on, feeding upon oak, spinning during the first week of July, and appearing as moths between 18th and 22nd of the same month. M. D'Orville, from the same batch of eggs, fed up several larvæ, but bred only one moth.

Fuscantaria: began to hatch on May 22nd, and although I afterwards placed the eggs out of doors, the larvæ continued to appear for some time, none dying in the egg: I placed them on a seedling ash, but most of them died at various stages of their growth; only three spinning up, (about the middle of August), and only two of these producing moths on September 15th. However, Mr. A. H. Jones, from whom I had the eggs, told me that every one of his larvæ, reared in a greenhouse, fed up well, and that he met with no loss whatever among them.

From 7 of the 9 eggs of *alniaria*, I obtained larvæ between May 29th and June 9th; they fed freely on both sallow and birch, and all spun up between August 1st and 15th; two, however, had not strength to assume the pupa state perfectly, but died after spinning; and the 5 survivors appeared as moths between August 28th and September 13th.

Tiliaria were the last to hatch, but none died in the egg; all the larvæ emerged between June 6th and 24th, and at first seemed to flourish well on sallow and birch; but by degrees they died off one after another, except two, which spun up during the first week of August, and appeared as moths about the 1st of September.

Why the larvæ of this genus should be so tender, and so liable to die off, seems a puzzle to me.

Descriptions have been long since published of all the larvæ, but those given in the Manual for *alniaria* and *fuscantaria* are not correct; of the other three I need not now say much. So far as I can speak from experience, *angularia* and *fuscantaria* are the most variable, both in colour, and in the presence and absence of humps; the *green* larvæ seem to be *smoother*, and the *grey* and *brown* varieties to be *humped*. *Erosaria*, although variable when small, seems constant both in colour and humps when full grown; and from the number and position of the humps, it is the most irregular in outline.

Alniaria, when full grown, is a grand looper, nearly $2\frac{1}{2}$ inches long, but not very stout. Head flattened, broader in front; the third pair of legs very long; on sixth segment a narrow transverse hump with two lateral warts; on seventh two lateral warts, with a slight swelling below; on ninth a narrow dorsal hump; and on the twelfth two small sharp pointed warts. The colouring is intricate, but may be

shortly described thus: ground colour, brown; a series of imperfect outlines of lozenges, longer or shorter according to the length of the segments, in very dark brown; the sub-dorsal lines, and some spots within the lozenges, of pale ochreous; the fifth segment is distinguished by a long, *dark* dorsal patch; one or two of the larvæ had a reddish tinge.

Tiliaria: seeing that I was so unlucky with this species, I cannot give measurements with much certainty; still I cannot think that any deficiency in growth would cause such great difference in the arrangement of the humps as appears between that given (after Treitschke) in the Manual, and the one that now follows, made from my own careful observation. Length $1\frac{3}{4}$ inches, figure slender; on sixth segment a narrow transverse hump, formed of two lobes; the seventh slightly swollen at the sides, and having on the belly a pair of warts, enclosing an inner pair much smaller; on the ninth segment a small narrow hump; on twelfth a very slight pair of warts; the skin is glossy; the ground colour in front is pale brown, brown on the intermediate segments, and darker again behind; the lozenge outlines darker brown, longer in form than in *alniaria*; the sides covered with a delicate mottling of grey and pink; the fifth segment has a long mark, paler than in *alniaria*.

All the species draw together the leaves of their food to make a covering for the pupa, perhaps *angularia* and *fuscantaria* use the least amount of silk, whilst *alniaria* seems to make a strong, though open and irregular, web, to protect the openings between the leaves.

The pupa of *alniaria* is of course the largest in the genus; but in form it is much like *angularia*, being rather elongated, and tapering off to a flattened point at the tail, the wing cases short, the antennæ well-defined; colour pale brownish, with a slight tinge of green: the whole surface is granulated, except the segmental folds, which are glossy, and paler than the ground; the wing cases are minutely freckled with brown, the abdomen blotched with brown. *Erosaria* and *fuscantaria* are paler in colour than the other pupæ, are not spotted, and the latter is of a stouter form than the rest. *Tiliaria* is distinguished by a little projection from the head-piece; its colour is a pale brown with a reddish tinge, all (except the wing cases) freckled with darker brown; the segmental folds glossy and paler.

I will only add that the specimens of *alniaria*, which I bred, were very fine, and far exceeded the parent moth (which Mr. Lacy kindly allowed me to inspect) in richness of colour and beauty of their markings.

Exeter, *November 3rd*, 1866.

Sphinx ligustri feeding on holly.— Some time since, a labouring man near here told me he had seen several larvæ of *S. ligustri* feeding on holly. Until I saw Mr. M'Lachlan's statement in the November number of the Magazine, I had concluded that a mistake had occurred.—Yeend Duer, Cleygate House, near Esher. *October* 31*st*, 1866.

Sphinx ligustri feeding on holly.— With reference to Mr. M'Lachlan's notice (p. 137), of the discovery of the larva of *S. ligustri* feeding on holly, it may be interesting to him and others of your readers to know that I have on several occasions taken the larvæ from that tree, and, I believe, have recorded the fact in the "Intelligencer," or elsewhere. In our garden at Raleigh there were bushes of laurestinus, lilac, holly, and privet growing close together, and *ligustri* was to be found feeding freely on each, but showing a preference for privet and laurestinus. I have likewise taken it from ash, guelder rose, and evergreen-oak.

The larvæ of *Ourapteryx sambucaria* will, in confinement, feed indifferently on holly or ivy.—G. F. Mathew, Barnstaple. 3*rd November*, 1866.

Occurrence of Diasemia Ramburialis, Dup., at Lewes.—I captured a slightly worn specimen of this insect at Lewes on the 29th ult., at the foot of a dry, chalky bank, bounded by low meadows. This, I believe, is the second known British example. Having compared it with some foreign specimens of *D. Ramburialis*, at Mr. Stainton's, I have no doubt of the correctness of my determination.—G. H. Verrall, Lewes, 9*th November*, 1866.

Capture of Stigomonota leguminana, (*deflexana*), *in Epping Forest.*—I captured several specimens of this hitherto undetermined species last June in the above locality.—E. G. Meek, 5, King Street, Old Ford Road, N.E., *November* 1*st*, 1866.

Occurrence of a Xylina new to Britain.—Mr. E. Meek has just placed in my hands for identification a very handsome *Noctua*. It is the *Xylina Zinckenii* of Treitschke, and was taken by an incipient Entomologist last September in the neighbourhood of New Cross.—H. G. Knaggs.

Occurrence of a Tortrix new to Britain—Mr. Harper has lately submitted to my inspection a very distinct looking *Tortrix*. It is *Tortrix ochreana*, Hübner.—Id.

Capture of Acidota cruentata at Chelsea.—On the 27th of November, last year, I was somewhat staggered at finding a lively specimen of this rarity crawling along the bottom of a stone wall in a paved area at the back of this house; and accordingly noted the capture in the "Annual" for 1866. By a curious coincidence, about the same time, my friend Mr. R. Henderson also took an example of the same species crawling on a stone wall at Glasgow. The insect is of considerable rarity, being usually found (when it *is* found), in moss or under dead leaves at the edges of woods, and I was inclined to attribute the advent of my specimen to a certain large basket of ferns packed in moss, from Lancashire, that had been deposited in our small back-garden, until Mr. J. Stevens informed me that he also had taken the insect from moss in a garden at the more rural but neighbouring Hammersmith.

During the past year, hoping against hope, I have, of course, often cast a longing eye upon the dry and unlikely spot where (as I considered) I had "fluked" the little stranger; and on the 29th ult. I could scarce believe my eyes when I saw another specimen travelling along the bottom of the same wall, and at the same place. However it *was Acidota* in the flesh (or rather, in the corium), and not a brachelytron of the brain. This was too much, (though not two too much). My sieve and brown paper were produced, and the superficial area of our entire premises duly sifted, yielding a result of *Homalota fungi* and *Cryptophagus pilosus* in profusion, *Oxypoda brevicornis*, one *H. melanaria* (by no means a common insect), and not a vestige of *Acidota*. As if in mockery of my efforts, *the same spot of the same wall* (which is entirely free from moss and has no crevices), produced another specimen on the 7th inst.! Being dreadfully superstitious by nature, I fancied the beetle was "no canny," and for a time hesitated about taking it, but I at last concluded to bottle it.

Of course I made fresh efforts to discover the metropolis of the insect, but only succeeded in turning up *Homalota pagana*. On the same day, (11th inst.), however, I found *two* more of the *Acidota*, still (or rather, running) on the same wall. On the 12th inst. I found another. On the 14th, another. To-day, another. I shall probably go on until I get a hundred, and then christen them *cruentata* var. *muraria*. *Saprinus virescens* and *Gnorimus nobilis* have both been taken in the same garden; and this is the more surprising, as Chelsea, though once countrified enough, is now shorn of all its green places, and to all intents and purposes forms part of London, being continuously connected by streets with that village, and having its due metropolitan share of railways, gas-works, and other insect-detergents.—E. C. Rye, 284, King's Road, Chelsea, 15*th November*, 1866.

Note on Sitones cinerascens.—I have in my collection a specimen of a *Sitones* much like our ordinary *cambricus*, but differing as follows: the antennæ are rufo-testaceous with the club darker; the rostrum has a broader sulcus, in place of a mere channel; the thorax is longer in proportion to its breadth, and so are the elytra; the punctuation of the upper surface is less coarse and less deeply impressed than in *cambricus*; and the scales on the under surface are nearly white in colour. I have no doubt I am correct in considering this species as *Sitones cinerascens*, Sch., of M. Allard's monograph. This author records the species in question as an inhabitant of Britain, but so far as is known no specimen is extant in any of our collections; and in the recent edition of Mr. Crotch's Catalogue the species is placed as doubtfully British. My example is a very rubbed one, so that I cannot say anything as to the pubescence, which, according to M. Allard, gives the species a very different appearance from *cambricus*.

I captured the specimen above referred to in the Isle of Arran, in August, 1864. —D. Sharp, 18, Loudoun Road, St. John's Wood, 12*th November*, 1866.

Occurrence of rare Coleoptera in London.—I have recently taken four specimens of *Anommatus* 12-*striatus* under stones in the court-yard of the British Museum; and one example of *Tachyusa concolor* in dead leaves and rubbish at the same place. —E. A. Waterhouse, 14*th November*, 1866.

Note on two forms of Mesene hitherto considered to be sexes of one species.—In the "Genera of Diurnal Lepidoptera," p. 442, n. 1, it will be seen that the *Papilio Bomilcar* of Stone (Cramer Suppl., pl. xxxix., f. 3) is considered to be the female of *Mesene Phareus*, of Fabricius (Mant. Ins. ii, p. 79, n. 722).

A comparison of the figures of these two insects with the specimens in the British Museum Collection has satisfied me that this is not the case, inasmuch as our specimens of the true *Phareus*, as figured by Cramer (Pap. Exot., pl. clxx, f. C.), are all males; and the only specimen of the true *Bomilcar* in the collection, is, without doubt, also a male insect; therefore, though *Mesene Bomilcar* may be a local form of Fabricius' species, it is very clear it cannot be its male.

Although we do not possess females exactly corresponding to *Phareus* proper, there are in the collection four specimens of what I take to be a slight variety of that species: two of these are males, and differ from the typical form in being slightly smaller, with a narrower black margin above, and having the internal red streak on the under-side of the front-wings continued upwards towards the apex of the wing; the two other specimens are females, their wings are shorter and rather more convex than those of the males, and the under-side of the front wings shows the red colour to the same extent as on the upper-side: all our specimens of *Phareus*, and of this variety, are from Parà.

In addition to these, there are two pairs of a larger form, with broader black margins, from Tapayos; and our specimen of *M. Bomilcar* is also from this locality. —A. G. Butler, Zoological Department, British Museum.

On the injury done to collections by Psoci.—In the "Entomologists' Annual" for 1861 (p. 19) I said that, according to my observations, the *Psocidæ* (*Atropos*) did little or no damage to collections. In the preface Mr. Stainton said that experience in England proved quite the contrary. Now I have gained this experience at my expense, for having received a series of American *Ephemeridæ* on short English pins, I have found that *Atropos* caused considerable damage to them, while all others on long pins were not attacked. I was thus very much in favour of German pins, but have been disabused on this point, for having taken Dragon-flies, and left them on the table during the night, I found them completely eaten by mice. Apparently one should have still longer pins in order to avoid these animals!— H. A. Hagen, Königsberg, 24*th October*, 1866.

[*Note.*—Without doubt insects pinned in the Continental fashion are not liable to the attacks of *Atropos*, and require less care generally for their safe preservation, I believe it would be useless to try and induce English entomologists to adopt this method, but I will add that, without using long pins, if the insects be so set that no portion of them touch the paper, they enjoy almost the same immunity as those high up on long pins. I have found, however, to my cost, that Continental and exotic insects suffer greatly from the larva of *Anthrenus*, an enemy far more formidable than *Atropos*; but this is an effect more of climatic conditions than of fashion. To avoid mice one must use long pins indeed! *Apropos* of mice I will relate an anecdote. A friend, on a collecting expedition in Scotland, had captured a rare dragon-fly for me, and after setting it carefully, left it exposed in the room during the night. Being aroused by a noise, he saw a *kitten* eating the insect with much apparent enjoyment. Had the mice disappointed her of a meal, and so

caused her to appropriate *their* intended feast? Cockroaches have more than once gained access to my setting-board, and done great mischief. Most English Lepidopterists can speak painfully from experience of the attacks of wasps on *Noctuæ* that have been captured at "sugar"; in fact, the corpulent body of a newly killed *Noctua* filled with saccharine fluid is quite a *bonne bouche* to a wasp; the latter makes a big hole and extracts the contents, and usually departs without damaging the wings.—R. M'Lachlan.]

Noxious insects naturalized in America.—No. 12, (September 1866), of the "Practical Entomologist," (Philadelphia), contains an interesting article by Mr. B. D. Walsh on this subject. From it we learn that fully one half of the worst American insect-foes have been imported from Europe. Thus the Hessian fly (*Cecidomyia destructor*), was introduced nearly ninety years since; the wheat midge (*Diplosis tritici*), about forty-five; the bee-moth (*Galleria cercana*), at the commencement of the nineteenth century; the apple moth (*Carpocapsa pomonella*), the currant clear wing (*Trochilium tipuliforme*), the meal worm (*Tenebrio molitor*), the cockroach (*Blatta orientalis*), &c., &c., at indefinite periods; and within the last few years the asparagus beetle (*Crioceris asparagi*), has made its appearance in the state of New York; finally the gooseberry saw-fly (*Nematus ventricosus*), has since 1862 shewed itself in several places, and has already proved very destructive. Mr. Walsh doubts if even the so-called American cockroach (*Blatta Americana*) be really indigenous, and suspects its importation from Asia. Probably with justice, he states that the injury inflicted on America by European insects is only reciprocated to a very slight extent; the chief insect pests for which we have to thank America, being the pea-weevil (*Bruchus pisi*), and the now too-well known house ant (*Myrmica molesta*). He argues, therefore, that (though popularly known as the "New World,") the American continent being the older, its plants and animals mostly belong to an old-fashioned creation, and can no more stand their ground against their more vigorous imported European competitors, than the Red Indian can hold his own against the Caucasian race. Mr. Walsh's theoretical speculations always deserve earnest consideration, and in this case the facts appear to bear him out. One of our common white butterflies has already obtained a footing in Canada, and perhaps eventually may prove more destructive there than the indigenous *Pieris oleracea*. Nor is America the only land so situated, inasmuch as it seems ordained that the European race, wherever it may locate itself, shall take with it some of its natural pests. Thus it is well known that many of our common weeds flourish in Australia and New Zealand, with far greater luxuriance than in Europe.—R. M'Lachlan.

Entomological Society of London, 5*th November*, 1866.—Sir John Lubbock, Bart., F.R.S., President, in the Chair.

Colonel Scott, R.E., of Ealing, was elected a Member.

It was proposed by the President, seconded by Mr. Wallace, and carried unanimously, that the cordial thanks of the Society be given to to the Linnean Society, for the permission to hold the meetings in their rooms.

The President requested that Members wishing to promote discussion on special subjects, would give notice to the Secretary, so that it might be published in the weekly scientific journals; such notice must, in any case, be received on or before the Wednesday previous to the meeting.

Mr. Wilson Saunders exhibited two larvæ of a *Cicada* from Mexico, each of which had a large *Clavaria* growing from between its eyes. It was announced that the subject of fungoid growths on insects would be discussed at a future meeting. He also exhibited two cases, supposed to be those of Coleopterous larvæ, sent from Bahia by Mr. Reed.

Mr. Bakewell sent for exhibition certain new and rare *Coleoptera* from Dr. Howitt, of Melbourne; including *Hemiphasis Bakewellii*, *Passalus teres*, several species of *Lissotes*, some of them apparently undescribed, a new *Ceratognathus*, and *Dorcadida bilocularis*.

Mr. Stainton exhibited drawings of the galls formed by *Aphides* on *Pistacia terebinthus*, in which lived the larvæ of *Stathmopoda Guerinii*; and at the same time explained the habits of the creatures as noticed by Dr. Staudinger at Celles-les-Bains. These galls were sometimes nearly a foot long, and, as they occasionally became nearly filled with water, the pupa of *Stathmopoda* had the power of protruding its body half outside the gall to avoid being drowned. He also exhibited the drawing of a larva found in the hard interiors of alder berries, which it was supposed might be that of *Stathmopoda pedella*.

Mr. Smith exhibited large galls formed by *Aphides* on the elm, recently found at Deal. Mr. McLachlan mentioned that he had found similar galls on the elm near Hampton Court (vide ante p. 157.)

Mr. Pascoe exhibited the patelliform scaly covering of a *Coccus* found on *Eucalyptus* at Port Lincoln.

Mr. Stainton exhibited three boxes of *Micro-Lepidoptera*, collected by Herr Lederer in Asia Minor and Syria.

The President exhibited examples, and numerous drawings, of a minute *Myriapod* which appeared to be quite undescribed. In its most mature form it had, apparently, only 9 pairs of legs, a smaller number than is known to pertain to any previously noticed member of this class. The youngest specimens observed had 3 pairs; they then seemed to acquire 5, and an additional pair was noticed after each moulting; but none were seen with more than 9, in which condition he had detected spermatozoa, indicating that the creatures were adult.

Mr. Rogers sent for exhibition curious varieties of *Hipparchia Janira* and *Rumia cratægata*.

The Rev. Douglas Timins communicated notes on the habits of *Argynnis Lathonia*.

Mr. McLachlan read a paper on new genera and species of *Psocidæ*.

Mr. E. Saunders read descriptions of 6 new species of *Buprestidæ*, and exhibited the insects.

19*th November*, 1866. Sir John Lubbock, Bart., F.R.S., President, in the Chair.

Percy Bicknell, Esq., of Beckenham, was elected a Member.

Prof. Westwood exhibited a pupa of *Thecla betulæ*, and remarked that it was placed lengthwise on a leaf, without the silken band that usually characterizes the pupæ of the *Lycænidæ*.

Mr. Weir exhibited a paper-like substance used by a Ceylon ant for lining its nest.

Mr. A. F. Sheppard exhibited certain British *Lepidoptera* received from Mr. Gregson, including *Acidalia mancuniata*, which Mr. Gregson proposed to re-name *veterata*, in consequence of the name *mancuniata* having been applied to, in his opinion, dwarfed females (!!); also *Phycis subornatella*, Zeller, a species of *Gelechia*, and varieties of *Pieris rapæ*, *P. napi*, and *L. sinapis*.

Mr. Stainton exhibited a living example of *Stathmopoda Guerinii*, bred from *Aphis* galls on *Pistachia terebinthus*. He remarked that these galls were described by Reaumur, who said that the tree on which they were produced was sometimes called *l'arbre mouche* (fly-tree), in consequence of the galls, which extremely resemble seed-pods, being found to be full of *Aphides*. Mr. Stainton said further, that probably the larvæ of *S. pedella* lived in galls on the alder, and that Linnæu's words, "*habitat in alni foliis subcutanea*," might, on this account, still prove to be correct.

Messrs. Sharp and Crotch exhibited 71 new British species of *Coleoptera*; 11 of these were new to science: these they described under the names of *Ptilium concolor*, *Atomaria Wollastoni*, *Telephorus darwinianus*, *T. scoticus*, *Sitones ononidis*, *Philonthus addendus*, of Sharp; and *Anthicus salinus*, *Gyrophæna Poweri*, *Lathrobium Jansoni*, *Stenus Shepherdi*, and *S. annulatus*, of Crotch.

Mr. Meek exhibited a *Noctua* apparently new to this country, and a new species of *Tortrix* bearing the name *Dicrorampha flavidorsana*, Knaggs MS.

Mr. Stevens exhibited new or rare species of exotic *Coleoptera*.

Mr. Janson exhibited *Macronychus 4-tuberculatus*, Müller, new to this country, taken by Mr. T. J. Harris, of Burton-on-Trent.

Prof. Westwood exhibited a curious example of *Pieris Pyrrha*, of which the sexes differed remarkably; the specimen exhibited had all the left-hand side and the right-hand fore-wing coloured as in the male, whereas the right-hand hind-wing was coloured almost wholly as in the female; also drawings of various species of *Leptalis*, which mimicked species of *Heliconidæ*; and of *Condylodera tricondyloides* from the Phillipines, an orthopterous insect, which exactly mimicked the *Coleopterous* genus *Tricondyla* (also from the Phillipines), supposing the latter to have abbreviated elytra. Prof. Westwood stated, that while admitting mimetic resemblances in all natural organisms, he considered they could only be looked upon as so many illustrations of the law of resemblance prevailing throughout nature. He considered that all had been created in the same garbs they now wore, and were not the result of natural selection, as supposed by Messrs. Bates and Wallace.

Mr. Wallace argued on the other side, that these analogies proved to his mind the truth of the theory of natural selection, and exhibited several insects in support of his statement, including a new species of *Diadema* (*D. anomala*), in which genus the males were usually suffused with purple, and the females obscure; whereas, in this instance, the case was contrary. He considered that Prof. Westwood's arguments proved the truth of his opinion. Mr. Bates also spoke on the same subject, and exhibited interesting South American Butterflies, and explained their habits, in support of his and Mr. Wallace's theory.

Dr. Sharp agreed with the truth of the theory of natural selection, but differed partially from Messrs. Bates and Wallace, as to the probable origin of mimetic analogies.

THE *LEPIDOPTERA* OF IRELAND.

BY EDWIN BIRCHALL.

(*Concluded from page* 148.)

GELECHIA CINERELLA—Howth, Wicklow Mountains.
„ RUFESCENTELLA—Howth, Clontarf.
„ POPULELLA—Killarney.
„ ERICETELLA—Howth.
„ MULINELLA— do. abundant.
„ DIFFINELLA— do.
„ TERRELLA—Abundant everywhere.
„ DESERTELLA—Dublin coast, on the sandhills.
„ EXPOLITELLA— ditto ditto
„ ARTEMISIELLA— ditto ditto
„ SENECTELLA—Howth.
„ MUNDELLA—Dublin coast, sandhills.
„ UMBROSELLA— ditto ditto
„ DOMESTICELLA—Wicklow Mountains.
„ RHOMBELLA— ditto
„ PROXIMELLA—Galway and Belfast.
„ VULGELLA—Wicklow Mountains.
„ MACULELLA—Howth.
„ TRICOLORELLA— ditto.
„ FRATERNELLA— ditto, and Malahide.
„ VICINELLA— ditto, and Belfast.
„ LEUCOMELANELLA—Howth, among the *Silene maritima* on the cliffs.
„ MARMORELLA—Abundant on the coast sandhills.
„ INSTABILELLA—Howth.
„ SEQUACELLA—Belfast.
„ MOUFFETELLA—Killarney.
„ TRIPARELLA— ditto .
„ TÆNIOLELLA—Dublin coast, Blarney.
„ ANTHYLLIDELLA— ditto common.
„ ATRELLA—Dingle.
„ NÆVIFERELLA—Howth.
„ HERMANNELLA—Belfast (?).
„ TARQUINIELLA (Plate I., fig. 2*)—Dublin coast, sandhills. This species, allied to *pictella*, has never, so far as I am aware, been taken anywhere else. It hides among the short herbage and under the edges of the sandhills.

* The figure, unfortunately, does not correctly represent the form of the hind-wings; they should be emarginate, as usual in the genus *Gelechia*.

Cleodora cytisella—Killarney.
Chelaria conscriptella—Killarney.
Anarsia spartiella—Howth.
Harpella Geoffrella—Killarney.
Dasycera sulphurella—Common everywhere.
Œcophora minutella—Dublin, Howth, and Galway.
„ flavimaculella—Dublin; by Mr. Hogan.
Œcophora lambdella—Killarney.
„ fuscescentella—Howth.
„ pseudo-spretella—Common everywhere.
Œcogenia Kindermanella—Howth.
Endrosis fenestrella—Common everywhere.
Butalis grandipennella—Howth.
„ fusco-æneella—Killarney.
Acrolepia granitella—Dublin, Howth.
Glyphipteryx thrasonella—Common everywhere.
„ Haworthana—Wicklow Mountains.
„ fischeriella—Howth.
Douglasia ocnerostomella—Dublin and Howth.
Argyrestiia ephippella—Belfast
„ nitidella—Generally common.
„ spiniella—Howth.
„ albistriella—Belfast.
„ retinella—Killarney.
„ Gœdartella—Dublin, Wicklow Mountains.
„ Brockeella— ditto ditto
Ocnerostoma piniariella—Howth.
Gracilaria Swederella—Generally common.
„ hemidactylella—Killarney.
„ elongella—Of general occurrence.
„ tringipennella—Dublin, Howth, and Galway.
„ syringella—Dublin and Holywood.
„ phasianipennella—Howth.
„ auroguttella— ditto and Wicklow Mountains.
Ornix anglicella—Dublin and Howth.
Coleophora alcyonipennella—Howth.
„ albicosta—Howth and Galway.
„ anatipenella—Howth.
„ discordella— ditto
„ murinipennella—Howth.

Coleophora cæspititiella—Abundant everywhere.
,, Tengstromella—Howth.
,, virgaureella— ditto
,, artemisiella— ditto
,, nigricella—Dublin.
,, fuscedinella—Dublin.
,, gryphipennella— do. and Howth.
,, vitisella (?)—Wicklow Mountains.
,, olivaceella—Howth.
Batrachedra præangustella—Dublin, common; Wicklow Mountains
Oinophila v-flavella—Dublin, among fungi in spirit vaults.
Chauliodus chærophyllella—Howth and Wicklow Mountains.
Laverna lacteella—Belfast (?).
,, epilobiella—Dublin.
,, hellerella— ditto common.
Chrysoclista linneella—Holywood.
,, flavicapitella—Dublin and Howth.
Asychna modestella—Dublin.
Chrysocorys festaliella—Howth, Killarney.
Elachista luticomella— ditto
,, flavicomella— ditto
,, Gregsonella— ditto
,, nigrella—Generally common.
,, subnigrella—Howth.
,, perplexella—Dublin.
,, zonariella—Howth.
,, tæniatella— ditto
,, megeriella— ditto
,, triseriatella—Ditto
,, pollinariella—Ditto
,, rufocinereella—Dublin, Wicklow Mountains.
,, cygnipennella—Of general occurrence.
Tischeria complanella—Belfast.
,, emyella—Howth.
Lithocolletis irradiella—Raheny, Co. Dublin.
,, Bremiella—Wicklow Mountains.
,, pomifoliella—Generally common.
,, corylella—Malahide.
,, spinicolella—Dublin.
,, faginella— ditto

Lithocolletis salicicolella—Howth.
" ulmifoliella— ditto
" quercifoliella—Abundant everywhere.
" messaniella—Dublin, Howth, Holywood.
" corylifoliella— ditto Wicklow Mountains.
" alnifoliella—Howth.
" heegeriella—Wicklow Mountains.
" Cramerella—Generally common.
" Schreberella—Clontarf.
" trifasciella—Howth.
Lyonetia Clerckella—Dannycarney, Co. Dublin, Holywood, Blarney.
Cemiostoma spartifoliella—Generally common.
Bucculatrix cratægifoliella—Howth.
" maritimella— ditto
Nepticula anomalella— ditto
" oxyacanthella— ditto and Coolock, Co. Dublin.
" septembrella— ditto
" ignobilella— ditto Coolock.
" argentipedella— ditto
" acetosella—Howth, in sheltered spots on the cliffs.
" plagicolella—Artone and Dunnycarney, near Dublin.
" gratiosella—Killister, Co. Dublin.
" marginicolella—Clontarf.
" aurella—Of general occurrence.

PTEROPHORI.

Pterophorus ochrodactlyus—Howth.
" isodactylus—Killarney.
" trigonodactylus—Howth, Clontarf.
" punctidactylus—Killarney.
" pilosellæ (?)—Belfast.
" bipunctidactylus—Howth, Belfast.
" fuscodactylus— ditto
" lithodactylus—Galway.
" pterodactylus—Howth, Belfast.
" galactodactylus—Wicklow Mountains.
" tetradactylus—Galway.
" pentadactylus—Wicklow Mountains, Cork.
Alucita polydactyla—Rocbuck, Co. Dublin, Blarney, Wicklow Mountains.

SUMMARY.

	British Species of Lepidoptera according to Doubleday's List.	Found in Ireland.
Diurni	64	43
Nocturni	109	70
Geometræ	271	192
Drepanulæ	6	3
Pseudo-Bombyces	27	20
Noctuæ	304	200
Deltoides	14	8
Aventiæ	1	0
Pyralides	67	36
Crambites	70	25
Tortrices	303	139
Tineæ	648	212
Pterophori	30	13
	Total British Species...1914	Total Irish Species...961

Addendum—

Sesia culiciformis—Killarney.

EXPLANATION OF PLATE I.

Fig. 1.—*Eupœcilia albicapitana*, page 146.

„ 2.—*Gelechia tarquiniella*, p. 169. (This figure, unfortunately, does not correctly represent the form of the hind-wings; they should be emarginate, as usual in the genus *Gelechia*.

„ 3.—*Tinea confusella*, p. 147.

„ 4.—*Lithosia caniola*, p. 33.

„ 5.—*Zygæna Minos*, (*a*. type, *b*. var.) p. 33.

„ 6.—*Zygæna nubigena*, (*a*. type, *b*. var.) p. 33.

„ 7.—*Dianthœcia Barrettii*, p. 106.

„ 8.—*Dianthœcia compta*, p. 106.

„ 9.—*Dianthœcia capsophila*, p. 105.

DESCRIPTION OF A NEW GENUS OF DIURNAL LEPIDOPTERA BELONGING TO THE FAMILY *ERYCINIDÆ*; WITH CHARACTERS OF TWO NEW SPECIES.

BY A. G. BUTLER, F.Z.S.

METACHARIS, gen. nov.

Anticæ maris subtrigonatæ, apice acuto; feminæ magis elongatæ, apice subconvexo; corpus maris robustum, feminæ tenue; antennis elongatis tenuibus, clava elongata tenui; palpis minimis; alæ supra venis plumbeo-acuminatis.

Wings of male generally dark on the upper side; of female ferruginous, spotted with black; both sexes with plumbaceous terminations to the nervures; the wings of male frequently shot with purple or blue below; the neuration the same as in *Lemonias**: the body of male robust, elongate; of the female short, slender: the antennæ long, with slender and gradually-formed club; the palpi very short, as in *Charis*.

1. Palpus of *Lemonias*
1*a*. Club of antenna of ditto.
2. Palpus of *Metacharis*.
2*a*. Termination of antenna of do.
3. Palpus of *Charis*.
3*a*. Club of antenna of ditto.

This genus is intermediate between *Lemonias* and *Charis*; from the former it differs in its minute palpi, and in the leaden or silvery sub-marginal streaks on the upper side; from the latter, in its longer antennæ with more slenderly formed club, and its much greater size; the females with elongate wings, as in some species of *Lemonias;* in coloration it chiefly differs in having the nervures tipped with plumbaceous or silver, in place of the ordinary silvery sub-marginal lines. The typical species are *Hesperia Ptolomæus* (Fabric.), *Papilio Agrius*, (Dalm.), and *Charis Cadmeis* (Hewits.)

The insects composing the present genus are natives of South America.

1. METACHARIS PTOLOMÆUS.

♂. Hesperia Ptolomæus, *Fabricius*, *Ent. Syst.*, iii., pt. 1, p. 319, n. 209, (1793), *Donovan*, *Ins. Ind.*, pl. 46, p. 6, (1800).

Erycina Ptolomæus, *Godart*, *Enc. Méth.* ix., p. 572, n. 38, (1819).

Lemonias Ptolomæus, *Westwood*, *Gen. Diurn. Lepid.*, p. 459, n. 19, (1851).

♀. Hesperia Lucius, *Fabricius*, *Ent. Syst.*, iii., pt. 1, p. 320, n. 211, (1793).

Brazil. ♂. B. M.

* The arrangement of the sub-costal nervules appears to differ slightly in some of the species.

2. Metacharis Agrius.

Papilio Agrius, *Dalman, Anal. Ent.*, p. 46, (1823).

Calospila Agrius, *E. Doubleday, List Lep., Brit. Mus.*, pt. 2, p. 15, (1847).

Lemonias Agrius, *Westwood, Gen. Diurn. Lepid.*, p. 459, n. 20 (1851).

Charis Sylvestra, *Ménét. Cat.*, pt. 1, t. iii., fig. 6 (1855).

Brazil. ♂ ♀. B. M.

3. Metacharis Cadmeis.

Charis Cadmeis, *Hewitson, Exot. Butterf.*, iii., p. 113, pl. xlvii. f. 1, (1866).

Amazons. *Coll. W. W. Saunders and W. C. Hewitson.*

4. Metacharis regalis, sp. nov.

♂. Alæ supra nigræ, cærulescentes, apicibus rufescentibus, punctis duobus tribusve sub-marginalibus apicalibus, venisque sub-apicalibus plumbeo-acuminatis; margine interno posticarum ciliis ferrugineis; corpus nigro-cinereum, abdominis dimidio anali albicante.

Alæ subtus ferrugineæ, area basali maculis plurimis parvis nigris variegata; puncto uno apicali, aliisque aliquando valde indistinctis, nigris: corpus olivaceo-albidum, ferrugineo-irroratum.

Exp. alar unc. $1\frac{11}{16}$.

♀. Alæ supra flavo-ferrugineæ, marginibus externis ferrugineis, punctis marginalibus inter venas nigris: linea interrupta angulis alternis undata sub-marginali, altera discali magis irregulari media, maculisque basalibus plurimis, nigris: venis plumbeo-acuminatis: corpus ochreo-fuscum.

Alæ subtus flavæ; punctis marginalibus, aliisque plurimis basalibus nigris; lunulis inter venas latis sub-marginalibus, ferrugineo-fuscis: corpus flavo-albidum. Exp. alar. unc. $1\frac{3}{8}$.

Ega, St. Paul, Tunantino, Tapayos, Brazil. ♂ ♀. B. M.

This species has a slightly different arrangement of the sub-costal nervules in the front-wings.

5. Metacharis Batesii, sp. nov.

♂. Alæ supra cinereo-olivaceæ, margine postico rufescente; punctis marginalibus, aliisque sub-marginalibus nigris inter venas positis; area basali lineolis punctisque plurimis basalibus nigris: corpus cinereo-olivaceum; antennis nigris, albo-fasciolatis et flavo-acuminatis.

Alæ subtus cæruleo-cinereæ, nitidæ, marginibus olivaceis; anticæ margine interno et apice nigro-punctatis; punctisque aliis valde indis-

tinctis discalibus nigris: posticæ punctis marginalibus, aliis majoribus sub-marginalibus; serie macularum discalium irregulari, punctisque nonnullis basalibus, nigris: corpus olivaceum. Exp. alar. unc. $1\frac{1}{4}$.

♀. Alæ supra flavo-ferrugineæ velut, mari maculatæ: subtus punctis marginalibus ferrugineo-fuscis; lineolis discoideis anticarum indistinctis, aliisque velut supra, nigris: corpus albidum.

Exp. alar. unc. $1\frac{1}{4}$.

Tapayos, Brazil. ♂♀. B. M.

There are several beautiful undescribed species of this group in Mr. Bates' Collection.

DESCRIPTION OF A NEW SPECIES OF *TORTRICINA*.

BY H. G. KNAGGS, M.D., F.L.S.

DICRORAMPHA FLAVIDORSANA, n. sp. Knaggs, Ent. Annual, 1867, p. 148, fig. 5.

Mas. *Alis anticis saturaté fuscis, fasciis tribus apicem versus obliquis angustis læte fulvis; inter has lineis cæruleis metallicis interpositis; margine apicali, puncta nigra tria vel quatuor continente, læte fulvo; costæ dimidio externo punctis pallidis et nigris alternis vario; lunulâ dorsali conspicuè flavâ, sed magnitudine et formâ variabili: posticis saturatioribus, ciliis pallidioribus.*

Fœm. *Similis, sed alis obscurioribus; D. Petiverellæ persimilis.*

Exp. alar. ♂ circ. 6‴; ♀ minor.

Habitat Haslemere, N. Devon, et ——— ?

D. flavidorsana is intermediate between *D. alpinana* and *D. Petiverella*, the male partaking of the characters of the former, the female of those of the latter. The male, however, is easily distinguished from *alpinana* by its darker ground colour, from *Petiverella* by the brightness of the apical oblique tawny bands, and from both by the vividness of its conspicuous dorsal patch. The female is not readily separable from either sex of *Petiverella*, though the apical oblique bands and the blue metallic lines between them are a trifle more evident than in that species.

Some two years or more ago, my friend, Mr. C. G. Barrett, sent me up, among a batch of "*insecta non determinata*," a male example of the insect under notice: but, although I then strongly inclined to consider it a species not included in our lists, I was induced to return it as "*alpinana?*" after seeing a similar specimen in the collection of Mr. Doubleday, who at that time seemed to be confident that it was merely a variety of *alpinana*.

This circumstance had passed from my memory when, a short time since, Mr. Meek brought me, for identification, *inter aliis*, a pair of this *Tortrix*, which revived my recollection of the occurrence, and still more strongly impressed me with the idea of its distinctness from *alpinana*. At this time Mr. Stainton, who, by-the-bye, perfectly coincided with my opinion in the matter, being about to pay a visit to Mr. Doubleday, I placed Mr. Meek's ♂ example in his hands for the purpose of showing to that gentleman.

A visit to Epping still further corroborated our views, for Mr. Doubleday had not only already separated this insect from *D. alpinana* in his cabinet, but agreed as to its being specifically identical with the specimen which Mr. Stainton placed before him.

Although Mr. Barrett's ♂ example (still bearing the ticket "*alpinana?*" by the way) differs from Mr. Meek's ♂, in having the dorsal patch broader and less curved (more as in *alpinana* in point of fact,) while in the latter that mark partakes of the character of that of *Petiverella*, I have no hesitation in expressing my belief that they both pertain to one and the same species.

Mr. Meek's specimens (a ♂ and a ♀) were taken last August amongst *Artemisia maritima* in North Devon, Mr. Barrett's (a ♂ and 3 ♀) were beaten from a hedge near Haslemere; I am unaware of the locality in which Mr. Doubleday's example (a ♂) was captured.

Kentish Town, *November 25th*, 1866.

A MONOGRAPH OF THE BRITISH *PSOCIDÆ*.

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

As a second instalment* towards monographing the British species of the families included in the Linnæan order *Neuroptera*, I offer descriptions of the genera and species of *Psocidæ*. These small insects have been much neglected. Various writers of the seventeenth and eighteenth centuries noticed *Atropos* in the Philosophical Transactions; but it was not until 1815 that the family was instituted, when Leach published an outline of it in the Edinburgh Encyclopædia (article "Entomology"). In 1836, Stephens described the British species (which he appears to have assiduously collected) in the sixth volume of his "Illustrations" (Mandibulata), and divided them into groups according to the neuration; but in several instances the types in his col-

* The *Trichoptera* are already done, and I hope soon to publish, in another place, the British *Hemerobidæ* and allied families.

lection do not accord with the sections in which they are placed, and as was too often the case with that author, the specific differences are too frequently grounded on superficial, or imaginary, characters. It is to be regretted that Curtis has hardly given the family due importance in his "British Entomology." He figures only one species (plate 648), and the two pages of text are scarcely sufficient to give the most moderate idea of the family. An important step in advance was here made by the separation of certain forms in a distinct genus. After Curtis, more than twenty years passed without any original notice. In 1861, a synopsis of our species was published by Dr. Hagen in the "Entomologist's Annual," in which he endeavoured to bring the Stephensian species within their proper limits, a task satisfactorily accomplished. This brief account, therefore, embodies all that has been done for the family in Britain.

With respect to continental authors, Linnæus, of course, comes first. In his "Fauna Suecica"* and "Systema" he described various species, including them in the genera *Hemerobius* and *Termes*, in which he was followed by Müller and Fabricius. In 1794, Latreille first separated them from *Hemerobius*, &c., under the generic term *Psocus*. His paper was published in the "Bulletin de la Société Philomatique," which I have not been able to obtain in our libraries. In 1799, his descriptions, with additions, were reproduced in Coquebert's Illustrations of the insects of Fabricius, part 1, and Coquebert devotes plate 2 to figures of the various species. These figures are exceedingly rough, yet in most instances recognisable, and the descriptions assist in the determination of the insects intended: imperfect as they are, with one or two exceptions, they are the only representations extant. After Latreille, Burmeister in his "Handbuch" (part of the division *Corrodentia*), Zetterstedt in his "Insecta Lapponica," Rambur in the "Histoire des Insectes Névroptères," and Brauer in the "Neuroptera Austriaca," all described the species known to them. In the present year (1866) Hagen has published a critical revision of the species of previous authors in the Stettin. Entomologische Zeitung, and a synonymic catalogue, with more exact generic divisions, in the Verhandlungen der zool.-bot. Vereins in Wien ("Psocinorum synopsis synonymica"). Schrank, Scopoli, &c., also describe some few species.

With respect to synonymy, the stumbling-block of all monographers, I will remark, that as far as the Stephensian species are concerned, that here given appears to be exact, according to the results

* The citations in this paper are always from the second edition of the "Fauna," and twelfth edition of the "Systema."

obtained from a careful examination of the types. With regard to Latreille's species, a careful study of his descriptions (aided by the figures), has, in one or two instances, induced me to arrive at a different conclusion to that of Hagen. I have not thought it necessary to notice mere catalogue names, such as those of Stephens' "Catalogue" and "Nomenclature," and Curtis' "Guide." Neither, as a rule, have I referred to Walker's British Museum Catalogue (*Neuroptera*, part 3), because the diagnoses there given are copies from other authors, and the species placed to represent them in the general collection of the British Museum have, in many cases, nothing whatever to do with the names accompanying them.

I enumerate 29 species; but many more, no doubt, occur with us. It may be remarked, that almost all the described European species have been found here. Apterous or semi-apterous forms of the division *Atropina* are very liable to be introduced and become naturalised; and even some of the true *Psocina* are likely to obtain a footing in the same way, for I once saw a species swarming in the empty hold of a foreign-going ship.

As a rule I have not mentioned special localities; these insects have been so little collected, that an enumeration here of known or recorded localities would probably appear ridiculous in a few years.

Excepting for the apterous or semi-apterous forms I prefer pinning to mounting on card; save my own, all recent collections of these insects that I have seen are carded, but these are not so easy to examine, especially as regards the neuration, which can only be well seen by holding the wings against the light; besides, carded specimens are *very* liable to be attacked and destroyed by mites and *Atropos*.

It only remains for me to say that I hope this monograph may induce observers to turn their attention to these insects. The materials I have had to work from have been limited. Stephens' collection, as affording the only reliable guide to a correct knowledge of his species, has been constantly consulted, and my own collection contains most of our forms. To Professor Westwood I am greatly indebted, he having placed in my hands the materials in the Oxford Museum, and his own drawings of the obscure *Atropina*; Mr. J. C. Dale has sent me more than a hundred examples taken at various times during his long career; and the Rev. T. A. Marshall has also communicated the whole of his materials in this family. To these gentlemen I herewith acknowledge my obligations.

The *Psocidæ* may be arranged in two divisions, thus—

A. Ocelli absent. Wings ill-developed or absent ..... *Atropina*.
B. Ocelli present. Wings largely developed ..... *Psocina*.

A.—*Ocelli absent.* (*ATROPINA*).

The species of this group are usually inquilines; that is to say, they live a more or less concealed life, usually in houses or stores. The antennæ are multi-articulate, with all the joints rather short. The wings absent or rudimentary; the posterior pair wanting, the anterior pair when present usually represented by coriaceous scales, or sometimes membranous. The body soft. Comparatively little is yet known of their exact habits, and the described species are not numerous.

The genera may be tabulated thus—

A. Meso- and meta-thorax united; wings absent; femora strongly dilated...*Atropos*
B. Meso- and meta-thorax free; femora only slightly dilated.....
  a. Wings represented by coriaceous scales.....*Clothilla*
  b. Wings membranous .....*Psoquilla*

Genus Atropos, Leach (1815).

Termes p. Linn.; *Hemerobius* p. Fab.; *Psocus* p. Latr.; *Troctes* Burm.

Tarsi 3-jointed; femora strongly dilated, the intermediate pair less so than the others. Head oval; eyes small. Antennæ 17-articulate, the two basal joints stout, the rest thin. Pro-thorax forming a narrow transverse collar. Meso- and meta-thorax united into one large piece. Abdomen ovate. Wings absent.

1.—Atropos divinatoria, Müller.

Termes divinatoria, Müll. Prodr. p. 184, 2179 (1776). *Hemerobius pulsatorius*, Fab. Syst. Ent. p. 311, 13, nec *Termes pulsatorium*, Linn.; *Atropos pulsatoria*, auctorum. *Troctes pulsatorius*, Burm. Handb. 2, p. 773, 1. *Termes fatidicum*, Linn. Faun. Suec. p. 475, 1938.?

Greyish-white. *Head* slightly testaceous. *Eyes* black. *Nasus* and *abdomen* with a few scattered bristle-like hairs. ("♂ with an oblong lobe at the apex of the abdomen beneath, on each side of which is a slender hook, acute and turned inwards at the tip; ♀ with a large oval egg-valve covering the apex of the abdomen beneath." *Nitzsch*, as quoted by *Burmeister* and *Hagen*.) The creatures vary from almost colourless to a decided grey, with the head more or less yellowish or testaceous. Length of body ⅛‴.

Exceedingly abundant in books and papers, and in neglected boxes and collections of insects, &c.; commits great ravages on dry insects set in the English fashion on short pins; commonly known as the "book-louse," or, in German, "*staub-laus*" (dust-louse).

It is with great reluctance that I do not apply to this insect the name "*pulsatoria*," under which it has been so long and familiarly known; but it appears conclusive that the true *Termes pulsatorium* of Linné is

a *Clothilla*, for the words in his description "segmenta abdominis ad latera punctis rufis singula notata" apply well to *Clothilla* but not to *Atropos*. That this insect was unknown to Linné is impossible, and that it is his *Termes fatidicum* is most probable, a *lapsus calami* in the comparative size of the latter having possibly occurred. (*Vide* Hagen in Stett. Ent. Zeit. 1866, p. 189.)

To this insect has long been attributed the power of producing the ticking noise known as the "death watch." That various species of *Anobium* cause this sound, is proved beyond doubt; but that a creature with a body so soft that the least touch annihilates it can in any way produce a noise sensible to human ears, seems to me impossible.* I look upon it as a perpetuated superstition commenced centuries ago, at a time when the human mind was peculiarly sensitive to impressions of the supernatural, and having its origin in the habitat of the creature; the real producers of the sound, species of *Anobium*, were not seen or suspected, and *Atropos*, as being the only insect supposed to frequent the spots whence the sounds proceeded, was naturally accused. The apprehensions excited by what is only the love-call of a small beetle, still exist with the uneducated.

A. formicaria, Hagen, a black species inhabiting the nests of *Formica fuliginosa*, occurs near Königsberg, and is likely to be found in similar situations in this country.

A. oleagina, Hagen, has occurred in Ceylon in oil-cake said to have been imported from England; there is no evidence that it is a British insect.

(To be continued.)

OBSERVATIONS ON THE STUDY OF GALL-FLIES (*CYNIPIDÆ*).

BY FREDERICK SMITH.

It gives me great pleasure to see the first page of the "Entomologist" for December occupied by a portion of a chapter on Galls. Some ten or twelve years ago, my friend, Mr. Haliday, informed me that German Entomologists had arrived at a conviction that the species of the genus *Cynips* had no male sex. This naturally excited my curiosity, and I became extremely anxious to investigate the subject. Galls of *Cynips Kollari* were not at that time found in the neighbourhood of London, but were plentiful in some parts of Devonshire; so I immediately

* Mr. F. Smith expressed similar doubts at a recent Meeting of the Entomological Society, and Burmeister and others have avowed themselves equally sceptical on this point.

entered into correspondence with friends in that county, who shortly supplied me with a good bushel of sound galls. Early in the spring following, hosts of flies were developed, but all proved to be females! This result was brought before the Entomological Society, and no doubt was duly registered in the Proceedings of that body.

I next ascertained that Hartig, in Germany, had reared and examined 10,000 flies, all *Cynips divisa*, with the same result. The same astonishing phenomenon had attended similar investigations of thousands of specimens of other species of *Cynips;* so that the results obtained by me had merely confirmed those at which Hartig had previously arrived. I am acquainted with numerous similar investigations, attended with similar results, having been made by Mr. Parfitt and other English Entomologists, so that Mr. Newman's statement has had abundant precedent and confirmation.

On many occasions I have received supposed males of *Cynips Kollari*, but these have invariably proved to be those of its parasites, *Callimome*, *Decatoma*, &c.

About four years ago, Professor Westwood brought before the Entomological Society a notice of the supposed discovery of the male of a species of *Cynips*. Baron Osten-Sacken discovered a remarkable gall on a leaf of the American red oak: it was petiolated, elongate-fusiform, and of a pale green; the insect reared was said to be a male, supposed to be that of the *Cynips confluens*, Harris; this was conceived to be a discovery that at once solved the mystery; the galls producing the opposite sexes, it then appeared to be proved, were altogether of different forms.

This supposed discovery of males, however, does not appear to have been confirmed by subsequent investigation, and we are left to infer that the connection between the male bred from the elongated gall and the female of the gall of *Cynips confluens* had probably no foundation in reality.

Galls of *Cynips Kollari* are now so universally spread over this country, and the opportunities of investigation of this mystery so close at hand, that I cannot think it possible English Entomologists could, up to the present time, have failed to discover the male if that sex has really any existence.

Since the supposed discovery of the male of *Cynips*, I have lost no opportunity of searching for it: every one who has paid attention to this interesting subject, must have noticed the great disparity in the size of the galls of *C. Kollari*, but flies bred from galls one inch in diameter, and others from galls scarcely a quarter of that dimension,

have invariably produced the same sex, that of female. All endeavour to discover galls, differing in form, and producing male flies, has proved ineffectual on my own part, and I am not aware of any Entomologist having been more fortunate. The species which I have selected for investigation have been *Cynips Kollari*, *C. radicis*, *C. folii*, and *C. aptera*; all plentiful in my own neighbourhood, and of each of which I have bred some thousands of specimens. Now, supposing it possible that the males of these really exist, and that in each species that sex inhabits a differently formed gall, and that to be looked for in a different situation, to the gall producing the female (as is supposed to be the case in the *Cynips confluens*, and by analogy in the case of *C. Kollari*, *C. folii*, &c.), where are we to look for the male galls in the case of *C. aptera?* an underground species, and also in the case of *C. radicis*, the gall of which is the well known woody excrescence found at the root of the oak? Startling as the announcement really was in the first instance, it still appears that we have a want of evidence to prove that a male in the genus *Cynips* has any positive existence. In the paper to which I have referred at the commencement of these observations, some good practical instructions are given as to the *modus operandi* most desirable in pursuing the investigation of this most interesting subject; in the majority of cases the method prescribed will prove successful; but there are a vast number of galls that require to be kept moist, particularly such as are found on leaves of plants, as well as others found on their roots; these require to be kept in pots, partly filled with earth; the common oak-spangle, as it is familiarly called, cannot be brought to produce its inhabitant without this process being adopted, and there are innumerable other species to which this method must be applied.

The study of galls and their inhabitants has of late years been assiduously investigated by more than one Entomologist in this country, but the result of their labours will probably not be made known until we have some portion of Mr. Armistead's work, when probably much interesting information will be placed before us.

British Museum.

A list of captures of Lepidoptera in 1866 *on the eastern extremity of the Cotswolds.*—In this list a note is added when the species was, by any means, procured from other places.

January 1st.—*H. rupicaprariu*, bred; this insect is always out here in the last week in December.

February 2nd.—*P. pilosaria*, bred; the pupæ very common at the roots of elm. 6th. *H. progemmaria*, bred; most abundant on elm trunks after dark. 21th. *A. prodromaria*.

March 6th.—*A. œscularia*, bred; 1 ♀, numbers of ♂. 12th to 18th. *T. gothica*, *instabilis*, *stabilis*, and *cruda*; all very abundant at sallow blossoms later on. 18th. *T. munda*. 29th. *X. lithorhiza*, bred; an abundant insect: *T. rubricosa*, two at sallow. About this time bred a fine specimen of *X. conspicillaris*: the pupa was probably dug from an oak in the meadows between Worcester and Stourport.

April 3rd.—*A. badiata*, very common after dusk.

May 8th.—*P. palpina*, bred; the pupæ dug in abundance at roots of willow. 9th. *D. mendica*, commonly. 10th. *N. camelina*; the pupa dug. 11th. *N. ziczac*, bred and dug. 16th. *D. pudibunda*, bred; scarcely found here. *R. cratægata*; the larva hybernated and spun up in the early spring. 17th. *F. atomaria* and *S. clathrata*, common in every field. 22nd. *A. betularia*, very common; the larvæ on currant leaves. 24th. *S. culiciformis*; bred nine from pupæ sent. *A. Euphrosyne*, *L. sinapis*, *S. alveolus*, *H. Tages*, *T. rubi*, *P. œnea*, *P. Geryon*, *E. omicronaria*, *M. euphorbiata*, &c., at Malvern; on the same day, Dr. Hearder took *M. hastata* and *P. hamula*. 26th. *S. tiliæ* and *populi*; the pupa dug at elm, sallow, and poplar. 29th. *C. vinula* and *H. prasinana*; the former from the larva, the latter dug. 30th. *A. putris*, in abundance at roots of elm.

June 3rd.—*A. urticæ* and *A. rumicis*. 5th. *A. megacephala*, from pupæ under the bark of poplars. 6th. *E. subfulvata*. 7th. *S. ligustri*; the larva has been unusually common this year. *C. furcula*. 8th. *N. plantaginis* and *C. bifida*, both bred. 9th. *E. mi* and *glyphica*, both very common. *P. bucephala*, bred in abundance. *A. ligustri*, quite common on ash trees; the larva spins up under the top stones of the walls against the trees. 11th. *H. oleracea*, *N. plecta*, and *G. trilinea*, at sugar. *C. spinula*, bred. 12th. *D. Elpenor*, hovering over flowers. *P. gamma* and *A. segetum*; these have been quite scarce this year. 16th. *C. porcellus*, hovering over flowers. *A. luctuosa*, hovering over wild thyme in the sunshine. 19th. *M. typica*, only two; the insect is usually abundant. 22nd. *H. dipsacea*, hovering over flowers in the sunshine. 26th. *T. orbona*, *M. furuncula*, and *P. chrysitis*, all common at sugar. 28th. *B. quercûs*; the larva hatched in August 18th, 1864, went into pupa in August, 1865. 29th. *Z. lonicerœ*, in the utmost profusion; two or three cocoons on one flower stem. 30th. *P. chrysorrhœa*, bred in numbers from larvæ sent me. *Mem.*—Never to breed any more till they give up irritating my skin.—E. Hallett Todd, Northleach, Gloucestershire.

(To be concluded in our next.)

Worcestershire captures (*Lepidoptera*), *and species bred in* 1866.—The season of 1866 has been, according to my experience, very unfavourable for Lepidoptera, so I have but few captures to record. The spring was so unusually cold and windy, that the appearance of many species was much retarded. Thus I met with *A. œscularia* and *A. prodromaria* only just emerged on the 9th of April, and *Argynnis Euphrosyne* did not appear until the end of May, fully a month later than last season; of this I captured one example nearly as large as *Adippe*. *C. vinula* withstood the cold of April; I saw one at rest, already rather worn, on the 22nd April.

January 3rd. *E. gelatella* was captured in my house.

April. *P. lacertula* and *N. dictæa* bred.

May. *C. ocularis* bred; *C. rotundaria* bred, two of which had the "first line" and "central line" confluent, so that only two lines appear on the upper wings, *L. hexapteraria*, *E. plumbeolata*, and *L. sinapis* captured.

June. *C. porcellus*, *S. undulata*, and *L. luzella* captured.

July. *L. quercûs*, a ♂ bred from a pupa of 1865; *P. lacertula* (second brood) *N. dictæa*, *N. Ziczac*, and *T. betulæ* bred; *C. chamomillæ* at rest on an iron fence (a new species to Worcestershire).

August. *C. diffinis*, *C. xerampelina*, and *C. graminis* bred. *M. euphorbiata* (second brood) captured. On the 23rd, I saw a fine ♂ *S. populi* drying its wings (no doubt of a second brood).

September. *M. stellatarum*; the only one I have seen or heard of this season was captured by a youth and brought to me. *V. c-album*; one bred from a larva I found feeding on elm (I think this is very unusual), and one amongst the flowers in my garden; the latter is filled with choice and attractive plants, yet I saw only one *V. Atalanta*, and four or five *V. urticæ*. *E. tiliaria* and *C. miata* bred. *C. nupta* at rest.

October. *X. semibrunnea*, *X. rhizolitha*, *O. macilenta*, *C. nupta*, and *A. lunosa* at sugar. I never before saw so few of the common autumnal species attracted by sugar; in fact, this system has failed with me throughout the year.

During the year, I met with the following larvæ:—*T. betulæ*, 25, nearly all of which emerged; 8 ♂ emerged from the 21st to 27th of July, but no ♀; after that the ♀ appeared, with 2 or 3 ♂. *G. papilionaria*, 6 larvæ, 5 emerged; I think it probable, that the high winds prevailing when the larvæ were feeding, prevented the *Ichneumons* from attacking them; in former years, I usually found one-third of the larvæ of *T. betulæ*, and 8 out of ten of those of *papilionaria*, stung. *C. vinula* 25 larvæ on one small willow. *N. ziczac*, *N. dromedarius* (14; the first on the 11th August, the last on the 10th of October, then not half-grown), *C. furcula*, *A. leporina*, *P. palpina*, *A. Atropos* (1 brought to me—rare this season), *C. ocularis*, *S. ocellatus*, *E. tiliaria*, *C. miata*, *P. falcula*, *E. pendularia*, *E. orbicularia*, *P. lacertula*, *S. apiformis*, and many others.—A. Edmunds, Cemetery House, Astwood Road, Worcester, *November* 21*st*, 1866.

On the distinguishing characters of the larvæ of Nyssia hispidaria and Phigalia pilosaria.—I have before now been puzzled how to distinguish the larvæ of these species, and, indeed, have bred the moths of the one from what I had taken for the larvæ of the other; but this year, through the kindness of Mr. Batty, I have had the opportunity of settling this difficulty for myself, and now venture to send a note of the most striking points of distinction.

Both larvæ are alike in this—that they are very knobby and warty; they have eight pairs of dorsal, and eight pairs of sub-dorsal warts, on segments five to twelve—both inclusive; they differ as follows.

In *hispidaria*, the warts, although not uniform in size throughout, yet do not vary so much; the dorsal warts on segment twelve being bigger than any of the rest, and the biggest sub-dorsal warts being on segment six: and then as to the colouring—there is a more uniform pattern and mottling of orange with grey or black.

In *pilosaria*, both the dorsal, and the sub-dorsal warts of segments six and seven, much exceed in size any of the rest; and, together with some pale ochreous marks on the same segments, which begin on the sides, and meet in the shape of a Λ on the back, form a distinguishing feature easily to be caught.—Rev. J. Hellins.

Captures at ivy, near Bristol.—My friend, Mr. John Hutchings, and I, have met with the following insects at ivy bloom this autumn:—*Dasycampa rubiginea*, two specimens on the 27th and 30th October; *Hoporina croceago*, a fine ♀ on the 1st November; *Xanthia aurago*, two or three specimens; and a few examples of *Xylina rhizolitha*, *semibrunnea*, and *petrificata*.—Alfred E. Hudd, Clifton, *13th November*, 1866.

Note on Hepialus velleda, var. carnus.—On June 7th, while collecting in a swampy copse at the other side of Hindhead, I disturbed with my feet a specimen of the variety "*carnus*" of *Hepialus velleda*, in fine condition. It, however, fluttered and kicked about in the grass so much that I found great difficulty in pinning it uninjured (boxing it was not to be thought of). Unfortunately, business prevented me from staying till dusk, or I should have endeavoured to ascertain whether the ordinary form of *velleda* was common, or whether the variety had taken its place, which would have been still more remarkable. The ordinary form has, however, been taken in this neighbourhood but rarely.—C. G. Barrett, Haslemere.

Note on Dicrorampha flavidorsana, Knaggs.—I captured this species (♂ and ♀) on the north coast of Devon last August, amongst *Artemisia maritima*. It appears to be very local, only occurring amongst the above named plant, which is undoubtedly its food-plant. I saw several more than the pair I captured, but passed them over for *D. Petiverella*, to which they are apparently closely allied. On returning home, however, and comparing them with some specimens of *D. Petiverella*, which I had taken at Folkestone about a month earlier, I thought that they were distinct, and at once took them to Dr. Knaggs, who recognized them as an insect which he had some time ago received from Mr. Barrett, and had returned as a probable variety of *D. alpinana*.

The habits of *flavidorsana* remind one of those of *D. simpliciana*, which flies over its food-plant before dusk.—E. G. Meek, No. 1a, Paradise Row, Old Ford Road, E., *November 23rd*.

Capture of Agrophila sulphuralis near Bury.—The only good thing taken by me near this town this year is *Agrophila sulphuralis*, of which I captured three good specimens in June.—J. W. Whelan, Bury St. Edmunds, *3rd December*, 1866.

Occurrence of Eubolia mœniata near York.—I write to inform you that, on the 19th of August last, I took what I thought to be at the time a good variety of *E. mensurata*. A few weeks ago, upon examining the specimen more closely, I found it answered exactly the description in Stainton's Manual of *E. mœniata*; I showed it to Mr. Allis, and he coincided with my opinion; so we together compared it with the figure in the Entomologist's Annual, and found it agree so well that we had no doubt about its being that species. I took it by beating broom, in

a spot not far from where *L. purpuraria* was taken some years since. Mr. Allis has the *purpuraria* in his cabinet. I intend making a coloured drawing of my insect, and sending it you. It is about the only insect worth noting that I have taken, having had a very bad season.—W. Prest, 6, Castlegate, York, *December 4th*, 1866.

[Mr. Prest has forwarded a drawing of his insect, and the form of the fascia is without doubt that of *Eu. mœniata*. Mr. P. also remarks that a Continental type of that species which we have forwarded is specifically identical with his insect.—Eds.]

An addition to Mr. Birchall's List of "The Lepidoptera of Ireland."—I observe that one Irish insect I am acquainted with is not enumerated in Mr. Birchall's valuable and interesting list of "The Lepidoptera of Ireland:" I mean *Ennomos tiliaria*. I can hardly understand how so conspicuous an insect has escaped the notice of so accurate an observer as that gentleman.

In this county, which is by no means entomologically favourable, this insect is one of the commonest of the *Geometræ*. In the Augusts of 1864 and 1865, I found the pupæ commonly at birch, usually spun up in leaves, or between blades of grass growing in corners formed by the roots of the tree. The perfect insects came abundantly to light in September and the beginning of October last year.

This year, owing to my absence during the entire season, I have been unable to obtain either the pupa or imago.—Hon. Emily Lawless, Lyons, Hazlehatch, County Kildare, Ireland, *Nov. 13th*, 1866.

Notes on Leptogramma Boscana and scabrana.—The Rev. E. Horton's observations on *Lept. Boscana* and *scabrana* would lead one to suppose that he is inclined to believe them but one species.

I take them both here,—the first, *Boscana*, very sparingly; it is much earlier in its appearance than *scabrana*, which last year was in great abundance in one locality near me, and is a much later insect; and, moreover, it is to be found all through the winter, concealed under leaves. I captured one only yesterday. *Boscana*, on the contrary, quickly disappears, and I have never found one after August. I have not yet tried my hand at breeding them, but another year I will make the attempt.—H. D'Orville, Alphington, near Exeter.

Recent captures on the Cotswolds.—The following insects were captured and given to me by the Rev. H. Roberts, of Ashton Rectory, in this county, after an excursion to the Cotswold Hills, near Cheltenham, at the end of June of this year:

1. *Procris Geryon*, taken near the celebrated Broadway Beacon, overlooking the Vale of Worcester.
2. *Asthena Blomeraria*, taken at rest, and not uncommon, on the boles of the larch on the Cotswold Hills near Cheltenham
3. *Acidalia ornata*, on the Cotswold Hills.
4. *Eupithecia lariciata*. This was brought to me alive, and deposited eggs from which I have reared the larvæ. Mr. Roberts found this insect abundantly in 1861 on the Cotswold Hills; but, being more of a botanist than an entomologist, he did not know what it was.—Id.

Description of the larva of Agrotis lunigera.—Some years ago Mr. W. Farren obtained a few eggs from a pinned ♀ of this species which were laid on the cork of his collecting box, and he cut them out, and kindly sent them to me; but, as they hatched in transit, I failed in attempting to rear them.

It is now with the greatest satisfaction that I am enabled to describe this larva, thanks to the persevering exertions of Mr. Thomas Terry in rearing a few eggs, obtained in a similar way, from a ♀ that had previously been poisoned and pinned.

The young larvæ when first hatched, and until after their third moult, were supplied with grasses, dock, dandelion, and other food; but they fed only on the dandelion, and preferred the withered leaves, perforating them with small round holes. At the time they came into my possession, I supplied them with *Polygonum aviculare*, which they attacked ravenously, and would never after eat dandelion. Their growth and condition became so satisfactory, that I have no doubt this is one of their natural food-plants.

They were sent to me on the 21st of last August, being then three lines long, and in six days were half-an-inch, and by the 8th of September one inch in length, and thick in proportion: they evinced great aversion to light, and a desire for burrowing.

When half-an-inch long, they were pale ochreous or flesh colour on the back, the sides greyish-green, their bellies of the same tint, but paler, and on the back of each segment a V-like mark of brown, inverted, with the apex in front, through which passed the pale buff dorsal line, most conspicuous through the black plate on the second segment. On the two sides of the inverted V mark were placed the usual four tubercular warts, black and large in proportion, and very conspicuous.

When they had attained an inch in length the inverted V marks had disappeared, and the larvæ had become much darker; the central part of the back on each segment mottled with dark brown, in the form of a diamond with the points cut off; the spaces next the sub-dorsal line buff colour, and wedge shaped.

The dorsal line conspicuously sulphur-yellow on the black shining plate of the second segment only, while on all the other segments scarcely noticeable, and chiefly at the commencement of each, as rather paler brown than the mottled portions it runs through.

The anal segment buff colour, forming a conspicuous pale mark above the flap.

The sides blackish-green, bounded above by the sub-dorsal line of rather darker hue, and below by the black spiracles and usual warty tubercles; the sub-dorsal line is edged below by a fine thread of dirty whitish-green, and another such fine line, but undulating and interrupted, runs between it and the spiracles. Above the legs is a pale, thin, dirty whitish line; the belly and legs slightly darker, of a greenish-drab tint; the ventral legs more beneath the body than usual; all the tubercular warts blackish, large, and shining. The head mottled-brownish, with a large black blotch on each side of the crown.

When the larvæ were an inch and a quarter long, and even a trifle longer, their details of markings and colours were just the same, but more intense and bright, the larva were then in their best coats, and very thick and plump. Soon after, about the middle of September, on attaining their maximum length, an inch and a half when stretched out, their colours and markings began gradually to fade away into a

monotonous dirty brown on the back, with greyish sides, and their condition was less plump; the tubercular warts changed to brown rings, enclosing buff dots, the hair or bristles from each only visible through a powerful lens; and, by the end of October, they began to diminish in length, with other manifestations of turning to pupa.—Wm. Buckler, Emsworth.

Note on Damaster from Japan.—I have recorded the abundance of the smaller species in Yokohama, but have not seen it here. Yesterday, however, I found two examples of the large one, which is 18 or 19 lines in length. There are rumours of a third species of this curious *Carabus!* I found *Panagæus* also for the first time.—G. Lewis, Nagasaki, 11*th September*, 1866.

Note on Thiasophila inquilina, Märk.—I am at a loss to know how Mr. Crotch (Newman's "Entomologist," No. 35, p. 175) can have stated that this insect has *nothing* in common with *Eurynsa Kirbyi*. I have not examined the type of the latter in his possession; but, from its description and figure in the "Annual" for 1858, there can be no doubt that it is specifically identical with the insects known to us as *T. inquilina;* moreover, Dr. Power has informed me that a careful examination of this type by himself and Mr. Crotch resulted in a confirmation of his previously expressed opinion to that effect.

Looking, then, at the fact that there are two species of *Thiasophila* found on the Continent, exhibiting a strong resemblance to each other, and of which the larger is found with *Formica rufa*, and the smaller with *F. fuliginosa*, it is exceedingly improbable that we also should have two not uncommon species, exhibiting the correct resemblance and points of difference, and found in the proper localities, of which the one should be without doubt the larger *Thiasophila*, and the other should be not only *not* the smaller one, but a species unknown on the Continent, and that ought to be referred to another genus. In support of this unlikely inference, Mr. Crotch states that our insect has well developed male characters, and *four*-jointed anterior tarsi, which "at once connect it with *Eurynsa*, of which genus it forms a new and very interesting representative."

Putting aside the not altogether impossible questions whether *Thiasophila* and *Eurynsa* be or be not correctly characterized, or whether our insect may not form a third genus apart from both, I would remark that it is also not impossible that the male characters may have been hitherto overlooked, though it is of course very improbable (from Kraatz's reference to the absence of salient sexual distinctions) that such should be the case. The insect is mentioned as rare, and the male may not have been observed when the description was published; its characters, indeed, being not very prominent when mounted in the continental fashion. In that case, as *T. angulata* exhibits no such distinctions, one can readily understand that the insect known to us as *T. inquilina* might easily, from its extreme resemblance to that species, be considered as its congener.

It is, however, to Mr. Crotch's statement that this insect has *four-jointed* anterior tarsi, that I particularly demur. I had satisfied myself that this was not the case, before connecting the two names as I did in the Catalogue appended to my "British Beetles;" but, as Mr. Crotch has drawn attention to the subject, I

have once more examined the front tarsi of two specimens of our *T. inquilina*, from different localities (both out of *F. fuliginosa* nests),—one taken by my friend, Mr. G. Lewis, at Charlton, and the other (with many others, of both sexes) by Mr. Brewer, at Tilgate Forest. I mounted these front tarsi in fluid, and examined them as transparencies, with one of Ross's ⅛-in. object glasses, and an eye-piece working to 700 diameters; the result being that five perfect joints were evident in each, clearly showing that the insect can be no *Eurysa*, according to the stated characters of that genus. So high a power was not required, to be certain of this, as the joints are symmetrical enough, with no particular excess or diminution of the ordinary relative length; but I wished to be quite certain, knowing how easy it is to be misled by the superficial examination of a gummed tarsus, in which the hairs, when clogged together, often either present the appearance of a false joint, or hide a real one. I have also since examined, and with a much lower power, one of the front tarsi of a male specimen (of Mr. Brewer's taking, at Tilgate), with tuberculated abdominal segments: this, also, has five evident joints.—E. C. Rye, 284, King's Road, Chelsea.

Note on the contents of the gall of the Elm.—Apropos of Mr. McLachlan's notice of galls on the elm in Entomologist's Monthly Magazine, I may remind him that the liquid which he noticed as occurring in them is collected in Italy and France as a supposed remedy for sore eyes. It is called *eau d'orme*. In the autumn, when the galls are dried, a balsamic residuum is also found in them, which, under the name of *Baume d'ormeau*, has some reputation for diseases of the chest. I presume it is the same gall, said to grow as large as the fist.

Finally, L. Kirchner ("Lotos zu Prag," 1855, p. 241) calls the insect *Schizoneura lanuginosa*, Hart. Probably this insect and the above galls are identical with those found by Mr. McLachlan.

Entedon, nov. sp., is noted as a parasite which accompanies these galls.—M. C. Cooke, 2, Junction Villas, Upper Holloway.

[I am greatly obliged to Mr. Cooke for calling my attention to the above interesting facts, which are quite new to me.—R. McLachlan.]

Note on a short-winged species of Cryptus.—At the end of Oct. last I found, running on the sand hills at Freshwater Bay, a singular *Ichneumon* with abbreviated wings, which I took at first sight for a gigantic *Pezomachus*,—it being nearly five lines in length. After vainly consulting Gravenhorst and Förster's monograph of *Pezomachus*, I sent the insect to Mr. Desvignes, who has pronounced judgment upon it as *Cryptus incubitor*, Ström, with the wings in a state of abnormal abridgement,—or else a new species, for which he proposes the name of *C. brevipennis*. It corresponds pretty exactly (wings excepted) with Gravenhorst's description, t. 2, p. 590, but the meta-thorax is sub-bidentate, a character not mentioned by Gravenhorst, as Mr. Desvignes has remarked. The wings are only about as long as the head and thorax, not torn or curtailed by any violence, but perfectly symmetrical, broad and truncated at the apex, and slightly emarginate at its middle. The radial cell is much shortened and widened; the costal nervure failing at and beyond the stigma.

The three cubital cells are visible, the 3rd being rudimentary; none of the nervures reach the margin. The fuscous cloud characteristic of the species is present, interrupted by three hyaline spots, one on the inner nerve of the 2nd cubital cell, one on the 1st recurrent nerve, and one on the inferior nerve of the first cubital cell. The hinder wings, with their nerves and cells, are similarly and proportionally abbreviated. With the exception of the failure of the costal nervure, nearly the same phenomena occur in *Pezomachus hemipterus*, F., and others of that genus. That the larger *Crypti* should be subject to this imperfection is, I believe, a new fact, and serves to bear out a theory which I have long entertained, that many (and possibly, under some circumstances, all) *Ichneumons* might occur with aborted wings. Another case in point is the *Brachypterus means*, Grav., which I believe to be nothing more than the pedestrian form of *Ichneumon crassipes*, L. Let any one diligently compare these insects, and he will find it impossible to separate them except by the wings. Moreover, I have a specimen whose wings are of intermediate length, rendering it doubtful to which form it should be referred. *Brachypterus* is changed in Förster's monograph to *Pterocomus*, without any reason being assigned. It is, moreover, a true *Ichneumon* by its concealed ovipositor, and not a *Pezomachus*; the latter genus embracing the apterous modifications of *Cryptus*, *Phygadeuon*, and *Hemiteles*, which have the ovipositor exserted.—T. A. Marshall, Milford, *Dec.*, 1866.

Cannibalism of the larva of Eupithecia minutata.—On the 27th of last month, Mr. D'Orville showed me the strange sight of a larva of this species engaged in devouring one of its companions. He had about a dozen of the larvæ, nearly full-grown, confined in a cage sufficiently large for them, and well supplied with their proper food—the flowers of *Calluna vulgaris*; so that neither overcrowding, nor starvation, could have been the incitement to cannibalism.

The victim had evidently been attacked behind the head, and its destroyer was so absorbed in its repast, that neither the being shut up in a chip box, nor the being carried about for three or four miles, made it desist, till it had left nothing but a shrivelled skin.

This is the first instance I have known of cannibalism among the small *Geometræ*.—J. Hellins, *November 12th*.

Entomological Society of London, *3rd December*, 1866; Sir John Lubbock, Bart., F.R.S., President, in the Chair.

E. T. Higgins, Esq., of Bloomsbury Street, and Andrew Swanzy, Esq., of 122, Cannon Street, were elected ordinary Members; G. H. Schrader, Esq., of Shanghai, China, was elected a Foreign Member; and G. H. Verrall, Esq., of School Hill, Lewes, F. L. Keays, Esq., of Green Lanes, N., and Walter Thornborrow, Esq., were elected Subscribers.

Mr. Evans sent for exhibition a large number of *Coleoptera* found in bales of New Zealand wool; the greater part were *Pyronota festiva*, but many other species were also present.

Mr. Stainton exhibited living examples of *Gracilaria scalariella* bred from *Echium vulgare*, from the south of France, and an aphis-gall on *Pistachia lentiscus*, containing a Lepidopterous larva, probably of one of the knot-horns.

Mr. Janson exhibited a collection of *Coleoptera* sent from Rio Janeiro by Mr. Hume.

Mr. Duer exhibited a pupa of *Vanessa urticæ* with curious filiform appendages projecting from the wing-cases.

Dr. Sharp exhibited a *Stenus* new to Britain, *S. major*, of Mulsant, found at Southend.

Prof. Westwood exhibited a drawing of the larva of a species of *Tropæa*, and read a description of its habits, as communicated by Mr. Holdsworth, of Shanghai. He also exhibited a number of *Hypogymna dispar*, mostly bred by Mr. Briggs, of Oxford, who had experimented upon the species with a view to test the power of the food-plant in producing variation in the imago. Some he had fed on elm, others on hawthorn; those fed entirely upon hawthorn were very small. Mr. McLachlan remarked that this insect was scarcely a fair subject for experiment, as, in this country, it was in a semi-domesticated condition.

Mr. Belt, of Maranham (who was present as a visitor), related that having found the nest of an insectivorous bird in a hole in a tree in Maranham, he watched the birds with a view of ascertaining what description of insects they brought to their young; and he found that Mr. Bates' supposition that the *Heliconidæ* were distasteful to birds (he being at the time unaware of Mr. Bates' remarks) was perfectly correct, for on no occasion was one of these butterflies brought to the nest.

Mr. Stainton said that, many years since, he was in the habit of taking large numbers of *Lepidoptera* at light; these he killed by subjecting them to the fumes of sulphur, examining them the next morning. The greater number consisted of *Agrotis exclamationis*, and these were thrown out to the poultry. On one occasion an example of *Spilosoma menthrastri* was among the number; and he remarked that his turkey-poults greedily ate the *Agrotidæ*, but each in its turn picked up the *Spilosoma*, and rejected it as distasteful,—thus proving that there might be an object in the mimicry of *Leptalis* and *Heliconia*.

Dr. Sharp replied to Mr. Wallace's letter in the last number of the "Athenæum," concerning his objections to Mr. Wallace's theory of the cause of mimicry. Among other arguments, he said that the fact of a bird not catching a *Leptalis* because it was so like a *Heliconia*, supposed a want of perception on its part. Mr. Wallace said that it had been proved (even in the case of the condor) that birds seek their prey by sight, and not by smell, and it was not to be supposed that a bird would catch a thousand distasteful *Heliconias* on the chance of obtaining a single *Leptalis*, such being the relative abundance of the insects.

Prof. Westwood adhered to his previously expressed conviction, that mimicry was not the result of natural selection, and announced that at the next meeting he would produce examples of close mimicry in insects inhabiting very different regions, in which case it could not be for preservation in consequence of the species mimicked being distasteful.

The President made a few remarks on the whole subject.

Mr. McLachlan read descriptions of a new genus of *Hemerobidæ* (*Rapisma*, type *Hemerobius viridipennis*, Walker), and of *Perlidæ* (*Stenoperla*, type *Chloroperla prasina*, Newman).

DESCRIPTION OF A NEW GENUS AND SPECIES OF BRITISH *HYMENOPTERA*, ALLIED TO *PEZOMACHUS*.

BY THE REV. T. A. MARSHALL, M.A.

The characters of this interesting insect exclude it from every one of the eight genera into which Förster has divided the group. It comes nearest to *Aptesis*, but its relations will be best understood if we reproduce Förster's synopsis, with the necessary addition. See Förster, Monogr. der Gattung *Pezomachus*, p. 22.

A. Terebra concealed, or scarcely exserted. (*Pterocormus, Oremnodes.*)

B. Terebra considerably exserted.

b. Metathorax completely and regularly areated. (*Stibeutes.*)

bb. Metathorax not areated, or with few and imperfect areæ.

c. Scutellum distinct.

d. Penult. joint of the tarsi bilobed. (*Agrothereutes.*)

dd. Penult. joint of the tarsi not bilobed.

Oresbius castaneus, Marsh.

e. Rudimentary wings reaching beyond the base of the metathorax. First segment of the abdomen punctulate, not longitudinally rugose.

f. Antennæ 2-3 coloured. (*Aptesis.*)

ff. Antennæ unicolorous. (*Oresbius*, nov. genus.)

ee. Rudimentary wings not reaching the base of the metathorax. First segment of the abdomen longitudinally rugose. (*Theroscopus.*)

cc. Scutellum obsolete, at least in the ♀. (*Pezolochus, Pezomachus.*)

Oresbius, n. gen.

Antennæ crassæ, capite cum thorace duplo longiores, non convolutæ, unicolores. Scutellum conspicuum. Alæ metathoracis basin excedentes; area radialis brevis, ovata; cubitales 2, cum disci cellulis confusæ. Areola nulla. Nervi omnes crassi, pilosi. Metathorax rugosus, inter rugas punctulatus, non areatus; pars declivis utrinque carinâ leviter designatus. Segmentum primum triangulare, tuberculis lateralibus nullis, basi latissimum, apicem versus gradatim angustatum. Abdomen capite cum thorace multo longius, supra depressum. Terebra exserta, segmenti primi longitudine. Corpus totum depressum, et sub saxis degenti idoneum.

Oresbius castaneus, n. sp.

Castaneus, vel rufo-brunneus ; caput antice et metathorax nigra. Antennæ 25-articulatæ, articulis 3 et 4 æqualibus, rufo-brunneæ ; articulus ultimus apice fuscus. Corpus totum griseo-pilosum. Pedes cum coxis trochanteribusque rufo-brunnei. Mas incognitus.

♀ Long. (terebra exclusa) 2-3½ lin.

Two specimens, differing much in size, were taken by me under stones at the top of Garbhavel or "Grayvel," near Loch Rannoch, in July last. The species may be suspected of being a parasite of *Nebria*, *Patrobus*, or *Otiorhynchus maurus*. These are about the only insects occurring at that elevation (some 3,500 ft.) capable of maintaining such a creature. No spider of sufficient size was to be found.

Note.—At page 191 of this vol. I stated inadvertently that Förster had changed Gravenhorst's *Brachypterus* into *Pterocormus* without assigning a reason. He does assign a reason, and a good one. Kugellan's genus *Brachypterus (Coleopt.)* has the priority by several years, and Gravenhorst's name cannot stand.

A MONOGRAPH OF THE BRITISH *PSOCIDÆ*.

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

(*Continued from P.* 181.)

Genus Clothilla, Westwood (1841).

Termes p. Linné ; *Lepinotus*, Heyden (?) ; *Paradoxides* and *Paradoxenus* (*Coleoptera*) Motschulsky.

Tarsi 3-jointed ; femora only slightly dilated. Head sub-cordate ; eyes small. Antennæ multi-articulate, the two basal joints stouter than the others. Pro-thorax forming a narrow collar. Meso- and meta-thorax separated. Abdomen ovate. Anterior wings represented by small, coriaceous, hairy, convex scales.

According to Hagen, *Lepinotus* of Von Heyden (Stett. Zeit., 1850) is identical with *Clothilla*. I append a mark of doubt against the name, because *Lepinotus* is described as possessing three closely-placed ocelli ("Stirne mit drei genäherten Nebenaügen") : probably a mistake has occurred in the original description.

1.—Clothilla pulsatoria, Linné. (Plate 2, fig. 2.)

Termes pulsatorium, Linn. Faun. Suec. p. 474, 1937 (1761) ; Syst. Nat. p. 1015, 2 ; *T. lignaria*, De Geer, Mem. t. 7, p. 41, tab. 4, fig. 1 (1778).

Clothilla pulsatoria, Hag. Ent. Monthly Mag. vol. ii., p. 122, 1. *C. studiosa*, Westwood, Annals and Mag. Nat. Hist. 1841, p. 480; Trans. Ent. Soc. Lond. ser. 1, vol. iv., p. 71; Hag. Ent. Ann. 1861, p. 22, 2.

Pale yellowish-white. *Head* suffused with pinkish, especially on the nasus. *Antennæ* sometimes fuscescent, pilose. *Abdomen* with the sutures of the segments marked with pink, which colour expands on the sides, marked with blackish at the apex. *Legs* grey. *Wing-scales* very small, oval, whitish, hairy.
Length of body $\frac{3}{4}$-1‴.

Occurs among papers, and in collections, &c.

I have not examined living examples. In Prof. Westwood's collection are a considerable number; to one of his drawings I find a note attached to the effect that "in the beginning of July a number of specimens were found in the seats of rush-bottomed chairs." Immature specimens are paler, and want the wing-scales; these latter readily fall off. It is probable that some of the descriptions given by authors for *Atropos* pertain to this insect. Latreille's note to *Psocus pedicularius*, respecting the copulation of *P. pulsatorius*, certainly refers to *Clothilla*. (*Vide* Coqbt. Icon. p. 10.)

2.—Clothilla inquilina, Heyden.?

Lepinotus inquilinus, Heyden, Stett. Zeit. 1850, p. 84. *C. inquilina*, Hag. Ent. Monthly Mag. vol. ii., p. 123, 3. *Paradoxides psocoides*, Motsch. Bull. Soc. Nat. Moscou, 1851, p. 510, 511.

"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."—*Hagen.*
Length of body $\frac{2}{3}$‴.

Amongst Professor Westwood's drawings, is a coloured representation of an insect (which I believe is lost) that appears to closely agree with the above description: either it was immature, or the wing-scales had fallen off. A note attached states that it was "found in some old honey-comb."

Lepinotus inquilinus, as the type of his genus, is described by Von Heyden as possessing three ocelli. *Vide* the remarks following the generic description of *Clothilla*.

3.—Clothilla picea, Motschulsky. (Plate 2, fig. 3.)

Paradoxenus piceus, Motsch. Etud. Ent. 1, p. 19 (1853). *C. picea*, Hag. Neurop. N. Amer. p. 8, 1; Ent. Monthly Mag. vol. ii., p. 123, 4.

Shining pitchy-black, short and stout. *Abdomen* very convex, smooth, the integuments rather hard, the segmental divisions scarcely visible. *Legs* dark testaceous. *Wing-scales* larger in proportion than in *C. pulsatoria*, oval, testaceous, hairy. The thread of the antennæ much finer than in *C. pulsatoria*.
Length of body $\frac{3}{4}$‴.

Two or three examples in Prof. Westwood's collection, found living in boxes of exotic (in one case Egyptian) insects; one in Mr. Dale's collection. If it be not indigenous in England, it is, at any rate, naturalised here. The original example was found by Motschulsky in a box of Californian insects. It bears a remote resemblance to the Coleopterous genus *Nossidium*.

[Genus Lachesis, Westwood (*Lachesilla*, Hagen.) This genus is characterized by Westwood ("Introduction" vol. ii., p. 19-20) as having 2-jointed tarsi, slender femora, and rudimentary wings (see also fig. 59, 13, 16, 17, and 18).

I have come to the conclusion that the genus is founded on incomplete evidence. I have examined the types of *L. fatidica* under the microscope, and made the following notes. The type-specimens are two, fixed on the same card. The larger one has no ocelli, no rudiments of wings that I can detect, 2-jointed tarsi, a large head with strongly developed front or nasus, and free thoracic segments. There is nothing to indicate that it is a fully developed insect, and I look upon it as a very immature form, or larva, of one of the *Psocina*. The other, or smaller example, is a very different creature; the head large and triangular, with evident ocelli; the tarsi 2-jointed, and with evident reticulated wings. That this is a micropterous form of one of the *Psocina* I do not doubt. On Professor Westwood's drawings of these creatures it is noted that "one of each (form) was found on a piece of cheese from a damp cellar." That this latter form is a condition of *Cœcilius pedicularius* appears probable.

In Professor Westwood's collection I see also another example, which appears identical with the smaller of the two types of *L. fatidica*, in better condition, and this bears four small wings, but the neuration offers no guide as to whether it be a form of *Cœcilius;* there is an evident pterostigma.

In the absence of further information, it seems desirable to omit *Lachesis* for the present.]

Genus Psoquilla, Hagen (1866).

Tarsi 3-jointed; femora only slightly dilated. Head cordate. Eyes large. Palpi with dilated apical joint. Antennæ with stout basal joints, and slender, multi-articulate thread. Abdomen broad, sub-depressed. Wings (I can see no vestige of posterior wings) about as long as the abdomen, elliptical at the apex, membranous; neuration evident but simple; the veins and margins ciliated.

1.—Psoquilla marginepunctata, Hagen (plate 2, fig. 4).

Psoquilla marginepunctata, Hag., Ent. Monthly Mag., vol. ii, p. 123 (1866).

The whole of the upper surface of the body fuscous; *nasus* paler, castaneous; *palpi* fuscous. Under-side of the thorax very pale whitish-yellow. *Wings* ovate, obtusely rounded at the apex, dark shining brown, the margins with rather large white spots, which are placed in the cells between the veins. *Legs* very pale whitish-yellow; the tibiæ with a fuscous ring at the apex; tarsi ringed with fuscous. Length of body ½‴.

This curious little creature was recently described from an example supposed to have been found at Hamburgh. In Prof. Westwood's collection I find two specimens (one nearly destroyed) found by the late Mr. Raddon amongst maize (Indian corn), probably at Bristol. I have no information as to whence the maize was imported. The insect can scarcely be considered indigenous. No doubt we have yet much to learn respecting these minute forms of *Psocidæ*, which, as mere living atoms, are very liable to be overlooked.

(To be continued.)

AN ESSAY TOWARDS A KNOWLEDGE OF BRITISH *HOMOPTERA*.

BY THE REV. T. A. MARSHALL, M.A.

(*Continued from page* 152.)

Genus eupteryx, Curt., Ent. Mag. 1, 192.

Identical with *Typhlocyba*, Germ., a name invented to express the absence of ocelli. But as the insects of the genus have ocelli, situated a little above the insertion of the antennæ, and as the names *Typhlocyba* and *Eupteryx* were published as nearly as possible at the same time, the latter and more rational appellation is here preferred. *Eupteryx* comprises numerous species, which are in fact the minuter and feebler forms of *Iassus*. A small number of them have been described by Curtis and Hardy, and one by Mr. Newman; the remainder have never appeared in any English work, and it is probable that several new species will be discovered. They are all of small size, and frequently of great beauty, rivalling, when alive, the gayest of the *Micro-Lepidoptera*. The artificial characters by which they are distinguished from *Iassus*, are taken from the hemelytra, wings, and legs. The fore and middle tibiæ are without spines on their exterior edge, the middle being likewise destitute of the customary fringe of bristles on the inside. The membrane of the hemelytra has 3-4 cells only: in *Iassus* there are 4-5.

See Burmeister's genera (*Typhlocyba*), and cf. remarks by Tollin, *über Kleinzirpen*, in the Stett. Ent. Zeit., 1851, p. 67. For the discrimination of species, the best characters are those derived from the neuration of the hemelytra and wings, in which the following arrangements are to be observed: On the corium are three longitudinal nerves, not connected transversely, and therefore forming no discal cells; they are often invisible, except in their apical half. The two outer are united not far from the base, and at the base all three are joined. The membrane is long as compared with that of *Iassus;* its nervures are conspicuous, forming strictly four cells, but of these the first (or outer one) is sometimes very small, or vanishes, leaving apparently only three. The second cell of the membrane is sessile or pedunculated; the third is either trapezoidal (broader at the apex than at the base), or its sides are straight or parallel. The membrane is rarely appendiculated. The wings have sometimes a sub-marginal nervure, receiving the extremities of the longitudinal veins; in other cases the latter terminate immediately in the margin itself. At the apex of the wings 2-4 longitudinal veins are to be seen, united transversely; one at least of them is forked near the base, and frequently two of them form bifurcations open towards the margin. The nervures and cells are with difficulty seen in these small insects, especially when dried. The best method which I have hit upon is to detach the hemelytra or wings from a fresh specimen, and stick them with water upon thin glass. They may then be examined with ease, as transparencies. In all cases the insects should be set with wings open, or their identification may be impossible. The species found in Livonia are elaborately tabulated by Flor, according to their neuration and the structure of the genital organs. But, as the difficulty of verifying these characters by pulling specimens to pieces, and by the microscope, is somewhat deterrent, we will attempt a more exoteric method, founded upon markings and general appearance, using the less visible characters only in cases of necessity. This rough and ready way will, for the most part, apply only to typical forms, but will place a large number of species at once beyond doubt.

I. Membrana appendiculata. Alarum nervi longitudinales 4.
(Pronotum et hemelytra lineis citrinis plerumque ornata. Sed variat ultra modum) ..... *albostriellus*, Fall. (1)

II. Membrana haud appendiculata. Alarum nervi longitudinales 3-2.

i. Vertex ut in *Deltocephalo* productus, pronoto $\frac{1}{3}$ brevior.
(Parvus, pallidus, immaculatus) ..... *citrinellus*, Zett. (2)

ii. Vertex late rotundatus, pronoto $\frac{1}{2}$ brevior.

A. Hemelytra quoad discum nigro, rubro, fusco, non signata. (Sed apex sæpe plus minus infuscescit.)

* Pallido virides.

1. Alarum venæ fuscæ, conspicuæ.....*smaragdulus*, Fall. (5)

2. Alarum venæ hyalinæ, inconspicuæ .....*viridulus*, Fall. (4)

** Pallide flavi.

† Abdomen flavum.

a. Alarum nervi longitudinales 2.

1. Membrana et corii apex fumosi. Vertex subproductus. Pronotum longius quam latius.....*apicalis*, Flor. (7)

2. Membrana et corii apex hyalini. Vertex late rotundatus. Pronotum transversum .....*flavescens*, Fab. (6)

aa. Alarum nervi longitudinales 3 .....*rosæ*, Lin. (12)

†† Abdomen nigrum, vel maximam partem nigrum.

a. Scutellum nigro 3-maculatum .....*scutellaris*, H. Sch. (11)

aa. Scutellum immaculatum, flavum.

b. Pronotum apud marginem anticum puncto unico nigro .....*ulmi*, Lin. (18)

bb. Pronotum apud marginem anticum puncto nullo.

c. Alæ fumosæ .....*Germari*, Zett. (22)

cc. Alæ hyalinæ.

d. Corium apice, membrana basi, infuscata. Hemelytra perpallida .....*filicum*, Newm. (16)

dd. Corium apice, membrana basi, hyalina. Hemelytra flavissima .....*flavipennis*, Zett. (3)

AA. Hemelytra in disco ipso, nigro, rubro, aut fusco variata.

i. Hemelytra rubro variata.

a. Hemelytrorum stria longitudinalis rubra.

1. Hemel. stria lata, suturalis, nusquam emarginata, ante membranam desinens, rubra. Clavi margo internus fuscus. Membrana hyalina. Vertex medio niger. Pronotum medio purpureum, vel nigro-rufum (sed ♀ fere tota flavicat)...*hyperici*, H. Sch. (9)

2. Hemel. stria angusta, subsuturalis, bis emarginata, membranam attingens, rubra. Clavi margo internus pallidus. Membrana subfumosa. Vertex et pronotum lineis 2 rubris. ♂ ♀ .....*blandulus*, Rossi. (10)

aa. Hemelytrorum stria longitudinalis nulla—sed maculæ 5 magnæ, oblongæ, rubræ. Corium apice, membrana basi, infuscata .....*quercûs*, Lin. (20)

ii. Hemelytra nigro variata.

a. Frons et vertex immaculati.

1. Scutellum nigrum, vel pro parte nigrum.

* Hemel. nigro transversim vittata (Fasciæ 2 latæ, transversæ, nigræ. Scutellum nigrum.) ..... *nitidulus*, Fab. (13)

** Hemel. nigro longitrorsum vittata.

† Vitta perangusta, recta, corium intus marginans. (Scutellum nigro cinctum) ..... *geometricus*, Schr. (14)

†† Vitta latissima, utrinque bis angulata (Scut. nigrum, apice interdum flavo) ..... *vittatus*, Lin. (25)

2. Scutellum flavum, vel subrufescens.

* Hemel. flava v. brunnea, strigis 3 brevibus transversis, maculaque apicali rotunda, nigris ..... *pulchellus*, Fall. (21)

** Hemel. flava, maculis irregularibus dilute fuscis, punctisque 2 nigris, altera in clavo, altera in corii disco.. *signatipennis*, Boh. (15)

aa. Frons aut vertex uterque vel ambo, nigro maculati.

1. Maculæ 2 verticis rotundæ, cum punctis 2 frontis, nigræ.

* Tibiæ posticæ nigræ, basi pallidæ ..... *urticæ*, Lin. (26)

** Tibiæ posticæ totæ pallidæ ..... *melissæ*, Curt. (27)

2. Maculæ 2 verticis nigræ; frons immaculata.

* Maculæ verticis punctiformes, minutæ. Hemelytrorum maculæ suffusæ, indeterminatæ ..... 10-*punctatus*, Fall. (17)

** Maculæ verticis reniformes, majusculæ. Hemelytrorum maculæ bene determinatæ.

† Frons longior quam capitis (cum oculis) latitudo... *auratus*, Lin. (23)

†† Frons non longior quam capitis (cum oculis) latitudo ..... *pictus*, Fab. (24)

iii. Hemelytra fusco longitudinaliter vittata.

a. Pronotum maculis 7, scutellum 3, nigris ..... *jucundus*, H. Sch.? (19)

aa. Pronotum maculis 5, scutellum 2, nigris ..... *parvulus*, Boh. (8)

(*To be continued.*)

ON SOME PECULIARITIES IN THE DEVELOPMENT OF *HEMIPTERA. HETEROPTERA.*

BY J. W. DOUGLAS.

(*Continued from page* 272, *Vol.* ii.)

Since the former remarks were written, my attention has been directed to the quotation by Mr. Westwood in his "Introduction

to the Modern Classification of Insects," Vol. ii, page 474, of the record, by Heineken, in the "Zoological Journal" for 1829, of an experiment made by him on a species of *Reduvius* inhabiting Madeira, both antennæ of a pupa of which he divided through the basal joint, on the 8th of August.—"Sept. 4. Reproduced, at the same time moulting into a perfect insect. They are of unequal lengths, thicker and shorter than the original ones, and, as far as I can ascertain, having only three instead of four joints." This is interesting, not only as showing that lost antennæ may be reproduced, but also the exact period of life of the insect at which the reproduction occurred. It is not stated which particular joint was deficient, nor whether or not the terminal joint were perfectly formed. But the inference to be drawn from this experiment, in elucidation of the examples of 3-jointed antennæ I have mentioned, is, that an antenna had in them been accidentally broken off while the insect was in the penultimate state, and was replaced by another, minus the joint, at the final change.

The reproduction of legs, wholly or in part, had been noticed in *Myriapoda*, *Crustacea*, and *Arachinda*, also in hexapod insects of incomplete metamorphosis, but it it was doubted if the power existed in those where the metamorphosis was complete. Mr. Newport, however, subjected even the larvæ of *Lepidoptera* to amputation of their legs, and those which survived the operation produced butterflies with limbs entire, even to the ungues, although some legs were small, and the spines of the tibiæ generally absent. Réaumur had long ago recorded that hairs cut off caterpillars were reproduced at the moulting of the skin.

With regard to the reproduction of antennæ, although Mr. Newport proved that it took place in *Iulidæ*, Mr. Goodsir found in his experiments with *Crustacea*, that, notwithstanding the greater power of reproducing limbs in this class than in insects, if antennæ were removed they were not replaced. It is, therefore, the more interesting to note such instances in the true *insecta* in which there is every reason to believe there has been a reproduction of antennæ. And, assuming that in the cases I have quoted there has been a veritable reproduction, it is still a matter to be elucidated why it is always the penultimate joint that is suppressed, and yet the terminal one is perfectly formed.

"THE *LEPIDOPTERA* OF IRELAND."

BY EDWIN BIRCHALL.

First Supplementary List.

APAMEA FIBROSA—Killarney.

ENNOMOS TILIARIA—Kildare.

Very abundant at light.—Hon. EMILY LAWLESS.

ENNYCHIA ANGUINALIS—Galway.

EPHIPPIPHORA TETRAGONANA—Howth.

Mr. BARRETT.

Erratum.

For THERA SIMULATA *read* THERA VARIATA.

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

BY H. G. KNAGGS, M.D., F.L.S.

THE CATERPILLAR STATE.

(*Continued from Vol.* ii. *page* 271.)

The furore to possess varieties which rages among British Macro-Lepidopterists, together with a growing interest by students of all branches of Natural History in that vexed subject—the variation of species—has opened up a vast field for enquiry as to the influences which produce these interesting freaks of nature.

"Variety-breeding," as it has been not inaptly termed, though yet in its infancy, would appear to offer the most practical means of arriving at something like a definite solution of the mystery, and as this art comes within the province of the larva rearer, I purpose glancing at those influences which are supposed to act on the preliminary stages of insect life to produce variation in the perfect state: to be brief then.—

First.—Influences acting *ab initio*. These may be accidental or hereditary—with the former we have little to do, but they may account for the formation of certain monstrosities in which organs are multiplied, suppressed, or modified through error in the primary impulse. Hereditary influences, on the other hand, will account for a large proportion of varieties, and may without doubt be turned to account as well by the variety breeder of insects as the Herefordshire farmer or the pigeon fancier, by the careful selection of parent stock with a view to peculiarities, whether structural or ornamental, being reproduced in the progeny. Of this we have (*e.g.*) instances in the rearing of negro varieties from parents more or less tainted with melanism; and of imperfections perpetuated, as in the frequent recurrence of individuals wanting a hind-wing, which may be noticed even at large in *Macaria notata*.

That these are the results of hereditary influences would seem to be demons-

trated by the fact that, while certain species have a tendency to vary in the above and other manners, few species are liable to the same extent of variation, and many apparently to none at all.

Of course it must be understood that originally these hereditary peculiarities have been acquired through some accident, or by the force of surrounding conditions, and have in the course of generations become perpetuated in what is termed a variable species, or in a race of individuals presenting appreciable differences from the typical form.

Second.—We have what may be called topographical influences; influences acting in greater or less degree on the fauna of a district through the nature of the locality; and among these the soil especially would appear to exert a potent influence, since we find certain species varying according as they may have reproduced, generation after generation, on a chalky, peaty, gravelly, or other soil. This cause may act indirectly through the vegetation of the respective districts which doubtless undergoes some modification.

Next, we have food, and whatever influence this may exert must naturally be through the larva; but of the fact that it does operate in various ways upon the future imago we have ample proof. The colour of the perfect *Tortrix viridana* is a familiar example of the power of food to produce variation in the imago, and there are many other instances of so-called phytophagic species, races, or varieties, chiefly among the Micro-Lepidoptera, which might be adduced.

It must not, however, be understood that, as a rule, changes of this kind are wrought in one or even in ten generations. We see, too, alteration in the colour of the larva brought about by the agency of food; thus in that of *Eupithecia absynthiata* and of other species, there is a tendency to assume the tint of whatever flower they may be feeding upon; and again, the colour of the silk of which the cocoon of the *Halias prasinana* is formed, depends on whether the larva had previously fed on oak, hazel, &c. We see, too, that species single brooded on one plant have a tendency to become double brooded on another, as in the case of *Orgyia gonostigma* reared respectively on oak and willow or sallow. And, finally, with respect to that unsatisfactory pet of the variety breeder—*Arctia caja*—many dark specimens have been attributed to the agency of coltsfoot, lettuce, and other *pabula*; but the late Peter Bouchard used to say of one of his best varieties of "the tiger," that he could account for it in no other way than that the beast must have lunched off some bread and cheese which had accidentally fallen into its den.

Then come causes of variation produced by the action of light (upon the larval and pupal stages especially), through which it is averred the future imago is rendered darker or paler, according as this influence may have been intense and prolonged, or nearly wanting, and of short duration. It is certainly worth the while of the variety-breeder to act upon and test the value of light as an agent in causing variation.

And, lastly, we come to those influences which operate chiefly upon the pupa; of these, perhaps, the atmospheric hold the foremost place, and under these may be classed what may be denominated the "thermic," causing retardation or acceleration of the completion of this stage; and this, like other causes of variation, appears to affect the individuals of certain species more than of others; for while,

on the one hand, it is affirmed that the imago of *Pieris rapæ* is unaffected by the length of duration of the pupa state (the pupæ which should produce the peculiarities of the so-called spring brood doing so whether the perfect insects emerge before or after the pupal hybernation), it is equally patent, on the other hand, that the corresponding brood of *Selenia illustraria* is considerably modified by the length of time which is passed in the pupa state, those pupæ which hybernate producing what is termed the spring brood, those which do not, the so-called "second summer brood," the latter in nowise differing from the ordinary summer brood. Again, by similar agency, we may, as a rule, account for the greater darkness in tint and markings of many northern, and especially Scotch, *Lepidoptera*, as compared with corresponding southern types, since many species double-brooded in the south are single-brooded in the north, and others which here pass but one winter in the pupa stage are apt, in the north, to remain in that state over a second winter, or even for a longer period. Dampness and dryness, too, may be added as atmospheric influences acting chiefly on the pupa.

Glancing back, therefore, we see that the would-be variety-breeder has the option of certain lines of action towards the end he has in view. First and foremost, he may, by judicious selection of the parent stock, enhance his future chances of success, if not in the first, at any rate, in succeeding generations: he may, if he be patient and of a peripatetic turn, avail himself of locality or soil; or he may bring to his aid the influences of food, light, heat, cold, moisture, &c.

It is here, perhaps, just as well to add that direct injuries, by any means whatever, to non-vital parts, especially of the pupa, tend to produce variation, or rather monstrosity, in the imago; but this hardly comes within the scope of variety breeding; it is rather a connecting link between the legitimate art and those ingenious delusions which may be classed as *post mortem varieties*, and which are not infrequently indulged in by the unscrupulous, the sordid, and the envious—I allude to such morbid practices as imitating varieties, or even rarities, by the aid of the paint brush and wasted talent, the manufacture of hermaphrodites, the clumsy artifice of dyeing by saffron and other agents, the conversion of greens into orange, bleaching by exposure to strong light or the fumes of sulphur, &c.,—impostures which are only mentioned to put the young entomologist on his guard, and which may generally be pretty easily detected by means of the relaxing jar and a strong lens.

(*To be continued.*)

Note on pairing in Phryganidæ.—It is generally believed that insects never pair a second time, but the following observations go some way towards proving that this belief is not absolutely correct.

One Tuesday afternoon, at about four o'clock, in the middle of October, I captured four or five couples of *Chætopteryx tuberculosa in coitu*. When I got home, I found them still united. Two pairs I placed under a glass shade with a small aquarium, hoping I might get some eggs. The other couples I killed with cyanide of potassium: these died without separating, and I was not surprised at this, considering the shape of the intromittent organ; but it made me all the more surprised at what I have presently to mention. Ten hours after the capture, the

pairs I kept alive were still *in coitu*. Seven hours later I found one of the pairs had separated. I removed the united couple, and continued my observations on the others. At eleven o'clock that night (Wednesday) I found the remaining couple had re-united, and were again *in coitu*. They continued thus through the whole of Thursday, Friday, and Saturday. On Saturday night they separated. For some hours after the male was remarkably active, but the female was sluggish; both, however, died early on Sunday morning.—J. Gedge, Cambridge, *Dec.*, 1866.

Note on the food-plant, &c., of Lycæna Alsus.—*L. Alsus* is found in the neighbourhood of Cambridge in several localities. The larva of this insect is generally said to feed on *Astragalus*; but in one place where it occurs I know there is no *Astragalus*, and in another only the smaller species (*A. hypoglottis*) is to be found, and that very sparingly. This made me curious to know what the larva fed on. There is one leguminous plant which grows plentifully in the localities for this butterfly, and which I thought would turn out to be the food-plant. This is *Anthyllis vulneraria*, otherwise known as "kidney-vetch," "lady's fingers," or "woundwort." *Anthyllis* gets its name (generic) from the downy flower-heads which characterize it: each legume being enclosed in an inflated hairy calyx. To decide this question, I determined to watch the females deposit their eggs. On June 27th, the perfect insect was out in great abundance, so I set to work to discover its food-plant. I soon observed that they did not care much for the great masses of *Anthyllis*, but rather chose to settle upon the scattered flowers of this and other plants. Presently, however, I saw one settle on a flower-head of *Anthyllis* which showed no yellow blossoms. I remained perfectly still. It walked down between the flower-buds, and dragged its body between the wooly calyces; all round the flower-head it went, and then turned up its body and flew off to another head. Here there were two or three blossoms just open, but it seemed to go through the same process. Upon gathering the flower-heads, I found in each case a single egg laid between the downy calyces. This I saw repeated many times. The insect showed great discrimination in the flower-heads she chose; often she settled on one, walked round it, then flew off to another, and sometimes to a third before she was satisfied. Never did she seem to be content unless there were some buds on the head; at any rate, I particularly noticed that she avoided those where the blossoms had faded, leaving the calyx, the first food of the larva, dry. Twice I saw what I took to be a female settle on the flower-head of *Hippocrepis*: in one case the insect remained some time, but in neither case was there any egg. The eggs were of a glaucous hue, and under the microscope were found to be most perfectly reticulated; the meshes which stood out in relief were not hexagonal as in *L. Egeria*, but perfectly rhombical, and knotted at the junction of their angles. They hatched on the sixth day (July 3rd). The larvæ began by eating the hairy calyx, then they passed into it and fed on the legume, and finally, upon that becoming dry, they crept down the flower-stalks, and perished in the water that was used to keep the flower-heads fresh.

In a second locality, I found that *Anthyllis* was the food-plant of *L. Alsus*; and though I must not be understood to give undue weight to the fact, still it is worth mentioning, that *A. vulneraria*, like *L. Alsus*, is not confined to chalk or limestone, though it always prefers dry sunny places.—Id.

Note on the number of eggs in Cerura vinula and Smerinthus ocellatus.—*C. vinula* found *in coitu* on the afternoon of June 7th. Less than six hours afterwards the female commenced laying eggs, which proved to be fertile. She died after depositing 32 eggs; but upon dissection, I found 236 eggs undeposited,—so the total number was 268.

S. ocellatus found *in coitu* at 1.30 p.m. on June 9th. Four hours afterwards I found two eggs had been laid. She continued to lay for several days (at least five days), laying in all 351 eggs—all fertile. Upon examination, I found 38 eggs undeposited, making in all a total of 389.

In the above instances, the sexes separated through fright immediately upon capture.—Id.

Sphinx ligustri feeding on holly.—As some notices of the discovery of the larva of this insect on holly have recently appeared in the "Entomologist's Monthly Magazine" (*vide* pp. 137, 163), it may perhaps be worth while to add another instance to those already known of its making that shrub its food. I extract the following from one of my note books:—"Sept. 11th, 1865. Found a privet hawk-moth caterpillar on holly at Fursdon," Egg Buckland, near Plymouth. So far as my observations go, the ash, privet, and laurustinus generally constitute its food; less frequently the lilac. So long ago as 1724, Eleazar Albin, in his curious old "Natural History of Insects," remarks that, besides being found on the lilac, it also feeds on "privet, *holly*, and *Phillyrea*."—T. R. Archer Briggs, 10, Torrington Place, Plymouth, *December 17th*, 1866.

Note on Dianthœcia capsophila and Tapinostola elymi.—I noticed a remark by Mr. Birchall (*ante* p. 106), who states that only four species of *Dianthœcia* occur in Britain. I desire to record that I have bred *D. capsophila* from larvæ collected in North Wales, near Conway. I have also had the good fortune to capture *T. elymi* this last season, but I reserve the exact whereabouts for the present.—Joseph Chappell, 18, Sheffield Street, Hulme, Manchester, *24th December*, 1866.

Lepidoptera at Guestling, near Hastings, in 1866.

March 28th.—*Eriogaster lanestris*, six bred; *Hoporina croceago*, a few at sallow; *Xylocampa lithorhiza*, one specimen at sallow; several on walls of Rectory on April 8th.

April 7th.—*Tæniocampa gracilis*, local, but plentiful,—this seems to appear the last of the commoner *Tæniocampæ*,—at sallow.

April 23rd.—*C. ridens*, one specimen on a tree trunk, one at sugar.

May 7th.—*Eupithecia irriguata*, on the trunk of a tree, a very fine specimen.

May 18th.—*Phytometra ænea*, very brightly coloured; *Ephyra pendularia*, common; *Platypteryx falcula*, scarce; *P. lacertula*, not uncommon.

May 26th.—*Acidalia subsericeata*, common; *Macaria notata*, local, but rather plentiful; *Ephyra punctaria*, rather scarce, three specimens; *Eupithecia pulchellata*, nice series bred, and some larvæ found.

May 29th.—*Ephyra porata*, not very common. All the species of *Ephyra* have occurred here except *E. orbicularia*.,

May 30th.—*Trochilium cynipiforme*, ♀, one specimen, on coppice oak.

May 31st.—*Eupisteria heparata*, several in one locality; *Emmelesia decolorata*, with preceding.

June 2nd-12th.—*Coryxia temerata*, one specimen; *Camptogramma fluviata*, one specimen; *Arctia villica*, two specimens; *Selenia lunaria*, one specimen; *Limacodes testudo*, one specimen; *Lobophora sexalata*, two specimens; *Eupithecia centaureata*, one specimen.

June 14th.—*Agrotera nemoralis*, one worn specimen; *Cymatophora fluctuosa*, one specimen. Last year I recorded this latter species in error, as the specimens were only *C. duplaris*. I have now met with it.

June 15th.—*Tephrosia extersaria*, one specimen.

June 20.—*Scotosia undulata*, one specimen.

June 28th.—*Asthena sylvata*, one specimen, at Fairlight.

June 29th.—*Phorodesma bajularia*, one specimen; *Herminia derivalis*, one specimen. I took another specimen on July 14th, at light.

July 16th.—*Lithosia complana*, probably not uncommon: apt to be passed by as *L. complanula*; *Geometra papilionaria*, two specimens.

July 17th to 27th.—*Cidaria picata*, two specimens; *Melanippe unangulata*, one specimen; *Pseudopterpna cytisaria*, one specimen, at Fairlight; *Endotricha flammealis*, very common, in a heathy wood, at Fairlight; *Epione apiciaria*, one specimen; *Eup. succenturiata*, one specimen.

August 4th.—*Triphœna fimbria*, one specimen.

August 13th.—*Gnophos obscurata*, one specimen, at Fairlight.

August 25th.—*Macaria notata*, one specimen. Is not this a second brood? Last year I took five specimens in August.

September 30th.—*Acherontia Atropos*, reared from a larva taken at Fairlight.

I have omitted two insects which, perhaps, I ought to have mentioned. *E. plumbeolata*, which is common here, and *A. inornata*, of which I met with one specimen this year, and one last; in neither instance do I know the dates.

All the above, with the two exceptions mentioned, were taken in, or on the borders of, a wood close to the Guestling Rectory. All that are not marked otherwise, were taken by mothing.—E. N. Bloomfield, Guestling Rectory, Hastings, *January* 12th, 1867.

Cosmia pyralina in Suffolk.—I secured a specimen of this species last season at Great Glenham, in Suffolk. Some years ago I used to take it not uncommonly in my own neighbourhood at light.—Id.

New locality for Epione advenaria.—While entomologizing in that part of the country which lies between Dorking and Guildford, I had the good fortune to find a new locality for this scarce species. In a fir wood, situated not far from the village of Ewhurst, where the ground is covered throughout with the whortleberry, I found this species, together with *F. piniaria*, in great abundance, the one as plentiful as the other; *Hypena crassalis* was not scarce, and I also secured a specimen of *Halias prasinana* and of *Ellopia fasciaria*. Commoner species, such as *F. atomaria*, *I. lactearia*, *A. remutata*, *L. marginata*, &c., were of course, there also, at the time of my visit.

In the same district, I have this year met with *P. bajularia*, *E. coronata*, *P. syringaria*, in lanes; *Thera juniperata*, and *C. fluviata*, on the ivy. At sugar, *Xanthia aurago*, *cerago*, and *silago*, *Hoporina croceago*, *Ennomos fuscantaria*; and a singular *Noctua*, of which I have not yet found out the name, and I noticed, on one particular lime tree, abundance of the larvæ of *X. citrago*, each larva having a rolled-up leaf as its habitat; I also noticed that the period for these larvæ to be in their cocoons was of somewhat longer duration than for most other *Noctuæ*,—five weeks being the chosen time to rest their wearied limbs and jaws before undergoing the change. After all, the specimens bred were not so fine, in any respect, as those found in a natural state, *i. e.*, sitting idly (by night) on the leaves and twigs of the lime tree.—S. Canning, 51, St. George's Square, Belgravia.

Description of the larva of Cucullia umbratica.—To the kindness of the Rev. Hugh A. Stowell and Mr. Greening, I am greatly obliged for examples of the larvæ of this species, and interesting details of their early history. The first named gentleman captured a ♀ at honeysuckle, that laid a large number of eggs on the 11th of last July, and in five days they were hatched, and fed well on sow-thistles *(Sonchus)*.

Unlike the sun-loving habits of others of the genus, these larvæ evinced a great aversion to light, and always hid themselves by day, reposing under the lower leaves of the sow-thistles, and at night ascending and feasting on the upper leaves and flowers.

Those reared from eggs were full fed by the 25th of August, and the others by the 3rd of September, and were kept separately and well supplied with earth; but instead of making subterranean cocoons, they spun silken threads amongst the flower buds of the sow-thistles, attaching them to the tops of their cages, and spinning under the buds a few threads, forming a loose and open kind of hammock, in which they changed to pupæ.

One individual chose a leaf, curved downwards and secured to the stem beneath by a few threads, amongst which it underwent its transformation.

The pupæ were smooth and reddish-brown, with the tips of the wing-cases projecting a little, and the anal point considerably.

The larvæ, when viewed from above, tapered but very little anteriorly or posteriorly, excepting the last segment only, which was rather elongated, and depressed at an obtuse angle with the other segments. The chief variation, individually, consisting of the more or less suffusion of black, and of the degree of dullness or brilliancy of the ground colour. Amongst them three examples will amply suffice for description, the others being intermediate and connecting.

Var. 1. Ground colour bright ochreous-yellow, with an elaborate blackish-brown raised and granulated arabesque pattern of curves and angles on the back; the sides equally intricate, but linear and wavy in character. The dorsal stripe is represented by bare double triangular spaces of the ground colour at the segmental divisions, and on the last segment as a central stripe. The sub-dorsal is indicated by a very thin undulating line of the ground colour, and on the anal segment abruptly widening into a very broad stripe, tapering to a point at the extremity. The head dull black; a dull blackish-brown plate on the second segment, with

three small spots of the ground colour on its front edge. Tubercular dots and spiracles black, also the anterior legs and prolegs; the latter with a ring of white above their extremities.

Var. 2. Ground colour brilliant orange-ochreous, visible in spots at the segmental divisions along the centre of the back, and in narrow streaks along the sub-dorsal region, a much interrupted line along the spiracles, and a row of spots and blotches on the side just above the legs (the largest blotches being above the anterior legs), and three broad stripes meeting at the end of the anal flap; all the rest blackish.

Var. 3. Ground colour dull brownish-ochreous, seen as dorsal, sub-dorsal, and lateral stripes, on the third and fourth segments with little interruptions, and on other segments only the faintest traces of them, excepting the anal, which is marked similarly to those previously described, and the dorsal stripe merely as a triangular spot at the end of the intermediate segments; all the rest of the body dull brownish-black, and each spiracle placed in a swelling blotch of intense and rather shining-black.—Wm. Buckler, Emsworth.

Notes on Micro-Lepidoptera occurring at Haslemere.—At a short distance from here there is a swampy copse, consisting principally of alder, sallow, and birch bushes, with plenty of brambles, rushes, and high tussocks of sedge, and cut up in every direction, but to very little purpose, with drains. Here, on May 18th last, I found *Micropteryx mansuetella* and *Allionella* pretty commonly, with *calthella* in abundance, all flitting among, and settling upon, the rushes and culms of sedge, keeping generally in the shadow of the high bushes, not in the sunshine.

At the end of the month, I visited the spot again, and then found the same species, all crowding upon the sedge *blossoms*, where they were joined by *Thunbergella*.

Glyphipteryx oculatella was also common, dancing merrily about the open places late in the afternoon, and settling on the rushes; and a few *Elachista ochrëella* occurred among the sedge.

For three weeks I was prevented from going there again, but on June 21st and 26th found *oculatella* still common, but worn; and also obtained *Phoxopteryx diminutana*, *Chorentis scintillulana*, *Nemophora metaxella*, *Laverna lactëella*, *Bucculatrix cidarella*, and, I believe, *Nepticula intimella*.

On May 31st I found, in another damp place by the railway embankment, *Micropteryx mansuetella*, swarming on the blossoms of *Luzula pilosa*, with *calthella* in hundreds; and just on the other side of the railway, had the good fortune to take *Incurvaria tennicornis* flying after sunset, and just by, *Coleophora graminicolella** was flitting in numbers among the grass and *Inula*.

In various woods I found the *Luzula* blossoms covered with *Micropteryx calthella*, which also frequented flowers of *Mercurialis perennis*, while *mansuetella* was not to be found at all on that plant.

Nemotöis minimellus was very common late in August, among flowers in open places in the woods, and two or three times I noticed it flying in little swarms over flowers of *Centaurea* and *Stachys*.

Psoricoptera gibbosella, bred from oak leaves rolled lengthwise into tubes.

* See Entomologist's Annual, 1867, p. 164.

Oncocera ahenella was rather common in June in some rough fields on the side of a hill, and was almost invariably to be found among *Hieracium pilosella*, though after a flight it would sometime settle on fern. Unless the sun was shining, it was hardly possible to disturb a specimen, and, when put up, catching it was no easy matter, as it would dart straight away to a good height, as though intending to fly a long distance, and then, making an acute angle, return to within a short distance of where it started. But these movements, from its shining metallic appearance, were by no means easy to follow. The specimens varied from pale drab to deep pinkish grey.

Acrobasis consociella, bred from larvæ which draw together the leaves of terminal shoots of oak into bunches.

Mixodia Schulziana, not scarce among heath at Woolmer Forest, Hants,—the most southern locality for it of which I have heard.—C. G. Barrett, Haslemere, *November*, 1866.

'*A list of captures of Lepidoptera in* 1866, *on the eastern extremity of the Cotswolds.*

(*Concluded from page* 184.)

July 1st.—*B. rhomboidaria* bred from larva feeding on ivy. 2nd. *E. bipunctaria* and *T. Janthina* abundant; *A. Galathea*, very plentiful. 4th. *A. triplasia*, at sugar. 7th. *C. prunata* and *N. c-nigrum*, plentiful; *P. Alsus*, new to this locality. 8th. *A. villica*, a curious specimen, with the tips of fore-wings nearly white, bred from larva from Southsea; *P. iota*, scarce here. 11th. *I. vernaria*, larva taken at Malvern. 14th. *C. diffinis* and *L. complanula*, the former sometimes common in the larva state. 18th. *C. cytherea*, abundant at light and sugar. 20th. *A. imitaria* and *S. cambricaria*, common. 21st. *A. pyramidea*, bred from larvæ on oak and sallow. 30th. *A. ornata*, two specimens; *S. dubitata*.

August 2nd.—*N. fulva*, abundant in one corner of a meadow. 3rd. *E. apiciaria*. 9th. *G. libatrix*. 15th. *S. illustraria*, one specimen at Malvern. 18th. *P. lignata*, abundant. 19th. *H. sylvinus*. 24th. *P. fuliginosa*, second brood.

September 7th. *T. cratægi*, one at light. 8th. *H. popularis*, at light. 10th. *E. cervinaria*, bred. 12th. *A. lunosa*, at light and sugar. 13th. *A. aprilina* and *C. miata*. 25th. *P. flavocincta*, at sugar. 29th. *G. flavago*, at light.

October 3rd.—*H. micacea*, at light. 8th. *O. lota*, at sugar. 13th. *H. pennaria*, at light. 25th. *P. populi*, bred.

November 1st.—*P. cassinea*, at light.

In addition to these, I have taken the following, without being sure of the dates:—*A. pyrophila*, 4 at sugar; *A. cinerea*, 2 at light; *L. cespitis*, 1 at light; *A. aquilina*, 2 at light; also *A. ravida* and *A. obelisca*.—E. Hallett Todd, Northleach, Gloucestershire.

Notes on the transformations of Leucophasia sinapis.—For eggs of this species I am indebted to the kindness of Mr. C. G. Barrett; and it has been with no ordinary pleasure that I have watched its transformations; for the insect has always been a favourite of mine ever since I began collecting—now some ten years ago.

The eggs seem to be deposited singly; in shape they are cylindrical, very long, standing erect on one end, the upper end coming to a point, which is curved a little to one side (reminding one somewhat of the shape of a cucumber), ribbed longitudinally—about four ribs appearing in any one view: colour a glistening yellowish-white.

The larva when full-grown is about ¾-inch in length; head globular, rather smaller than second segment; body cylindrical, tolerably uniform in bulk, but tapering very gently towards the tail; anal flap terminating squarely, and under it appearing two very small blunt points: the skin wrinkled—with six folds to each segment, covered uniformly (but not densely), with very fine, short, whitish down. Colour a beautiful green, the front segments minutely dotted with black; dorsal line darker green, edged with yellowish-green; spiracular line distinct, of a fine, clear yellow, edged above with darker green; spiracles undistinguishable, belly and legs translucent green.

When the larva is about to spin, it fastens itself, with the head upwards, to a stem of its food-plant by a little webbing at the head and the tail, and a thread round the fore part of the body; and at first it rests quite flat on the stem; after some hours, it raises its back, and bends itself into a bow, the head and tail still fastened to the stem, and the thread round the body being much stretched; in this position it remains about two days, when it casts its skin for the last time (the threads which fasten down the head apparently being attached only to the larva skin), and becomes a pupa. The pupa when arrived at its full colour is very beautiful. In shape it is slender, very acutely pointed at the head, not so acutely at the tail; the wing-cases projecting in a swelling curve to nearly twice the width of the body, and meeting in a blunt ridge; the head is thrown back, and the pupa rests with the wing-cases touching the stem, fastened by the tail, and the thread round the body. The skin is semi-transparent; the colour a lovely delicate green; the abdomen rather yellowish: just in the spiracular region there runs all round the body a stout pink rib, enclosing the greenish spiracles: from this a strong pink line branches off, bordering the outer edge of each wing-case; and the nervures of the wings themselves are delicately outlined in pink.

I received some eggs on August 2nd, and again on September 1st. The larvæ appeared respectively on August 8th and September 6th; full fed on September 26th and November 8th; in pupa September 29th and November 8th. The food chosen was either *Vicia cracca* or *Orobus tuberosus;* but not both.—Rev. J. Hellins.

Caprices of Chelonia caja.—I have just completed the interesting occupation of setting October imagos of this species, thereby advancing its right to be considered, in some measure, double-brooded.

They were reared from ova deposited last July. Between fifty and sixty larvæ fed up in their accustomed manner, and are now of the usual size, save five, which outstripped the rest, and grew rapidly on a mixed diet, of which *Tagetes erecta*, (*African Marigold*) formed their "*pièce de résistance*." They spun their shroud about the last week in September, and four of them have emerged (the fifth appearing, on examination, to be drying up), one, a very small ♂, and three ♀. All the three ♀ have produced masses of eggs, probably barren ones, for the ♂ would seem too punily inadequate to aspire to the dignity of a "paterfamilias." He is the smallest,

most perfectly marked "Tiger Tim" conceivable; and now when set, barely an inch in expanse from tip to tip, and about six lines from points of palpi to anal tuft. His wings, though perfect and marked according to custom, are scarcely in proportion to the body, although, when prepared for the cabinet, the little gentleman was five days old. There is no characteristic departure from the normal type to speak of, in the ladies. Should their eggs prove fertile, we should thus at once have before us the egg, the larva, the pupa, and the imago—three of them at unaccustomed periods—illustrating, during a humid and almost sunless season, a condition of insect life much nearer the equator. In this case it is unnecessary to observe that there was no "forcing" of any kind, the natural and the precocious larvæ having been reared together under precisely similar conditions of light, atmosphere, locality, parentage, and food-plant. It will be interesting to a high degree to discover which of these five influences is the most important agent in effecting the strange aberrations exemplified by this and other species. A slight attention to the science of optics in reference to Chromatology would persuade to the belief that "light" was an important agent in these variations. It would not be difficult to prove "theoretically" that it was an all-sufficient cause. But, in these practical times, "demonstration" is gradually displacing "theory," and evidence is happily becoming more important than argument. In *C. caja* it is possible entomologists may have an easy opportunity of practically proving if light have or have not material influence on lepidopterous ornamentation. I venture to believe that I have, this past season, confirmed my previous impressions that it *has*; and I am now repeating my previous experiments on a larger scale, the results of which it will afford me gratification to be permitted to make known. Speaking generally, I feel convinced, from observations already made, that insects subjected during their growth and transformations to much light, would, as a rule, be *darker*; and those reared in the shade *lighter* than the normal individual. I should feel very grateful for any communication, *pro* or *con*, from those who may have already reared conspicuous varieties, or who may be induced to do so. For instance, information relating to the condition of the breeding cage would be interesting, if covered in from, or capable of admitting much of, the solar light; on what food-plant the larva chiefly fed; if a captured specimen, the sort of soil from whence it came; and any other circumstance contributing, in the estimation of the writer, to the result in question.

In conclusion I may describe a most singular *var.* of *C. caja*, I have had the good fortune to add to my series this season; a wild ♂ captured last July at Woodford, in Essex; and which, from information kindly forwarded by Mr. Doubleday and other authorities, may be considered almost unique. Let my readers figure to themselves a male of the average size; the thorax and body of the common type; the superior wings entirely cream-white; the lower wings rosy-crimson, with all the usual *blue-black* markings *orange-yellow*, except in the upper semi-lunar spot of the right lower-wing, in the midst of which is visible a blue-black atom, formed by about seven of the scales still retaining their accustomed tint; and it will be scarcely possible to imagine a greater sacrifice of "*pigmentum nigrum*," short of its utter annihilation. It would be most interesting to know the conditions under which this extraordinary example was produced. Surely something more than locality and food-plant was at work!—Ed. Horley, 14, South Bank, Regent's Park, *October 30th*, 1866.

Hermaphrodite Trichiura cratægi.—The following as yet unpublished description of a hermaphrodite *Gastropacha (Trichiura) cratægi* occurs in a letter, dated December 15th, 1866, addressed to me by my esteemed friend, Herr Ch. Haury, of Prague; but, as the specimen has since then changed hands, I am unable to say in whose collection it is now.

Herr Haury writes,—"One of my entomological friends here has bred this season a specimen of *Gastropacha cratægi*, the right antenna of which, as well as the exact right half of the body, and the right wings, are male, whilst the whole left side is female. The anal organs are, also, male on the right, and female on the left.

"The difference in the wings are very great, as the male side is much darker than the female one; the right male half of the abdominal segments is black, whilst the left female half is simply pale grey.

"The larva did not appear to differ in any way from others of the species."—Albert Müller, Penge, *January 11th*, 1867.

Captures in the Isle of Wight.—I beg to send the following notes. The captures were made close to my residence (with the exception of *M. Cinxia* and *A. luctuosa*, which were taken at Ventnor).

At sallow blossom:—2 *D. rubiginea*, 5 *T. miniosa*, 4 *T. gracilis*, 2 *X. petrificata*, and hosts of commoner species.

Bred:—*E. lanestris*, *A. villica*, *C. vinula*, *S. tiliæ*, and lots of common moths. I also bred *Cinxia* and *Artemis*.

Taken with net:—*V. maculata*, *E. lincolata*, *A. citraria*, *A. luctuosa*, *B. trifolii*, *L. quercifolia*, *M. Cinxia*, *A. luctuosa*, *Hoporina croceago*, and *S. irrorella* (*Edusa* did not put in an appearance.)

At ivy blossom I was fortunate enough to secure 6 *D. rubiginea*, and several other good things.

Among my best captures were two curious varieties of *H. Janira*, one having the centre of all the wings a pure pearly-white, and the other having the wings of one side (the right) marked in the same manner.

I got only one specimen of *A. Atropos* this season; last season I could count them by dozens.

I saw a fine specimen of *C. Celerio* while at the ivy blossom; it came to my lamp, but, being upon a ladder at the time, I was unable to secure it.—James Ingram, St. Helen's Schools, Nettlestone, Ryde, Isle of Wight, *Dec. 11th*, 1866.

Curious locality for Acari.—At Gosforth, in August last, I caught a number of water bugs of the genus *Corixa*, and was a good deal surprised, when I came to mount them, to find several specimens infested by *Acari*. The parasites were lodged on the upper surface of the abdomen, beneath the wings; they were minute, bright red creatures, and quite unknown to me. One of the *Corixa (semistriata)* had, in addition to several of the mites, what I take to be an oval egg sack, of sufficient size to hold a good number even of the perfect creatures.

Both hemelytra of this *Corixa* are punctured through the centre of their corium, and the holes appear to be of old standing, their edges being smooth and blackened. Can these holes have been made by the mites, for facility of ingress and egress to their strange dwelling place?—Thos. Jno. Bold, Long Benton, *December 26th*, 1866.

Winter captures of Coleoptera at Wimbledon.—I briefly note the results of three hurried excursions (about an hour each) to one of my old localities here,—a pond near the windmill,—as shewing that the combined influences of drainage, bricks and mortar, volunteer camps, and perpetual rifle-shooting, have failed to destroy the entomological value of this well-known spot. All my captures were made by cutting tufts, &c., at the edge of the aforesaid pond; exposed the while to the peculiarly searching blasts that course unchecked over the expanse of the open common.

Lamprinus saginatus, 3. In company with *Tachyporus chrysomelinus*, to which it bears an absurd resemblance. A question for mimetic-analogists: which of these beetles mimics the other,—and why? Has the *Lamprinus* an intuitive perception that the *Tachyporus* is so common that no Coleopterist would knowingly bottle it?

Stenus longitarsis, Thoms., 2 ♂ and 1 ♀. This is the place where, years ago, I first took this rare insect, then known as "small *ater*," and which has recently been found in other parts of the continent besides Sweden.

S. lustrator, ♂. The Wimbledon examples agree with those from Shirley in differing from the fen specimens through their shorter elytra and the degree of darkness suffused at the apex of their femora; they cannot, however, I think be specifically separated from the latter.

S. canaliculatus; *S. cicindeloides*, 1 or 2 ♂ (which sex, as noted by Erichson, I always find very rare); *Mycetoporus lepidus*, in numbers, chiefly the dark var.; *Tachyporus transversalis*, common, and now apparently migrated from the far distant *Kiesenwetteri* locality; *T. scitulus*.

Evæsthetus læviusculus, 12. *Calodera riparia*. *Aleochara brevipennis*. *Hister neglectus*, 2. *Anchomenus sexpunctatus*, 3.

A. versutus, 12. Readily distinguishable from *A. viduus*,—which occurs with it, and by which it is often represented in collections,—by its smaller size, broader and shorter thorax, flat interstices, and much less robust legs and antennæ.

Stenolophus dorsalis, several specimens. These Wimbledon examples vary much in size (some being scarcely larger than *S. luridus*), and more in colour, exhibiting intermediate grades between almost entirely testaceous and pitchy-black, with a lighter humeral patch to the elytra,—the latter extreme, indeed, closely simulating *S. meridianus*. The entirely pitchy-black, or *pseudo-derelictus* form, has not been found by me.

Last year I found here one example of *Anisodactylus binotatus*, var. (?) *atricornis*; my two specimens of which (apart from the marked and, apparently, constant characters of lesser size and darker colour attributed to this insect) have the outer apex of the elytra distinctly more deeply sinuate than in the supposed type form; a character much relied upon for specific separation in the *Harpalidæ* by the late Dr. Schaum, but which alone does not seem to afford anything like a safe guide.—E. C. Rye, 284, King's Road, Chelsea, *January*, 1867.

Newspaper Entomology.—The following little gem, from the *Times* of the 10th January, may have escaped the notice of some of our readers.

"The Potato and its Parasites.—It is stated in *La Patrie* that 'The "microscope reveals to us the existence of a small black spot, of the diameter of a "pin's head, in the potato. In this small space can be detected some 200 ferocious

"animals of a coleopteric form, which bite and tear each other with continued "fury. It is easy to comprehend the potato disease when such an intestine warfare "is raging.'"

It is a pity that this paragraph did not appear before the publication of the Ent. Annual for 1867; since a portion of it, viz., "*in this small space can be detected some* 200 * * *animals of a coleopteric form*," might have been utilized as a motto for that little volume, instead of the Tupperian quotation. The concluding part of the same sentence might, also, be considered as an exaggeration of those *amantium iræ* which so often (alas!) disturb the entomologist's mind.—Id.

Notes on Coleoptera from the French "Annales," &c.—M. Lucas, in the last trimestre of the Ann. Soc. Ent. Fr., p. 442, records the capture, in the wooded district near Harfleur, of very bright and light-coloured specimens of *Geotrupes vernalis*, with the thorax either impunctate, or, at most, only slightly punctulated on the disc. On the sandy flats of Lion-sur-Mer he finds the ordinary dark specimens, with distinctly and densely punctured thorax; and enquires whether this variation be owing to the conditions attending the different localities. M. Grenier appears to have found the brilliant form inland, far from the sea. From the publication of such a trivial note in the French "Annales," and from M. Lucas' terming the bright insect a very curious variety, which he has only found in that part of Normandy, I presume that these two forms, so long familiar to British Coleopterists, and even specifically separated by Haworth, Stephens, and others, are now for the first time known to French Entomologists. Haworth's *lævis*, according to Stephens' description, can only be considered as a synonym of *vernalis*, as in it the thorax is thickly and coarsely punctured; Stephens' *vernalis* being the form with very obsoletely punctured thorax. I have taken both vars. on Wimbledon Common; and Mr. Sharp recently found a very large number of the insect with punctured thorax near Malvern, many of which were of extraordinary brilliancy.

M. Chas. Brisout de Barneville, at p. 356 of the same part, in his list of new *Coleoptera* from the Spanish excursion of the society, describes a *Homalota (H. glacialis)* which, from its habitat and characters, must be very close to the previously described *H. eremita*, mihi; it seems, however, to differ from the latter chiefly in its obscure pubescence, and (compared with *H. tibialis*) its narrower thorax. It is, also, apparently of considerably less size than *H. eremita*.

In the "Catalogue des *Coléoptères* de l'Alsace et des Vosges," by Messrs. Wencker and Silberman (reviewed in "l'Abeille," Vol. IV., 1867, xlix.), M. Chas. Brisout describes (p. 131) *Centhorhynchus versicolor*, which Mr. Crotch has informed us is the insect known to us hitherto as *C. quercicola*; and also *C. euphorbiæ*, which, on the same authority, represents our *C. crux*.

At p. 53 of the last-mentioned journal, M. de Marseul gives translations of the diagnoses of M. Kutschera's new species of *Halticidæ*, from the defunct Wiener Ent. Monatschrift, including those described from British specimens, and already noticed in these columns by Mr. C. Waterhouse; and, at p. 283, M. Allard, in his revision of the same family, gives full characters for the *Plectroscelis*, hitherto known to us as *Sahlbergi* (and abundant in marshy places on Wimbledon Common), but which, as pointed out in another place, is the *subcærulea* of Kutschera (Wien. Monat, 1864, 346, 27). M. Allard, does not, however, note the difference in the length of the antennæ.—Id.

Note on Scolytus intricatus and Bembidium paludosum.—Last spring I visited Dunham Park, and succeeded in discovering the larvæ of *Scolytus intricatus* feeding on the smaller branches of the oak. I secured an infested branch about 3 feet long, and 1¼ inch in diameter, which, being rather decayed, with the bark peeling off, and about as crooked as an oak-stick could possibly be, attracted more attention from non-entomological people in the street than was exactly agreeable,—rude remarks being made as to my powers of selecting fire-wood. From this despised twig I bred about 100 of the *Scolytus* in the following July.

During the last summer I visited the haunts of *Bembidium paludosum*. On the first time, the day was cloudy, with occasional gleams of sunshine, and the *Bembidium* ran very rapidly, but never took wing: on the second, however, the day being bright and sunny, it was excessively alert; not only running rapidly, but using its wings when hotly pursued.—Joseph Chappell, Hulme, 24*th Dec.*, 1866.

Entomological Society of London, 7*th January*, 1867; Sir John Lubbock, Bart., F.R.S., President, in the Chair.

S. A. Davis, Esq., of Seven Sisters' Road, Holloway, was elected a Subscriber.

Prof. Westwood exhibited a collection of butterflies, formed in Brazil by the late Dr. Burchell; each specimen was carefully labelled as to locality. He remarked that an examination of the *Heliconidæ* of this collection had almost induced him to abandon his belief in the immutability of species, but promised to speak more fully on the subject at a future meeting. He had been unable to look out examples of mimicry in insects inhabiting different regions, but thought that the resemblance between the humming-bird hawk-moth and the humming-birds offered an analogous instance. Dr. Sharp considered that this resemblance was more apparent than real, and was the result of the similar habits of the creatures, and not a case of mimicry.

With respect to the humming-bird moth, Mr. McLachlan inquired if any Member could offer an explanation of the propensity exhibited in this insect to frequent walls, sand-banks, &c., far from herbage. In connection with this subject, Mr. Smith said that a correspondent had once actually sent him the clay-nests of bees, under the impression that they pertained to the moth!

Mr. Eaton suggested that the habit might result from the extra heat afforded by the walls, &c.*

Mr. Eaton said that last season he had found a hornet's nest in a bank, a very unusual occurrence.

The Secretary read some notes, by Capt. Hutton, on the Japanese silk-worm.

Mr. Stainton communicated two papers, by Prof. Zeller, on the *Crambina*, *Pterophorina*, &c., collected in Palestine (March to May, 1865) and Egypt (January to April, 1864) by the Rev. O. Pickard Cambridge. Some of the insects were exhibited.

Mr. Butler communicated a monograph of the genus *Hestia*, with descriptions of forms not hitherto noticed, and remarks on the natural affinities of the *Danaidæ*.

* I shall be glad if any of the readers of this Magazine can suggest any explanation of this peculiar habit. The question has been asked more than once. Mr. Eaton's suggestion is the most plausible I have hitherto heard.—R. McLachlan.

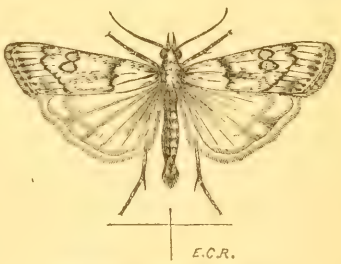
DESCRIPTION OF AN HITHERTO UNACKNOWLEDGED SPECIES OF *SCOPARIA* (*S. ULMELLA*, DALE, M.S.).

BY H. G. KNAGGS, M.D., F.L.S.

SCOPARIA ULMELLA, Dale, M.S.

Alæ anticæ angustæ, apicibus sub-acutis, costis sub-arcuatis; pallidæ, fusco nigroque sparsim irroratæ; lineâ primâ arcuatâ, late fuscâ; stigmate orbiculare sub-obsoleto; stigmate claviformi lineâ primâ confuso; stigmate reniformi perspicuo, 8-formi, flavido-ochraceo, fusco marginato; lineâ secundâ costam versus quasi 3-formi, deinde serratâ, ad marginemque internum oblique deflectâ; umbris sub-terminalibus inconspicuis; marginibus apicalibus strigis punctisque sex vel septem notatis. Posticæ albidæ, nitidæ, sub apicem leviter emarginatæ. *Exp. alar. lin.* 8.

From the members of the *dubitalis* (*pyralella*) group, to which upon the whole it perhaps bears the greatest affinity, *S. ulmella* is distinguished by the slender conformation of its fore- and hind-wings.



Scoparia ulmella, Dale, M.S.

The peculiarity of its renal stigma, 8-shaped and filled in with ochreous, at once separates it from the *mercurella* group.

To the *coarctata* group it bears some resemblance in the form of the fore- and hind-wings, but it has little else in common; the characters of the first line and its appurtenances, &c., forbidding any connexion with that group.

It will therefore be seen that *S. ulmella* has a facies peculiar to itself, of which the most striking points are the long narrow fore-wings with slightly acute apices—the well-defined broad arched (concavely facing the base) first line, in which two of the stigmata are pretty nearly absorbed—the very characteristic renal stigma, 8-shaped and filled in with ochreous—the apical margin furnished with dots and dashes—the shape of the hind-wings, which are comparatively long, and slightly emarginate just below their apices.

Of this interesting little species Mr. Dale took three examples on the 13th of July, 1844, on a wych elm trunk in a thick wood at East Meon, adjoining Bordean Hanger (Captain Chawner's estate). One of these, which Mr. Dale presented to the late Mr. Curtis, is now unfortunately in Australia; the other two are in Mr. Dale's own cabinet.

Kentish Town, *February 2nd*, 1867.

AN ESSAY TOWARDS A KNOWLEDGE OF BRITISH *HOMOPTERA*.

BY THE REV. T. A. MARSHALL, M.A.

(*Continued from page* 200.)

Genus Eupteryx, Curt.

1.—*Eupteryx albostriellus*, Fall.

Flavus vel albidus; pronotum vittis 2, hemelytra vittis 3 longitudinalibus aureo-citrinis. Alarum nervi longitudinales 4, quartus abbreviatus. Abdomen flavum, vel nigrum incisuris flavis. Pedes flavi. ♂ ♀. Long. 1½; alar. exp. 4 lin.

Cicada albostriella, Fall., Hem., Pt. 2, p. 54.

Typhlocyba id., Flor, R. L., 2, p. 382.

Cicadula elegantula, Zett., Ins. Lapp., p. 298.

Var. *a.*—Unicolorous, without orange-coloured stripes, apex of the corium, and the membrane, fuscescent: *T. fulveola*, H. Sch., D. Ins., 164, 16. ♀.

Var. *b.*—Similar, but of a much deeper yellow; the wings also dusky. In one instance the hemelytra are entirely clouded with dusky, except at the base.

Var. *c.*—Pronotum and scutellum broadly brown; hemelytra pearly white, with yellow lines, and a transverse fuscous spot on the inner margin. *T. Wahlbergi*, Boh., Handl., 1845, p. 42.—*Eupt. fasciata*, Curt., B. E., 640, No. 3 (not of Brit. Mus. Coll., which is *E. parvulus*, Boh.).—*T. vitrea*, Walk., Cat. of Homopt., 42.

I believe also at present that *T. rubi* and *T. eximia*, Hardy, Tynes. Trans., 1, 417, belong to this species, although the latter is represented in the Brit. Mus. by the roseate variety of *E. citrinellus*, Zett.

Very common on oaks, elms, and other trees, throughout the country.

2.—*Eupteryx citrinellus*, Zett.

Sulphureus; hemelytra hyalina, clavo coriique margine externo late citrinis vel flavis: sed hæc pictura interdum obsolescit. Vertex *Deltocephali*, triente brevior quam pronotum. Abdomen nigrum, basi et apice flavum, ♂; vel tantum dorso medio nigrum, ♀. Pedes flavi.

Long. 1-1¼; alar. exp. 3 lin.

Var.—The yellow replaced by a faint rosy tint, or flesh-colour.

Cicada citrinella, Zett., Fn., Lapp. 1, 536.

Typhlocyba id., Flor, R. L., 2, p. 386.

Cicadula gracilis, Zett., Ins., Lapp., p. 299.

Dikraneura variata, Hardy, Tynes. Trans., 1, 423.—Specimens under this name are in the British Museum.

Locally common among grasses: Swithland woods, Leicestershire; sand hills near Deal; coast of Berwickshire, late in October, "in the sea caverns on *Geranium Robertianum*" (Hardy).

3.—*Eupteryx flavipennis*, Zett.

Flavus; abdomen supra nigrum, incisuris flavis. Vertex ♂ rotundatus; ♀ sub-productus. Hemelytra flava, membrana corii apice, maculaque prope marginem corii exteriorem elongata, fenestrata, hyalinis. Long. 1-1½; alar. exp. 3½ lin.

Cicada flavipennis, Zett., Ins., Lapp., p. 292.

Typhl. id., Flor, R. L., 2, p. 388.

It is not likely to be confounded with anything except *flavescens*, Fab., and *apicalis*, Flor; both which species differ in having the abdomen wholly yellow. In marshy places, not very common.

4.—*Eupteryx viridulus*, Fall.

Totus læte viridis, capite et pronoto obsolete albo striatis. Oculi fusci. Hemelytra pellucida, viridia, immaculata. Alæ hyalinæ, nervis inconspicuis. ♂ ♀. Long. 1¼; alar. exp. 3 lin.

Cicada viridula, Fall., Hem., Pt. 2, p. 53.

Typhl. id., Flor, R. L., 2, p. 392.

Eupt. solani, Curt., in the Gardener's Chronicle, 1846, p. 388, and in Morton's Cyclop. of Agriculture, vol. 1, p. 772, fig.

This is the "potato frog-fly" of Curtis, stated (l. c.) to have appeared in great profusion on that plant after the murrain of 1845. A case of *post* but not *propter*. It is common, frequently abundant, everywhere, in gardens, hedges, and fields, on many other plants beside the *Solanum*.

5.—*Eupteryx smaragdulus*, Fall.

Viridis; vertex, pronotum, scutellum, fusco bilineata. Vertex brevis, latus, medio non longior quam lateribus. Hemelytra aureo-viridia; corium extus, clavus totus vel margine interiore, infuscata. Frontis latera, pedes plus minus, cum oviductu feminæ, cærulea. Abdomen supra medio interdum nigricans. Alarum nervi fusci, conspicui. ♂ ♀. Long. 1½; alar. exp, 3¾ lin.

Cicada smaragdula, Fall., Hem., Pt. 2, p. 53.

Typhl. id., Flor, R. L., 2, p. 393.

Eupt. viridipes, Curt., B. E., 640, No. 9.

The fuscous markings vary in intensity, and are frequently absent, probably in immature specimens. The short, broad vertex, greater size, and different habitat, at once distinguish it from the preceding. On willows and alders, common.

6.—*Eupteryx flavescens*, Fab.

Angustus, elongatus, totus pallide flavus. Vertex medio paulo longior quam lateribus. Hemelytra abdomine multo longiora, pellucida; membrana hyalina, nervis 3 longitudinalibus leviter incurvis, intus convexis; cellula media triangularis. Oculi post mortem, tarsi apice, fusci. ♂ ♀. Long. $1\frac{1}{4}$; alar. exp. $3\frac{1}{2}$ lin.

Cicada flavescens, Fall., Hem., Pt. 2, p. 53.

Typhl. id., Flor, R. L., 2, p. 394.

Larger and longer than *E. rosæ*, and having only two, instead of three, longitudinal *alary* nervures. Among the yellow immaculate species there remains only *apicalis* with which it can be confounded. Common on various trees, hazel, lime, elm, &c., until late in the autumn.

7.—*Eupteryx apicalis*, Flor.

Præcedenti persimilis. Vertex medio conspicue longior quam lateribus. Pronotum suæ postice latitudinis dimidio longius. Scutellum angulis anticis rufescentibus. Corii spatium a margine exteriore tertium sæpe hyalinum. Membrana, cum corii apice, infumata. ♂ ♀.

Var.—The clavus infuscated, and the apex of the hemelytra more broadly clouded.

T. apicalis, Flor, R. L., 2, p. 396.

Taken near London, but on what tree I am unable to state. Epping Forest; Thames Ditton.

8.—*Eupteryx parvulus*, Boh.

Flavus, abdomine nigro. Vertex maculis 2 rotundis, nigris, macula etiam citrina, perobscura, antice inter has posita. Pronotum maculis 2 anticis, totidemque lateralibus, fuscis; medio aut postice utrinque inter has rufescens. Scutellum maculis 2 magnis, triangularibus, nigris. Hemelytra pallida, pellucida; clavus rufuscens. Corium longitudinaliter rufo-fusco univittatum. Membrana vix fumata, unguibus fuscis. ♂ ♀. Long. 1; alar. exp. 3 lin.

T. parvula, Boh., Handl., 1845, p. 46.—Flor. R. L., 2, p. 397.

T. 10-punctata, H. Sch., D. Ins., 124.

On hazel bushes, Epping Forest and Birch Wood; not common.

9.—*Eupteryx hyperici*, H. Sch.

Flavus.—♂ sæpe subrufescens; scutellum apice nigro; abdomen vitta dorsali longitudinali nigra.

♀ pallidor; vertex macula magna, postice latiore, marginem posticum attingente, nigra. Pronotum vitta media longitudinali lata

nigro-purpurea. Scutellum apice nigrum; linea maculæque 2 triangulares baseos fuscæ vel nigræ. Hemelytrorum clavus late sanguineus, margo externus anguste niger. Alæ hyalinæ; pedes pallidi.

Long. $\frac{3}{4}$-1; alar. exp. $2\frac{1}{3}$ lin.

T. hyperici, H. Sch., D. Ins., 143.—Flor, R. L., 2, p. 398.

T. coronula, Boh., Handl., 1845, p. 44.

T. placidula, Stål, Öfv., 1853, p. 176.

I took a single pair on *Hypericum perforatum* in Swithland Woods, Leicestershire, in August.

[Note.—At page 199, line 8 from bottom, for ♀ read ♂.]

(To be continued.)

CORRECTIONS OF ERRORS HITHERTO EXISTING IN THE NOMENCLATURE OF SEVERAL SPECIES OF THE GENUS *NYMPHIDIUM*.

BY ARTHUR G. BUTLER, F.Z.S.

1. In Mr. Doubleday's "Genera of Diurnal Lepidoptera," p. 449, n. 17, *Nymphidium Orestes*, Cramer, Pap. Exot., iii., pl. 282, f. *a*, *b*, is queried as a male insect, whilst *N. Soranus*, Cramer, Pap. Exot., iv., pl. 353, f. *a*, *b*, is proposed as the female of it; there can, however, be no doubt that the figures of both *Orestes* and *Soranus* are taken from female specimens.

The true male of *Soranus*, which we have in the National Collection, resembles, in some measure, *N. Arctos*, Hewitson, Exot. Butterf., i., p. 113, pl. 57, f. 1 (1853). It is, however, of a lighter colour, and with narrower and more elongate wings.

Judging from a somewhat shattered specimen of *Soranus* in the Collection, I should say that it is sufficiently distinct to be separated from *Orestes;* but even supposing it should prove to be only another form of that insect, the name *Orestes* will have to be superseded by that of *Soranus*, the latter being undoubtedly the older title.

2. The female of *Nymphidium Lamis*, Cramer, Pap. Exot., iv., pl. 335, f. *f*, *g*, both sexes of which are figured in Hübner's Samml. Exot. Schmett. Band., ii., pl. 14, f. 1-4, has been again represented in the "Genera" (pl. 73, f. 5) as *N. Azan* of Doubleday's List. It is not, however, the insect intended by Mr. Doubleday, but a new species, which I thus characterize.

Nymphidium azanoides, sp. nov. (Azan., *Doubl., Ms.*)

♂. *Alæ supra fuscæ, fascia lata media communi alba extus sinuata, anticarum triangulari ad nervulum discoidalem primum terminata; linea*

submarginali cinereo-albida undulata, aliisque maculas tres discoideas circumcingentibus colore similibus: posticæ stria submarginali interrupta coccinea: corpus thorace fusco, abdomine albo fusco-terminato, antennis fuscis flavo-acuminatis.

Alæ subtus pallidiores maculis nonnullis nigris a linea submarginali cinctis; maculis nonnullis sub-basalibus nigris: aliter velut supra: corpus, thorace fusco-albido, abdomine albido: alar. exp. unc. $1\frac{15}{16}$.

♀. *Alæ supra fuscæ cupreo-tinctæ, fascia lata media communi alba, anticarum præ angustiore extus sinuata, intus irregulari, post cellæ finem terminata; maculis marginalibus nigris apud apicem anticarum, indistinctis albido-cinctis, aliisque basalibus elongatis similibus: posticæ margine anali coccineo rufescente: corpus fuscum abdomine albo-fasciolato, antennis fuscis.*

Alæ subtus multo pallidiores, fascia media magis irregulari, margine anali nec rufescente; maculis marginalibus, quarto sextoque anticarum primo quarto sextoque posticarum, albicantibus, aliter velut supra; corpus albidum: exp. alar. unc. 2. ♂ Brazil? ♀ Para. B.M,

Var. ♂ *fascia media angustiore, maculis marginalibus magis distinctis:* ♀ *fascia media angustiore, anticarum minus irregulari; margine toto postico posticarum et margine anali anticarum rufescentibus.*

♀ Santarem. ♀ Ega. B.M.

The female of the above species had Doubleday's name (*Azan*) attached to it.

3. *Nymphidium Ascolia*, Hewitson, Exotic Butterf. i., p. 113, pl. 57, f. 4, appears to be very closely allied to, if not identical with, *Papilio Damon*, Stoll, Supp. Cram., pl. xxxix., f. 5, 5D. It may be a distinct species, but some of our specimens seem to be intermediate between the two figures.

4. A figure of *Nymphidium Lysimon*, Stoll, is given in the "Genera," pl. 73, f. 4, as *N. Platea* of Doubleday's List. It is only in part the species intended by that gentleman; the true *Platea* is intermediate between *N. Omois*, Hewitson, and *N. Acherois*, Boisduval.

NYMPHIDIUM EPIPLATEA, sp. nov. (Platea, *Double., Ms.*)

♀. *Alæ supra albæ, margine costali anticarum marginibusque posticis fuscis; maculis marginalibus semicircularibus nigro-fuscis, linea violaceo-albida cinctis; fascia submarginali coccinea, anticarum abbreviata, anali; anticæ costa albicante; maculis duabus discoideis coccineis, aliisque albidis nigro-cinctis et albido circumcinctis, velut in* Lysimone ♀ *dispositis: corpus, thorace fusco, abdomine albo; antennis nigris albo-fasciolatis et ochreo-acuminatis.*

Alæ subtus pallidiores ; maculis striisque fulvis pro coccineis, maculis quarta et sexta anticarum, tertia quintaque posticarum marginalibus albicantibus : corpus albidum : aliter velut supra : exp. alar. unc. $1\frac{3}{16}$.

Pernambuco.

This insect and a male specimen of *N. Lysimon*, from Para, represented Mr. Doubleday's *Platea*. This species differs from the female of *Lysimon* in its more quadrate form, and the great width of the white band, which in fact occupies almost the entire wing, as in *N. Acherois*.

5. The female of *Nymphidium Belise* of Cramer has in the "Genera" been placed amongst the *Nymphalidæ* as *Pyrrhogyra? Irenea*.

The synonymy must now stand as follows:

Nymphidium Belise.

♂ *Papilio Belise*, Cramer, Pap. Exot., iv., pl. 376, f. E, F (1782).
Thisbe Belise, Hübner, Verz. bek. Schmett., p. 24, n. 189 (1816).
Erycina Belise, Godart, Enc. Méth., ix., p. 578, n. 67 (1819).
Nymphidium Belise, Westwood, Gen. Diurn. Lep., p. 449, n. 13 (1851).
♀ *Papilio Irenea*, Cramer, Pap. Exot., iv., pl. 328 (1782).
Erycina Irenea, Godart, Enc. Méth., ix, p. 419 (1819).
Pyrrhogyra? Irenea, Westwood, Gen. Diurn. Lep., p. 253, n. 7 (1850).

Ega. St. Paulo. ♂, ♀. B.M.

Var. *a*. *Major, fascia anticarum sub-apicali alba magis elongata; posticæ maris magis elongatæ ; fascia submarginali maculari albida feminæ magis distincta.* ♂ Peru?* ♀ Para. B.M.

Var. *b*. *Fascia sub-apicali anticarum vix distinguenda, aliter velut precedenti.*

Para (two specimens) ♂. B.M.

This species belongs to the *Phliasus* group. It is evidently allied to *N. Molela*, Hewitson, of which we possess both sexes ; but the latter insect differs much from it in coloration, especially on the underside.

Zoological Department, British Museum.

DESCRIPTIONS OF BRITISH *HYMENOPTERA* (*PROCTOTRUPIDÆ*) NEW TO SCIENCE, &c.

BY THE REV. T. A. MARSHALL, M.A.

Gen. PARAMESIUS, Westw. ; Thoms. Öfv., 1858, p. 370.

P. BELYTOIDES. n. sp. *Ater, nitidus ; antennarum articulo ultimo ovato, articulis* 9-13 *nigris, cæteris rufis. Pedes cum coxis rufi ; tar-*

* I think this must be erroneously registered ; it is probably from Para.—A.G.B.

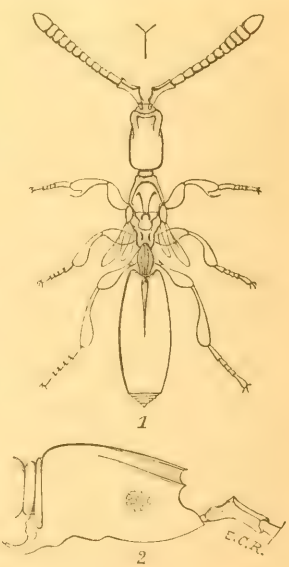
sorum articulus penultimus apice, ultimus totus, fusci. Alæ fumatæ, angustæ, abdomine breviores, volatui vix idoneæ. Abdomen apice rufo, piloso, compresso, acuminato. ♀. *Long. lin.* 2, *alar. exp. lin.* 2.

At the base of the second abdominal segment are three very short linear impressions, a character which refers the insect to the first of Thomson's sections, l. c. Of this section only one species has been described, *Diapria nervosa*, Nees, = *Par. rufipes*, Westw. Both sexes are known, and are not uncommon among dead leaves in woods. I have taken several in this situation near Leicester. The present species differs considerably in form, having the abdomen longer and more acuminated, and the wings much darker, too short and narrow for flight. All the other *Paramesii* which I have seen have ample wings in both sexes. *P. belytoides* is also remarkable for its large size. Taken in the London District by Mr. Rye, who kindly communicated it to me.

Paramesius belytoides, Marsh.

Gen. GALESUS, Curt., B.E. 341; Thoms., Öfv., 1858, p. 373.

Mr. Haliday enumerates (in the Nat. Hist. Review, vol. iv.) five British species, of which three are neither named nor described. He gives *Psilus cornutus*, Panz., as a syn. of *Diapria brunnipes*, Nees. I cannot understand this; for, if it be true, neither of them is a *Galesus* at all; since Nees gives to his *brunnipes* (♂) 15-jointed antennæ instead of 14-jointed (Mon. t. 2, p. 322). But it is probably a waste of time to attempt to reconcile the older authors. Nothing certain can be made out from Panzer's figure. I am acquainted with three species of this genus, one of which is new. The other two are *G. fuscipennis*, Curt., l. c., fig., and *G. clypeatus*, Thoms., l. c.; No. 3 = *cornutus*, Curt. (but not of Nees or Panzer). Thomson has described eight species, but seems not to be acquainted with *fuscipennis*, Curt. The vertex in this genus overhangs the frons more or less in the form of a hood; we shall here call it *laminated*



1. *Galesus cæcutiens*, Marsh.
2. Head of ditto, seen laterally.

A. Ocelli 3, conspicuous, near the edge of the frontal lamina. Wings ample.

a. Front broadly laminated. The lamina deeply emarginate in the middle.....(1) *G. fuscipennis*, Curt.

b. Front narrowly laminated. The lamina faintly emarginate in the middle.....(2) *G. clypeatus*, Thoms. = *cornutus*, Curt. (not of Nees or Panz.) = (?) *claviger*, Hal. (too briefly characterised).

B. Ocelli obsolete, represented by two faint punctures. Wings aborted.

(3) G. CÆCUTIENS, n. sp. *Ater, nitidus, capite postice non dilatato, thoracis latitudine. Antennæ capitis thoracisque longitudine, articulo penultimo transverso. Oculi parvi, parum concavi, desuper omnino non videndi; ocelli nulli. Alæ lineares, breves, metathoracis basin haud excedentes. Pedes picei; femora tota, tibiæ nisi apice, nigra.*

♀. *Long. lin.* 1½.

The only other species described with aborted wings is *subapterus*, Thoms., Öfv., 1858, p. 375. This belongs to Thomson's second section, having the frontal lamina entire in front, the head dilated behind, &c. In *cæcutiens* the frontal lamina is produced into four lobes rounded at their apices, the two central being raised above the two lateral, and the elevated space bounded on each side by a depressed line; the laminated space is aciculated, and therefore not shining. The ocelli should be at the anterior edge of the frontal lamina; they are entirely obsolete, and in their place only two blind punctures are to be seen. This insect appears at first sight to be blind, but having examined it with great care, I can answer for its possessing eyes, which are in their usual position, viz., low down on the antero-lateral part of the head. They are smaller than in the other species, flat, quite invisible from above, and not readily seen in any position, being nearly homogeneous with the rest of the surface, and having the facets very minute. I am indebted for this curious creature to Mr. Rye, who took two specimens on the 23rd April, 1865, in a sandpit near West Wickham Wood, Surrey. They were running actively about in the sunshine, vibrating their long antennæ in front, after the fashion of *Calodera* or *Callicerus*, members of both of which genera were found with them. A specimen has also, I believe, been taken by Dr. Sharp near Edinburgh.

Gen. ANEURHYNCHUS, Westw.; Thoms., Öfv., 1858, p. 375.

A. NODICORNIS, n. sp. *Ater, nitidus; ♂ antennæ capiti cum*

thorace longitudine æquales, piceæ : articulus 3^tius oblique insertus; 4^tus extus incrassatus, lobatus. Pedes picei; coxæ nigræ nisi apice; femora medio infuscata. Alæ amplæ, subfuscæ, disco saturatiores; linea longitudinalis utrinque abbreviata, albida. Tegulæ ferrugineæ. Abdomen ovatum, brevius quam præcedenti, magis convexum, fortius basi sulcatum.

♀ *differt antennis totis nigris, capite cum thorace brevioribus, apice sensim clavatis, articulis* 3, 4, *simplicibus. Terebra sub-exserta, ferruginea.*

♂ ♀. Long. $1\frac{1}{2}$; alar. exp. 3 lin.

Common in Swithland Woods, Leicestershire, among dead leaves in damp places, July, August.

Milford, *January*, 1867.

A MONOGRAPH OF THE BRITISH *PSOCIDÆ*.

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

(*Continued from p.* 181.)

B.—*Ocelli present.* (*PSOCINA.*)

In this division come all the species which have hitherto been generally included in one genus, *Psocus:* but already, in 1837, Curtis separated certain species under the generic term *Cœcilius*, and a more extensive acquaintance with exotic forms has rendered a still further division necessary. This has been done by Hagen in his "Synopsis Psocinorum synonymica," and his genera are adopted here. The general characters of the division are as follow:

Antennæ about 13-jointed; the two basal joints short, the rest long, but gradually decreasing in length, pilose in the male (probably the joints are always 13 in British genera, but the exact discrimination of the apical ones is sometimes difficult). *Head* transverse, triangular; the crown provided with three evident, and often prominent, *ocelli;* the front is tumid, and forms a strongly convex piece, termed the *nasus*. *Eyes* large and prominent; larger and placed closer together in the male than in the female. *Labrum* large and convex. *Mandibles* strong and corneous, trigonate, toothed within (the teeth unequal in the two mandibles, according to Westwood). *Maxillary palpi* 4-jointed, the terminal joint somewhat clavate. *Labial palpi* rudimentary. *Prothorax* scarcely evident. *Mesothorax* very large, strongly convex, divided into three lobes. *Metathorax* equal in breadth with the *mesothorax*, transversely sub-quadrate, convex. *Abdomen* small, oval. *Legs* moderately long, slender; the *femora* very slightly dilated; *tarsi* 2- or 3-jointed, the terminal joint with strong claws (when 3-jointed, the second or middle joint is the smallest).

Wings large, much longer than the abdomen (excepting in the micropterous forms), membranous, the anterior pair dilated and rounded or elliptical at the apex. The nervures strong, arranged as follow: parallel with the costa runs a strong nervure, the *radius;* before its termination this more or less gradually recedes from the margin, forming a triangular or elongated space, generally darker coloured than the rest of the wing, and termed the *pterostigma;* but immediately at the point where it recedes, it emits a short transverse vein to the costal margin. The *subcosta* is rudimentary, forming a fine vein at the base between the costa and radius, and scarcely visible without the aid of the microscope.* Below the radius runs a nervure which I here term the *forked vein;* rather before the middle of the wing this vein divides, one branch running obliquely to the posterior margin; at about the middle it divides again, one branch running to the costal portion of the apical margin beyond the pterostigma, and ending in a long and usually curved furcation; the other branch runs into the apex, and emits two or three smaller branches to the dorsal portion of the apical margin; the upper branch of the forked vein sends out one, and sometimes two *(Stenopcosus)* transverse veins to the radius. The first lower branch of the forked vein, after reaching the dorsal margin, frequently sends out a veinlet obliquely upwards, reaching the second lower branch, closing a large space which is called the *discoidal cell (Psocus* and *Stenopsocus);* or this veinlet does not reach the second lower branch, but is directed back again to the dorsal margin, forming a free elliptical cellule *(Cacilius* and *Elipsocus);* or this veinlet is absent *(Peripsocus)*. The other nervures are unimportant, consisting of a very fine vein, which may be called the *cubitus*, running obliquely from the base of the forked vein to the dorsal margin, and, within this, a stronger vein, running nearly parallel with the dorsal margin, and which may be called the *post-costa*. The posterior wings are shorter and narrower than the anterior; the costal margin nearly straight, the apex obtuse. The neuration of these wings is very simple. The sub-costa is absent; the radius joins the costa rather beyond the middle; the forked vein first sends out a simple branch to the posterior margin, it then again forks, the upper branch dividing at the end, and enclosing a triangular cellule, the lower simple; one transverse vein unites the forked vein to the radius. There is also a cubital vein running parallel with the first lower branch of the forked vein, and a rudimentary post-costal nervure.

(The nomenclature of nervures is a subject on which scarcely two authors agree. That here given will be found sufficient for all purposes connected with British species. A reference to the plate will render this terminology better understood.)

The eggs are laid in patches on leaves, bark, or other objects, and the females cover them with a web. The larvæ and pupæ greatly resemble the perfect insects. As in all *Pseudo-Neuroptera*, the line of distinction between the larva and pupa states is not evident, the changes being very gradual; the more fully developed individuals bearing rudimentary wing sheaths. The ocelli in these states are absent. The

* In the "Entomologist's Annual," 1861, p. 18, Hagen calls the vein forming the pterostigma, the "sub-costa," and he terms the forked vein below this the "radius." I consider the sub-costa to be certainly represented by the rudimentary vein described above.

tarsi appear to be 2- or 3-jointed according to the species, as in the imago; I certainly possess larvæ or pupæ with both 2- and 3-jointed tarsi. The idea expressed by Westwood in his "Introduction," vol. ii., p. 19, that there is probably a sexual variation in the neuration, appears to have been based on an insufficient knowledge of the specific characters. I possess both sexes of most of the species, and nowhere do I find sexual variation in this respect. As in all other *Neuroptera*, the neuration is occasionally liable to individual aberration, but only in an unimportant degree. This aberration generally consists in the veins of one wing of an individual belonging to a particular group or genus, showing a tendency to assume partially the characters of other groups; a fact which to the philosophical entomologist is pregnant with significance. The occasional occurrence of micropterous forms is interesting. I have observed these forms in at least five species, and they probably occur in all. It is also possible that some individuals never acquire wings, though otherwise fully developed; a supposition which the evident analogy with *Termes* renders additionally worthy of observation.*

In all their states they probably feed on dry vegetable matters and lichens. They are universally common, more or less in societies, on tree-trunks, and palings, and amongst the herbage of trees, especially firs, larches, and yews; and some species in houses and warehouses. I believe that both sexes possess the power of spinning web, not distinguishable from that of spiders. If a number of living specimens be enclosed in a pill-box, it will be found that, at the end of a few hours, the interior is traversed in all directions by numerous lines of web. They are exceedingly active and difficult of capture.

The British genera may be tabulated as under—

A. Tarsi 2-jointed.

a. Pterostigma free.

* Discoidal cell closed, quadrate; four complete cellules on apical half of the posterior margin..... *Psocus*.

** Discoidal cell incomplete, open.

† Three complete marginal cellules; the last (counting from the apex) elliptical and free ....*Cœcilius*.

†† Two complete marginal cellules; the last altogether absent .....*Peripsocus*.

* In the micropterous forms (which are probably always females) the neuration differs slightly from the normal arrangement. Yet the deviation is usually less than would be expected from the abridgement of the wings, and seems to consist in a shortening of the apical cellules. A micropterous example of *Psocus nebulosus* has an altogether normal neuration, excepting that the pterostigma is much abbreviated; a similar form of *Stenopsocus cruciatus* presents an irregular formation of the cellules on the posterior margin. The forms noticed in the remarks on *Lachesis*, and which I imagine to be this state of *Cœcilius pedicularius*, shew no trace of the posterior marginal cellules.

b. Pterostigma united to the forked vein by a transverse veinlet; neuration otherwise almost as in *Psocus* ..... *Stenopsocus.*

B. Tarsi 3-jointed; neuration as in *Cœcilius*..... *Elipsocus.*

Genus Psocus, Latreille (1794), Hagen.

Psochus, Latreille (1796). *Hemerobius*, p. Linné, Fabricius, Müller, Schrank, Scopoli, &c. *Phryganea*, p. Linné, Geoffroy.

Tarsi 2-jointed. Pterostigma free. Discoidal cell complete, quadrate. Four complete cellules on the apical half of the posterior margin.

1.—Psocus longicornis, Fabricius.

Hemerobius longicornis, Fab. Gen. Ins. p. 245 (1776), &c. *P. longicornis*, Fab. Ent. Syst. suppl. p. 203, 1; Zett. Insect. Lapp. col. 1052, 1; Ramb. Név. p. 320, 3. *P. lineatus*, Lat. Coqb. Icon. p. 12, tab. 2, fig. 8 (1799); Steph. Ill. p. 119, 8; Curt. B. E. 648, 5; Burm. Handb. vol. ii., p. 780, 18; Ramb. Névrop. p. 219, 2; Brauer N. A. p. 34; Hag. Ent. Ann. 1861, p. 28, 15.

Antennæ much longer than the wings, pubescent in the ♂, black, the first, second, and third joints reddish-testaceous. *Head* yellowish-ochreous; *crown* striped and spotted with black; *nasus* regularly striped with longitudinal black lines. *Palpi* yellowish-ochreous, the terminal joint pubescent. *Thorax* fuscous or blackish, the divisions of the lobes margined with yellowish-ochreous. *Abdomen* yellow, the segments margined with black, which expands on the lateral margins, the terminal segments wholly black. *Legs* yellow; tarsi and the apex of the tibiæ blackish. *Wings* hyaline; *fore-wings* rather elongate, with sub-triangular *pterostigma*, which is yellowish, with a fuscous spot in the apical portion; at the base a sub-triangular fuscous spot proceeds from the inner margin half across the wing; a more or less indistinct fuscous cloud in the apex (all these markings vary much in intensity): *veins* blackish, all, excepting the costal nervure, yellowish at the base, that closing the discoidal cell, and the base of the superior apical furcation, also yellowish. The male differs considerably from the female; the pterostigma being darker, almost filled in with piceous; the other clouds and markings are often almost entirely wanting. Length of body* 1¾-2¼‴; expanse of fore-wings 6-7‴.

Tolerably common on tree-trunks, especially poplars.

2.—Psocus nebulosus, Stephens.

P. nebulosus, Steph. Ill. p. 199, 9 ♀ (1836); Burm. Hand. vol. ii., p. 780, 17; Hag. Ent. Ann. 1861, p. 29, 16. *P. similis*, Steph. Ill. p. 120, 20 (1836); Brauer N. A. p. 33. *P. variegatus*, Curt. B. E. 648, 4, nec. Fab. *P. infuscatus*, Ramb. Névrop. p. 319, 1, ♀ (1842). *P. affinis*, Ramb. Névrop. p. 320, 4 ♂ (1842).

* In all cases the measurements of the body are taken from dry examples; in the live insects they are considerably greater. The abdomen of the ♂ shrinks much more than that of the ♀.

Antennæ (♂) longer than the wings, pubescent, blackish, the two basal joints yellowish; (♀)not pubescent, the third joint reddish-testaceous. *Head* fuscous, paler (somewhat ochreous) in the ♀, in which sex the *crown* is marked with longitudinal darker stripes; *labrum* darker. *Thorax* pitchy-brown; the divisions of the lobes margined with yellowish, more conspicuous in the ♀. *Abdomen* blackish, with yellowish markings more conspicuous beneath. *Legs* obscure testaceous, the tarsi darker. *Wings* of the ♂ uniformly pale fuscous, with cupreous iridescence; *fore-wings* rather short and broad, the *pterostigma* is triangular, blackish in mature individuals, paler at the inner side; in the ♀ the fore-wings are paler with darker clouds, and the veins margined with darker, the inner side of the pterostigma often conspicuously yellowish; veins fuscous, that closing the discoidal cell, and the base of the superior apical furcation, pale; the *posterior wings* paler than the anterior.

Length of body 1½-2‴; expanse of fore-wings 5¼-6‴.

A common species on tree-trunks, &c.

3.—Psocus variegatus, Fabricius.

Hemerobius variegatus, Fab. Ent. Syst. 2, p. 85, 18 (1793), &c. *P. variegatus*, Lat. Coqb. Icon. 13, tab. 2, fig. 13; Steph. Ill. p. 118, 4 (partim); Burm. Handb. 2, p. 778, 4; Ramb. Névrop. p. 322, 12; Brauer N. A. p. 33; Hag. Ent. Ann. 1861, p. 30, 17. *P. atomarius*, Steph. Ill. p. 118, 15 (1836). *P. picicornis*, Steph. Ill. p. 118, 2 (1836). *P. pilicornis*, Lat. Coqb. Icon. 13, tab. 2, fig. 12 ?.

Antennæ scarcely so long as the wings, very pilose in the ♂, yellowish, the two basal joints and the apex fuscescent. *Head* yellow; *crown* with a few fuscous markings about the conspicuously blackish ocelli; *nasus* fuscous in its lower half, scarcely striped; *labrum* darker; *palpi* with blackish apical joint. *Thorax* yellow (sometimes fuscescent, or with fuscous markings). *Abdomen* yellow above, with a blackish median line; beneath blackish. *Legs* yellowish, the tarsi darker; tibiæ hairy, and marked with very minute blackish dots. *Wings* hyaline; *anterior wings* very thickly clouded and irrorated with greyish-fuscous; with darker fuscous spots, especially about the pterostigma and posterior marginal cellules, and along some of the veins; the radius about the inner side of the pterostigma conspicuously suffused with yellow, and some of the other veins also streaked with yellow.

Length of body 1-1½‴; expanse of fore-wings 4-4½‴.

Very common on tree trunks, but difficult to see on account of its coloration being so similar to that of the bark. In the Ent. Ann., 1861, this species was not separated from *P. fasciatus*.

4.—Psocus fasciatus, Fabricius. (Plate 2 fig. 5.)

Hemerobius fasciatus, Fab. Mantiss, 1, p. 247, 13 (1787), &c. *Psocus fasciatus*, Fab. Syst. Ent. Suppl. p. 203, 4; Steph. Ill. p. 118, 13; Zett. Ins. Lapp. col. 1052, 2. *P. pilicornis*, Lat. (?); Burm. Handb. 2, p. 779, 2. *P. variegatus*, Steph. Ill. p. 118, 4 (partim).

Antennæ not so long as the wings, very pilose in the ♂, fuscous. *Head, thorax, abdomen, and legs*, coloured almost as in *P. variegatus*, but the blackish median line on the upper side of the abdomen is apparently absent. *Wings* hyaline; *anterior wings* irrorated with fuscous, the irrorations becoming confluent and forming more or less distinct fuscous fasciæ, viz., a basal one indicated only by an almost quadrate spot on the inner margin; another extending obliquely across the wing rather before the middle, and very broad on the inner margin; a third, which may be said to commence as a dark spot at the pterostigma, proceeding in an often indistinct manner across the wing, and carried round the apical margin, forming a nearly semi-circular band (this is very evident in distinctly marked individuals). *None of the veins yellow.* Length of body 1¼-1⅝‴; expanse of fore-wings 4½-5‴.

Occurs in the same situations as the last, and is probably equally common. Very similar in appearance, but at once separated by its slightly larger size, by the dark irrorations being collected into fasciæ, and by the absence of any yellow veins.

(*To be continued.*)

Notes on the un-named species in Mr. Waterhouse's Catalogue of British Coleoptera (1861).—There are 23 species un-named, and mostly queried as new, in Mr. Waterhouse's Catalogue, the greater part of which have now, with more or less certainty, been endowed with "a local habitation and a name;" and it has occurred to me that it may be of some slight use to British Coleopterists if these species were collected together, with references, &c., to the insects to which they are attributed.

They are as follows:—

1. Hydroporus 1* *sp.*—? Cat., p. 107, and Pocket Cat. (*Hydroporus*, sp.—?), p. 7. This insect has been identified by the Rev. Hamlet Clark (vide Ent. Ann., 1863, p. 69) as the *H. quinquelineatus* of Zetterstedt (*Hyphydrus*). My friend Mr. T. J. Bold appears to have formerly taken it in abundance near Newcastle.

2. Calodera 1 *nov. sp.?* Cat., p. 16; Pocket Cat., p. 8. This fine insect, occurring rarely in marshy places near London, is the "*Callidera nigrita*, Mann.?" of the 1st Edn. of Mr. G. R. Crotch's Catalogue of British *Coleoptera*, and the *Calodera nigrita* of his 2nd Edn., and of my own Catalogue, appended to "British Beetles." Mr. Waterhouse informs me that his reason for hesitating to attribute the insect to that species (with the description of which he was, of course, well acquainted) was that Erichson, in the Gen. et Spec. Staph., describes the abdomen of *C. nigrita* as "*planum et æquale*" (in distinction to others of the same genus, wherein he specifies it as "*segmentis basi summa*"—or "*4 primis*" or "*anterioribus*"—"*transversim impressis*" or "*depressis*"), though in the Col. March., p. 303, he says "die *ersten* Ringe an der Basis der Quere nach eingedrückt,"—an expression echoed by Dr. Kraatz in Ins. Deutschl., ii., 142;—whereas our insect has the *four* first segments of the abdomen distinctly and strongly transversely furrowed. Thomson, however (Skand. Col., ii., 300), gives the following character for *Calodera* (in which he includes *nigrita*, Mann.), "Abdomen—segmentis 2—5 basi impressis;" and I believe that Dr. Kraatz has sent over specimens as *C. nigrita*, Mann., which agree with our insect.

It appears from Mr. Waterhouse's note-book that he long ago named this species in MS., provisionally, "*Kraatzii*."

3. Stenus 20 *sp.*—? Cat. p. 28. This, in the appendix, p. 108, is named *S. lustrator*, Er., Kraatz (Ent. Ann., 1863, p. 85).

4. Bledius 5 *sp.*—? Cat., p. 108 (and Pocket Cat., p. 7). This is to stand in the place of the *B. pallipes*, Grav., of the Catalogue. It is represented in Mr. Waterhouse's cabinet by three specimens: I, also, have it from the Lancashire coast. *B. pallipes*, compared with *B. opacus* (teste Erichson), should have longer and more densely punctured elytra;—a character not exhibited by Mr. Waterhouse's insects, or mine. *Bledius pallipes*, Gr., is included, with a query, in the 2nd Edn. of Mr. Crotch's Cat.; and is, I presume, intended to represent this species.

5. Ancyrophorus 2 *nov. sp.?* Cat., p. 30. This, at p. 108, and in the Pocket Cat., p. 13, is named *A. longipennis*, Fairm. (Ent. Ann., 1863, p. 87).

6. Omalium 14 *nov. sp.?* Cat., p. 31, and Pocket Cat., p. 13. This has been determined by Mr. G. R. Crotch as *Deliphrum crenatum*, Grav. (*Omalium*); vide Ent. Ann., 1867, p. 68. It appears (as Mr. Crotch says) to have no generic characters in common with our only other *Deliphrum*.

7. Omalium 16 *nov. sp.?* Cat., p. 32, and Pocket Cat., p. 13. This is represented by a single specimen in Mr. Waterhouse's collection, which is named in his note-book "*O. brevicorne*, Er.?," and which is, in my opinion, only a deceptive *O. vile*. *O. brevicorne* has been recorded as British by the Rev. A. Matthews (Ent. Ann., 1864, p. 63).

8. Anisotoma 13 *sp.*—? Cat., p. 35, and Pocket Cat., p. 14. I have identified this insect (vol. i. of this publication, p. 167) with the *A. ornata* of Fairmaire, which appears to be a pale form of the *A. litura* of Stephens. Vide Ent., Annuals for 1865, p. 65; 1866, p. 78; and 1867, p. 111.

It seems, also, to be the *A. scita* of the 1st Edn. of Mr. G. R. Crotch's Cat. (nec Erichson).

9. Meligethes 6 *nov. sp.?* Cat., p. 38, and Pocket Cat., p. 15. This insect occurs abundantly on Cruciferous plants at Southend. It most resembles *M. coracinus*, but has the punctuation less fine, the legs brighter coloured, and the antennæ entirely pale. It is in the same section (that with simple tibiæ) as *M. æneus*; from which common species it may be known by its usually smaller size, its clear rufous legs and antennæ, duller and non-metallic colour, closer punctuation, and more evident pubescence.

10. Cryptophagus 16—, *sp.?* Cat., p. 41, and Pocket Cat., p. 17. This is the insect described by me as *C. Waterhousei* at p. 101 of the present vol. Vide Ent. Ann., 1867, p. 51 (fig., frontisp.).

11. Atomaria *sp.*—? Pocket Cat., p. 17. I have identified this insect with the *A. Barani* of Ch. Brisout (p. 156 of vol. ii. of this publication: and Ent. Ann., 1866, p. 86).

12. Hydræna 2 *nov. sp.?* Cat., p. 44, and Pocket Cat., p. 18. This has been referred by Mr. G. R. Crotch (vide Ent. Ann. 1867, p. 77) to the *H. palustris*

of Erichson. A continental type of the latter insect, however, in Dr. Power's possession, does not seem to him (or to me) to coincide with the specimens in his collection which, as he informs me, represent Mr. Waterhouse's species.

13. Hydræna 6 *nov. sp.?* Cat., p. 45, and Pocket Cat., p. 18. Mr. Crotch has referred this species (which appears to be represented by insects in Dr. Power's collection) to *H. pulchella*, Germ. (Ent. Ann., 1867, p. 78).

14. Elater 5 *nov. sp.?* Cat., p. 52, and Pocket Cat., p. 20. This is represented by four examples in Mr. Waterhouse's collection; one taken in Kensington Gardens by himself, and the others in Windsor Forest by Mr. T. H. Griesbach and the late Messrs. A. Griesbach and R. Sharman. It is about the size of *E. pomonæ*, but has thinner joints to the antennæ, brownish (not black) pubescence on the thorax, which is duller, being more closely punctured, and the elytra with finer striæ, and flatter interstices. For this insect, which I intend shortly to describe, I propose the name of *E. coccinatus*.

15. Elater 11 *nov. sp.?* Cat., p. 53, is identified at p. 21. of the Pocket Cat. with *E. rufitarsis*, Desvignes ("Entomologist," 1842, p. 326), an insect apparently described under various names,—of which De Marseul, in the last Edn. (l'Abeille) of his Cat., adheres to *Æthiops*, Lacord.

16. Agriotes 4* *sp.*—? Cat., p. 109, and Pocket Cat., p. 21.
Adrastus limbatus (p.), Steph. coll.

This (usually mixed with *Adrastus pallens* in collections) is, I believe, represented by the *Agriotes pallidulus*, Ill.? of both the 1st and 2nd Edns. of Mr. Crotch's Cat.

A. pallidulus is described as having the elytra either fuscous or testaceous; whilst every specimen of our common insect that I have seen has the elytra light, with a dark and often broad sutural stripe.

17. Agriotes 6 *nov. sp.?* Cat., p. 54, and Pocket Cat., p. 21. This is the insect taken by the Rev. H. Clark under stones on the Chesil Bank. It is very closely allied to *A. sputator*; but is rather flatter, and slightly larger, with rather more closely punctured thorax and more delicately punctured elytra.

18. Telephorus 21* *sp.*—? Cat., p. 109, and Pocket Cat., p. 22. This is the insect described as *T. scoticus* (Rye, Cat. "British Beetles") by Mr. D. Sharp (vide Ent. Ann., 1867, p. 53), and previously, at different times, attributed to *T. femoralis*, Brullé, *T. assimilis*, Payk., and *T. figuratus*, Mann.

19. Ptinus 5 *sp.?* Cat., p. 58, and Pocket Cat., p. 23. There are several specimens in Mr. Waterhouse's collection, labelled "near *sub-pilosus*." They are closely allied to *P. fur*; but appear to be smaller than that insect, and to have no tuft of pubescence at the back of the thorax.

20. Anthicus 2 *sp. nov.?* Cat. p. 62, and Pocket Cat., p. 24. This has been described by Mr. G. R. Crotch under the name of *salinus*. Vide Ent. Ann., 1867, p. 53.

21. Anthicus 6 *sp. nov.?* Cat., p. 62, and Pocket Cat., p. 24.
Anthicus ater, Murray, Cat. (*teste* Wat. Cat.).

This insect is stated by Mr. Murray (l. c., p. 103) to occur at Rachills and in Aberdeenshire. It can by no means, however, be correctly attributed to the true *A. ater*.

My friend Mr. Morris Young, of Paisley, has recently sent me specimens of it, and it is represented in Mr. Waterhouse's collection by two examples (also from that gentleman) which are stated in his note-book to have been named *A. flavipes* by Du Val for Mr. Young;—that name, indeed, being still affixed to one of them, and written apparently by a foreigner.

My specimens are nearly equal in length to ordinary examples of *A. tristis*, Schm., but are considerably broader and more convex and bulky than that insect. They are clothed with the dense glittering pubescence peculiar to certain *Aleocharidæ* of shore-frequenting habits, and are somewhat roughly but very closely punctured on the thorax and head, the latter of which is square behind, and has a thin longitudinal shining line on the vertex. The elytra, which are less closely punctured than the head and thorax, are slightly shining, as far as the pubescence allows the surface to be seen. The darkest specimen is entirely dull black, except the tibiæ and base of the tarsi, which are pitchy-brown; and the lightest one (out of six) exhibits the faintest possible trace of a dark brown humeral blotch, and has the femora and antennæ pitchy-brown, and the tibiæ and tarsi light reddish-testaceous.

La Ferté, Mon. Anth., 222, states the type of *A. flavipes* to be brownish-black, with an oblong obsolete chestnut-brown humeral spot, and the antennæ and legs entirely testaceous. His darkest form (*A. rufipes*, Payk.) is entirely black, with brown femora, and the tibiæ, tarsi, and antennæ of a ferruginous red, more or less dark; and I presume it is to this form that these Scotch specimens are to be referred. If distinct from it, as is very probable, they must nevertheless be closely allied to it; as they do not agree at all with any other species in La Ferté's monograph. That author gives the length as "0,0017 *ad* 0,002;" which can hardly fail to be a misprint,—though not noticed in the list of errata.

Thomson gives $\frac{3}{4}$ of a line for the length of *A. flavipes*; whereas my largest specimen exceeds $1\frac{1}{4}$ lin.

The specimens representing *A. flavipes* in the European collection of the Brit. Mus. cannot be reconciled with my insects.

22. Thyamis 26 *sp.*—? Cat. p. 94, and Pocket Cat. p. 33. This insect is, I believe, intended to be represented by the *T. lateralis*, Ill., of the 1st Edn. of Mr. Crotch's Cat., and was, indeed (as I am informed), so named for that gentleman by M. Allard; who, subsequently (as Mr. Crotch remarks, Ent. 35, 174), on finding that it could not be rightly attributed to that species (of which Mr. Waterhouse was well aware, having continental types agreeing with Illiger's insect), has proposed for it the name of *T. patruelis*, under which it appears in the 2nd Edn. of Mr. Crotch's Cat.

The species is allied to *T. melanocephala*, but differs from that insect in being smaller and with less evident shoulders to the elytra, which are more deeply punctured, the punctures running somewhat into striæ. Mr. Waterhouse's specimens were taken at Darenth, about the end of June, on *Verbascum*.

23. Psylliodes 6 *sp. nov.?* (from Lundy Island), Cat., p. 95, and Pocket Cat.

p. 33. This insect, sent to Herr Kutschera by Mr. Waterhouse, has been described under the name of *luridipennis*. Vide Ent. Ann. 1867. p. 98.

Besides the above, there is another species, the *Gyrophæna* sp.? 6*—, of Mr. Waterhouse's Paper on that genus in the Trans. Ent. Soc., 1861. This insect has been described by Mr. Crotch under the name of *Poweri*. Vide Ent. Ann., 1867, p. 48.—E. C. Rye, 284, King's Road, Chelsea, *9th February*, 1867.

Note on Cidaria silaceata.—I believe it is generally understood that *silaceata* is double-brooded in the southern parts of England; such, I believe, is not the case in the north, that is, so far as my own experience goes. In June, 1865, I took two or three specimens of this species at Bishopswood, near Lawood, one of which kindly laid me a few eggs. In due time the larvæ came forth, and fed up by the end of July, when they changed to pupæ. As I understood this species was double-brooded, I kept a sharp look-out for the imagos, but none made their appearance in 1865. In May, 1866, the first moth, a fine dark specimen, made its *debût*. I think, beyond doubt, that *silaceata* is not double-brooded here. Of course there are exceptions to all rules, and odd specimens of this species may make their appearance in August or September; but these, in my opinion, prove the exception and not the rule.—W. Prest, 6, Castlegate, York.

Stylops emerging five months after the death of the bee.—On the 18th July, 1866, I captured, at Ipswich, a male of *Andrena convexiuscula*, Smith, the abdomen of which was much distorted with a *Stylops* on the left side, about the juncture of the 3rd and 4th segments. On returning home I placed it in my collection, and on the 4th December last put it in a pocket-box by itself, in order to name it, as I was then not certain of the species. On opening the box on the 13th December, I was astonished to find a live male *Stylops*, which had evidently just emerged from the bee. The pocket-box had never been used before.—G. A. James Rothney, Queen's Road, South Norwood, *2nd February*, 1867.

Capture of a second British example of Xylina Zinckenii.—In the note I sent you some time ago (vide ante p. 207), I mentioned having caught a *Noctua* of which I had not then found out the name. I took it to an entomologist, and he wrote back that it was the new species, *Xylina Zinckenii*. It was taken at sugar on a young elm tree, in the month of October; locality mentioned in my former note.—Hon. Spencer Canning, 51, St. George's Square, S.W., *Jan.* 26, 1867.

[The example of *Zinckenii* above referred to has been seen by Mr. Doubleday, and also by ourselves.—Eds.]

Note on Xylina Zinckenii.—In the Entomologist's Annual my friend Dr. Knaggs states that M. Guenée's remarks upon what Fabricius says of this species (supposing it to be his *Lamda*) surprise him. I think them very just, as I cannot see any resemblance between it and *Acronycta Psi* either in form, colour, or markings. It is very nearly allied to *X. conformis*, and some of the specimens approach this species so closely that, but for their smaller size, they might easily be confounded with it. I possess two from Lapland which have hardly a trace of the ordinary black markings on the superior wings.

I incline to Haworth's opinion that the *Lamda* of Fabricius is the *lithoriza* of Borkhausen.—Henry Doubleday, Epping, *February 14th*, 1867.

Note on Dianthœcia cæsia.—I believe some dark coloured specimens of this species have been taken in the Pyrenees, but I have not seen any of them.

I think Dr. Knaggs is mistaken in supposing that the name applied to this insect by Mr. Parry,—*Mamestra auredo*,—is "a palpable *lapsus calami* for *Mamestra arida* of Lederer." Very little is known of this Asiatic species, and I think but few British Entomologists even knew of its existence before the publication of the Annual.—Id.

Captures at sallows, &c., near York (1866).—I devoted the evening of March 31st to a trip to some sallows which were in bloom at Langwith, near this city; but, finding on my arrival that I was too early, I employed the time until dusk by beating for hybernated larvæ feeding on Scotch fir. I got about a dozen larvæ of *Ellopia fasciaria*, (from which I bred a lovely series,) and lots of those of *Thera variata*. At dusk I took on the wing several *Larentia multistrigaria* and *Lobophora lobulata*, and a *Cidaria psittacata*, the last as green as if bred. By "sheeting" the sallows I found a perfect shower of insects of various orders; but, as I only collect *Lepidoptera*, I boxed in about an hour 18 *Trachea piniperda*, a dozen *Taniocampa munda*, and a few *Xylocampa lithoriza*, and saw more of the commoner species of the genus *Taniocampa* than I had ever before seen at one time. *Rubricosa* was especially common this year.

April 14th. I again visited the same locality, and got, besides commoner species, 40 *Trachea piniperda*, 5 *Taniocampa populeti*, several *T. gracilis*, and a few *Sarrothripa Revayana* (hybernated); also on the wing, *Selenia illunaria*, *Anticlea badiata*, *Cidaria suffumata*, and *Eupithecia abbreviata*.

April 28th. I went to Stockton forest, to look for *Taniocampa opima*; I "sheeted" in company with Mr. Jackson for two or three hours, and got one. It was a very cold night; we had easterly winds until after the sallows were over; but I got another *T. opima* on May 5th, both this and the previous one being males. I took a number of larvæ of *Eupithecia tenuiata* at the same time, from which I bred many fine specimens.—T. J. Carrington, Fulford, York.

Notes on variation in Lepidoptera.—Dr. Knaggs has some interesting remarks on this subject in his last paper on "Collecting, &c." My object in the present communication is to ask how, in many instances, we are to know that certain forms are, in point of fact, varieties of the (taken for granted) typical insect? Where such variations result from the progeny of a known parent, of course we have no difficulty in deciding the question; but how can it be proved in the following instance, for example? Most collectors are familiar with the beautiful lemon-coloured variety (query) of *Xanthia cerago*. Upon what data is this statement made? If, as I have remarked, it has been bred from eggs laid by an ordinary *cerago*, then the question is settled. But if not, which I believe to be the case, how can it be proved? Surely there are dozens of species, allowed to be such, more closely resembling each other than *cerago* and its variety. I would

remark, farther, that this variation, if it be such, can not proceed either from locality or food, for, as regards the former, it is found in all parts of the country, and, as regards the latter, it feeds exclusively (with me) on sallows. Whatever it may be, it is certainly a rare insect. For some years past I have had from 300 to 400 larvæ of *cerago* and *silago* mixed together, and I find the proportion between the lemon-coloured and the ordinary specimens to be as one in sixty. As I am on the subject, I may be permitted to make an observation or two on Dr. Knaggs' paper. And first, as to variation being produced by the action of light, or its reverse, I believe this to be an utterly fallacious idea. It obviously can not hold good in a state of nature, for it will scarcely be maintained that, of the larvæ of the *same* species, one has more light than another; and, as regards at least the subterranean pupæ, all alike are enveloped in the same Cimmerian darkness. Nor can I at all give in my adhesion to the "thermic" theory—*i.e.*, that a longer or shorter duration of the pupa state has any influence upon the coloration of the future imago. I do not exactly understand Dr. Knaggs' "illustration" of "*illustraria*," but I differ widely from the conclusion he draws in the following passage:—"Again, by a similar agency (retardation or otherwise of the pupal state), we may, as a rule, account for the greater darkness in tint and markings of many northern, and especially Scottish *Lepidoptera*, as compared with corresponding southern types, since many species, double-brooded in the south, are single-brooded in the north; and others, which here pass but one winter in the pupa state, are apt, in the north, to remain in that state over a second winter, or even for a longer period." Now, if this conclusion were well founded, we should find this occur in our breeding cages. This, however, we most certainly do not. Take, for example, a hundred pupæ of the well-known *Eriogaster lanestris*. Some will emerge the first year, some the second, and so on through five years, and even longer. Yet there is not the slightest variation in the intensity of the colouring of these specimens. As other, yet, perhaps not such familiar examples, take almost all the species in the genus *Notodonta*. I have occasionally had one or more pupæ of *camelina*, *cucullina*, *dictæa*, *dromedarius*, *zic-zac*, *trepida*, *chaonia*, and *dodonæa* remain two years in that state, but I have never noticed the slightest appreciable difference in colour between the first and second year's specimens. Many similar instances could probably be brought forward; and if, of which I have no doubt, the experience of others coincides with mine in this respect, the objection seems to me fatal to the "thermic" theory. My own impression has always been, that variations (except what Dr. K. aptly terms accidental and hereditary) originate in the larval state, and are *assisted*, at any rate, by soil and food. One memorable instance of the latter has occurred to myself, viz., in the case of *Cleora lichenaria*, a specimen of which having been fed upon some orange-coloured lichen, had all the wings richly suffused with that colour. At the same time I must add that, so far as my own experience goes, the *intentional* supply of different kinds of food, with the idea of producing varieties, is, in almost all cases, a total failure. To conclude, I am much of Bouchard's opinion, "that the beast must have lunched off bread and cheese."—J. Greene, Cubley Rectory, Sudbury, Derby.

*** In the above interesting notes I observe that Mr. Greene implies a desire for further information respecting "*the illustration of illustraria*:" I fear that I did

not express myself very clearly on the subject, and must therefore trespass on the space of the Magazine to add a few explanatory remarks.

Everybody knows that there are two forms of *Selenia illustraria* in appearance so different from one another that, did we not know positively to the contrary, we should still be regarding them in the light of distinct species. In Mr. Doubleday's Catalogue these are respectively designated—the one *illustraria*—the other *delunaria* (*var. æst.*), by which names in the present note, for the sake of convenience and greater perspicuity, the so-called spring and summer broods will be respectively indicated.

It is pretty well known, too, that in the natural sequence *illustraria* reproduces itself in the form of *delunaria* and *vice versâ*. But what I assert is, that whenever (whether, at large, owing to exceptionally hot or long summer seasons, or, in captivity, from warmth, assisted, perhaps, by what Mr. Crewe has happily termed "feeding up quickly") the completion of the pupal stage is accelerated, then *delunaria* produces *delunaria*, not *illustraria*. Further, it is my belief that the converse will be found to hold good, viz., that should the completion of the pupal stage be retarded either by cold seasons or climates in a state of nature, or artificially by the aid of an ice-well, *illustraria*—not *delunaria*—would be found to result from *illustraria*; and I feel the more confident of this from the fact that its congener *lunaria* is single-brooded in northern localities, and the spring form is the only one known in those parts of the country. I am unaware if *illustraria* occur in Scotland; but if it do, I venture to say that not only will it be found to be single-brooded, but the form *delunaria* will be unknown there.

I therefore feel justified in coming to the conclusion (not my own idea, by the way) that acceleration or retardation of the completion of the pupal stage from thermic influences are causes of greater or less degree of maturation or (to use another word) variation in the imago.

Certainly, against this view, I have myself adduced the case of *P. rapæ*, and Mr. Greene has added that of *E. lanestris* as well as some of the "prominents"; but these by no means do away with the fact that when the "purple thorn" emerges *after* pupal hybernation the result is always *illustraria*,—when *before* pupal hybernation, *delunaria*.

Touching the subject of boreal variation in *Lepidoptera*, it is well known to our continental friends that the intensity of the colour and markings of the long-lived *C. delphinii* is proportionate to, and it is reasonable to suppose dependent upon, the duration of the pupal state; nearer home, among other familiar instances, we find *Colias edusa*, after a long absence, during which we may rationally presume it has lain dormant in the pupal state, reappearing more beautiful than ever, with iridescent tints.

Any discussion repecting the influence of light to produce variation I leave to those good men who have had opportunities of testing it, and who know its value better than I. For myself, I have simply stated it to be worth trial.

On other points Mr. Greene and I are much of the same opinion; I understand him to admit the power of hereditary influence, *i.e.*, the "selection" (whether natural or artificial) theory to cause variation; and as for phytophagic varieties, he goes further than I did when he states that intentional administration of food to the larva with a view of producing variation in the imago is in *almost* all cases a total failure

thereby implying that in some exceptional cases it is successful, and, indeed, citing such an instance in *C. lichenaria*; for, while admitting the power of food to produce variation, I expressed my belief that changes of the kind were not wrought in one generation, or even in ten generations.

I cannot conclude without thanking Mr. Greene for the very courteous forbearance he has shown in the above review of my notes on such a disputable subject as the variation of species is generally supposed to be.—H. G. K.

Note on the ovipositing of Triphæna pronuba.—In the Weekly Intelligencer, Vol. IX., p. 107, I have recorded the finding of a batch of eggs of this species, evenly deposited on a stalk of grass. Last year Mr. E. Birchall found, and kindly sent to me, another such batch deposited on the upper portion of an ear of corn.—J. Hellins, 29*th January*, 1867.

Entomological Society of London, *January* 28*th*, 1867 (Anniversary Meeting). Sir John Lubbock, Bart., F.R.S., President, in the Chair.

An abstract of the Treasurer's accounts and the report of the Council having been read by the Auditors and Secretary respectively, the Society proceeded to ballot for the Council and Officers for 1867, when Sir John Lubbock was re-elected President, S. Stevens, Esq., was re-elected Treasurer, Messrs. Dunning and Sharp Secretaries, Mr. Janson Librarian, and Messrs. Bates, Moore, McLachlan, A. F. Sheppard, Smith, Stainton, G. F. Saunders, Weir, and Westwood, Members of the Council.

The President read an address on the progress of Entomology during 1866, and the meeting closed with votes of thanks to the Officers and Council for their services during the year now expired.

February 4th, 1867. The President, by letter, nominated Prof. Westwood and Messrs. Smith and Stainton as his Vice-Presidents for the present year; after which Prof. Westwood took the Chair, and the ordinary business was proceeded with.

H. E. Cox, Esq., of Croydon, was elected a member, and Yeend Duer, Esq., of Esher, was elected a Subscriber.

Mr. Bond exhibited a series of examples of a *Lasiocampa* from various localities, which apparently pertained to *L. trifolii*, but exhibited certain minute differences in colour and markings, which also appeared to be shared by their larvæ. It was suggested that these might be analogous to the two forms or species known as *L. quercûs* and *callunæ*. In coloration they somewhat resembled *Odonestis potatoria*. He also exhibited an extraordinary variety of *Dianthœcia capsincola* from York, and singular varieties or monstrosities of various species of *Argynnis*. He further stated with respect to the query as to the reasons which induced *Macroglossa stellatarum* to frequent walls, banks, &c., that he had watched the insect and observed it enter holes, where it rested for a while between its flights; which statement was confirmed by Dr. Wallace.

Professor Westwood exhibited a singular variety of *Mamestra brassicæ*, bred by Mr. Briggs of Oxford.

Mr. Pascoe exhibited a collection of *Coleoptera* from Vancouver's Island, containing several interesting forms.

Mr. G. S. Saunders exhibited the nest of some Lepidopterous insect from St. Paulo, Brazil. This was about a foot in length, forming a compact web between two small branches.

Dr. Wallace stated that he had recently seen an example of *Drepana sicula* in the collection of Dr. Bree, of Colchester, which that gentleman assured him had been taken by himself in the vicinity of Stowmarket, in Suffolk.

Dr. Wallace exhibited various preparations of the silk of *Attacus Cynthia*, including a portion carded by himself; also a large number of the moth, exhibiting great variation in size and colour, dependent upon forcing, retardation, light, food-plant, &c. He stated that his experience was decidedly favourable to the theory that in *Lepidoptera* the males emerge before the females. He further made some remark on the specific value of *A. ricini* and *A. Gucrinii*, and was inclined to look upon these as merely local forms of *A. Cynthia*. He had observed that a sound sometimes proceeded from the eggs of *A. Cynthia*, which he attributed to the contraction and expansion of the shells caused by the movements of the young larvæ immediately before hatching.

Mr. Moore exhibited various examples of *A. ricini*, together with its silk, and the unique specimen of *A. Guerinii*.

Mr. Wormald exhibited a collection of insects received from Mr. Pryer, of Shanghai. In it was an example of a true wild *Bombyx*, allied to *B. Huttoni*.

Mr. Gould stated that *Hylurgus piniperda* had recently been causing great devastation in a plantation of *Pinus insignis* in the grounds of Lord Falmouth, in Cornwall.

Mr. Pascoe called attention to a statement by a writer in "Science Gossip," claiming for *Atropos* the power of producing a ticking sound. Mr. McLachlan said he thought that some error had occurred, as he could not imagine by what means so soft an insect could produce a sound. Mr. Smith said he had for some time kept examples of *Atropos* in small boxes, but could not detect any sound produced by them.

Mr. Wilson, of Adelaide, communicated further notes on South Australian *Coleoptera*, remarking that various species were common in cow-dung. Mr. A. R. Wallace alluded to the manner in which these insects had seized upon circumstances favourable to their modes of life, as cows were only a very recent importation into that part of the world. One of the insects alluded to was *Calosoma Curtisii*, the European congeners of which were well known as arboreal species. Mr. Gould stated that previous to 1838 cows were unknown in Australia.

It was announced that the prize offered by the Society for the best essay on Economic Entomology had been awarded to Dr. Wallace, for his paper on *Bombyx Yama-mai*; and that it had been decided to continue the offer for the present year on the same terms as before; the essays to be sent in on or before the 30th of November next.

A MONOGRAPH OF THE BRITISH *PSOCIDÆ*.

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

(*Continued from p.* 231.)

5.—Psocus sexpunctatus, Linné.

Hemerobius 6-punctatus, Linn. Faun. Suec. p. 383, 1511 (1761); Syst. Nat. p. 913; Fab. Syst. Ent. p. 310, 9, &c.; Müll. Prodr. p. 146, 1865. *P. 6-punctatus*, Lat. Coqb. Icon. 13, tab. 2, fig. 10; Burm. Handb. 2, p. 778, 8. *P. subfasciatus*, Steph. Ill. p. 119, 7 (1836); Hag. Ent. Ann. 1861, p. 30, 18. *P. maculatus*, Steph. Ill. p. 119, 6 (1836).

Antennæ scarcely so long as the wings, pilose in the male, fuscous, the basal portion yellowish. *Head* yellowish or fuscescent; *crown* spotted with blackish (the spots varying in different individuals); *nasus* striped with blackish (when the head is fuscescent the spots and stripes of the crown and nasus are indistinct or confused with the ground colour; they are always liable to vary); *labrum* dark. *Thorax* and *abdomen* varying from yellow to fuscous. *Legs* brownish, with the tarsi and apex of the tibiæ darker, often blackish. *Wings* hyaline; *anterior wings* short and broad; with fuscous clouds, some of them often uniting and forming an oblique fascia before the middle, broadest on the inner margin; a series of six rounded fuscous spots in the apex, placed in the cellules between the veins; apical margin greyish; pterostigma elongate, sub-triangular, rather narrow, enclosing a fuscous spot, and sometimes with the vein forming it marked with yellow; *veins* blackish, with a dark spot placed at some of the points of furcation; base of the superior apical furcation whitish.

Length of body 1½‴; expanse of fore-wings 4-4½‴.

Tolerably common.

6.—Psocus bifasciatus, Latreille.

Psocus bifasciatus, Lat. Coqb. Icon. 11, tab. 2, fig. 4 (1799); Steph. Ill. p. 120, 11; Burm. Handb. 2, p. 780, 15; Hag. Ent. Ann. 1861, p. 30, 19. *P. contaminatus*, Steph. Ill. p. 120, 12 (1836). *P. megastigmus*, Steph. Ill. p. 120, 13 (1836).

Antennæ not more than two-thirds the length of the wings, slightly pilose in ♂, black, sometimes testaceous at the base. *Head* ochreous; crown with three groups of black spots, viz., one on each side close to the eyes, and the third behind the ocelli; *nasus* with numerous straight longitudinal blackish lines placed very close together; a large yellowish space beneath each eye. *Thorax* black above, with elevated radiating reddish-brown lines; sometimes spotted with yellow beneath. *Abdomen* blackish, the segments margined with yellow, more conspicuous beneath, and during life. *Legs* brown, with blackish tarsi. *Wings* hyaline; *anterior wings* elongate, with fuscous markings, viz., a basal fascia broken up into spots (frequently absent altogether), an irregular indented fascia rather before the middle (usually well indicated), and a large spot placed in the sub-triangular *pterostigma* (always present), the latter is frequently filled in with yellow or

whitish, especially on the under-side of the dark spot, and the veins forming it is also pale; veins blackish, the veinlet closing the discoidal cell, and the base of the superior apical fork, whitish or yellowish.

Length of body 1-1½‴; expanse of fore-wings 4-5‴.

A common and variable species. Occurs on tree trunks, and among the foliage of firs, yews, &c.

Hagen (Stett. Ent. Zeit. 1866, p. 235) considers this species to be represented by *P.* 4-*maculatus* of Lat. (Coqb. Icon. p. 12, tab. 2, fig. 6, 7), and places *bifasciatus* of the same author as distinct. I consider 4-*maculatus* to represent the next species (*maculipennis*, Steph.), and that *bifasciatus* is the same as Stephens' same named insect described above. Coquebert's figure gives a moderately good idea of the insect, and the words in Latreille's description, "*fascia baseos e maculis tribus, altera flexuosa*" agree precisely with a common form of our *bifasciatus*.

This is the insect supposed by Westwood to be the female of his 4-*maculatus*; vide "Introduction," vol. ii., p. 19, fig. 59, 1.

7.—Psocus quadrimaculatus, Latreille.

Psocus 4-*maculatus*, Lat., Coqb. Icon. 12, tab. 2, fig. 6 (fig. 7 var. ?), (1799); Burm. Handb. 2, p. 779, 13. *P. maculipennis*, Steph. Ill. p. 119, 6 (1836); Hag. Ent. Ann. 1861, p. 31, 20.

Antennæ not so long as the wings, fuscous, paler at the base. *Head* pale yellow; *crown* with a few brown spots, and suffused with blackish about the ocelli; *nasus* marked with numerous straight brown longitudinal lines, and with brownish spots at the sides. *Thorax* and *abdomen* blackish, largely varied with yellow (especially in the ♀); the body is robust in proportion to the size of the insect. *Legs* pale greyish-brown, the tarsi and tips of the tibiæ more obscure. *Wings* hyaline, several fuscous (often confluent, sometimes nearly absent,) spots in the disc before the middle; a large rounded fuscous spot in the dilated portion of the pterostigma, and another, still larger, placed opposite to it on the posterior margin, occupying portions of the third and fourth (counting from the apex) marginal cellules; between these spots is often a faint cloud sometimes uniting them; *pterostigma* triangular, much dilated towards the apex; *veins* blackish, that forming the pterostigma, that closing the discoidal cell, the base of the superior apical furcation, and some at the base, pale yellowish; *posterior wings* with frequently a greyish cloud on the inner margin near the base.

Length of body 1-1¼‴; expanse of fore-wings 2¾-3‴.

Probably local; occurs on palings, &c.

Latreille's description applies very well to this insect; Coquebert's fig. 6 gives a moderately good idea of it, but it appears to me doubtful if the supposed variety (fig. 7) belongs to it. Burmeister's description "Vorderflügel klar, die Nerven bräunlich, ebenso 2 Flecke, von welchen der eine am Ende des Randmahles (pterostigma) liegt, der andere grössere zwischen der 3-ten und 4-ten Zelle am Hinterrand," suits admirably.

8.—Psocus subnebulosus, Stephens.

Psocus subnebulosus, Steph. Ill. p. 121, 14 (1836); Hag. Ent. Ann. 1861, p. 31, 21.

Antennæ not so long as the wings, pilose in ♂, brown, yellowish at the base. *Head* yellow; *crown* marked with brown streaks and spots, especially in the middle; *nasus* with longitudinal parallel brown streaks. *Thorax* piceous, the divisions of the lobes, and a median dorsal streak, yellow. *Abdomen* darker. *Legs* testaceous, the tarsi darker. *Wings* hyaline; *anterior wings* rather elongate; a large brown spot occupies, and is continued below, the sub-triangular pterostigma, which latter has also a small blackish spot at its commencement; below the pterostigma on the posterior margin is a brownish cloud, and a dark brown dot at the termination of the post-costa; *veins* dark brown, those in the middle of the wing whitish.

Length of body 1‴; expanse of fore-wings 3‴.

This species seems to partially combine the characters of *P. bifasciatus* and *P. 4-maculatus*. The type in Stephens' collection is in bad condition, and the wings on one side show an aberrant neuration. Two specimens in Mr. Dale's collection (from which the above description is taken) are rather larger than the type, but otherwise identical.

9.—Psocus bipunctatus, Linné.

Hemerobius 2-punctatus, Linn. Faun. Suec. 384, 1514 (1761); Fab. Syst. Ent. p. 310, 11. *Psocus 2-punctatus*, Lat. Coqb. Icon. 12, tab. 2, fig. 3; Curt. B. E. 648, 16 (no description); Burm. Handb. p. 779, 14; Ramb. Névrop. p. 321, 7; Brauer N. A. p. 33.

Antennæ not longer than the wings, pilose in ♂, blackish, the basal joint yellowish. *Head* pale orange-yellow; *crown* marked with blackish in the middle; *nasus* suffused with blackish, straightly striated; *labrum* blackish; *palpi* orange, the terminal joint with the apical half black. *Mesothorax* with black lobes and broad orange divisions. *Metathorax* varied with orange and black. *Abdomen* orange, with longitudinal rows of black spots. *Legs* pale orange, the tips of the tibiæ and tarsal joints somewhat obscure. *Wings* hyaline; *anterior wings* dilated at the apex, with a large rounded piceous spot in the lower angle of the pterostigma, and a blackish dot at its commencement; a blackish mark on the dorsal margin towards the base, above which is a yellowish-grey cloud; *pterostigma* triangular, the lower angle acute, yellowish-grey in the parts not occupied by the piceous spots above-mentioned; *veins* dark fuscous; *posterior wings* with a slight greyish cloud on the inner margin towards the base, otherwise hyaline.

Length of body 1½‴; expanse of fore-wings 4‴.

The name *bipunctatus* occurs (without description) in the list of British species in Curtis' British Entomology. I did not examine Curtis' types, but according to Hagen, who compared them in 1857, they are the true species of this name (*vide* Stett. Ent. Zeit. 1866, p.

237). On this authority I include the species in this Monograph. The above description is made from a Prussian example, communicated to me by Dr. Hagen. It is allied to *P. subnebulosus* and *P. 4-maculatus* (*maculipennis*). I have compared it with the Linnæan types.

10.—Psocus morio, Latreille.

Psocus morio, Lat. Coqb. Icon. 11, tab. 2, fig 5 (1799); Curt. B. E. 648, 18; Burm. Handb. 2, p. 781, 20; Hag. Ent. Ann. 1861, p. 32, 22.

Antennæ not nearly so long as the wings, pilose in the ♂, fuscous, paler at the base. *Head* fuscous; *nasus* darker than the crown, with no evident stripes. *Thorax* and *abdomen* fuscous. *Legs* dark testaceous. *Wings* smoky; *anterior wings* shining, with the basal half dark fuscous, somewhat coppery; *pterostigma* large, triangular, blackish, paler within; *veins* dark fuscous; *posterior wings* rather paler than the apical portion of the anterior.

Length of body 1‴; expanse of fore-wings 2-2½‴.

Rare. I have a specimen taken recently near Canterbury; two are in the Oxford Museum; and others were in Curtis' collection. The coloration of the wings will readily separate it from all others.

More species of this genus no doubt occur with us.

Genus Stenopsocus, Hagen (1866).

Psocus p. Auct.

Tarsi 2-jointed. Pterostigma connected. Discoidal cell complete, less quadrangular than in *Psocus*, rather irregular. Four complete cellules on the apical half of the posterior margin; the last triangular and pedunculated.

1.—Stenopsocus immaculatus, Stephens.

Psocus immaculatus, Steph. Ill. p. 125, 30 (1836); Hag. Ent. Ann. 1861, p. 25, 7. *P. rufescens*, Steph. Ill. p. 125, 31 (1836). *P. flavescens*, Steph. Ill. p. 125, 32 (1836). *P. venosus*, Steph. Ill. p. 121, 17 (1836). *P. strigosus*, Burm. Handb. 2, p. 776, 1 (1839); Brauer N. A. p. 33. *P. flavicans*, Zett. Insect. Lapp. col. 1054, 8, ♀ (1840). *P. subfumipennis*, Zett. Insect. Lapp. col. 1053, 5, ♂ (1840).

Antennæ as long as the wings, slightly pilose in the ♂, blackish, the two basal joints yellowish. *Head* yellow; *crown* with a blackish longitudinal median line; *nasus* slightly fuscescent. *Thorax* dark brown. *Abdomen* yellow, sometimes fuscescent. *Legs* yellow, the tips of the tibiæ and apical joint of the tarsi fuscous. *Wings* hyaline, immaculate; *pterostigma* elongate, narrow, faintly tinged with yellowish; *veins* fine, yellowish or brownish.

Length of body 1-1¾‴; expanse of fore-wings, 4½-5½‴.

A very common species amongst trees and undergrowth.

2.—Stenopsocus nervosus, Stephens.

Psocus nervosus, Steph. Ill. p. 126, 36 (1836).

Antennæ as long as the wings, yellow. *Head* yellow, brownish on the crown. *Thorax* shining chestnut-brown, the divisions of the lobes paler. *Abdomen* yellowish. *Legs* pale testaceous. *Wings* hyaline, immaculate; *anterior wings* with most of the *nervures margined with very pale yellowish-brown*; *pterostigma* subtriangular, broader and less elongate than in *S. immaculatus*; *veins* fine, brown.

Length of body 1-1½‴; expanse of fore-wings 4-4½‴.

I know nothing of the habits of this species.

In Stephens' collection it is represented by a single example, not in very good condition, which Hagen referred to *S. immaculatus*. I, on the contrary, thought it might be a large immature example of *S. cruciatus*. However, in Mr. Dale's collection I find several examples which convince me that the species is good. The form of the pterostigma and the margined nervures readily separate it from *immaculatus*; and the size, and length of the antennæ, preclude the possibility of its being an immature form of *cruciatus*. The only other European species of this genus is *P. stigmaticus* (considered by Hagen to equal *striatulus*, Fab.) described by Imhoff and Labram in the "Insekten der Schweiz." I have not seen a type of that species; according to the description, which is very short, it cannot be identical with *nervosus*, but more nearly approaches *immaculatus*.

3.—Stenopsocus cruciatus, Linné. (Plate ii., fig. 7; *forma sub-microptera.*)

Hemerobius cruciatus, Linn. Syst. Nat. t. 3, app. 225 (1768). *Psocus cruciatus*, Brauer N. A. p. 32. *H. 4-punctatus*, Fab. Mantiss. t. 1, p. 248, 17 (1787), &c. *P. 4-punctatus*, Fab. Syst. Ent. suppl. p. 204, 8; Lat. Coqb. Icon. 12, tab. 2, fig. 9; Steph. Ill. p. 125, 33; Burm. Handb. 2, p. 776, 2; Ramb. Névrop. p. 321, 8. *P. subocellatus*, Steph. Ill. p. 124, 19 (1836); Hag. Ent. Ann. 1861, p. 24, 6. *P. costalis*, Steph. Ill. p. 126, 30 (1836).

Antennæ not so long as the wings, moderately thick, varying from yellowish to fuscous, according to the degree of maturity attained by the insect. *Head* shining chestnut-brown; the vertex on either side of the ocelli yellowish. *Thorax* chestnut-brown. *Abdomen* yellowish or fuscescent. *Legs* pale yellow, the tarsi obscure. *Wings* hyaline; *anterior wings* with four elongate fuscous spots near the base, two of which are placed on the posterior margin, and the other two above them (these spots vary greatly in intensity); the apical half of these wings is without spots, but there are pale greyish brown bands, one placed along the apical margin, and the others following the course of the veins; *pterostigma* elongate, dilated in the middle; *veins* brown; the *posterior wings* have frequently two pale greyish-brown spots on the dorsal margin near the base.

Length of body 1-1¼‴; expanse of fore-wings 3-3½‴.

Very common on tree trunks, palings, &c.

(*To be concluded in our next No.*)

AN ESSAY TOWARDS A KNOWLEDGE OF BRITISH *HOMOPTERA*.

BY THE REV. T. A. MARSHALL, M.A.

(*Continued from page* 221.)

10.—*Eupteryx blandulus*, Rossi.

Flavus; vertex et pronotum lineis 2 longitudinalibus, antice sæpe confluentibus, rubris vel rufofuscis. Scutellum apud angulos anticos rufo vel fusco bimaculatum. Hemelytra pellucida, vitta suturali, angulata, rufa vel sanguinea. Abdomen interdum dorso plus minus nigrum. Pedes flavi. Long. $1\frac{1}{4}$; alar. exp, $2\frac{3}{4}$ lin.

Cicada blandula, Rossi, Fn. Etrusc., 2, 217, 1263; Fall., Hem., 2, p. 57.

T. blandula, Flor, R. L., 2, p. 400.

T. flammigera, Curt., B. E., 640, no. 2.

T. quercûs, H. Sch., D. Ins., 124, 7.

C. tiliæ, Geoffr., Ins., 1, 426, 24.

The head, pronotum, and hemelytra are often destitute of red or brown markings, probably in immature specimens. Common in most parts of the country on oaks, hawthorn, wild rose, &c.

11.—*Eupteryx scutellaris*, H. Sch.

Flavus; abdomen nigrum, marginibus lateralibus anguste pallidis. Frons utrinque fusco cancellata. In vertice linea transversa brunnea oculos connectit; vel vertex apice maculis 2 nigris rotundis. Pronotum antice maculis paucis obscuris in lineam transversam dispositis; postice vitta obscura transversa rufescente—sed hæc pictura sæpe obsolescit. Scutellum apud angulos anticos maculis 2 triangularibus nigris; apex niger. Hemelytra hyalina; clavus, corii margo externus et internus, venæque longitudinales basi, flavo-virides. Pedes pallidi, unguibus fuscis. Long. 1; alar. exp. 2 lin.

T. scutellaris, H. Sch., D. Ins., 164, 13; Flor, R. L., 2, p. 405.

In Swithland woods, Leicestershire; rare.

12.—*Eupteryx rosæ*, Lin.

Totus albidus vel pallide flavescens, tenerrimus, oviscapto feminæ brunneo. Alarum nervi longitudinales 3, in ipsum marginem incurrentes: nervus externus prope basin bifurcatus, 2 interiores nonnihil apicem versus approximati. ♂ ♀. Long. $1\frac{1}{2}$; alar. exp. $3\frac{1}{3}$ lin.

Cicada rosæ, Lin., S. N., p. 467, 50.

T. rosæ, Flor, R. L., 2, p. 407.

Common throughout the country on roses in gardens, and on the wild rose: also on lime trees, according to Flor. Extremely delicate and difficult to preserve; should be mounted upon black paper, or the nervures cannot be seen.

13.—*Eupteryx nitidulus*, Fab.

Flavus; scutellum, vittæque hemelytrorum 2 transversæ, latæ, nigra. Harum vittarum una basalis est, altera ante ipsam membranam sita. ♂ ♀. Long. $1\frac{1}{2}$; alar. exp. 3 lin.

Var. The space between the black bands of the hemelytra more or less darkened.

Cicada nitidula, Fab., S. R., p. 79, 88.

T. nitidula, Flor, R. L., 2, p. 407.

Abundant one year on elm trees in a small wood near Leicester, in August; since that time it has been much rarer. Also in Mr. Douglas's collection.

14.—*Eupteryx geometricus*, Schr.

Flavus elongatus, cylindricus. Scutellum nigro cinctum—interdum totum nigrum. Clavus extus nigro marginatus. Membrana plus minus infuscata. Pedes flavi, unguibus fuscis. ♂ ♀.

Long. $1\frac{5}{4}$; alar. exp. $3\frac{3}{4}$ lin.

Cercopis geometrica, Schr., F. B., 2, 57, 1076.

T. geometrica, Flor, R. L., 2, p. 408.

Cicada lineatella, Fall., Hem., 2, p. 54.

T. plagiata, Hardy, Tynes. Trans., 1, p. 416.

On alders and willows, Leicestershire and London district.

15.—*Eupteryx signatipennis*, Boh.

"Angustus, pallide flavus; hemelytris maculis irregularibus dilute fuscis, maculisque 2 nigris, una parva rotundata dorsali ante medium, altera majori ad marginem exteriorem, mox pone medium; abdomine nigro flavoque variegato, apicibus segmentorum flavis; tarsis apice fuscis." ♂ ♀. Long. 1; alar. exp. 3 lin.

T. signatipennis, Boh., Handl., 1847, p. 36.

The original diagnosis is copied above. On birch trees in Swithland woods, Leicestershire, locally abundant.

16.—*Eupteryx filicum*, Newm.

Viridi-flavus. Abdomen nigrum, incisuris flavis. Vertex medio productus, sua inter oculos latitudine vix brevior, linea subtili nigra longitrorsum bisectus, apice nonnunquam nigro bipunctatus. Caput cum oculos pronoto paulo angustius. Pronotum disco infuscatum. Hemelytra abdomine multo longiora, flava: membrana hyalina, fusco nebulosa, nervis flavis. Alarum nervi longitudinales 3, fusci; exteriores 2 prope apicem ramulo conjuncti, deinde paulo divaricantes; omnes in

marginem ipsum excurrentes. Pedes flavi; tibiæ posticæ apice, tarsorum articuli apice, cum unguibus, fusci. ♂ ♀.

Long. 1½; alar exp. 3½ lin.

T. filicum, Newm., Tr. Ent. Soc., ser. 2, 1853, vol. 2; Proc. p. 132.

On ferns, growing wild, as well as under glasses. I am indebted to Mr. Douglas for specimens from London, and have taken some at Milford in a fernery.

17.—*Eupteryx decempunctatus*, Fall.

Pallide flavus; abdomen nigrum, incisuris flavis. Inter verticem et frontem maculæ 2 nigræ rotundæ. Pronotum maculis 6 rotundis, nigris, minutis, quarum 2 laterales, 2 anticæ distinctiores, duæque post oculos sæpe obscuræ. Scutellum antice nigro bimaculatum. Hemelytra maculis quibusdam suffusis, irregularibus, fuscis. Pedes pallidi. ♂ ♀.

Long. 1¼; alar. exp. 3 lin.

Var. 1. Pronotum black, yellow in the middle. All the dark marks much exaggerated. Hemelytra much clouded with fuscous. Tips of the veins on the membrane fuscous.

Var. 2. Very pale, the dots very small.

Var. 3. Dots on the pronotum reduced to 4, those behind the eyes vanishing. Commoner than the type.

Cicada 10-*punctata*, Fall., Hem. 2, p. 51.

Cicada 6-*punctata*, Fall., ibid.

T. 10-*punctata*, Flor, R. L., 2, p. 409.

? *T.* 8-*notata*, Hardy, Tynes. Trans., 1, p. 419:—on furze.

? *T.* 6-*maculata*, Hardy, ibid., p. 421.

? *T. jucunda*, Hardy, ibid.

On a small species of *Salix* in woods, Leicestershire.

18.—*Eupteryx ulmi*, Lin.

Flavus; abdomen nigrum, incisuris flavis; rarius totum flavum (♀). Inter verticem et frontem maculæ 2 punctiformes nigræ. Pronoti margo anticus puncto medio nigro. Scutellum sæpe apice nigrum Hemelytra hyalina, vix flaventia; corium apice (præsertim intus), et membrana apice, infuscata. Pedes pallidi, unguibus nigris. ♂ ♀.

Long. 1½; alar. exp. 3½ lin.

Cicada ulmi, Lin., S.N., p. 467; Fall., &c.

T. ulmi, Flor, R.L., 2, p. 411.

Eupteryx ocellata, Curt., B.E., 640, No. 8.

The dot on the front of the pronotum is a good distinctive character. Common on elm trees everywhere, until late in the autumn.

(*To be concluded in our next No.*)

DESCRIPTION OF A NEW SPECIES OF *ELATER*.

BY E. C. RYE.

ELATER COCCINATUS, n. sp.

Ater, sub-parallelus, depressus, fusco pilosus; elytris sanguineis, lævius punctato-striatis, interstitiis planis; prothorace longiori, lateribus a basi tertiam usque ad partem anteriorem fere parallelis, inde gradatim angustatis, omnium creberrime punctato, disco solo nitidiusculo, lateribus omnino haud nitidis, postice canaliculato, supra scutellum foveolato; antennis pedibusque nigro-piceis,—his tarsis, illis articulis secundo tertioque rufescentibus. *Long. corp.* $5\frac{1}{2}$ *lin.*

This insect (as mentioned at p. 233 of the present vol.) is the "*Elater*, 5 *nov. sp.?*" of Mr. Waterhouse's Catalogue. Single specimens of it have been taken by that gentleman (in a rotten tree) in Kensington Gardens, and by Mr. T. H. Griesbach and the late Messrs. A. Griesbach and R. Sharman in Windsor Forest.

There appears, also, to be a specimen of it in the British Museum Collection.

From *E sanguineus*, Linn., this species may be distinguished by its smaller size and narrower and more parallel shape; its longer thorax, which is duller and more densely punctured, with not quite so dark pubescence and a more abbreviated and less evident dorsal channel; and its less deeply striated elytra, of which the interstices are flatter.

From *E. lythropterus*, Germ., the above characters will also serve to separate it, except that the pubescence of its thorax is darker, and its dorsal channel is quite as evident behind. The joints of its antennæ are, moreover, longer and not so broad.

I have not seen *E. cinnabarinus*, Esch; which, however, from its confusion by Candèze with *E. lythropterus* (with which *E. satrapa*, Kies., appears to be identical), must be too closely allied to that insect to have any connection with *E. coccinatus*.

From *E. pomonæ*, Steph., which it rather exceeds in size, its longer antennæ, longer, more parallel, very much duller and more closely punctured thorax (of which the pubescence is considerably darker), and the slighter striæ and flatter interstices of its elytra readily separate it.

Its immaculate elytra distinguish it at once from the type form of *E. sanguinolentus*, Schr.; and its much longer, more parallel, much duller and more closely punctured and posteriorly canaliculated thorax serve to separate it from the plain form of that species,—which it, perhaps, resembles superficially more than any other. Its antennæ,

however, though of similar structure, are altogether larger; its elytra are somewhat flatter, less gradually acuminate behind, and with the striæ more delicate and the interstices even less elevated.

Apart from other characters, its uniform bright red elytra distinguish it from the other allied species, *E. præustus*, *crocatus*, *pomorum*, *rubidus*, *rufiventris*, *ochropterus*, *elongatulus*, *elegantulus*, *balteatus*, *&c.*

One of Mr. Waterhouse's specimens has a thin, shining, longitudinal dorsal line from the front to the base of the thorax.

In Mr. Waterhouse's paper (Trans. Ent. Soc., Vol. v., n. s., pt. iii) on the species of *Elateridæ* in the Stephensian cabinet, he states that among Stephens' *E. pomonæ* is a specimen of *E. præustus* (Fab.) Germ. This insect does not appear to have been otherwise claimed as British. Its red elytra being tipped with black would readily distinguish it from all our species except *E. elongatulus;* from which its much larger size and broader build would at once separate it.

When *Agriotes pilosus*, also, was introduced recently into our lists, it appears to have escaped observation that in the above paper Mr. Waterhouse had long before stated (though with doubt as to its authenticity), that the *Athoüs elongatus* of Stephens' cabinet is represented by an example of that species. In the "Manual" Stephens gives "near Southgate ?" as the locality for *A. elongatus.*

284, King's Road, Chelsea, S.W.

Note on Xyloterus quercûs, Eich.—In the "Annals and Magazine of Natural History," Vol. V. (1849, No. xxxi.), p. 279,—Article xxxii., "Descriptions, &c., of some rare or interesting indigenous Insects," by the late J. Curtis, is the following description:—

"*Bostrichus Waringii.* Ochreous, shining; head black, concave; thorax "pale ferruginous, scabrous, with longish ochreous hairs in front; elytra punctate "striate, the suture piceous, an elongate oval space on the outer margin, and a "stripe down the middle of each beyond the centre, but not reaching the apex, "piceous also. Underside blackish. Legs deep ochreous. Length 1½ line.

"I am indebted to Mr. Waring for my specimen, which he took in a house in "Bristol. It is allied to *B. domesticus*, Linn."

There would seem little doubt but that Curtis' long previously described species is identical with Eichhoff's *X. quercûs*, so recently added to our lists; but, at the same time (supposing even that its identity could be established with certainty by an examination of the type,—now, with the remainder of the Curtisian collection, in Australia), there can be no question that Eichhoff is the real describer of the insect, and in equity entitled to the greater share of honour; as he points out structural characters, &c., and differences between his species and the closely allied *X. lineatus;* upon which, they being unknown to Curtis, the latter author is silent.—E. C. Rye, 284, King's Road, Chelsea.

Occurrence of Eros affinis, a species new to Britain.—Mr. J. Hardy, of Emden Street, Hulme, Manchester, has sent to me for examination a fresh and perfect carded specimen of an insect which he considered to be specifically distinct from *E. Aurora*, and which I have determined to be *E. affinis*, Payk.; Kies., Ins. Deutsch., IV., 441, 4. It was taken last year at Killarney by Mr. Hardy's son, who also at the same time found a pair of elytra of the same species floating in the Lake. The insect occurs in Sweden, and elsewhere within our range. It is rather smaller than *E. Aurora*, and readily distinguishable from that species by its black thorax, of which the anterior margin only is obscurely reddish. Compared with *E. Aurora*, moreover, it exhibits the following diagnostic characters;—its antennæ are shorter and thicker, having the 3rd joint small and little longer than the 2nd; its thorax is somewhat broader, less contracted in front, with the discal depression differently shaped, and the anterior margin minutely but sharply emarginate in the middle; and its elytra are shorter, with the interstices between the four elevated ridges on each not broken up by supplementary longitudinal striæ, so that they are uninterruptedly transversely reticulate.—Id.

Note on a dark variety of Cicindela campestris.—My son, Dr. A. Chapman, of Abergavenny, captured a black variety of *C. campestris* in the first week of October, 1858, on the hill bounding Glen Finnart on the South, on the west side of Loch Long.—T. Chapman, 56, Buchanan Street, Glasgow.

[This specimen, thanks to Mr. Chapman's spontaneous generosity, now adorns my cabinet. It is in perfect condition, and exhibits the outline of its cream-coloured spots with great sharpness, owing to its dark ground-colour. The ordinary outer central spot on each elytra is absent. It is, of course, the var. *funebris* figured by Sturm.—E. C. R.]

Notes on variation in Lepidoptera.—There seems much unanimity of opinion amongst Entomologists upon two points connected with the variation of *Lepidoptera*. The first of these is, that there is a true physiological cause for them; and the second, that this cause is not too deeply hidden for our minds to find it out.

There are three general causes admitted by all, and on which no dispute can arise. These are—Climate, Isolation, and Hereditary Descent. The first on this list—Climate, is clearly "a ratio compounded of ratios," and may involve many causes in one; the second may depend on the first, or last, or on both together; and the third cannot, of course, originate a variety, but only perpetuate it. It is clear, therefore, that we must look deeper than these.

The more specific causes which deserve investigation are as follow:—

1. *Heat.*—It is difficult to give any physiological reason why heat alone should be the cause of variation. The experiment of rearing our common *Lepidoptera* in an orchis house for several generations could, however, easily be tried.
2. *Light.*—This cause has strong analogies in its favour; any but negative experiments with it are, however, very difficult to devise.
3. *Food.*—We have bearing upon this point the successful case of *Cleora lichenaria*, quoted by the Rev. J. Greene. We have also the fact that larvæ are coloured frequently by their food. Physiologically, analogy gives us the

frequent colouration of the skin by the salts of silver when taken internally, and the hue given to the bones of animals by the exhibition of madder. It is not unreasonable to suppose that the bright orange of the *lichen* might remain as a pigment unaltered just in a similar way. Experiments might be made with the *Cleora* or *Bryophilæ*; or colouring matter, such as madder, might be mixed with the food of *Aglossa*, or with the wax of *Galleria*, &c. But in general, the colouring matter of plants is too fugacious for us to expect a change in hue from this cause. I had this year two larvæ of *Phlogophora meticulosa* of a bright carmine colour, from feeding on heath blossoms: the moths in no way differed from the ordinary examples.

4. *Soil.*—The only way in which we can conceive this to act is, that a moist soil strongly impregnated with some metallic oxide might, by endosmose, stain the tissues in a naked pupa, and so an artificial colouration might be produced.
5. *Retardation or acceleration of development.*—Dr. Knaggs has given in the case of *illustraria* a most interesting example—the only one, I believe, in which a variety can be produced at will. The interest attached to this must be my apology for asking him to give still further particulars. It will be seen that there is one great difference between the case of *E. illustraria* and of *P. rapæ*. In experiments with *P. rapæ* the larva has been allowed to feed as usual; the development of the pupa has alone been abridged. In *illustraria* the larva has fed up rapidly as well, and has gone into the pupa stage prepared for a short period of quiescence. If Dr. Knaggs has, by heat or other causes, accelerated the last stage alone, and still produced the summer form, it would add to the interest of the experiment. Yet a variety produced at will is a great achievement.

A great many of the boreal varieties occur, however, in single-brooded insects;—for example, in *polyodon, lithoxylea, occulta, festiva.*

The summary of probable causes is here tried to be stated with fairness, and it is hoped experiments will be made by those who have the leisure, and the results (negative as well as positive) published.

The writer has himself a strong bias in favour of the action of light; and it must be remembered that, if one larva feeds up in twenty-five days and another in thirty, the latter has one-sixth more light during its larval stage than the former. We have not as yet solved all the mysteries attendant on the retardation or acceleration of development. Heat is, without doubt, a powerful agent; yet there is often a year's difference between the pupæ of *Eriogaster lanestris*, exposed, as far we can see, exactly to the same thermal influences. The following extract from a Canadian letter may be interesting:—

> "*P. rapæ* was quite plentiful with us last year. The spring and fall "broods differ here as they do with you."

R. C. R. Jordan, Birmingham.

Notes on variation in Lepidoptera.—At page 236 of the Ent. Mo. Mag., the Rev. J. Greene asks how it can be proved that "the lemon-coloured variety (query) of *Xanthia cerago*" is veritably *X. cerago*. I think that Mr. Greene is quite right when he says he believes it has never been bred from eggs laid by an ordinary *cerago*; *i. e.*, if he thereby mean from eggs laid in confinement by an ordinary

female; but I think it can be proved, from a series of specimens of these forms, that, as they approach each other in colour, markings, size, and shape, we imperceptibly lose the types of each as they merge into one another, and this, to my mind, demonstrates their specific identity to a certainty; especially when taken in conjunction with the fact that they are bred from larvæ presenting no perceptible points of difference. Further on, Mr. Greene says, "Surely there are dozens of species, allowed to be such, more closely resembling each other than *cerago* and its variety." I take the last two words in this sentence to imply that Mr. Greene has only seen the lemon-coloured variety pure and simple; and I therefore ask permission to say that in my cabinet is a good series of this species, all the specimens of which have been bred from larvæ collected from various species of sallows and willows. Larvæ on *Salix caprea* and *S. aurita* almost always produced the typical *X. cerago*, while those fed upon the catkins and leaves of *S. viminalis* often produced the lemon-coloured variety and its variations. Such is my experience in breeding this species, which, it will be perceived, is at variance with Mr. Greene's statement that (with him) the larvæ producing the latter feed exclusively on sallow.

When I say that there are in my collection about 10 of the lemon-coloured variety and its variations, and about 20 of the typical *X. cerago* and its variations, from deep-banded rich brown-ochreous to faint indistinctly marked specimens, approaching each other, as I said before, so closely that there is no telling "which from t'other," I think it may be fairly assumed that we have only one species before us. If there be still a doubt about this, I would add that the dark stigma always appears in both forms, as also does the cilial brownish colour on the fore-wings; and, though the outer row of minute spots is sometimes obsolete in the paler forms, my very lightest specimen has this character well defined; whilst in two larger specimens, below it, these spots cannot be seen at all.

Again, some other species of this genus vary very much in colour, particularly *X. aurago* and *X. gilvago*, of which latter Mr. Greene himself gave me, last year, the darkest pair I ever saw.

My remarks that different kinds of food affect the future imago might open a question which I will not now go into; but that it does so I am quite able to show in more instances than one.—C. S. Gregson, Stanley, near Liverpool, *March 1st*, 1867.

Notes on variation, &c., in Lepidoptera.—I have read with much pleasure and interest the remarks of my friend Dr. Knaggs, in reply to my notes in the March No. of the E. M. M., upon the supposed causes of variation in colour, form, size, &c., in certain *Lepidoptera*. I think I now understand his position, as to *E. illustraria*, but I am not sure. Unfortunately, I have never had an opportunity of breeding this insect myself, and, therefore, I only know its habits from hearsay, or from what I have read of the experience of others. Will Dr. K. or some other competent person kindly answer the following questions:—1st. Am I correct in supposing that eggs laid by *illustraria* in the spring produce in summer *delunaria*, and that eggs laid by this latter produce, next spring, *illustraria*, and so on? 2nd. Do all the pupæ from the spring-laid eggs emerge in summer, and if so, are all *delunaria*?

3rd. If not, *i. e.*, if some of those pupæ lie over through autumn and winter, are the insects produced in the following spring *illustraria* or *delunaria?* I ask particular attention to question two. In Vol. I., p. 44 of the "Ent. Weekly Intelligencer" I find the following communication from Mr. Machin:—"I took two of "the larva of this insect on the 22nd of July of last year, about half-fed; two "larger ones were taken the same day by Mr. J. Standish, and bred by him in the "following month; these Mr. Standish called *sublunaria*, and considered them quite "distinct from *illustraria*. My two larvæ kept feeding, though very slowly, till the "end of September, when they changed to pupæ. Being fully convinced in my "own mind that the two bred by Mr. Standish were from an early brood of *illus-* "*traria*, I determined in the autum to try and procure a number of the larvæ. I "succeeded in obtaining about 25, several on the 12th of September, but a few "days old, &c." Now, were these FOUR larvæ the result of spring-laid eggs? There is an ambiguity in Mr. M.'s statement, which leaves this uncertain. From his saying that he was fully convinced that Mr. Standish's two larvæ were from an early brood, we are left to infer that he considered his own were NOT, *i. e.*, that the larger ones were the progeny of the spring brood, while his (the smaller) were born of summer parents. Yet at the close of his communication he speaks of having procured 25 larvæ, several on the 12th of September, only a few days old. Surely the two found July 22nd, and half-fed, and these latter can not BOTH have been summer born? This by the way. IF (as I assume) Mr. Machin's two larvæ, which fed on slowly throughout September, and passed the winter state, WERE spring born, what came out the following spring—*illustraria* or *delunaria?* If *delunaria*, then Dr. K.'s thermal theory fails; for, owing to retardation, they ought to have produced *illustraria*, if I understand him rightly. On the other hand, if they DID produce *illustraria*, then I would venture to suggest that this result was much more probably caused by prolongation of the LARVAL than the PUPAL state. Let me apply this suggestion to *illustraria* generally. I must be permitted to assume (most willingly subject to correction, if wrong) that the spring larvæ feed up in a shorter time than the autumnal. If this be true, is it not highly probable that the smaller and paler progeny of the former, and the larger and darker progeny of the latter are respectively due, rather to the shorter and longer duration of the LARVAL than the PUPAL state? I should unhesitatingly adopt this conclusion, if I were only certain of my premises. One circumstance appears to me to give great force to my explanation, and it is this: *illustraria* is much larger than *delunaria*. Now, whatever may be said as to COLOUR, it is obviously impossible that increased SIZE can be obtained in the pupal state. It must be due to some previous stage of the insect's existence; and what can this be but the larval? But again, with regard even to COLOUR. In a communication made by Mr. Hopley on this subject (E. M. M., p. 212), he says, in reference to *Arctia Caja*, that he thinks he has reason to believe that light, more or less, in the LARVAL state, has an influence upon the colouring of the future imago; that MUCH light will produce DARKER specimens, and LITTLE light PALER. Mr. Hopley being, I believe, an artist, we may presume that he is correct in thus describing the effect of a greater or less degree of light. Applying this canon to the case before us, the WINTER pupæ of *illustraria*, being so much longer shrouded in DARKNESS, ought, in

spring, to produce PALER specimens, but they are much DARKER. If, now, we admit the longer LARVAL duration of the summer born progeny, we have a proportionate prolongation of LIGHT, and the result is, DARKER specimens of the perfect insect next spring. But Dr. K. says, "Whenever the completion of the pupal stage is "accelerated, then *delunaria* produces *delunaria*"—that is, as I take it, if the pupæ (which are the result of summer-laid eggs, and which, under ordinary circumstances, would pass the winter in that state, and then produce *illustraria*) are, by some artificial or unusual means, forced—THEN the result would be *delunaria*. Is this indeed the case? Has it ever been proved? If so, it appears to me a most extraordinary circumstance; and of course I admit that, so far as it goes, it militates against my theory, and, to the same extent, justifies Dr. Knaggs, as he himself remarks, in inferring the converse. As I am so much in the dark about the habits of *illustraria*, I will not say more about it at present, but shall feel truly obliged to any one who will give a full, minute, and accurate account of the history of this insect, especially whether there be any well authenticated case or cases of *delunaria* eggs producing *delunaria* insects through the pupæ having been forced. However, admitting this, it is but ONE instance opposed to MANY, for I think Dr. Knaggs scarcely allows sufficient weight to those I have already adduced against the thermic theory. I have brought forward NINE species in my favour—he only ONE, viz., *illustraria*; and upon this one he rests satisfied. "I THEREFORE feel justified "in coming to the conclusion that acceleration or retardation of the completion of "the pupal state are causes of a greater or less degree of variation in the imago." Let me now put forward a few additional facts. In the cases already adduced (and many others might be given), RETARDATION only was alluded to; nature was left to herself, and no variation was perceptible. How is it when artificial means are employed to ACCELERATE the pupal state? For many years I have been in the habit of "forcing" pupæ. The method is immaterial. Suffice it to say, that I have bred the following insects at the following periods:—During the last three weeks of March, *Eupithecia centaureata* and *coronata*, *Coremia ferrugata*, *Macaria liturata*, *Fidonia piniaria*, *Clostera curtula* and *reclusa*; *Notodonta dromedarius*, *trepida*, *dodonæa*, *chaonia*, *cucullina*, *dictæa*, *camelina*; *Acronycta megacephala* and *menyanthidis*. Now all these were at least two months earlier than they would appear in a state of nature; yet in no case was there any appreciable variation either in colour or form. I may add that, at the time these insects were bred, my attention was particularly drawn to this part of the question, from the fact that it had been supposed "forcing" was calculated to produce cripples, or PALE specimens. It was certainly not so in my case, as may be seen by referring to my communication (Intelligencer, Vol. I., p. 11). Curiously enough at this date (March 2nd) when I am writing, I have on my setting-boards specimens—forced, of course—of *Eupithecia virgaureata*, *albipunctata*, *venosata*; *Saturnia carpini*, and *Platypteryx unguicula*, all of which emerged in February; yet not the slightest variation in any is discernible. I have also had *Smerinthus tiliæ* and *ocellatus* out in February, in fact, scores of species in that month and March; yet in not ONE SINGLE instance can I remember to have seen any aberration in form or colouring. In fact, I have been exceedingly unfortunate in breeding varieties.

Now I am sure Dr. Knaggs will pardon me for thinking that these and the

other instances brought forward in my last paper form a strong "case" for the "plaintiff" or the "defendant," whichever I am to regard myself. It just occurs to me to ask whether any difference has been observed in the specimens of *Acherontia Atropos* which emerge in the autumn and those which remain over the winter. I fear these notes have extended to an undue length, but the subject is a very interesting one, and the "busy season" in the Entomological world has not yet commenced. I beg, in my turn, to thank Dr. Knaggs for his courteous answer to my objections, and shall hope to read something further from his pen in reply.—J. Greene, Sudbury, Derby.

*** I thank my friend Mr. Greene for reminding me of the case of *A. Atropos*, in which species autumnal specimens are immature, while spring examples are mature, and capable of reproducing their like; which corroborates my assertion that "retardation or acceleration of the completion of the pupal state are causes productive of a greater or less degree of maturation." I fear I can add nothing futher than has already been stated at page 238, in reply to Mr. Greene's questions 1, 2, & 3. Put it thus—If *I=illustraria*, *D=delunaria*, and ▬ = Winter; then, if there be but one brood in the year, the sequence will be *I*▬*I*▬*I*, and so on; if two broods, *I-D*▬*I-D*▬*I-D*, and so on; if three broods, *I-D-D*▬*I-D-D*▬, and so on. Certainly *illustraria is generally* larger than *delunaria*; but then *delunaria* may be much larger than *illustraria*.

All Mr. Greene's examples were forced *after* pupal hybernation. Had they emerged *before* that event, there would have been found—or I am much mistaken—considerable modification, always presuming the species experimented with to be possessed of some discernible degree of variability. If Mr. G. will test this with such species as *Tephrosia biundularia* and *crepuscularia*, he will see what I mean.

With deference to my friend, I submit that his results do but prove that all insects have not a like tendency to variation. With regard to *Clostera*, however,—in *C. anachoreta* at any rate,—there is an appreciable difference between the first and second broods; and whenever a third brood is obtained, it resembles the second (not the first) brood, just as in the case of *S. illustraria*. I should like to have replied at greater length, but want of space compels me to be thus brief.—H. G. K.

Macroglossa stellatarum and walls.—At the meeting of the Entomological Society held in January last, Mr. McLachlan enquired if any member could offer an explanation of the propensity in this insect to settle on sunny walls, &c. Mr. Eaton suggested the increased heat afforded by the walls, &c. Mr. McLachlan considers Mr. Eaton's the most plausible explanation he has yet heard, but at the same time expresses a wish for any additional suggestions.

A few days since I was reading over some of the back volumes of the "Zoologist"—an endless fund of instruction and amusement. In the vol. for 1851 will be found descriptions, by M. de la Chaumette, of the larvæ of various *Sphingida*, and amongst others, that of *Macroglossa stellatarum*. While reading over the description, I came across the following passage, which struck me at once. The italics are mine:—"I have always found the larva of this insect on the *Galium "mollugo*, which is found growing on *old walls exposed to the sun, and it is against*

"*such walls that I have chiefly found the imago flying.*" (Zool. Vol. IX., p. 3101). Bearing this in view, is it possible—I will not say probable—that there may be an instinctive feeling in this insect which leads it to settle on sunny walls in search of a plant whereon to deposit its eggs?—J. Greene, Cubley Rectory, Sudbury, Derby.

*** My query respecting *M. stellatarum* was most fully and satisfactorily answered by Mr. Bond and Dr. Wallace at the meeting of the 4th February (vide ante p. 239). According to my experience, the walls, &c., especially frequented, are those that are the most free from any vegetable growths save the lowest forms of lichens.—R. McL.

Notes on Tapinostola (?) Bondii.—A short time since I sent specimens of this species to my kind friend Professor Zeller, and, in a letter received from him this morning, he says—"After an examination of the figures and descriptions, I cannot "suppose it to be the *extrema* of Hübner. Treitschke (V. II., 316), who saw the "originals, says that the cilia, though too darkly coloured, are *really dark*, as if "singed, and adds that in the least marked specimens there is always a dark dot "in the outer (posterior or anterior?) margin, which is visible on the underside. "Moreover, the *whole underside is white, sparingly dusted in the intervals of the "prominent veins.* I hope that when I am at Vienna I shall see the specimens in "the Museum, and be able to inform you of the real difference of these two species."

I am rather surprised that these remarks of Treitschke were not quoted by Dr. Knaggs, as, if the specimens examined were the true *extrema* of Hübner, it is quite certain that *Bondii* is a distinct species.

Lederer refers Herr. Schäffer's figure 336 to *Helmanni* without any mark of doubt, and 337 to *extrema*, Hub.; but if the above-quoted remarks of Treitschke be correct, it cannot possibly represent this species.

I believe it was taken from a female *concolor*, but I do not think this species has occurred on the Continent, unless the specimens which Lederer captured some years since in a marsh near Vienna were *concolor*.

In July, 1843, I took several specimens of *Nonagria* (*Tapinostola*, Led.) *concolor* to Paris, and the late M. Pierret, to whom I gave them, said it was a species unknown to him, but was probably the *extrema* of Hübner.

In 1844 the late M. Becker had specimens from me, and as he sent many species which he procured in England to Herrich Schäffer, I think it very probable that his figure 337 was taken from one of my specimens.—Henry Doubleday, Epping, *March 14th*, 1867.

On the habits of Acrolepia assectella, Z., a species not yet found in Britain.—Dr. Breyer gave an interesting notice of this insect in the sixth volume of the Annales de la Société Entomologique Belge, (p. 21).

"Our common onion, *Allium cepa*," says he, "is a biennial; the first year produces the onion, in the second we have the flower and the seeds. The flowers placed in an umbel are borne on a common stalk, which commences to shoot in the spring, flowers in June, and produces ripe seeds towards the end of September.

"This year, whilst examining, in a kitchen-garden, the onions in seed, I was struck by the appearance of a disease; several stems were completely stripped, others bore an umbel which was so slightly attached that the least touch brought off all the flower-stalks at once. These flower-stalks had been gnawed at their base, and their union with the common stem was transformed into a flour-like mass. Here was evidently the work of an insect larva, and not a disease of the plant. On blowing upon this dust I immediately discovered a quantity of small larvæ, which seemed at the first glance as though they belonged to some Dipterous insect, but on examining them more closely I perceived that they were small Lepidopterous larvæ. These larvæ produced *Roslerstammia assectella*.

"The larva is of a transparent dirty yellow, like old pieces of polished bone; it bears a little shield on the second segment, and has two rows of little black hair-bearing dots, hardly perceptible to the naked eye; it is slightly attenuated in front, and during repose swollen posteriorly. It feeds gregariously in the flower stems of the onion, *Allium cepa*, not making separate galleries, and not ejecting its excrement nor collecting it together. The larvæ are full-grown towards the commencement of September, and then quit the stem, some perforating the sides of it, but the greater number passing out at the base of the umbel; the pupæ are placed singly, some amongst the flower-stalks, but the greater number of the larvæ descend the stem and disperse themselves over the ground.

"The chrysalis is enclosed in a very pretty net-work cocoon, like very close *tulle*, and tolerably firm. At the end of three weeks the imago appears; it is sufficiently well known and I need not therefore describe it. It hybernates, and the following spring the female deposits her eggs on the growing flowering-stems of the onion. *Assectella* must be included in the list of insects injurious to horticulture, for although it does not actually damage the plant in which it lives, it hinders, or at any rate diminishes, the production of seeds."

Under the name of *Tinea Vigeliella* of Duponchel, Colonel Goureau in his interesting "Insectes nuisibles," has given at p. 204, a history of "la teigne du poireau et de l'ognon," (which is in truth *A. assectella*), from which I quote the following:—"We sometimes perceive at the end of September or the beginning of October, that plants of leek are attacked by small larvæ which have taken up their abodes in the thick leaves of that vegetable. They excavate longitudinal galleries either straight or tortuous, which only occupy half the thickness of the leaf, and they devour all the substance which they excavate. They do not always remain in the same gallery, and move readily from place to place. They pierce the leaf to reach the other side of it, where they form new galleries, or they proceed to another leaf which they gnaw in a similar manner. When these larvæ are numerous, as happens some years, they soon destroy a whole row of leeks, or even all in the garden. They eat almost incessantly and are soon full fed; this happens towards the 6th of October. . . . . The perfect insects appear about the 17th November; but the entire brood does not then come out; some pass the winter in the pupa state, and do not take wing till the following spring, when in the months of April or May, they deposit their eggs on the leaves of young onions, producing a spring brood which attacks the onions as the autumn brood has attacked the leeks."

Most German Entomologists repute *assectella* to be synonymous with the *Acrolepia betuletella* of Curtis, but the two species are quite distinct. Unfortunately *assectella* is not yet known as a British insect, and *betuletella* still continues a rarity, of which the larva is unknown. Last month Mr. Sang met with three specimens of *A. betuletella* at Castle Eden Dene, and most liberally added this species to my collection.—H. T. Stainton, Mountsfield, Lewisham, S.E., *October 23rd*, 1866.

Curious flight of Lasiocampa quercûs.—Riding along the side of the crowning hill of Hindhead one day last August, I noticed several males of *Lasiocampa quercûs* flying above me in a singular manner. I immediately dismounted, and hurried to the crest of the hill, where I found that the moths in scores were trying their utmost to get over the ridge, while the wind, which was very powerful, as constantly drove them back. They would come beating and tacking up the side of the hill, often dashing into the heath and getting up again, until they got fairly to the edge, when the wind would carry them back hundreds of yards, and hurl them into the valley below, when the same performance would be gone through again.

I searched on the summit of the hill, where the wind would not allow me to stand erect, for some attraction which should bring so many males that way, but could find no females; nor did it seem that any spot was more favoured than another by the males, as their only object seemed to get over the hill, no matter where.

They were so numerous that, although the wind made a perfect plaything of my net, twisting it everywhere but where I wished, I contrived to catch over thirty in an hour.—C. G. Barrett, Haslemere.

Notes on Acidalia rusticata.—Whilst rearing this species from larvæ kindly sent by Mr. T. Eedle, Mr. Buckler and I have made a few notes, for which I venture to think the descriptions of Mr. Newman and M. Millière have still left room.

We received the larvæ in September, 1865, then about half grown, and feeding on tender leaves of ivy and lilac; but, after hybernation, we found that having by chance got hold of some withered bramble leaves, they preferred them to any other food. They spun up about the beginning of June, 1866, and the perfect insects appeared from 8th to 20th July.

M. Millière speaks of this species as double-brooded, and describes the larva of the summer brood, which feeds up quickly; but in England it seems there can be but one brood: for there would not be time for another between the middle of July and the beginning of September—when we received our larvæ.

I do not know whether there is more than one form of the larva, but in neither of the above-mentioned descriptions is there any mention made of the row of five dorsal markings, which, in our specimens, were very conspicuous.

The ground colour was a dingy-brown, paler on the 9th segment; the dorsal and sub-dorsal lines paler than the ground; on each segment from 5th to 9th (both inclusive) is an oblong space paler than the ground, shaped somewhat like an acorn, the tip of which is formed by a very pale spot behind; these acorns are

partially enclosed (at the beginning and end of each segment, that is) by blackish marks like Vs, only with the arms curved to suit the outline. There are also some much shorter curved lateral marks crossing the segmental folds just below the sub-dorsal line; and there is a pale ochreous plate on the second segment.

The great rugosity of the skin, and its curious short clubbed bristles, have been described before.—J. Hellins, Exeter, 28*th January*, 1867.

Description of the larva of Spilodes sticticalis.—On June 8th, 1866, Mr. T. Brown, of Cambridge, kindly sent me eggs of this species. These were roundish in form, shining, and very soft to look at; deposited one on another in an irregular mass; colour an orange-yellow, changing just an hour or two before the larvæ emerged to smoky-grey, the heads of the larvæ showing as black dots.

The larvæ appeared on June 10th, and from the first were very active. Seeing *Artemisia* given as their food by Treitschke, I supplied them with *A. vulgaris*, and they took to it readily, and throve so well that by July 7th they were nearly full-fed. I noticed they ate away the upper side of a leaf, avoiding the ribs and veins, and leaving the under side untouched. They were very active, walking rapidly, and could jump backwards an inch at a time.

When full-fed the larva is scarcely an inch in length, slightly tapering towards either end from the stoutest part, which is at the fifth segment. The head black and shining, as is also in some specimens the plate at the second segment, which in others is of the ground colour; the ground is of a dull leaden-grey hue; some larvæ have a pale dorsal line with dark outlines, whilst in others the pale line is not seen, but the dark outlines run together to form a stripe with a paler line on either side; sub-dorsal line pale; spiracular stripe pale sulphur-yellow, deeper above and paler below, and intersected by an interrupted dark grey line. The usual dorsal spots appear as large as shining warts, which have a pale centre enclosed with a blackish ring, and emit bristles: spiracles black; the belly pale olive-grey with shining warts There was one variety of a pale grey ground colour, with the lines faintly yellow, and this combination gave a greenish appearance to the larva.

These larvæ appeared to go under ground for pupation, but I have not yet disturbed the pupæ. Three or four of the imagos appeared during the second week in August, and I am hoping to see some more next June.—Id.

Notes on the larva of Anchocelis lunosa.—I should not offer a description of this larva were it not that I think it scarcely comes under the generic characters given of the *Anchocelis* larvæ in the Manual, whilst some of its distinguishing characters are omitted in the specific description after Guenée.

In October, 1865, Mr. H. Terry sent us some eggs, the larvæ from which I found feeding by the 28th of that month. They were then of a dull blue-green, with black heads, and rested on blades of grass, with their heads turned round sideways. On February 22nd, 1866, I noted that they were of various lengths, from $\frac{1}{3}$ to $\frac{1}{2}$ inch, and the smaller ones were still green, whilst most of the bigger ones (being a moult in advance) had a brownish tinge; and all had a pale dorsal line and a pale ochreous collar behind the head.

In April they attained their full growth, when I took the following description:—Length 1¼ inch; stoutish, cylindrical, tapering slightly towards the extremities; head round; dorsal plate on segments two and thirteen: the warts large, conspicuous, raised, and emitting bristles; skin (not velvety, but) shining. Ground colour, usually, an olive-brown, darker all over the back as low as the sub-dorsal line; dorsal and sub-dorsal lines fine, ochreous; side below the sub-dorsal line paler than the back, but deepening towards the spiracles, which are placed in a dark line; below the spiracles the colour is a dull purplish-brown; head pale brown; the plate on segment two pale yellow (very conspicuous) edged behind with black.

There were varieties which retained a great deal of their juvenile greenness to the last, the side between the sub-dorsal line and the spiracles being more green than brown, and the belly pale greenish; and there was one larva which remained quite green all over, the back being deepest in tint, just as in the brown variety; the warts in this larva were not so conspicuous, but in every case the pale yellow of the second segment is very striking.—Id.

Description of the larva of Acronycta auricoma.—During last summer, by the kindness of that industrious and expert collector Mr. Meek, I had the opportunity of figuring and rearing a larva of this species, which well deserves its name of *auricoma*.

It was taken on oak, and both oak and bramble were given to it for food, and at length it seemed to prefer the latter; and on the 13th July it spun its silken cocoon on the underside of a bramble leaf, and the moth emerged on the 3rd of August.

The full-grown larva was about one inch and a-half in length, and cylindrical, but the head smaller than the second segment. Ground colour of the body and ventral legs a dark slaty-grey; head and anterior legs black and shining; a black plate on the second segment; all the segments divided by very narrow black bands; a broad velvety black transverse band across the middle of the back of each segment, on which are placed four orange tubercles in the usual order, the anterior pair being much the largest, excepting on the third and fourth segments, where they are of equal size, and placed in a transverse row; all the tubercles are furnished with bright golden-yellow silky hairs, which give the larva a very beautiful appearance.

The spiracles white, ringed with black. The sides of the body slightly garnished with hairs of a pale drab colour.—Wm. Buckler, Emsworth, *January*, 1867.

Note on Mr. Kirby's paper on the European Sphingidæ.—In the Zoological Record for 1865 p. 601, I observe, in the notice of my paper on European *Sphingidæ* (Ent. Mag. I.) the following sentence:—"Following Walker, he divides *Macroglossa* into two genera, retaining that name for the clear-winged species, and applying the name of *Sesia* to the group including *M. stellatarum*." As this is scarcely correct, I take the liberty of explaining it, in justice both to Mr. Walker and myself. My words were—"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." With respect to species, I followed Staudinger; and his arrangement can be compared with mine by means of the table in Ent. Mag., p. 255. But I followed Walker in

the arrangement of genera, using my own discretion as to adopting his names or not. With respect to *Sesia*, I maintain that the true Fabrician types of the genus are the opaque-winged species. I add here a sketch of Walker's arrangement, for the purpose of enabling others to compare it with Staudinger's and with my own :—*SPHINGIDÆ*, *Sesia* (clear-wings), *Macroglossa*, *Proserpinus*, *Chœrocampa*, *Pergesa*, *Deilephila*, *Daphnis*, *Sphinx*, *Anceryx*, *Acherontia*, *Smerinthus*. *Deilephila esulæ*, Boisd., which Staudinger makes doubtfully a variety of *D. euphorbiæ*, Walker gives as a distinct species ; and *Laothöe (Smerinthus) tremulæ*, doubtfully, as a variety of *L. populi*. The work referred to is the Brit. Mus. List of Lep. Het., Part 8, *Sphingidæ*, 1856.—W. F. Kirby, Dublin.

Lepidoptera in the Isle of Wight.—During last autumn I had a few weeks of collecting on the south coast of the Isle of Wight, with my friends Mr. Stanley Leigh and Mr. Ernest Geldart.

Our captures bore strong testimony to the inclemency of the season. Insects were certainly scarcer : where *Depressariæ* had been before in scores we now took single examples. The resident farmers, too, appeared to have some indistinct associations with thatch-beating ; and, though they failed to recognise us, were obviously troubled by some painful recollections of a previous autumn.

Among the Macros we found little worthy of note. *P. Adonis* and *G. obscurata* were in extreme abundance. *A. citraria* was by no means scarce. At lamps, near Ventnor, we met with *H. popularis*, *A. australis*, *A. immutata*, and *E. pumilata*. The lighted arbours in the pretty gardens of the "Crab and Lobster" inn proved peculiarly attractive to certain species of *Noctuæ* ; and it was here that I captured a most lovely *D. cucubali*, the active pursuit of which evidently perplexed and startled an old gentleman near whom the visitor settled.

When I say that *Noctua bella* was the best insect obtained by about fourteen nights of sugaring, I give a fair idea of the utter uselessness of that mode of collecting. Its unproductiveness, however, appears to have been general, if I may judge by the lack of quality and number of my brother's captures thereby in Scotland.

Of the *Depressariæ* I took 17 species : *liturella*, and *pallorella* by searching the brushwood on the cliffs at night ; *arenella*, *sub-propinquella*, *Alstræmeriana*, *purpurea*, *albipunctella*, *Yeatiana*, *applana*, *ciliella*, *rotundella*, *chærophylli*, *nervosa*, *badiella*, and *Heracliana* by beating thatch ; and *umbellana*, after exposure to fearful storms of wind and rain, by searching the stacks of dried heath on the top of St. Boniface Down. These storms, which gathered and fell in the most hurried manner, and with the utmost violence, appeared to culminate when we reached the most exposed spots. I certainly never got any insects at such expense of personal comfort as my specimens of *umbellana*.

Besides the above, we of course took many species not worth recording. It may be that the season was a peculiarly bad one, and beyond doubt the roughness of the weather, which gave us many very grand sea views, and a most enjoyable and bracing air, interfered with our entomological success ; but I cannot help thinking the south of the Isle of Wight not remarkable for the number of its local species. In this opinion, however, I am quite open to correction.—J. B. Blackburn, Grassmeade, Southfields, S.W., *January*, 1867.

Early capture of Nyssia hispidaria.—I took one male specimen of this insect on the 9th inst., at Richmond Park. The afternoon was very fine, to which I attribute its early appearance. There is little doubt that this species annually occurs in the woods lying in the north of London.—S. A. Davis, Seven Sisters' Road, Holloway, *February 19th*, 1867.

Note on Sesia cynipiformis.—In June last I searched the oak trunks in Hyde Park, in expectation of finding this species. The insect was on the point of emerging from the pupa at the time, and I took but three. I was unable to visit the spot again until the end of July, but by that time the imago had had its day for that year. It must, however, have been in profusion, judging from the number of pupa skins which protruded through the oak bark. As far as I have observed, the insect seems confined to a small part of the park; and that a spot by the storehouse of the Guards. I may here mention that I captured two *Catocala nupta* in Hyde Park, in September last.—Id.

Offer of Glyphipteryx Haworthana.—I shall be able in a few days to forward pupæ of this insect to any person in want of them, on receipt of box and return postage. An early application is requested, that I may know what quantity to collect.—Chas. Campbell, 145, Lower Moss Lane, Hulme, Manchester.

Captures of Lepidoptera in South Wales (1866).

March.—*C. flavicornis, T. laricaria, S. avellanella.*

April.—*L. dictæoides** and *T. opima.**

May.—*N. cristulalis, N. plantaginis, H. uncana, L. viretata, E. tenuiata, S. lunaria* and *illustraria.*

June.—*A. leporina, L. pudorina* and *littoralis, M. albicolon, M. notata.*

July and August.—*H. petasitis,* L. cespitis, A. fibrosa, A. ripæ,* præcox, valligera, cursoria,* and *saucia; A. occulta,* P. festucæ, A. citraria, E. coronata;* and a variety of *G. papilionaria* of a rich uniform cream-colour.

Sept.—*E. nigra* and *C. spartiata.**

All marked thus * are new to me in this locality. The above are the best of my captures in 1866.—J. T. D. Llewelyn, Ynisygerwn, Neath, *Feb. 22nd*, 1867.

Entomological Society of London, *18th February*, 1867. Sir John Lubbock, Bart, F R.S., President, in the Chair.

Mr. Moore brought under the notice of the Meeting the damage caused by the larvæ of *Tomicus monographus* to the staves of malt-liquor casks in India. The insect had not yet been detected in Britain; still there seemed every reason to believe that the staves were infested before they arrived in India; so either it must be overlooked here, or, as was probable, the staves were imported from some continental locality in which the species abounded. It was calculated that there were sometimes 134,000 holes drilled in the staves forming a single cask. Immersion in boiling water had been found an effectual remedy. Specimens of the insect, and of the wood attacked, were exhibited.

Mr. Newman exhibited the lock of a door from the Kent Waterworks, being one of several that had been rendered useless through their chambers being filled with the nests of *Osmia bicornis.* He also exhibited a portion of the stem of *Salix*

capræa attacked by the larvæ of *Sesia bembeciformis*, and showing their presence within by means of raised marks externally in the bark. And, on behalf of the captor, Mr. Wildman, an example of *Naclia ancilla*, new to Britain, taken last season at Worthing.

Mr. Smith exhibited a collection of *Hymenoptera* from Mr. Du Boulay, of Champion Bay, Australia. The collection was very rich in new forms, some of them most beautiful. Mr. Higgins also exhibited a miscellaneous collection from the same locality, including many beatiful *Scaritidæ* and *Buprestidæ*.

Mr. Stainton exhibited a small moth bred by him from larvæ found feeding on the olive at Mentone. This had been described provisionally by M. Millière as *Tinea oleastrella*; it appeared to be somewhat allied to *Zelleria*. Also a living crippled example of *Margarodes unionalis*, bred from an olive-feeding larva from the same locality.

Professor Westwood remarked that, having previously caught a specimen of *Vanessa urticæ*, Professor Rolleston had dissected it with a view to ascertain if its structure showed any adaptation for sustaining life during the long hybernation of the insect. To his surprise the example proved to be a male, it being generally supposed that only the female hybernated; the abdomen was full of a greasy-looking substance which, under the microscope, showed numerous fatty globules.

Mr. A. R. Wallace read a paper on the *Pieridæ* of India and the Indian islands, describing 46 new forms, detailing the geographical distribution and affinities of the species. A discussion followed, in which Messrs. Bates, Pascoe, Westwood, and the author took part.

Mr. H. Jenner Fust, jun., communicated a laborious paper, the result of several years' work, on the geographical distribution of *Lepidoptera* (to the end of the *Crambina*) in Great Britain and Ireland, after the plan of Watson's "*Cybele Britannica*."

Mr. E. Saunders communicated a paper on the species of *Buprestidæ* collected by Mr. Lamb at Penang.

4th March, 1867. F. Smith, Esq., Vice-President, in the Chair.

A. H. Clarke, Esq., of 16, Furnival's Inn, was elected a Member.

Mr. Dunning exhibited a collection of insects presented to the Society by M. Pollen, of Leyden, taken in Madagascar; in it were fine examples of the rare longicorn *Sternotomis Thomsoni*.

Mr. Bond exhibited, on behalf of Mr. Wilkinson, of Scarborough, an instance of Hymenopterous parasitism on the larvæ of *Dasypolia templi*. The infested larva came above the surface of the ground, and the parasitic larvæ spun a web-like covering over it, in which they changed to pupæ—447 minute ichneumons had emerged from one larva.

Mr. Charles B. King communicated some notes on a species of *Phasmidæ* common in Jamaica.

Mr. C. O. Waterhouse communicated a paper on a new species of *Damaster*, which he described as *D. auricollis*; also notes on a genus of Dynastid-Lamellicorns, of the family *Pimelopidæ*.

Dr. Hagen communicated notes on the genus *Raphidia*.

AN ESSAY TOWARDS A KNOWLEDGE OF BRITISH *HOMOPTERA*.

BY THE REV. T. A. MARSHALL, M.A.

(*Concluded from page* 248.)

19.—*Eupteryx jucundus*, H. Sch. ?

Pallide viridi-flavus; vertex, pronotum, scutellum, nigro maculata (maculæ verticis 2, pronoti 5), hemelytra longitrorsum fusco vittata. Pectus et abdomen nigra; hujus incisuræ anguste flavæ. Pedes pallidi, unguibus fuscis; coxæ posticæ subtus macula nigra.

The vertex is yellowish-white, with two large round spots at the apex, between the eyes; hinder margin very narrowly bordered with black, and with a small central black spot, anteriorly acuminated. Pronotum with two anterior black spots, and three more arranged transversely on the disc, the middle one narrowed behind, and broader in front than the two lateral spots. Scutellum with two triangular black spots at the basal angles, and a black spot in the transverse depression before the apex, from which a narrow black medial line extends to the base. Hemelytra with five longitudinal brown stripes (two on the clavus, three on the corium); the nervures greenish-yellow. Of the three longitudinal alary veins the two anterior, or outer, are blackish, the inner one finer and pale. Long. 2 lin.

Typhl. jucunda, Flor, R. L., 2, p. 632.

Mr. Douglas has a specimen which appears to belong to this species. Being unprovided with a type at the present moment, I am compelled to translate and abridge the description of Flor. He states that the insect is found on the common alder. Probably the specimen labelled *T. fulva*, H. Sch., in the British Mus., is identical with the above.

20.—*Eupteryx quercûs*, Lin.

Albidus; vertex sæpe linea sinuata antica citrina: pronoti margo anticus, maculæque 3 ejusdem discales,—scutelli omnes anguli—hemelytrorum maculæ 5-7 irregulares, oblongæ, plus minus confluentes, citrinæ vel rubræ. Corii cellulæ apicales 2 magnæ prope costam, fusco cinctæ, ocellatæ. Membrana cellulis (praesertim basalibus) infuscatis, nervis albidis. Pedes albidi, tibiæ posticæ apice ipso fusco: unguiculæ fuscescentes. ♂ ♀. Long. 1¼; alar exp. 3 lin.

Cicada quercûs, Fab., S. R., 79, 89.

T. quercûs, Flor, R. L., 2, p. 412.

T. fasciata, Tollin, ueber Kleinzirpen, in Stett. Ent. Zeit., 1851, p. 73.

Abundant on various trees, but especially oaks, throughout northern Europe. In the British Mus. *T. gracilis*, Zett. ? is mixed with the present species.

21.—*Eupteryx pulchellus*, Fall.

Pallide flavus; abdomen basi supra nigrum. Vertex et pronotum lata, sub-depressa. Hemelytra pellucida, disci colore variabili, sed striolis semper 3 transversis, maculaque parva sub-apicali, nigris. Striolæ 2 ad membranæ basin a margine externo et interno ductæ, abbreviatæ; striola tertia longior et distinctior ad corii marginem externum pone medium orta, oblique in membranam flectitur. Alæ lacteæ. Pedes pallidi. ♂ ♀. Long. $1\frac{2}{3}$; alar. exp. $3\frac{1}{2}$ lin.

Var. *a*. Hemelytra saturate brunnea.

Var. *b*. Hemel. roseo vel rufo tincta, margine externo flavo.

Cicada pulchella, Fall., Hem., 2, p. 55.
T. pulchella, Flor, R. L., 2, p. 418.
Tettigonia concinna, Germ., Fn., 14, 12.
Eupt. ornatipennis, Curt., B. E., 640, fig. (var. *a*.).

Very common on oaks from July—October.

22.—*Eupteryx Germari*, Zett.

Pallide fusco-flavus; abdomen nigrum, incisuris flavis. Scutellum infuscatum. Hemelytra propter alas perlucentes nonnihil cœrulescentia. Corium margine externo cellulaque media hyalinis. Membrana apice indeterminate fumosa; cellula 2^da^ petiolata, raro sessilis. Alæ pallide fuscæ, cyaneo iridescentes, nervis 3 externis crassioribus, fuscis. Pedes pallidi, unguiculis fuscis; tibiæ posticæ ad spinarum basin nigropunctatæ. ♂ ♀. Long. $1\frac{1}{2}$; alar. exp. 4 lin.

Cicadula Germari, Zett., Ins., Lapp. p. 301.
T. Germari, Flor, R. L., 2, p. 420.

Found rarely, on *Pinus abies*, in the London district. In Mr. Douglas's collection and my own.

23.—*Eupteryx auratus*, Lin.

Flavo nigroque varius. Vertex maculis 2 magnis ovatis, basin attingentibus, ibidemque conjunctis. Frontem linea nigra utrinque a genis determinat. Antennæ flavæ. Pronotum flavum, punctis 2 anticis minimis nigris, maculisque 2 magnis lateralibus, basin versus approximatis, sed basin haud attingentibus. Scutellum nigrum, apice late, vittaque media longitudinali, flavis. Abdominis incisuræ flavæ. Hemelytra pellucida, flava, costa sæpe aurea; clavus vitta basali intus longitudinali fusca; angulo baseos interiore rotundo, macula media, et apice, nigris. Corium intus fusco marginatum; vitta basalis obliqua, intus pallidior, maculaque magna pone costæ medium irregularis, nigræ. Membrana fusca, hyalino ter fenestrata. Alæ hyalinæ, nervis 3 exterioribus fuscis. Pedes flavi. ♂ ♀. Long. $1\frac{5}{4}$; alar. exp. $3\frac{1}{2}$ lin.

Cicada aurata, Linn., S. N., 5, p. 466, No. 48.
T. picta, Burm., Handb., 2, p. 107.
T. aurata, Flor, R. L., 2, p. 423.
T. fulva, H. Sch., D. Ins., 143, 1.
Cic. nigropunctata, Schr., Ins., Austr., 499?
Eupt. maculipennis, Curt., B. E., 640, No. 11 (according to the Brit. Mus. collection).

The above description is taken from a number of average individuals, but dark or pale varieties occur which differ considerably in their markings. The species is likely to be confounded with *pictus*, Fab.; q. v. The five last species here described form a natural and closely allied group, which might well constitute a genus. *E. auratus* is sufficiently common on shrubs in hedges, fields, &c., throughout the country.

24.—*Eupteryx pictus*, Fab.

Præcedenti proxime affinis, sed minor. Differt fronte breviore (vid. p. 201)—colore pallidiore, sulfureo, maculisque semper minoribus. Hemelytra perpallida, fere hyalina, maculis 2 nigris, una minori apud marginem clavi interiorem, altera majori ad corii marginem exteriorem pone medium sita. Pedes flavi; coxæ posticæ nigræ, intermediæ nigro maculatæ; femora anteriora subtus, tibiæque posticæ apice (♂) interdum nigra. Cætera ut in præcedenti. ♂ ♀.

Long. 1; alar. exp. 3 lin.

Cicada picta, Fab., S. R., p. 77.
T. picta, Flor, R. L., 2, p. 425.
Cicada aurata, Fall., Hem., 2, p. 50.
T. aureola, Bohem., Handb., 1845, p. 49.

Common throughout Europe.

25.—*Eupteryx vittatus*, Lin.

Niger, flavo varius. Caput flavum; vertex postice brunneus, basi ipsa nigra. Pronotum omnino nigrum, vel punctis 3 disci flavis. Scutellum nigrum, rarius apice et linea media flavis. Hemelytra flava, vitta lata longitudinali, utrinque bis excavata nigra. Pedes flavi. ♂ ♀.

Long. 1; alar, exp. $2\frac{5}{4}$ lin.

Cicada vittata, Lin., S. N., 5, p. 463.
T. vittata, Flor, R. L., 2, p. 427.
Eupt. notata, Curt., B. E., 640, No. 1.
T. 4-signata, Hardy, Tynes. Trans., 1, p. 418.

Common in shady places among grass and nettles. I found one dwarf specimen on the top of a Scotch mountain. Has occurred in Italy, as well as northern Europe.

26.—*Eupteryx urticæ*, Lin.

Eupt. aurato similis, sed minor, tibiis posticis nigris basi flavis. Differt etiam fronte nigro bipunctata. Vertex maculis 2 magnis rotundis, maculaque baseos media triangulari, nigris. Frons utrinque nigro marginata. Pronotum maculis 7 nigris, 4 in margine antico sæpe confluentibus, 2 parvis lateralibus, una basali maxima, irregulari, sæpe quadrifariam divisa—sed maculæ omnes variant. Scutellum flavum, maculis duabus triangularibus apud angulos anticos. Hemelytra flava, clavi coriique cellulis maximam partem infuscatis, nervis flavis. ♂ ♀.

Long. $1\frac{1}{4}$; alar. exp. $2\frac{3}{4}$ lin.

Cicada urticæ, Lin.; Fab., S. R., p. 77.
Eupt. tarsalis, Curt., B. E., 640, No. 6.
T. urticæ, Flor, R. L., 2, p. 428.

Common everywhere on *Urtica dioica*. It is readily distinguished from its allies by the black hinder tibiæ, yellow at the base.

27.—*Eupteryx melissæ*, Curt.

Pallide viridi-flavus; abdomen nigrum. Frontis maculæ 2, verticis 3, nigræ. Pronotum ad marginem anticum punctis 2, punctis etiam 4 (utrinque 2) lateralibus, nigris; disco indeterminate fuscum. Scutellum angulis anticis, punctisque 2 ante lineam transversam depressam nigris. Pedes pallidi. ♂ ♀.

Long. $1\frac{1}{4}$; alar. exp. $2\frac{1}{2}$ lin.

Eupteryx melissæ, Curt., B. E., 640, No. 7.
T. collina, Flor, R. L., 2, p. 433.

Taken by Curtis in August and October upon balm in a garden at Niton, Isle of Wight, and by me last year in a similar locality in this neighbourhood. It is very distinct from *urticæ* in colour, being of a delicate sea-green instead of yellow; the hemelytra are shorter; the scutellum has four instead of two black spots; the hinder tibiæ are not black; and the nettle is not the plant upon which it lives.

To the above species of *Eupteryx* I am now enabled to add the following, which is not in the Synopsis at p. 200.

28.—*Eupteryx stachydearum*, Hardy.

Eupt. urticæ simillimus, ægre distinguendus. Membranæ cellula 4ta (intima) basi non solum 3tiæ 4tæque contigua, sed etiam corii cellulæ 2dæ. Tarsi postici longiores. Tibiæ posticæ tantum apice ipso nigræ. ♂ ♀.

T. stachydearum, Hardy, Tynes. Trans. 1, p. 422.
T. Curtisii, Flor, R. L., 2, p. 431.
? Eupt. hortensis, Curt., B. E., 640, No. 5.

Common on various plants; *Stachys sylvatica*, *Lamium album*, and *Ballota nigra*.

In conclusion, I will add a few observations made during the course of publication of these papers.

Delphax elegantulus, Boh.; see vol. 1, p. 252.

♀ (undescribed.)

Forma brachyptera. A mare differt colore omnino testaceo, statura paulo majore. Abdominis segmenta supra medio carinata, ad latera foveolis utrinque 3 fuscescentibus. Segmentum genitale apice infra nigrum. Oviductus albidus.

Common, with the ♂, in marshy parts of Epping Forest.

Delphax bivittatus, Boh., Handb., 1849, p. 259; Stål, Öfv., 1854, p. 196.

"Oblongus, dilute flavo-testaceus, supra utrinque vitta in vertice cum opposita conjuncta et ad anum fere continuata, nigro-fusca; vertice ante oculos producto, obtuso, fronte, prothorace scutelloque tricarinatis; hemelytris vitta suturali, nigro-fusco ornatis, apice conjunctim emarginatis, singulatim angulo exteriore rotundatis." ♂ ♀.

Long ♂ $1\frac{1}{3}$; ♀ $1\frac{1}{2}$ lin.

The brachypterous form only. Taken sparingly on Wimbledon Common and in Epping Forest.

Delphax thoracicus, Stål, Öfv., 1858, p. 356.

"Nigro-fuscus (♂), vel plus minus dilute fusco-testaceus (♀); capite dilutiore, pedibus incisurisque pectoris plus minus dilute sordide flavo-testaceis. Thorace, limbo angusto laterali superiore valvulæ analis ♂ albicantibus; fronte medio bicarinata, carinis basin versus subevanescentibus." ♂ ♀.

Long. ♂ $1\frac{1}{4}$; ♀ $1\frac{1}{2}$ lin.

The brachypterous ♂ has black hemelytra, the ♀ testaceous, both tipped with white. The pronotum of the ♀ is often whitish. Very similar to *albomarginatus*, Curt., but the frontal carinæ are less developed, almost obsolete between the eyes, and concolorous with the face, instead of white. It is also a larger insect.

Found also on Wimbledon Common, in marshy spots.

I am inclined to believe that *Iassus 4-vittatus*, described as new at p. 222 of vol. 2, is nothing more than a finely coloured variety of *socialis*, Flor, vol. 2, p. 250.

Iassus (*Asythanus*) *ventralis*, Fall., Hem., 2, p 31.

Is a British insect; Mr. Douglas has taken it, and kindly communicated to me a specimen.

Iassus (*Athysanus*) *brevipennis*, Kschbm.
Athysanus—Arten, p. 9.

I found two or three specimens at Rannoch, which appear to be this species.

Mr. Scott has re-discovered in the Isle of Wight the *Batrachomorphus irroratus*, of Lewis, Trans. Ent. Soc., vol. 1, 1834, p. 51, pl. 7, fig. 5; a remarkable insect, whose systematic place appears difficult to settle.

I am informed by Mr. Douglas that *Tettigometra impressopunctata*, Signoret (see vol. 3, p. 149), is in the collection of Mr. Dale, occurring also in the south of England.

T. A. M.; Milford, *April*, 1867.

A MONOGRAPH OF THE BRITISH *PSOCIDÆ*.

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

(*Concluded from p.* 245.)

Genus Cæcilius, Curtis (1837).

Tarsi 2-jointed. Pterostigma free. Discoidal cell incomplete, open. Three complete cellules on the apical half of the posterior margin; the last elliptical and free.

1.—Cæcilius pedicularius, Linné.

Hemerobius pedicularius, Linn. Faun. Suec. p. 384, 1515 (1761); Syst. Nat. p. 913, 15; Schrank En. Ins. p. 314, 630. *Psocus pedicularius*, Lat. Coqb. Icon. 10, tab. 2, fig. 1. *P. abdominalis*, Fab. Ent. Syst. suppl. p. 204, 9 (1798); Steph. Ill. p. 127, 41; Hag. Ent. Ann. 1861, p. 28, 14. *P. nigricans* Steph. Ill. p. 127, 40 (1836). *P. dubius*, Steph. Ill. p. 127, 42 (1836). *P. domesticus* Burm. Handb. 2, p. 777, 4 (1839); Brauer N. A. p. 33. *P. binotatus*, Ramb. Névrop. p. 324, 14 (1842). *Lachesilla fatidica*, Westwood, Introduction vol. ii. p. 18, fig. 59, 16, *forma micropteru?*

Antennæ short, yellowish or brown. *Head* and *thorax* uniform shining blackish-brown, or reddish-brown. *Abdomen* yellowish, the segments margined with brown, which colour sometimes suffuses the whole. *Legs* yellowish, the knees and tarsi obscure. *Wings* hyaline; a small blackish dot at the commencement of the pterostigma, and a similar one at the termination of the cubitus on the inner margin; *veins* rather strong, dark brown; *pterostigma* broad, occasionally with a very faint smoky tinge; the free posterior marginal cellule broadly elliptical.

Length of body $\frac{3}{4}'''$; expanse of fore-wings $1\frac{3}{4}$-$2'''$.

This minute insect is abundant in autumn in the interiors of houses and warehouses, even in the heart of the City of London. In the room in which I now write it swarms every year during a few days in August or September, according to the season; but lasts a very short time, generally disappearing entirely in a week from the advent of the first-seen examples.

2.—Cæcilius flavidus, Stephens.

Psocus flavidus, Steph., Ill. p. 122, 20 (1836); Ramb. Névrop. p. 323, 9; Brauer N. A. p. 33; Hag. Ent. Ann. 1861, p. 27, 13. *P. flavicans*, Steph. Ill. p. 123, 21 (1836). *P. ochropterus*, Steph. Ill. p. 122, 19 (1836). *P. subpunctatus*, Steph. Ill. p. 126, 34 (1836)? *P. borëellus* Zett. Insect. Lapp. col. 1053, 6 (1840). *Cœcilius strigosus*, Curt. B. E. 648, 26 (1837).

Antennæ rather short, slightly pilose in ♂, fuscous, the basal half (excepting the two first joints) yellowish. *Head* yellow; the *crown* marked with brown in the middle about the ocelli. *Thorax* yellow, marked with shining brown. *Abdomen* yellow. *Legs* yellow, the tarsi brownish. *Anterior wings* elongate, sub-hyaline, tinged with greyish-yellow; *veins* strong, brown, and most of them margined with brown; *pterostigma* elongate, dilated in the middle; free posterior marginal cellule broad, the apex broadly and flatly rounded; *posterior wings* hyaline, scarcely tinged, the *veins* finer. Length of body 1-1½‴; expanse of fore-wings 3-3½‴.

A common species on palings.

3.—Cæcilius obsoletus Stephens.

Psocus obsoletus Steph. Ill. p. 123, 22 (1836).

Antennæ short, dark reddish-brown, slightly pilose in ♂. *Head* and *thorax* uniform reddish-yellow. *Abdomen* paler. *Legs* reddish-yellow. *Anterior wings* pale smoky greyish-yellow; *veins very fine*, brownish, not margined; *pterostigma* more elongate than in *C. flavidus*, dilated at the apex, which is more abrupt, reddish or smoky-yellowish; the free posterior cellule similar to that in *P. flavidus*, but smaller. *Posterior wings* tinged as in the anterior, but paler.

Length of body 1-1¼‴; expanse of fore-wings 2¾-3¼.‴

Probably equally common with No. 2, but overlooked or confused with that species.

I have seen numerous specimens of both sexes, and am convinced that it is neither an immature nor sexual form of *flavidus*. The colouring is more reddish and obscure, the veins very fine, and the structural characters of the latter somewhat different.

In Mr. Marshall's collection I find two specimens that I believe form another closely allied species; the wings are *much broader* and *more obtusely rounded*, hyaline, with the least perceptible tinge of colouring, and with exceedingly fine veins. In a group in which the

species evidently so closely resemble each other, I will not describe this as new without an examination of more, and fresh, examples. In size it equals *C. obsoletus*.

4.—Cæcilius Dalii, McLachlan, n. s. (Plate 2, fig. 6).

Albidus: antennis alis paulo brevioribus, gracilibus, fuscescentibus, capite immaculato, ocellis brunneis; thorace interdum brunneo-tincto: abdomine flavo, basi utrinque nigro-signato; pedibus pallide flavis; alis hyalinis, anticis latis, brevibus, fere immaculatis, apice rotundatis, punctis duobus fuscis, quorum unum ad pterostigmatis initium, alterum ad post-costæ terminationem; venis gracilibus ciliatis, fuscis, ad marginam apicalem vix fusco-marginatis, pterostigmate elongato.

Long. corp. 1-1½‴; *exp. alar.* 3-3¼‴.

Antennæ not so long as the wings, fuscescent or yellowish. *Head* whitish, immaculate, the ocelli brown. *Thorax* whitish, sometimes suffused with brownish. *Abdomen* yellowish, a blackish line on each side at the base. *Legs* pale whitish-yellow, the tibiæ marked with very minute blackish points, being the tubercles whence spring the hairs. *Wings* hyaline; *anterior wings* with a minute blackish dot at the commencement of the pterostigma, and another at the termination of the post-costa on the posterior margin; *veins* very fine, ciliated, brownish, all the apical veins slightly margined with fuscous at their terminations in the margin, forming brownish points, and some of the basal veins are stronger and darker than the others; *pterostigma* elongate, scarcely dilated, almost parallel; free marginal cellule almost semi-circular; in the *posterior wings* the apical veins are pointed at their terminations as in the anterior.

Taken commonly by Mr. Dale amongst box (*Buxus*) in his garden at Glanville's Wootton, Dorset, unaccompanied by any other species. It is an extremely delicate-looking insect, and very distinct, on account of its broad rounded wings and very pale coloration. I have seen many examples, which do not vary otherwise than by showing an unusually strong tendency to aberrant nerval arrangement.

5.—Cæcilius fuscopterus, Latreille.

Psocus fuscopterus, Lat. Coqb. Icon. 10 tab. 2, fig. 2 (1799). *P. vittatus* Dalman, Analect. Ent. p. 98, 13 (1823); Steph. Ill. p. 122, 18; Zett. Insect. Lapp. col. 1044, 9; Hag. Ent. Ann. 1861, p. 27, 12. *Cæcilius fenestratus*, Curt. B. E. pl. 648 (1837). *P. fenestratus*, Burm. Hand. 2 p. 778, 7.

Antennæ not so long as the wings, stout, pilose in ♂, fuscous, the basal joints testaceous. *Head* and *thorax* shining chestnut-brown, the latter often blackish. *Abdomen* reddish, black at the apex. *Legs* pale yellow, the tarsi tipped with fuscous. *Wings* hyaline, shining; *anterior wings* long and narrow, a broad brown longitudinal band extends from base to apex, occupying the whole breadth of the wing at its commencement, but leaving an elongate, hyaline space near the apex of the costal margin (which space is intersected by two brown-margined veins), and

another long hyaline space on the apical portion of the posterior margin; *veins* blackish; *pterostigma* elongate, broadly dilated at the apex; free posterior cellule broadly rounded; *posterior wings* with a similar band to that in the anterior, but much paler, greyish. Length of body 1-1½‴; expanse of fore-wings 4‴.

Sometimes common amongst undergrowth in woods, but apparently uncertain in its appearance.

Coquebert's figure gives a very faint idea of the insect, and the neuration is incorrectly delineated, but Latreille's description suits well. Curtis's figure is very characteristic, but the colouring rather too dark.

Genus Peripsocus, Hagen (1866).

Psocus, p. auctorum.

Tarsi 2-jointed. Pterostigma free. Discoidal cell incomplete, open. Only two complete cellules on the apical portion of the posterior margin; the last being altogether absent.

1.—Peripsocus alboguttatus, Dalman (Plate 2, fig. 8).

Psocus alboguttatus, Dalm., Analect. Ent., p. 98. 14 (1823). *P. striatulus*, Steph. Ill. p. 124. 27, teste coll. partim (1836). *P. 4-maculatus*, Steph., Ill. p. 124, 26, teste coll. partim (1836). *P. pupillatus*, Dale, Walker Brit. Mus. Cat. Neurop., pt. 3, p. 493, 40 (1853); Hag. Ent. Ann. 1861, p. 28, 9; Ent. Monthly Mag. vol. 2, p. 9.

Antennæ about the length of the wings, slightly pilose in ♂, blackish, testaceous at the base. *Head* uniformly brown, the ocelli blackish. *Thorax* brown, the lobes darker. *Abdomen* reddish-brown. *Legs* brown. *Wings* mouse-grey, occasionally almost black, the posterior paler; *anterior wings* with whitish spots in the cellules, some of which enclose pupils of the dark ground-colour (one of these near the base of the long median apical cell being the most conspicuous), others without pupils; *pterostigma* elongate, dilated at the apex; *veins* fuscous.

Length of body ¾-1¼‴; expanse of fore-wings 2½-3¾‴.

Apparently a local species; taken commonly by Mr. Dale.

2.—Peripsocus phæopterus, Stephens.

Psocus phæopterus, Steph. Ill. p. 127, 39 (1836); Brauer N. A. p. 33; Hag. Ent. Ann. 1861, p. 25, 9. *P. nigricornis*, Steph. Ill. p. 126, 38 (1836).

Antennæ scarcely so long as the wings, stout, blackish. *Head* and *thorax* varying from dark brown to black, shining. *Abdomen* dark brown. *Legs* blackish. *Wings* uniformly smoky-grey (varying from pale to nearly black), the hind-wings scarcely paler; *veins* blackish; *pterostigma* elongate, slightly dilated towards the apex, brownish. Length of body 1-1¼‴; expanse of fore-wings 3-3¼‴.

A very common species, especially amongst the foliage of firs and larches.

Genus Elipsocus, Hagen (1866).

Psocus, p. auctorum.

Tarsi 3-jointed. Neuration as in *Cœcilius*.

1.—Elipsocus unipunctatus, Müller.

Hemerobius unipunctatus, Müll. Faun. Fridrichs. p. 66, 580 (1764); Prodr. p. 146 1690. *H. aphidioides*, Schk. En. Ins. Aust. p. 314, 629 (1781). *Psocus immunis*, Steph. Ill. p. 121, 16 (1836); Hag. Ent. Ann. 1861, p. 23, 4. *P. longicornis*, Steph. Ill. p. 121, 15, nec Fab. *P. obliteratus*, Zett. Insect. Lapp. col. 1052, 4 (1840). *P. naso*, Ramb. Névrop. p. 320, 5 (1842). *Cœcilius vitripennis*, Curt. B. E., pl. 648, 28 (1837).

Antennæ about the length of the wings, scarcely pilose in ♂, black, the two basal joints yellowish. *Head* yellowish with blackish spots on the crown (varying to all brown); *nasus* with numerous blackish convergent streaks. *Thorax* black or brown, with the divisions of the lobes, and elevated radiating lines, yellowish. *Abdomen* brown or black, varied with yellow. *Legs* pale yellow, the tips of the tibiæ and the tarsi black, tibiæ with very minute blackish points. *Wings* hyaline with brown veins; *pterostigma* very narrow, elongate, its lower edge curved, pitchy-brown, which colour extends slightly below the vein forming the stigma; free marginal cellule large, sub-triangular, the apex rounded and nearly touching the vein above it. Length of body 1½-2‴; expanse of fore-wings 5-5½.‴

A common species.

2.—Elipsocus Westwoodii, McLachlan, n. sp.

Psocus 4-maculatus, Westwood, Introd. vol. 2, p. 19., fig. 59, 8-9, nec. Latreille (noticed).

Fuscus; antennis alis brevioribus; his vix elongatis, hyalinis; anticis fascia media flexuosa, maculis duabus, una pterostigmaticali, altera cellulam ellipticam circumscribenti, plus minus intense fuscis; venis sub-ciliatis, nigricantibus.

Long. corp. 1-1½‴; *exp. alar.* 3½-3¾‴.

Antennæ shorter than the wings, brown. *Head* and *thorax* more or less intensely brown. *Abdomen* and *legs* brown. *Wings* hyaline; *anterior wings* rather elongate, a fuscous zig-zag transverse fascia (sometimes nearly absent) follows the course of the veins in the middle, often uniting with the pterostigma; the latter is elongate, much dilated beyond its middle, the dilated portion occupied by a more or less intense fuscous spot; the free posterior cellule large and elliptical, and usually margined with fuscous; *veins* blackish, slightly ciliated.

Not uncommon on tree-trunks: not in Stephens' collection.

This is (according to the types) the species considered by Westwood as *P. 4-maculatus*, Latreille. The latter species, however, is a true *Psocus* in the restricted sense, and I believe identical with *P. maculipennis*, Stephens. The large specimens mentioned by Westwood (*loc. cit.*), and supposed by him to be the females, are *P. bifasciatus*.

3.—Elipsocus hyalinus, Stephens.

Psocus hyalinus, Steph. Ill. p. 123, 23 (1836); Hag. Ent. Ann. 1861, p. 26, 10. *P. 2-punctatus*, Steph. Ill. p. 123, 24, nec. Linn. *P. 6-punctatus*, Steph. Ill. p. 123, 25, nec. Linn.

Antennæ not so long as the wings, dark fuscous. *Head* pale shining brown, without markings; *eyes* and *ocelli* black. *Thorax* dark shining blackish-fuscous. *Abdomen pale yellow with a fuscous apex*. *Legs* brownish. *Wings* hyaline; *anterior wings* rather elongate, a fuscous zig-zag transverse fascia follows the course of the veins in the middle; *pterostigma* semi-ovate, occupied by a dark fuscous spot; free marginal cellule elliptical, margined with dark fuscous; *veins* moderately ciliated, blackish. The markings vary much in intensity according to the degree of maturity attained. Length of body 1‴; expanse of fore-wings 3‴.

Very similar to the last, but smaller, and may be at once distinguished by its yellow abdomen, tipped with fuscous.

Hagen places *hyalinus* in *Cœcilius*, but the types of all three of Stephens' species have 3-jointed tarsi, as is also the case with individuals taken by myself and compared with the types.

4.—Elipsocus flaviceps, Stephens (Plate 2, figs. 9 and 10).

Psocus flaviceps, Steph. Ill. p. 124, 28 (1836); Hag. Ent. Ann. 1861, p. 26, 11. *P. striatulus*, Steph. Ill. p. 124, 27, nec. Fab. *P. lasiopterus*, Burm. Handb. 2 p. 777, 5 (1839). *Cœcilius irroratus*, Curt. B. E. 648, 27 (1837).

Antennæ not so long as the wings, pilose in ♂, fuscous. *Head* yellow (sometimes wholly brown); *crown* spotted with blackish; *nasus* with few convergent brown lines. *Thorax* brown varied with yellow, or wholly brown. *Abdomen* brown with lateral yellow lines. *Wings* varying from hyaline to smoky; *anterior wings* very variable in their markings; in the most strongly marked form they are strongly spotted with fuscous, with a semicircular row of fuscous spots in the apical cellules, most of the veins and the lower edge of the semicircular pterostigma margined with fuscous; in the least marked form these wings shew little trace of the dark markings, save a perceptible margining of the veins; and all intermediate conditions occur; *veins* dark brown, *strongly ciliated*; free posterior cellule small. Length of body 1-1¼‴; expanse of fore-wings 3-3¼‴.

Common amongst the foliage of firs, larches, and yews.

This, to me, has been the most puzzling of all the *Psocidæ*. The varieties into which it runs are so numerous that it yet seems doubtful if there may not be more than one species, yet I have beaten all the forms at the same time from one small larch-tree. The strongly ciliated veins seem to afford the best character. Although placed by Hagen in a different group, Stephens' types appear certainly to have 3-jointed tarsi, which is also the case with all similar examples in my,

and other, collections. That *P. lasiopterus* of Burmeister belongs here seems evident from his words, "nervis fusco-cinctis, longissime pilosis," but his doubtful reference to *fuscopterus* of Latreille is incorrect; he was unaware of the existence of species with 3-jointed tarsi.

CORRIGENDUM.

Page 196. Instead of "*Lachesis*, Westwood (*Lachesilla*, Hagen)," read "*Lachesilla*, Westwood (*Lachesis*, Hagen)." The generic term *Lachesilla* will be found in the Appendix to the "Introduction," p. 47.

EXPLANATION OF PLATE II.

Fig.
1. *Atropos divinatoria*, Müller.
2. *Clothilla pulsatoria*, L.
3. *C. picea*, Mots.
4. *Psoquilla margine-punctata**, Hag. (the antennæ supplied).
5. *Psocus fasciatus*, F.
6. *Cœcilius Dalii*, McLach.
7. *Stenopsocus cruciatus*; L. *forma submicroptera*.
8. *Peripsocus alboguttatus*, Dalm.
9. 10. *Elipsocus flaviceps*, Steph.; extreme forms.
11. Neuration of fore-wing of *Psocus*.
12. „ „ *Stenopsocus*.
13. „ „ *Cœcilius*.
14. „ „ *Peripsocus*.
15. A 2-jointed tarsus (*Psocus* proper, &c.)
16. A 3-jointed tarsus (*Elipsocus*).

Natural history of Catocala sponsa.—In August, 1865, I captured at sugar a moth of this species, which proved to be a ♀, and she obligingly laid a few eggs on oak twigs and the sides and leno cover of her cage, after being fed for a fortnight with moistened sugar.

The eggs were circular, and rather depressed, smooth and shining, olive-brown, some of them semi-transparent and mottled with darker brown, showing a whitish ring near the margin and a narrow blackish ring within it; these last, as the sequel proved, were fertile, and the others barren.

In April, 1866, the young larvæ hatched just as the oak buds and blossoms began to appear, and on which they fed, preferring the blossoms, though after their second moult they readily partook of the leaves.

When first hatched they were blackish-brown, with a few paler blotches; long in proportion, looping with much activity in their progression, often standing erect on their anal legs with a tremulous motion of the body, and, if touched, falling and wriggling in an excited manner.

After the second moult they were of a very pale brown mottled with olive-greenish and brown, exhibiting decidedly the peculiarities of contour pertaining to larvæ of the genus *Catocala*.

In their early stages they were very restless for some time after being disturbed by changing their oak twigs, walking about their glass prison as if bent on escaping, but would at length settle down to their food; in repose they were

* This figure is reduced from a beautiful drawing kindly executed for me by my colleague Mr. Rye, from microscopic examination. At page 196 I have said that the hind-wings appear to be wanting. But, according to the drawing, the wings appear to be *metathoracic*, and accordingly *hind-wings*. The only example that had partially escaped the ravages of its kindred, was destroyed, after having been figured, through an unfortunate accident; so that, for the present, I am unable to make a re-examination.

generally stretched out close to the surface of the twigs, and assimilated well with them; as their size increased, so in proportion they became quieter, and at length even lethargic in their demeanour, each individual having a separate residence. On arriving at maturity they spun a loose kind of hammock amongst the oak leaves, and therein changed to pupæ of a purplish-red colour, covered with a delicate violet bloom. The moths appeared towards the end of July.

The full-grown larva, when stretched out, measures two inches or two inches and a half in length; its walk is a half looping motion, sometimes retaining that posture in feeding, though generally it closely embraces the twig, its body being extended, and its head erected to the edge of a leaf.

In form it is rounded above and flattened beneath, and tapering towards each extremity. The head is broad, rounded, slightly elevated, and indented on the crown, and is a trifle larger than the second segment. There is a transverse dorsal hump on the ninth segment, and the twelfth also appears slightly humped, but the thirteenth is much depressed. The thoracic segments are deeply wrinkled, the others plump and deeply indented at the divisions.

Tubercles conical, and terminating in a very short spiky bristle, six on each segment, viz., two lateral and four dorsal, the hinder dorsal pairs being much the largest.

In colour, the head is of a deep dull red, brighter on the face; the edge of the crown bordered with black, and edged beneath in the centre with pale ochreous, and on each side, just below this, a black spot. The thoracic segments much suffused with greyish-brown; tubercles and markings rather indistinct.

The ground-colour of the body is pale ochreous, pale brownish, or greyish-ochreous; a large bright pale ochreous patch on the fifth segment, occupying its anterior dorsal surface, and extending a little down each side of it. There is a purplish-brown or grey blotch transversely suffused on the hinder part of the ninth and beginning of the tenth segments, and following on the latter a paler patch. A similar dark blotch on the chief portion anteriorly of the twelfth segment. The dorsal and sub-dorsal stripes purplish-brown, or brownish-grey, with a narrow line of pale ground-colour between them; the sub-dorsal stripes have the tubercles placed thereon, and the stripes widen round the bases of the tubercles. There are two similar lateral stripes, the lowest not very distinct, owing to the aggregation of dark atoms along the sides, all the stripes being composed of minute spots.

Sometimes faint indications occur of greyish transverse bands on the sixth, seventh, and eighth segments. Tubercles deep glossy-red posteriorly, and black anteriorly, but sometimes all are black, except those on the twelfth segment. Spiracles dirty whitish or brownish, margined with dark brown. Filaments pinkish-grey. The ridge of the hump on the ninth segment has generally a very pale blotch of the ground-colour, divided by a narrow transverse black mark between the tubercles. Belly pale greyish with dark red spots.—Wm. Buckler, Emsworth.

Notes on the respective larvæ of Thera simulata, obeliscata, and firmata.*—The larvæ of these species have all been described before, but the object of the following

* I learn from Mr. Doubleday that the *Th. variata* of the last edition of his list is unquestionably Hübner's *obeliscata*, which is probably distinct from *variata* S.V. Among hundreds of *obeliscata*, Mr. Doubleday has never met with a specimen approaching the typical *variata* in colour, which is always of a greenish tint.—J.H.

notes, carefully made by Mr. Buckler, is to bring together their distinctive marks more fully.

They are all shortish, smooth loopers, coloured with various tints of green.

Th. simulata. About $\frac{5}{8}$ inch in length; stouter than the others. Head yellowish-green; back pale greenish-blue; dorsal line slender, of dull grass-green; sub-dorsal stripe of same colour; below this comes a white stripe, and then a broad stripe of the dark green, reaching to the spiracles, and there edged with dark brown; between this and the legs is a pale yellowish stripe: legs greenish.

Th. obeliscata. Same length; anal segment pointed, and very minutely bifurcated at extremity; head bent under, in colour green; back bluish-green; dorsal line darker green, and edged with lines paler than the ground colour; sub-dorsal line commencing on second segment as a yellowish-white line, then widening into a broad stripe, and assuming a blue tinge edged with white, till the tenth segment, when it contracts, and assumes the yellowish tint again; below the spiracles a fine yellowish-white line, but broader at each end; belly green, with a central yellow line, and on either side an indistinct whitish line. Legs tinged with red.

Th. firmata. Same length; anal segment decidedly forked; head slightly bent under, red, with a brown streak over each lobe. Ground colour dark bluish-green; dorsal line of a much darker tint of the same; sub-dorsal line whitish, fine and uniform in width, quite white on second segment; below the spiracles a fine whitish line, tinged with yellow on the hinder segments; belly green, with three equidistant pale lines.—J. Hellins, 23*rd January*, 1867.

Note on variation in Lepidoptera.—Dr. Knaggs, in his interesting remarks on this subject, makes no mention of the effect produced on *Lepidoptera* by the size and ventilation of the cages in which they are bred. This seems to me a constant cause of variation in size of *bred* specimens; want of *room* and ventilation producing small examples. I have bred in a box 3½-in., 2½-in., and 2-in. deep, covered with glass, specimens of *Odonestis potatoria*, the ♀ measuring only 1″ 10‴ in expanse, *Arctia caja* 1″ 11‴, *Clostera anachoreta* 10‴. The only cause I can assign for this diminution in size was the want of *room* in the breeding cage. In no instance was the insect forced, but in each case remained the usual time in the larval and pupal stages. That this supposition is correct, I am further convinced by the fact that larvæ of the *same batch* that produced the above *potatoria* and *caja*, reared in a well ventilated cage, produced large specimens. If this hypothesis be correct, may it not be applied to insects in their natural state, and account, to some extent, for the usual difference in size of the spring and summer broods of *S. illustraria?* May not the larvæ produced by the summer brood "feed up" more leisurely than those of the spring brood, and thus have more time to roam about, which exercise, aiding their development, cause them to produce larger imagos?—James A. Forster, 38, Skinner Street, Clerkenwell.

Note on the contractility of the silk of leaf-rolling larvæ.—At page 15 of our second volume, my friend, Bernard Piffard, treats us to an interesting little note on leaf-rolling, which I had hoped would have elicited some further remarks. The interest attaching to this subject, and the approach of the season at which investi-

gative experiments may be conducted, must be my excuse for again bringing it before the notice of our readers.

At the time at which Mr. Piffard wrote, I not only satisfied myself of the correctness of his statements, but obtained the following still more remarkable result, which consists in the fact that when the newly-spun thread (arranged as suggested by my friend) is damped by gently breathing upon it, a contraction of one-half the length takes place within the space of a few minutes.—H. G. Knaggs.

Capture of Drypta emarginata near Gosport.—During the last fortnight I have been fortunate in securing between forty and fifty specimens of this pretty species, off a grassy hedge-bank at Rowner. I find they congregate together in parties of three or four at the roots of grass. They appear to me to be of a sluggish disposition, as, when disturbed from their haunts, they do not seem in any great hurry to get away.—G. H. Lacy, 2, Chester Place, Stoke Road, Gosport, *April 9th*, 1867.

Note on Anobium tessellatum.—At a meeting of the Entomological Society, about twelve months ago, the subject of the tapping of the death-watch and other insects formed one of the subjects discussed on that occasion. The report of that meeting elicited from my friend, Mr. Henry Doubleday, very decisive and satisfactory information as to the habits of the death-watch; its method of producing the tapping was minutely detailed. Accompanying this history was a promise to send living insects at that time of the year when these rappings or love-calls are most frequently heard.

I have this day received a pair of *Anobium tessellatum*, with full instructions how to induce the insect to repeat his rapping performance. Having left the insects in quiet some time, in order that they might recover the effects of their transit by post, I proceeded to follow the directions given. Taking a lead pencil, and giving half-a-dozen taps in rapid succession on the table, close to the box in which they had travelled, they shortly commenced to answer. Raising themselves on their anterior legs, they commenced bobbing their heads up and down rapidly, tapping with their mandibles on the bottom of the box. This performance I could elicit almost at pleasure; the number of taps varied from four to five—usually five are given. The insects have kept on repeating their love-call at intervals throughout the day. I fancy they are a couple of males. After inciting them to tap once or twice, they become restless, and run about the box, occasionally stopping, as if listening for a repetition of the sound: a few taps with the pencil sets them off again. Of course, all this was most satisfactorily demonstrated by Mr. Doubleday twelve months ago, as well as by numerous previous observers; but at the time when the subject was before the Society, I expressed some opinions of doubt, and I wish to show my perfect conviction of the powers of *Anobium*, this being the first time I ever had an opportunity of witnessing the actual mode in which the insects produce the tapping sound.

I have been carefully listening for some sound from *Atropos pulsatoria*, which is said to produce similar noises; this, I must confess, I have still some doubts about. I have kept several some months in a box close at hand on my table, but up to this time they have made no sound. The *Anobium* has been at work all the day long.—F. Smith, British Museum, *April*, 1867.

Occurrence of Oxythyrea stictica near Manchester.—Some specimens of *O. stictica* were found in a garden at Whalley Range (a south-western suburb of Manchester) on the evening of Monday last, crawling upon soil which had been shaken from the roots of British Ferns collected last year. I can offer no theory to account for the circumstance of their occurrence; and can only say that they are in a perfectly fresh condition, and present every appearance of having only just completed their final change.—J. Hardy, 118, Embden Street, Hulme, 11*th April*, 1867.

Entomological Society of London. 18*th March*, 1867.—Professor Westwood, M.A., F.L.S., Vice-President, in the Chair.

Dr. A. E. Davies, of Edinburgh, and M. Barbier Dickens, of Paris, were elected Members; F. Archer, Esq., of Liverpool, was elected a Subscriber.

The Chairman announced that the Council had under consideration the publication of a general Catalogue of British Insects, but there was great difficulty about the *Diptera*. It was considered very desirable that country entomologists should collect their indigenous species, noting dates, &c., for the purpose of serving towards the production of a tolerably complete list.

Mr. F. Smith read descriptions of new species of *Cryptoceridæ*.

Captain Hutton communicated a paper "On Species and Varieties."

1*st April*, 1867.—Sir John Lubbock, Bart., F.R.S., President, in the Chair.

Mr. Stevens exhibited, on behalf of Mr. Higgins, six fine examples of *Damaster blaptoides* from Nagasaki.

Mr. Bond exhibited an illustration of the method in which the ichneumon *Rhyssa persuasoria* is enabled to deposit its eggs in the larvæ of *Sirex*. In this instance the *Rhyssa* had pierced the solid wood with its ovipositor and sheaths, and in withdrawing them had left the outer sheath in the tree; this sheath, though not thicker than a hair, was apparently worked into the wood by the same method as one would insert an awl. Mr. Smith alluded to an analogous instance as noticed by the late Mr. E. Doubleday, in the case of a North American species of *Pelecinus*.

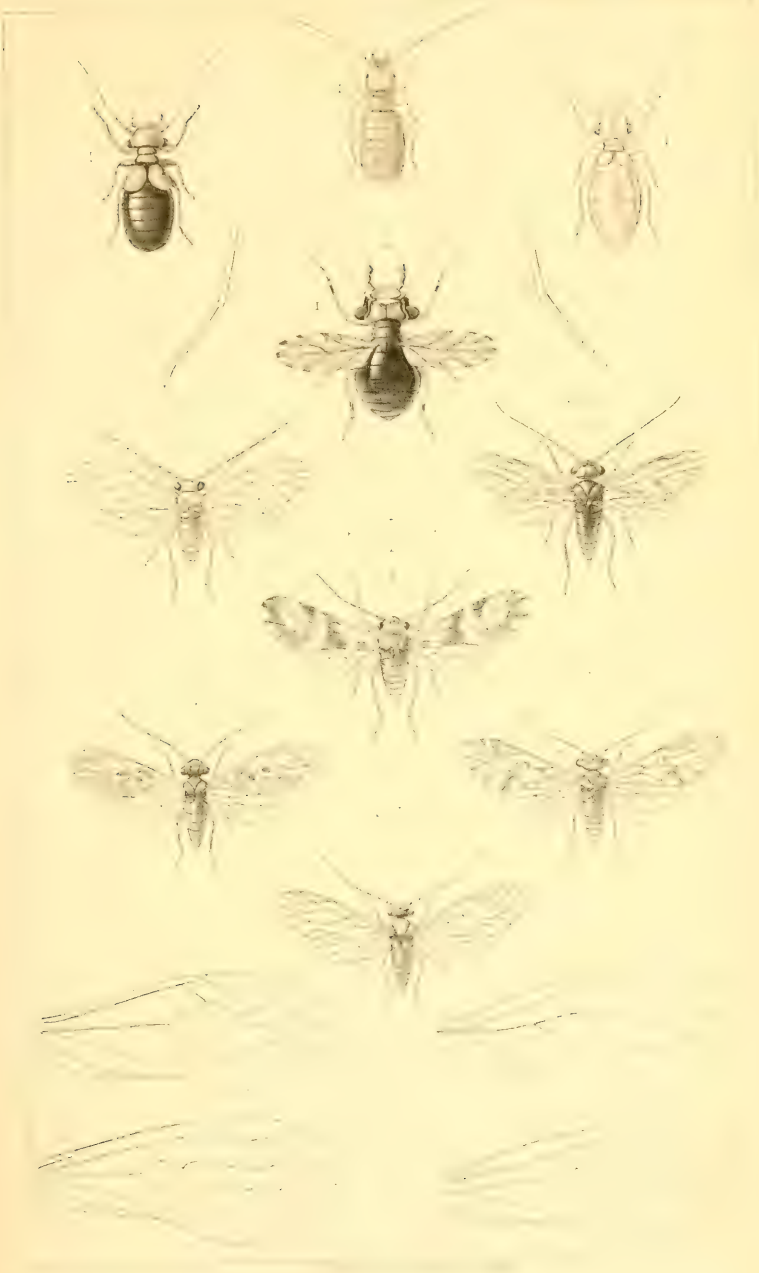
Mr. G. S. Saunders exhibited a number of specimens of black *Poduridæ*, allied to *P. tuberculata*, which had been found in great quantities in pools of water in Yorkshire, after the melting of the snow.

The Secretary read an extract from a Melbourne newspaper relative to an immense migration of some insect, said to be a beetle, in Australia. It was suggested that the insect was more probably Orthopterous.

Mr. A. R. Wallace read a letter he had received from Mr. Jackson Gilbanks, of Wigton, asserting that birds did not attack the caterpillars found on the gooseberry. The writer did not say whether he alluded to the Lepidopterous *Abraxas grossulariata*, or to one of the *Tenthredinidæ*. Mr. Bond and other Members stated that they had repeatedly seen tits and other birds carry off the larvæ of the moth.

Prof. Westwood communicated diagnoses of a decade of new species of *Mantispidæ*, mostly belonging to *Trichoscelia*.

Mr. Pascoe exhibited a new longicorn from Greece, belonging to the genus *Toxotus*; described as *T. Lacordairei*, Pasc.



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H. G. KNAGGS, M.D., F.L.S. E. C. RYE.
R. McLACHLAN, F.L.S. H. T. STAINTON, F.R.S.

VOL. IV.

"Observe degree, priority, and place,
Insisture, course, proportion, season, form,
Office, and custom, in all line of order."
(*Troilus and Cressida*, *Act* i., *Scene* iii.

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HEMIPTERA-HETEROPTERA.

GENERA.

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BRITISH HEMIPTERA: ADDITIONS AND CORRECTIONS.

BY J. W. DOUGLAS AND JOHN SCOTT.

GYMNOCERATA.

GEODROMICA.

Section 5.—Lygæina.

Family 1.—Lygæidæ.

Head—5-sided, triangular in front; antenniferous tubercles obtuse. *Antennæ*, 1st joint shortest, the others of nearly equal thickness. *Eyes* sessile. *Pronotum* trapezoidal. *Legs* moderate, anterior *thighs* scarcely stouter than the others, unarmed.

Genus 1.—Lygæus, Fab.

Elliptic, flat above, outer sides of the elytra subparallel.

Head convex. *Face*, sides slightly concave, central lobe narrow, short; cheek-plates broad, parallel. *Antennæ*, 1st joint rather the thickest, about half the length of the 2nd, nearly half the length extending beyond the apex of the face; 2nd longest, 2nd and 3rd slightly thickened at the apex, 3rd and 4th in length subequal, 4th long—fusiform. *Eyes* posteriorly touching the pronotum, laterally projecting a little beyond its anterior angles. *Ocelli* much nearer to the eyes than to each other. *Rostrum* reaching beyond the middle coxæ, 1st joint longer than the head, the base in a channel, 1st and 2nd joints longest, subequal, 3rd and 4 shorter, subequal.

Thorax—Pronotum trapezoidal, in front with a transverse, much sinuate, linear depression. *Scutellum* long, triangular, sides slightly sinuate, base much depressed. *Elytra—clavus* and *corium* on the same plane, claval suture depressed; *corium*, from the inner side of the 1st nerve, at about half its length, a nerve is given off, and extends to the posterior margin, the 2nd chief nerve broadly furcate at the end; *membrane* with five nerves, the 1st short, 2nd and 3rd gradually divergent, 4th and 5th sinuate, connected at some distance from their origin by a transverse nervure, thus forming a large irregular basal cell, whence the nerves continue to the inner margin. *Mesosternum* much depressed in the middle

posteriorly. *Legs* moderately stout; *thighs*, 1st pair scarcely thicker than the others, unarmed; *tarsi* stout, long, 1st joint as long as the other two together, on the 3rd pair longer.

Abdomen—flat above, beneath sub-cylindrically convex: abdominal segments of equal length, posterior margin of the 6th in the ♂ roundly, in the ♀ angularly cut out. *Genital segments* beneath—in the ♂ 2 only visible, the 1st of them only in the middle, the 2nd broad and hindwardly rounded; in the ♀ short, rounded posteriorly, the 1st and 2nd form two lateral angular plates, whose inner margins touch, the 3rd lies in the opening between them.

Species 1.—Lygæus equestris.

Cimex equestris, *Lin.*, F. S., 253, 946 (1761); S. N., ii., 726, 77 (1767). *De Geer*, Mem., iii., 276, 19 (1773). *Fab.*, S. E., 718, 104 (1775); Mantiss., ii., 298, 185 (1787).

Cimex speciosus, *Scop.*, Ent. Carn., 127, 369 (1763).

Lygæus equestris, *Fab.*, E. S., iv., 147, 43 (1794). *Wolff*, Ic. Cim., 24, 24, t. 3, fig. 24 (1800). *Fab.*, S. R., 217, 57 (1803). *Panz.*, F. G., 79, 19. *Fall.*, Hem. Suec., i., 48, 1 (1829). *Schill.*, Beitr., i., 58, 1 (1829). *Hahn*, Wanz., i., 21, t. 3, fig. 12 (1831). *Curt.*, B. E., x., pl. 481 (1833). *H. Schf.*, Nom. Ent., 1, 44 (1835). *Burm.*, Handb., ii., 298, 3 (1835). *Kolen.*, Mel. Ent., ii., 74, 38 (1845). *Sahlb.*, Geoc., Fen., 53, 1 (1848). *Flor.*, Rhyn. Liv., i., 222, 2 (1860). *Fieb.*, Europ. Hem., 166, 5 (1861). *Stål.*, Oefv. Vet. Akad. Förh., 212, 1 (1862).

Black, smooth, dull, unpunctured, with very small, distant, yellow scale-hairs; upper side of the head, *pronotum*, *elytra*, and *abdomen* deep red, with black markings; *membrane* black or fuscous, the margin, a central round spot, a band near the base, and a spot near the end of the corium, white.

Head—on the upper side red, a triangular spot at the base next each eye, and the apex of the face black. *Antennæ*, *eyes*, and *rostrum* black.

Pronotum flat, sides posteriorly rounded to and at the posterior angles, red, except the anterior third, which is at first black from side to side, the colour then narrower as the pronotum widens, posteriorly, in the middle, the red colour juts in so that the black comes down as two rounded lobes; the anterior transverse sinuate line is glossy; on the posterior margin of the pronotum is a black band (not extending to the posterior angles, which are red), and on this

band near each end is an elongate depression. *Scutellum* black, with a deep, narrow, transverse furrow at the base, the middle slightly raised lengthwise, and a corresponding depression on each side. *Elytra—clavus* red, in the middle a large, round, velvety black spot, posterior to which the colour is more or less infuscated; *corium* red like the clavus, across the middle, opposite to the end of the scutellum, a broad black band, slightly undulating on its upper side, and on the lower side outwardly much and squarely extended downwards; *membrane* black or fuscous, margined with white or whitish, a band near the base, a triangular spot near the apex of the corium, and a large central spot (on the 4th nerve) clear white. *Sternum* dull gray-black, each segment on each side with an outer and an inner velvety deep black spot, forming two rows. *Legs* black, clothed with very fine yellow pubescence.

Abdomen red, dull; beneath, on the anterior margin of each abdominal segment except the first, a subangular shining black spot on each side, and a larger one on each side of the middle, except the sixth, of which the middle is entirely black and dull. Genital segments black in both sexes.

Length $5\frac{3}{4}$-6 lines.

A single specimen in Dr. Power's collection, captured at Devizes by Mr. Joseph Sidebotham, in June, 1864.

Curtis has figured this species in his "British Entomology," but the account he gives of its capture in Britain seemed so dubious, that we placed it among the "Reputed British Species." Abroad it is common on *Asclepias Vincetoxicum* and *Seseli Hippomarathrum*, neither of which are British plants.

Section 7.—Hebrina.

Family 2.—Mesoveliidæ.

Elliptic, stout. *Head* very long, widened in front. *Antennæ* long, subfiliform, 4-jointed. *Ocelli* large, prominent. *Rostrum* free, apparently 4-jointed, 1st and 2nd joints very short, 3rd very long. *Pronotum* long, subtrapezoidal, in front depressed, hindwardly very convex. *Scutellum* large, formed as if in two plates, the 1st convex, rounded behind, the 2nd smaller, concave, truncate. *Elytra—clavus* broad, membranous; *corium* with two principal nerves, posteriorly furcate and forming cells; *membrane* without nerves. *Legs* long, thin; *coxæ*, 1st pair inserted anteriorly on the prosternum; *tarsi* trimerous, 1st joint very short.

Genus 1.—Mesovelia, Mulsant and Rey.

Head—long, very much deflected, above widened anteriorly by reason of the antenniferous processes; *crown* very long, convex posteriorly, flattened in front; *face* convex, central lobe wide, prominent, side lobes shorter, triangular; antenniferous processes short, obtuse. *Underside* without a rostral channel. *Antennæ* 4-jointed, long, subfiliform; 1st joint slightly longest and stoutest, slightly curved; 2nd shorter than the 1st; 3rd and 4th subequal, about as long as the first. *Eyes* moderate, prominent, deeply reticulated. *Ocelli* large, prominent, inserted near the base of the head. *Rostrum* free, slender, subulate, reaching to the second pair of coxæ, apparently 4-jointed; 1st and 2nd joints very short, 3rd widened at the base, very long; 4th not half the length of the 2nd; *labrum* short, triangular, covering the 1st joint.

Thorax—Pronotum long, subtrapezoidal, almost campanulate, in front but little wider than the base of the head, with the anterior angles rounded, widening to the hinder angles, which are prominent, but rounded; sides sinuate; posterior margin sinuate, almost emarginate, angles rounded; disk in front depressed, with two foveæ, posteriorly very convex, but within the hinder angles deeply depressed. *Scutellum* large, the 1st plate transverse, convex, broadly rounded posteriorly; from beneath its posterior margin arises the second plate, narrower, square, concave, truncate, its posterior margin elevated. *Elytra*—in the developed form, according to Mulsant and Rey, "furnished with two principal nerves and feeble ramifications, forming altogether five cells; the interior large, elongate, elliptical; the two posterior moderate; the two exterior narrow. *Membrane* without perceptible nervure." (In our undeveloped form, the *clavus* is very broad, membranous, posteriorly imperfectly defined; *corium*, anterior marginal nerve thick, on the disk two similarly thick nerves, which posteriorly join at an acute angle, beyond which, between the anterior and inner nerves, is formed a large subrhomboidal cell; *membrane* wanting.) *Sternum* broad, deep. *Legs* long, thin; *coxæ* in large cleft sheaths, the 1st pair inserted anteriorly on the prosternum; *thighs* beneath, and 3rd pair of *tibiæ*, with spinose hairs; *tarsi* long, trimerous, 1st joint very short, 2nd longer than the 3rd; claws long, fine, curved.

Abdomen broad, thick, the last segment rounded posteriorly; *connexivum* very broad, reflexed.

Species 1.—Mesovelia furcata, pl. 1, fig. 1.

Mesovelia furcata, *Muls. & Rey*, An. Soc. Lin. Lyon, p. 138, et fig. (1852). *Muls.* Opuscules, 1, 158 (1852). *Fieb.*, Europ. Hem., 102 (1861).

Testaceous, whitish beneath, central lobe of the face, posterior two-thirds of the *pronotum*, and the *scutellum*, black. *Antennæ* piceous. *Clavus* and *membrane* white. *Legs* testaceous.

Head—shining; *Crown* testaceous, sides with white pubescence, a puncture close behind each eye, a central longitudinal line from the base not extending the whole length, and two dots toward each side anteriorly, one above the other, pitchy black; *Face* clothed with long, white pubescence, central lobe black, side lobes yellowish. *Underside* whitish. *Antennæ* piceous, pubescent, 1st joint with one spinose projecting hair. *Eyes* black. *Ocelli* piceous, shining. *Rostrum* pale ochreous, last joint black; *Labrum* black.

Thorax—Pronotum smooth, anterior 3rd testaceous, shining, anterior margin, sides, and the two foveæ piceous; posterior portion black, dull; *Scutellum* black, dull, rough, the middle of both plates indistinctly ochreous. *Elytra* shining; *Clavus* white, posteriorly infuscated; *Corium* indistinctly testaceous between the nerves, anterior margin hairy. (In the undeveloped form before us the *Corium* is sub-rhomboidal, posteriorly long-pointed, all the nerves deep black, beyond the cell the anterior marginal nerve is widened, flattened, and transversely wrinkled). *Sternum* whitish. *Legs* testaceous; finely pilose; *thighs* paler at the base; spines of the thighs and tibiæ black; *tarsi*, last joint black.

Abdomen—testaceous above, whitish beneath, both surfaces pilose.

Length $1\frac{3}{4}$ line.

For this extremely interesting addition to our fauna, we are indebted to Edwin Brown, Esq., of Burton-on-Trent, in whose collection is a single example, with undeveloped elytra, captured by him some years since on or near the banks of the Trent. Hitherto the species had occurred only in France, but, from its small size, it may have been overlooked here by the few collectors of *Hemiptera*. There can be but little doubt that it is attached to some aquatic plant or plants, and Mulsant and Rey say "Hab. Fallavier (Isère), among the detritus of the marshes. Very rare."

The structure of the insect conforms to the characters given for Section Hebrina (Brit. Hem., p. 25), with the exception of the antennæ, for, including the 2 minute intermediate joints, *Hebrus* (on which

the section was founded) has 7 joints(erroneously stated 6), whereas *Mesovelia* has only 4 true joints; consequently, the characters of HEBRINA must be amended in this particular to "4 or 7-jointed."

Mulsant and Rey appear to have mistaken the basal portion of the curious scutellum for a posterior process of the pronotum (which it certainly is not), but any one, without microscopic examination, might be deceived by the anomalous structure. In their description of the elytra, they say the nerves and their ramifications form 5 cells, but in these they evidently include the *clavus*, which they do not distinguish from the *corium* by name.

Fieber is the only other author that has noticed the insect, and he does not appear to have seen it, for he only quotes the description of Mulsant and Rey; but, although he puts it next to *Velia* in his Family HYDROESSÆ, he says, with his usual sagacity that it "belongs, perhaps, more rightly to HEBRIDÆ," which is, undoubtedly, a right conclusion.

(To be continued.)

ON SOME BRITISH *CYNIPIDÆ*.

BY THE REV. T. A. MARSHALL, M.A.

A. First segment of the abdomen longer than the rest.

CYNIPIDES, Hartig.

I. Radial cell much longer than its greatest width; 2nd cubital cell (areolet) nearer to the costa than to the centre of the wing.

a. Joints of the antennæ unequal, the 7—8 apical joints shorter and broader.

a. Scutellum hemispherical.

i. Thorax villose. Maxillary palpi 5-, labial 3-articulate.

Gen. CYNIPS, Hartig.

Cynips folii, Lin.

Black; covered with greyish hairs, except on the abdomen, which is shining and like ebony. Orbits of the eyes, sides of the thorax, and the scutellum, often reddish. Legs, especially the joints, varied with reddish. Wings hyaline, with pitchy nervures, the areolet externally, and the base of the radial, incrassated, blackish. ♀.

Long. 2; alar. exp. 6 lin.

C. folii, Hart., in Germ. Zeits., 2, p. 187; Curt., in Gardener's Chronicle, 1845, p. 208, fig. (with gall).

In spherical, fruity galls, of the size of a hazel nut, resembling apples, or even apricots, in miniature, attached to the under side of oak leaves. Those collected by me at Birch Wood in autumn produced each a single ♀ in the following January, having been kept in doors. The period of their natural exclusion is probably March. In February I obtained *Decatoma biguttata*, Swed. (*Cooperi*, Curt.) from the same galls. They are also parasitically infested by a *Synergus* (*Cynips pallidicornis*, Curt., B. E., 688), and *Callimome inconstans*, Walk., which is perhaps the same as that described by Curt., B. E., 552.

Cynips lignicola, Hart.

Ferruginous, entirely sericeous except the upper part of the abdomen, which is shining and blackish. Metathorax black. Wings hyaline, with a reddish tinge; areolet and base of the radial cell not incrassated into a dark spot as in the preceding. ♀.

Long. $2\frac{1}{2}$; alar. exp. 7 lin.

C. lignicola, Hart., Germ. Zeits., 2, p. 207; 4, p. 402, 1842-43.
C. Kollari, Giraud, Verhandl. Zool. Bot. Gesellsch., Wien, 1859, t. 9, pp. 337-374.

The hard, spherical, woody, monothalamous galls of this species are well known; they are attached to the twigs of the oak, and are largest and most abundant in the South of England. The insect is the largest of the British *Cynipidæ*. I once found them hatching in great numbers in September, in Jordan's Wood, Kent. The Linnean *C. quercûs-petioli* is a *Synergus*, parasitic on this species. For further information see Parfitt, Zoologist, 1856, vol. 14, p. 5074-76; Stainton, Trans. Ent. Soc., ser. 2, 1855, vol. 3, Proc. p. 76, and Zoologist, 1855, vol. 13, p. 4747; also Zoologist, vol. 13, p. 4566, and vol. 19, p. 7330. A species of *Decatoma* and *Callimome Devoniensis*, Parfitt, are parasites of this species. A fig. of the gall and insect has been given by Prof. Westwood in his Essay on British Ink Galls in the Gardener's Chronicle.

Cynips radicis, Fab.

Resembles *C. lignicola*, but is smaller. Ferruginous, antennæ except at the base, a frontal spot, sides of the mesothorax, metathorax, a dorsal spot on the abdomen, base of the coxæ, and the hinder tibiæ, black. Radial cell shorter than in *lignicola*, its basal nerve incrassated. ♀.

Long. $1\frac{5}{4}$; alar. exp. 6 lin.

C. radicis, Hart., Germ. Zeits., 3, p. 335 (*C. fecundatrix*, Hart., ibid., 2, p. 189, diagnosis only).

In polythalamous woody galls at the roots of oaks, two inches in diameter, each producing a great number of the insect. It has two Cynipideous parasites, one a species of *Rhodites*, the other unknown; also *Callimome cynipidis*: see Walker, Zoologist, vol. 19, p. 7330.

Cynips fecundatrix, Hart.

Brownish-black, the knees, two basal spots on the sides of the abdomen, and the apex, ferruginous. First segment of the abdomen forming ⅔rds of its entire length. ♀. Long. 2 lin.

C. fecundatrix, Hart., Germ. Zeits., 3, p. 334 (the diagnosis given by Hartig, ibid., 2, p. 189, belongs to *C. radicis*).

Gall monothalamous, surrounded by an imbricated covering formed of the distorted and unnaturally developed leaves of the oak bud; well figured by Ratzeburg, die Forstins., 3, tab. 5, fig. 11. Linné described the galls, and one of their parasites is his *C. quercûs-gemmæ*, probably a *Synergus*. These galls are abundant throughout the country, but I have never succeeded in rearing the *Cynips*, and do not possess a specimen.

Cynips ramuli, Lin.

Minute, ferruginous, the abdomen black. Thorax scarcely villose, with three or four brown lines between the discal sutures. Scutellum surrounded with brown. Wings hairy, appearing to be dotted all over with minute black points. Antennæ 15-jointed; ♂. The ♀ has 14-jointed antennæ, the abdomen larger, and the basal segment only black. Long. ¾; alar. exp. 2¾ lin.

C. quercûs-ramuli, Curt., in Gardener's Chronicle, 1844, p. 476, fig.

Unknown to Hartig, who only quotes the Linnean description, and conjectures that the insect is *Teras terminalis*. The circumstance that both sexes of this species are discovered is interesting, and significative as regards the supposed absence of males in the other species of *Cynips* proper. *C. ramuli* makes a near approach to *Andricus* in conformation, having the thorax nearly glabrous. The galls resemble small balls of white raw cotton attached to the twigs of the oak. They are polythalamous, and disclose the flies at the latter end of June. I am indebted for a gall, which produced seven specimens (6 ♀, 1 ♂), to Mr. P. Inchbald. In Mr. Walker's collection I find a great number, taken near Chepstow.

The above five species are all that I have been able to collect in England of the genus *Cynips* as now restricted. Hartig describes 28. There is a single large *Cynips* in Mr. Walker's collection, apparently British, which I cannot identify. It resembles *C. radicis*, but has a compressed abdomen, and is otherwise different. It is useless to speak of it without better information.

NATURAL HISTORY OF *CHROSIS EUPHORBIANA*, TREITSCHKE.

BY PROFESSOR ZELLER, OF MESERITZ.

Diagnosis of the larva:—Length 7 lines; dirty greyish-green (darker when young), slightly glossy; the head heart-shaped, black; the thoracic plate, divided down the centre, is black, as, also, the rounded anal plate and the anterior legs; the mouth is reddish-brown; the palpi yellowish-green.

The head is black, with pale hairs. The thoracic plate is broader than long, truncately cordate, divided in the middle by a slender, pale longitudinal line, clothed with pale hairs; beneath it, before the very small dark spiracle, is a large dark wart, bearing a hair, and beneath it above the black first anterior legs, a smaller one. On the second and third segments, near the slender darker green dorsal line, is a small wart, beyond it a rather larger one, and beyond it two smaller ones, at some distance from one another. On the remaining segments the ordinary spots have nothing different from their usual position, and are not much darker than the ground colour, and can only be well distinguished through a lens; each bears a transparent, pale hair. The spiracles are small, and not easily perceived; there is a small wart above them, and another on the lateral prominence beneath them. The ventral pro-legs are cylindrical, neither long nor thick, on the outer side with a small brown spot, above which is an elongate wart, with two pale hairs.

The anal plate is broader than long, rounded, clothed with hairs.

This larva, which is double-brooded, the first brood in June (when I have never yet observed it) and July; the second brood towards the end of August and throughout September; lives solitarily on *Euphorbia palustris* (perhaps, only exceptionally, on *Euphorbia lucida*), amongst the leaves of the terminal shoots, which it draws together lengthwise like a pod, and it therein feeds on the innermost leaves, probably without having occasion to change its place of abode. Its abundant excrement is collected at the lower end of the domicile.

In cold, wet weather many larvæ get killed. Floods, also, which in summer cover these plants with water, usually leave very few larvæ living. In captivity, this larva often eats, without injury, the dried leaves, producing only a smaller imago. It is very subject to the attacks of the larvæ of *Pteromali*; these hang on to the larva and suck its juices, sometimes six or seven at a time; they are thick, fusiform, more pointed at the upper end than at the lower, many-ringed, dark grey, transparent at the margins. It is also attacked, not unfrequently, by a moderate sized, red-legged, black *Ichneumon*.

The change to the pupa state, in summer, takes place between the leaves of its abode. But, in the autumn, all the larvæ quit the food-plant, and assume the pupa state on the ground, where they are not unfrequently under water for months together without injury.

The pupa reposes in a fusiform, rather thick, snow-white cocoon, which is about twice as long as its body. It is ochreous-yellow, without peculiarity; the short cone in which the abdomen terminates, bears at its end four short bristly spines, with hooked tips, and several on each side. When the imago is ready to appear, the pupa forces itself, by the aid of the lateral spines on the abdomen, far out of the leaves, so that it is often only left hanging by the last segment. In summer, the imago appears 10 or 14 days after the pupa state has been assumed. The hybernating pupa only require to be placed in a moderately warm room, and the perfect insects are excluded before the end of the winter.

In many years the larva is so plentiful, that, on large bushes of *Euphorbia*, almost every shoot is tenanted by one. The perfect insect, however, is very seldom met with at large. Of the summer brood, I do not remember to have ever met with a single specimen; at the end of May I once, on a moist warm evening, saw a few of the moths flying round the food-plant much in the style of *Dichrorampha Petiverella*. In captivity, they emerge from the pupa at almost all hours of the day, and then sit quietly on the leaves. They there often become the prey of a species of grey spider, which had settled in the deserted larval abodes, and then been placed in the breeding cage along with the clusters of leaves.

Hitherto this species has only been observed in the bed of the Oder, where the *Euphorbia* grows freely, exposed to the flooding of the valley.

March, 1867.

PUPATION OF *ANTISPILA PFEIFFERELLA*.

BY CHAS. HEALY.

To my mind it does appear remarkably strange that the two larvæ in this genus, which agree so much in their manner of feeding, &c., yet should differ so much in the mode in which they pass the winter months.

A. Treitschkiella remaining in the larval state till the following month of May before it turns to pupa; *A. Pfeifferella*, on the other hand, shortly after it has cut out its case, enters the pupa state. Then, again, *A. Treitschkiella*, although it does not assume the pupal form

for months after it has become full fed, may be kept indoors all the winter, and bred freely the following spring. *A. Pfeifferella*, although it turns to a pupa a few days after it is full fed, is yet very difficult to breed when kept indoors.

This little larva, a few days after it has constructed and completely finished its oval case, turns to a pupa about $3\frac{1}{2}'''$ in length; this is at first quite white, its head being decorated with eight little bristles (setæ). By the end of September the eyes of the pupa turn quite black, the head and wing-cases become pale brown, and the extremity of the abdomen assumes a dull reddish-brown hue. During the month of October the anterior portion of the antennæ begin to turn black. In December, the antennæ slowly assume a darker tint, the legs likewise become clouded with darkish tints, the abdomen white, and, curious to relate, the dull reddish-brown hue, which first made its appearance at the extremity of the anal segment, now begins to flow up along the back of the abdominal segments; a day or so afterwards, the dorsal surface of the third and fourth abdominal segments becomes darkish, the dull reddish-brown fluid which a little time before slowly crept up the centre of the dorsal surface of the abdominal segments, now slowly spreads itself over the back of those segments, and, in so doing, imparts a pale brownish tinge to them. About the middle of the month the tips of the wing-cases become somewhat clouded with dark brown, in some cases one wing becomes clouded at its tip before the other; the back of the third and fourth abdominal segments lose somewhat of their previous clouded appearance; the pupa then occasionally exhibits signs of life by slowly moving its abdomen up and down. When three parts of the month of December have expired, the tips of the pupa's wings change their colour from dark brown to black, or, at least, appear to be so, as seen through the puparium. By the end of the month the wings, which have been faintly deepening in colour, exhibit slight indications of the first formation of their markings, for, in the exact locality of the markings on the wings of the imago, we perceive certain little triangular-shaped brownish coloured spots, several shades darker than the general tone of the wings; after some days (in others weeks expire before there is any change), these little pigmentary spots assume a golden hue. At this period of its economy, the back of the thorax is light brown, the dorsal surface of the first, second, and third abdominal segments having become whitish, the remaining abdominal segments, excepting the anal, being tinged with pale brown; the anal segment itself having a brownish tint. Near the latter end of January the back of the pupa's first abdominal segment becomes somewhat

swollen, the remaining abdominal segments becoming considerably depressed, but are slightly raised at their sides. Some time during the month of February a little dark spot makes its appearance on the front surface of the head, and is situate midway between the eyes; early in the following month this little dark coloured spot begins to enlarge itself by giving out a quantity of dark coloured pigment, which latter spreads itself over the head and wings, and finally empties itself into the abdomen, turning the latter dark brown. After the interval of a few days, the wing-cases have a somewhat tortoise-shell look, and, on the arrival of the month of May, the little imago bursts out of its case, and leaves its puparium projecting.

74, Napier Street, Hoxton, N.

Capture of Deilephila livornica at Haslemere.—On the 11th inst. I had the tantalising pleasure of killing and setting a specimen of *D. livornica*. It was caught flying over lilac blossoms in the evening by Miss Rosa Chandler, the little daughter of a gentleman here. She brought it to me in the net to secure for her, so that it is not in very fine condition.—C. G. Barrett, Haslemere, *May*, 1867.

Capture of Deilephila livornica near Wolverton.—I beg to inform you that a living specimen of *Deilephila livornica* was brought to me to be named a few minutes after its capture by Mr. Fisher, of Stantonbury. It accords well with the description in "Stainton's Manual," as well as with an engraving of the insect in one of the volumes of "Young England." Mr. Fisher has also compared it with a continental specimen in the possession of a collector here, and the only point in which it differs from the latter is, that it is smaller, being barely three inches in expanse of wings.—Joseph Barlow, Thompson St., Stantonbury, Wolverton, *April 17th*.

Capture of Deilephila livornica in Devon.—Yesterday evening at sunset I captured a beautiful specimen of *D. livornica*, whilst hovering over the blossoms of a yellow Azalea.—J. Pole, Templeton, Tiverton, Devon, *May 9th*, 1867.

Capture of Deilephila livornica in Ireland.—I received last week a specimen of this insect; it was taken at Derriquin Castle, on the Kenmare river, Ireland.—L. M. S. Pasley, Admiralty House, Portsmouth, *May 18th*, 1867,

A new locality for Endromis versicolor.—On the 5th May, while rambling on the borders of Sussex, near Petersfield, I observed a male "Kentish Glory" on the wing, the only insect I noticed during the day; as I believe it to be a new locality for this beautiful species, the occurrence may be worth recording.—Fred. Bond, Adelaide Road, N.W., 10*th May*, 1867.

Capture of Notodonta carmelita at Haslemere.—On Tuesday last (April 30th) I was delighted at finding a lovely pair of *N. carmelita*.—C. G. Barrett, Haslemere, *May 4th*, 1867.

Note on the pairing of Vanessæ.—I think I have heard an opinion expressed that the *Vanessæ* copulate before hybernation. This, however, I have always doubted, having often seen the males of *V. urticæ* following the females in spring in amorous fashion. The other day I noticed a pair of *V. cardui* in great excitement settling on the ground, the male walking round the female with tremulous wings; they then flew up, and after circling round with great rapidity for a considerable time, settled on one of the lower branches of an oak tree, where they at once paired. So quietly did they settle down, that although I hit the branch close by them with sods, they would not move.—Id.

Note on the larva of Limenitis Sibylla.—I have been to-day to Woolmer Forest, to the place in which *Limenitis Sibylla* occurs, and have, by hard searching, contrived to find above a dozen larvæ of that species; they appear to prefer those honeysuckles which climb over bushes and up the trunks of oak trees, and are generally to be found on the smaller stems or shoots in the more sheltered parts of the bush. One or two of the larger specimens were upon the leaves feeding, but most of them had a carpet of silk laid down on the stem at the base of a shoot upon which to rest. They are as yet small, the largest being but little over an inch long—pretty creatures, delicate light green, with curiously tufted or branched pink spines, and purple spiracular line; but Mr. Buckler, to whom I am sending specimens, will, doubtless, on a future occasion, describe them for you with his usual accuracy.—Id.

Discovery of the larva of Scsia chrysidiformis.—During my stay at Folkestone last June and July I resolved to find, if possible, the larva of this beautiful clearwing, and, after watching several females as they hovered about, and losing them, was fortunate enough to observe one depositing her eggs on the upper side of the leaf of the common sorrel; and I also detected eggs upon the common dock. I now set to work splitting the dead stems and digging up the roots, and was soon rewarded by finding several pupæ and full-fed larvæ, two of which I at once forwarded to Mr. Buckler to figure. The specimens bred from the dock were much larger and brighter than those bred from the sorrel. The insect appears to live in the larval state over two years, as I have a larva still feeding which seemed to be full-grown when I took it last July. Among others I bred a large male variety wanting the yellow belts.

The perfect insect emerges between nine and eleven a.m., and copulation takes place between ten and twelve.—E. G. Meek, 1A, Paradise Row, Old Ford, E.—*May 11th*, 1867.

*** The discovery of the larva of *S. chrysidiformis* affords an instance of important observations being made simultaneously by different workers in widely separated localities. In the last part of the "Annales de la Société Entomologique de France (4me série, tome 6me, 4me trimestre), just received, is a notice by Mons. P. Mabille on *Lepidoptera* observed in Corsica, and at page 557 he, also, mentions having found the larvæ of this insect in the stems [?] of *Rumex crispus*, and gives good reasons for considering that *S. chalcocnemis* of Staudinger is a form of *chrysidiformis*, namely, that both feed in the same plant, and pair *inter se*.—Eds.

Description of the larva of Sesia chrysidiformis.—I have this day (July 5th, 1866) received from Mr. Meek the larva of this species feeding in the roots of *Rumex acetosa* and some other kind of *Rumex*; he having observed, watched, and followed a ♀ moth deposit her eggs on several of the above plants, and with great sagacity followed up his discovery by detecting the larvæ, one of which I have now the pleasure to describe.

This larva has mined in the thickest portion and rather on one side of the root; it has ejected heaps of brown frass at both ends of the mine, and has spun a tough silken brown covering over a portion of the side, which had been eaten quite through; this and the frass are good manifestations of the tenant within.

The larva is about five-eighths to three-quarters of an inch in length, tapering a very little posteriorly, the head rather broad and slightly flattened, the body rather pellucid, smooth, plump, and shining.

In colour, it is of a dirty brownish-white, with the dorsal vessel showing through as a dark grey internal pulsating streak, and visible as far down as the beginning of the 10th segment. The head rather reddish-brown, and a narrow plate of the same colour on the second segment; the anal segment has also a plate of a yellowish colour; above the spiracles are very minute blackish punctures.—Wm. Buckler, *July*, 1866.

Description of the larva of Aplecta advena.—At the beginning of July, 1865, Mr. Doubleday kindly sent me several young larvæ of this species which had been reared from eggs. They were very lively creatures, greatly averse to light, and very active in crawling and burrowing under their food for shelter. They throve well on *Polygonum aviculare*, and by the 26th of July were three-quarters of an inch in length; they were then pale greyish-ochreous on the back, brownish in the middle, through which ran a fine whitish dorsal line enclosed by two black outlines, which were united thrice across the white line within, at the beginning of each segment, suggestive of an irregular chain pattern. The four tubercular spots black and distinct. The sides, belly, and legs darker, of dull olive-brownish, a fine dirty whitish longitudinal line above the legs, the sub-dorsal line darker brown, but interrupted near the middle of each segment by a short oblique streak of pale ochreous from the back, a fine, rather obscure, darker brown line running midway along the side. Head ochreous.

Early in September they had attained their full growth, being about one inch and five-eighths in length, rather thick and cylindrical, the head, second and anal segments but a trifle smaller. The head shining olive-brown; on the second segment a blackish-grey plate, rounded behind, through which pass the pale dorsal and sub-dorsal lines. The ground colour of the back and sides very pale ochreous; a diamond shape of dark grey mottled with olive on each segment, having on its edges the usual four tubercular dots, rather large, and whitish ringed, with blackish-grey; the dorsal line whitish edged with blackish-grey, but more or less suffused with dark grey and olive as it passes through the middle of the diamond shapes, though distinct at the beginning of each segment. A very short blackish-grey linear mark on the anterior part of each segment on either side. Sub-dorsal line whitish, outlined with dark grey, and in its course sometimes touching each pos-

terior pair of dorsal dots. The sides are mottled with dark grey and olive, having oblique streaks and a pale line of ochreous above the legs. Spiracles brownish-orange, edged with dark grey; belly and legs pale greenish-brown.

Some of the moths appeared late in autumn, and others in the following June.—Id.

Note on Bombyx quercûs and B. callunæ.—Having lately been in communication with Mr. H. Doubleday about the question of the distinctness or identity of these two forms of the Oak Eggar, I have become desirous to procure some information as to the range of each in England and Wales.

Mr. Birchall tells us that only *callunæ* is found in Ireland; and I suppose this form prevails universally north of Manchester, also westwards from Hampshire to Cornwall; but we have no certain information yet about Wales.

Quercûs, of course, occurs at Epping, and in the London district, and is the form taken at Cambridge; but as yet we cannot say whether it prevails throughout the counties eastwards of this line.

My object, then, in publishing this note, is to ask collectors generally, and especially those who live at about 40 or 50 miles in any direction from Epping, to be so good as to send, during the coming summer, to Mr. H. Doubleday (who has kindly promised to devote himself to the question) a pair, male and female, of the Oak Eggar moth, which they breed or take in their several localities; and, if they find varieties, to send a specimen of them.

If a sufficient number would kindly respond to this appeal, they would greatly facilitate the settlement of an interesting question.

I suppose it is generally known that the distinction between *quercûs* and *callunæ* really lies in the different curves of the pale fascia on the wings of the moths, and not so much in the greater or less depth of colour generally, nor in the length of time passed in the pupa state.—J. Hellins, *April 13th.*

Occurrence of Selenia illustraria at Edmonton.—About a week ago I captured an example of this species at Lower Edmonton, and as I believe it has not been recorded as occurring in Middlesex, send you a note of it. In the same locality I once before took a larva, from which I bred a crippled specimen. My friend Dr. Knaggs tells me that many years ago he secured an example on a fence in Church Lane, Lower Edmonton, but that he has never recorded the fact.—J. W. Downing, Vauxhall Road, *May 11th*, 1867.

Note on hybernation of the larva of Boarmia rhomboidaria.—In the beginning of last month, I observed on a lilac bush in my garden some nearly full-grown larvæ of *B. rhomboidaria*, which had evidently passed the winter in the position I then saw them, as they were covered with dirt, and seemed to have suffered much from the weather. I have for the last three years noticed the larvæ of this species hybernating, and have found them of all sizes, from 2‴ to full-grown, the small ones having usually made themselves comfortable quarters in the loops of list with which I have nailed a Virginian creeper to the wall. From one of these larvæ which I found in March, 1865, I bred a large and very strongly marked specimen. The larva fed for about ten days on buds of elder, and changed to pupa at the end of April, the imago emerging early in June.—James A. Forster, 38, Skinner Street, Clerkenwell, E.C.

Xylomyges conspicillaris bred again.—I have to announce the appearance of *X. conspicillaris* in my breeding cage yesterday; the specimen is in fine condition.—E. Horton, Powick, Worcester, *April 27th*, 1867.

Note on the Japan silk-worm, B. Yamamai.—At the January meeting of the Entomological Society of London, the Secretary read a note from Captain Hutton, of Mussooree, in which he expressed his opinion that "*Bombyx Yamamai* is a hybrid between *B. mori* and *B. sinensis*." I do not know what is his reason for this; but, if correct, are we to understand that all three so-called species are varieties of one? They are certainly not very much alike in the imago state. If *B. mori* and *B. sinensis* are distinct species, how is it that *B. Yamamai* is fertile, of which there is, of course, no doubt at all?—Alfred E. Hudd, Clifton, *March 16th*, 1867.

Variety breeding.—In April, 1866, I secured ova from a handsome leaden-coloured variety of *Tephrosia laricaria*, Stainton, which I took at rest, in company with a male of the usual colouring. The larvæ fed upon larch, and about fifty went down to pupa.

Eight only came to maturity: one on December 23rd, 1866; two on February 17th, 1867; two February 18th; one on February 21st; one on February 23rd; and one on March 12th. Then some snow drifted into the breeding-cage, which was out of doors, and, melting, saturated the soil where the remaining pupæ lay. To this misfortune I attribute the death of the remainder of the batch.

Of the eight which came to maturity the whole were females, five being the dark leaden-coloured variety, and the other three typical *laricaria*.

I have renewed the experiment this year.—John T. D. Llewelyn, Ynisygerwn, Neath, *May 12th*, 1867.

Captures at light at Neath.—On May 6th and 7th, I put out light and took three fine male specimens of *Camptogramma fluviata*, and about eight males of *Diaphora mendica*, besides other species.—Id.

Singular variety of Nyssia hispidaria.—I have lately acquired a specimen of this species, the fore-wings of which are suffused with black over the greater extent of their surface; the cilial spots are strongly marked, and the hind-wings are correspondingly dark.—Howard Vaughan, Kentish Town.

Occurrence of a Catoptria new to Britain.—Mr. Gregson writes me that a *Catoptria* which Mr. Stainton returned to me as *C. Scopoliana* is *C. aspidiscana*, Hübner, a species new to this country. I have taken it along with *Eriopsela quadrana* for some years back, and have unfortunately sent a score or so away as *Scopoliana*, so that at present I have none left. I shall be on the look out for it again in about six weeks from now.—J. B. Hodgkinson, Preston, *April 12th*, 1867.

Discovery of the larva of Pterophorus hieracii.—I have at last discovered the larva of *Pterophorus hieracii*, for which I have searched for years, and, as I believe it has not hitherto been found in England, enclose a few, thinking that you would like to see them. They feed on the common "wood sage," *Teucrium scorodonia*, and are now just changing their first skins; they do not feed down the stems

of their food-plant like those of some of the other "plumes," but eat the young leaves first, as you will see. If you think a notice of this discovery would interest your readers, I shall be glad if you will insert it in the Magazine for next month.—N. Greening, Warrington, *May 2nd*, 1867.

Birds and gooseberry caterpillars.—Mr. Gilbanks is certainly mistaken in supposing that no birds will eat the larvæ of the gooseberry saw-fly, which is the species, I suppose, to which he alludes (vide Vol. iii., p. 280).

Young cuckoos are very fond of them, a fact which my friend the Rev. Harpur Crewe can confirm. Chaffinches also feed their young with these larvæ, and I have seen the young birds picking them off the leaves soon after they had left the nest.—Henry Doubleday, Epping, 14*th May*, 1867.

Notes on the larvæ of Hydroptila.—On Good Friday I collected from a small tributary of the Darenth many cases of *Hydroptila*, concealed in the crevices of the under surface of stones. These contain green larvæ, and apparently pertain to *H. pulchricornis*. A miniature aquarium, consisting of a tumbler and plant of *Callitriche*, has enabled me to watch their habits more narrowly; and I notice a peculiarity, not, I think, hitherto observed in Trichopterous larvæ. It is well known that the larvæ of most of the larger species, with portable cases, sink rapidly to the bottom when disturbed, but in *Hydroptila* the larvæ remain suspended by a thread in mid-water, in the same manner as many Lepidopterous larvæ are suspended in mid-air; and by this thread they are enabled to regain their lost position without the trouble of commencing *de novo* at the bottom. The little, flattened, seed-shaped cases are very interesting objects; but I almost despair of rearing the imagos, as the conditions afforded by the highly aërated bubbling streamlet in which they were found, are too different from any with which I have the means of supplying them. The cases, while the inmates are yet in the larva state, seem to be composed entirely of coarse silk, but, before the change, minute sand-granules are worked into the outer surface, thus rendering them much firmer.—R. McLachlan, Forest Hill, *May*, 1867.

Locality for Cis punctulatus, Gyll.—I am not aware that any British locality has yet been published for the above insect, which was brought forward with doubt by Mr. G. R. Crotch last year as new to this country. I met with it last July near Rannoch, in Perthshire.—T. Blackburn, Grassmeade, Wandsworth.

Assemblage of Beetles.—Walking along the cliff from Ramsgate to Margate, with a strong south-wester blowing, I retired down a gully or "stair" (as they call them in the ordnance maps) to smoke a pipe out of the wind. The tide was up, and I found myself on a small bay of sand, bounded landwise by perpendicular chalk cliffs. The sand to the lower part of the cliffs were covered with thousands of beetles evidently blown down from the fields above by the wind. I counted over thirty genera, most of them represented by four or five species. The insects were mostly on their backs; and, with the exception of some *Bembidia* and a small *Choleva (anisotomoides)*, they were almost torpid. When put upon their legs they made but feeble efforts to get away, and seemed to be unable to get a footing on

the fine sand. I never before saw such a quantity and variety of beetles together in so small a space (about thirty yards), to be got without the least trouble beyond picking them up. It was collecting made easy, as I never saw it before. The exact spot is between Foreness and Whiteness, not far from a cockney erection called Neptune's monument. I subjoin a list of the genera as far as I can recollect:—*Notiophilus*, *Calathus*, *Anchomenus*, *Pterostichus*, *Amara*, *Anisodactylus*, *Harpalus*, *Bembidium*, *Ilybius* (!!), *Homalota*, *Mycetoporus*, *Philonthus*, *Xantholinus*, *Lithocaris*, *Silpha*, *Choleva*, *Helophorus*, *Sphæridium*, *Cercyon*, *Aphodius*, *Agriotes*, *Cneorhinus*, *Sitones*, *Alophus*, *Phytonomus*, *Trachyphlœus*, *Cryptorhynchus*, *Lema*, *Crepidodera*, *Coccinella*, *Coccidula*, *&c.*—V. C. de Rivaz, 4, Shrewsbury Road, W.

Note on a third species of Damaster.—As I foretold (Ent. M. Mag., Vol. iii., p. 189) in September last, there is another species of the genus *Damaster*, besides *blaptoides* and *Fortunei*. It does not, however, come from the locality I anticipated, but from Yesso. Its head and thorax are metallic green, and its elytra are far more rugose than in the other two species. Its size, moreover, is barely two-thirds that of *Fortunei*, and about one-third of that of *blaptoides*, the Nagasaki insect. Provided I am the first to record the existence of this species, I purpose describing it after the name of its amiable captor, A. J. Gower, Esq., our Consul at Hakodadi.—G. Lewis, Nagasaki, 26*th February*, 1867.

[This is, of course, the insect described at the Entomological Society on 4th March last (E. M. M., Vol. iii., p. 264) by Mr. C. O. Waterhouse, under the name of *Damaster auricollis*.—E. C. R.]

Note on Oresbius castaneus.—Of this curious insect, recently described by Mr. Marshall in this Magazine, I find I have a ♀ example, captured by me some years back on Goatfell.—D. Sharp, Crichton Institution, Dumfries, *May 6th*, 1867.

Note on the Bœocrara littoralis of Thomson.—In a former note (Ent. M. Mag., Vol. ii., p. 242), I said that I could not perceive any reason for separating this species from *Trichopteryx* on account of its external characters, but that I had not examined the organs of the mouth. I have lately done this, and can safely assert that they are perfectly normal in every respect; the mandibles, maxillæ, mentum, labium, labial palpi, and lingua are exactly similar to the corresponding organs of *T. lata* and *T. fascicularis*; in the labrum and maxillary palpi a slight, but only specific, difference exists. The former of these is somewhat shorter in proportion to its width, though the outline is the same, and the penultimate joint of the latter is more widely truncate at the apex.

The anatomy of the underside, which varies much in the different genera of this family, in this insect entirely resembles the most typical form of *Trichopteryx*, and the shape and neuration of the wing—a highly valuable differential character—is so exactly like that of *T. fascicularis*, that it would be almost impossible to say from which species the wing had been removed.

I therefore feel no hesitation in saying that the species in question is a pure *Trichopteryx*; whether it be the *Bœocrara littoralis* of Thomson may possibly admit of doubt, as we have never yet obtained a type from that author, but I think its characters can scarcely be mistaken.

If we are right in our determination, the genus *Bœocrara* must inevitably fall to the ground, since the external character of foveolate punctuation can hardly be deemed sufficient to establish a genus, and the other mark—that of the margined sides of the thorax, on which Mr. Thomson seems to lay great stress—is all but universal throughout the fifty-eight species now comprised in the genus *Trichopteryx*, and may be seen strongly developed in some of the commonest, e. g. *T. grandicollis*.

With regard to the specific appellation of this insect, I do no think that the name "*littoralis*" originally applied by Thomson, or "*Thomsoni*," to which it was subsequently changed by Mr. Sharp, can either of them stand. Col. Motschulsky, in the "Bulletin de la Soc. Imp. de Moscou" ii., p. 504, 1845, assigned the name "*littoralis*" to a species of *Ptenidium*; but since at the same time he changed the name of that genus to *Trichopteryx*, and described his species as "*Trichopteryx littoralis*," I suppose that, according to the rule generally received, a clear case of pre-occupation has been established, and that it will become necessary to adopt the name "*variolosa*," under which M. Mulsant has fully described this insect (Opuscules Entomologiques, C. xii., p. 187, 1861).

Through the kind assistance of M. de Marseul, I have in my possession the specimen from which M. Mulsant described the characters of his *Ptilium variolosum*, and this specimen is identical with the insects which we suppose to belong to *Bœocrara littoralis*, Thoms.

The correct synonomy of this species appears to be :—

TRICHOPTERYX VARIOLOSA, Mulsant.

variolosum (*Ptilium*), Mulsant, Opusc. Ent., xii., p. 187, 1861.

littoralis (*Bœocrara*), Thomson, Skand. Col. p. 99, 1855. (nomen prius usitatum).

Thomsoni, Sharp, Ent. M. Mag., Vol. ii., p. 230, 1866.

A. MATTHEWS, Gumley, *April*, 1867.

On the asserted connection of Atropos with the "death-watch."—In the number of the "Entomologist's Monthly Magazine" for May, 1867, p. 279, I perceive that Mr. F. Smith has expressed a doubt as to the capability of *Atropos pulsatoria* to produce the sounds attributed to it by naturalists. The following circumstance, which came under my own immediate observation, perhaps may serve to throw some light upon the subject.

A ticking sound, so precisely similar to that of a watch as scarcely to be distinguished from it by the nicest discrimination, was perceived to proceed from a small work-box comprising several compartments. Now, as this very remarkable noise, which differs widely from the tapping sound produced by *Anobium tessellatum*, is supposed by many persons to be caused by some species of spider, I resolved to investigate the phenomenon; accordingly, having placed the work-box on several sheets of writing-paper, I proceeded to open the compartments in succession, examining each, with its contents, in a good light, assisted by the employment of a large lens. After having carefully inspected the compartment first opened, a pause ensued, till the sound, which had been interrupted, was renewed. Proceeding cautiously in the manner described, the ticking sound was ultimately traced to the

last compartment, which served the purpose of a pincushion, and was filled with bran. On the cover being withdrawn, the bran was removed in very minute quantities to a sheet of writing paper, each portion, when lightly spread by means of a feather, being closely examined under the lens. The only occupant of the box detected by this complete scrutiny was a living *Atropos pulsatoria;* and I think the facts of the case fairly warrant the deduction that the ticking sound was produced by it, more especially as no such sound was ever after heard to emanate from the box.

I may add that the *Atropos*, which was placed in a clean phial, died in the course of an hour without emitting any perceptible sound. Summer is the season in which the ticking sound is usually heard, but how it is produced I believe has not yet been discovered.—John Blackwall, Hendre House, Llanrwst, *May 4th*, 1867.

*** I candidly admit that the above-cited instance is a case of *very* strong circumstantial evidence in favour of the power of *Atropos* (the insect should be called *divinatoria*, for it certainly is not the *pulsatoria* of Linné) to produce a sound, and I have just been informed of an exactly parallel case. But I must still adhere to the opinion expressed at page 181 of Vol. iii., that a creature in which every portion of the body is of a soft consistence cannot possibly cause any perceptible ticking. Any noise produced by a minute apterous insect must of necessity be mechanical, either by the sudden contact of some hard part of its body with a like hard opposing surface, or by the action of one of its members against another, and *Atropos* entirely wants any organism favourable to either of these actions.—R. McLachlan.

True bugs.—In the Annals of Natural History for 1839, the Rev. Leonard Jenyns described a new species of *Acanthia* under the name of *Cimex hirundinis*, specimens of which had been found in the nests of the common house-martin in Cambridgeshire. The only examples of this species I ever saw were in the collection of the late Mr. John Curtis; but as that collection was unfortunately exported to Australia when the "British Hemiptera" was in preparation, it was only possible to copy Mr. Jenyns' description. I am therefore desirous to obtain examples, and if any one who has opportunity of access to places where martins' nests abound would do me the favour to look for the creatures, and, if obtained, send some to me alive, I should be greatly obliged. It may not be necessary to disturb the nests, for Mr. Curtis informed me that at Tunbridge Wells, where his specimens were taken, the bugs were also found about the house in the vicinity of the nests. The species is held by continental authors to be a myth, but, though convinced by the sight of Mr. Curtis' specimens that it is an entity, I wish to place the subject beyond a doubt. I am aware that it is a delicate matter to hint to a non-entomologist that there may be a bug about his country-house, and there might be a balcony-scene not illustrated in any edition of Shakespeare, if it were discovered that such a Romeo had obtained access to Juliet's window without even the pretence of a ladder; indeed I know that one gentleman felt grossly insulted by the suspicion that there *could* be a bug on his premises. Nevertheless, I venture to prefer my petition that the vagrants may be looked for before "the swallows homeward fly;" and, if found, apprehended and committed to my custody. I think it is also possible that the same, or possibly another species, might be discovered to be attached to

the nests of the sand-martin, and that some stragglers might be found on the ground below the entrances of the burrows of the birds, in the same way that examples of *Haploglossa nidicola* and the fleas which inhabit sand-martins' nests are detected in such situations.

While I am on the subject of true bugs, I may also say that two other allied species were described by Mr. Jenyns—*Cimex columbarius* found in pigeon-houses, and *C. pipistrelli* found attached to a bat. The former is probably common enough, and may be the same as, I am informed, occurs in fowl-houses; but the latter will doubtless be difficult to obtain, as bats usually have their breeding-places in inaccessible situations. But as both are unknown to me (except by description), and one or other of them may by chance come into the possession of a naturalist who would not value it, I beg him to remember the service examples would render; among others, to J. W. Douglas, 7, Kingswood Place, Lee.

General Information.

[In accordance with a wish expressed by several of our provincial subscribers, we propose to give, each month, items of general information concerning Entomologists and their doings, &c., &c.—Eds.]

The Linnean Society's soirée.—At this réunion of Naturalists, held at Burlington House on the 1st May, there were two Entomological exhibitions which caused considerable attraction; firstly, a case of the remarkable North Indian Butterfly, *Kallima Inachis*, which, when closed, exactly resembles a dead leaf; sent by Mr. A. R. Wallace; secondly, a living example of the pupa of *Empusa pauperata*, from the south of France, one of the few European representatives of the family *Mantidæ*; exhibited by Mr. Stainton.

Preservation of Insects.—The last part of the French Annals contains a long paper by Dr. Laboulbène on this subject: he gives the preference to a solution consisting of equal parts of phenic acid and pure benzine dropped on a small piece of sponge, and placed in corner of the box. Phenic acid possesses the valuable property of arresting the development of fungoid growths, and insects treated with a weak solution of the acid in alcohol or pure naphtha, are ever afterwards free from the attacks both of mould and mites; like all other liquid preparations, it is somewhat difficult of direct application to Lepidopterous insects.

Lepidopterous inquilines in galls.—The last part of the Proceedings of the Ent. Soc. of Philadelphia contains a paper of Mr. Walsh, in which he enumerates ten species of American Lepidoptera as feeding on galls, viz., *Ægeriidæ* 1, *Noctuæ* 1, *Tortricidæ* 4, and *Tineæ* 4.

Death of Dr. Breckenridge Clemens.—We regret to have to announce the decease of this distinguished American Micro-Lepidopterist, which occurred on the 11th January last. In Dr. Clemens, America has lost almost its only Entomologist who attended to this branch of the science.

Advices have been received from Mr. Göring, lately a companion of Dr. Burmeister in his travels in the Argentine Republic, now exploring that part of Venezuela east of Caraccas. A collection formed by this gentleman is believed to be *en route* for England.

From private sources we learn that Dr. Leconte, the celebrated American Coleopterist, may shortly be expected in England.

Entomological Society of London. *6th May*, 1867.—Professor Westwood, M.A., F.L.S., Vice-President, in the Chair.

J. Sidebotham, Esq., of George Street, Manchester, was elected an Ordinary Member, and Herr Snellen Van Vollenhoven, of Leyden, was elected a Corresponding Member.

Mr. Stainton exhibited cases of *Coleophora lixella*, and made some remarks on the habit of the insect; from which it appeared that the young larva, when first hatched, feeds upon *Thymus serpyllum*, and uses a seed-calyx of that plant for its case: afterwards it forsakes the thyme and wanders on to grass, leaves its first case attached to a blade, and proceeds to form its ordinary adult case out of the grass leaf. The discovery of this extraordinary habit is due to Herr Von Heinemann, of Brunswick. He also exhibited a larva of *Hyponomeuta egregiella* on *Erica cinerea* from Fontainebleau.

Prof. Westwood remarked on an Hemipterous insect from New South Wales, belonging to the *Reduviidæ*, which had a habit of dancing high in the air, after the manner of gnats, and possessed a powerful odour of musk, so as to strongly scent the letter in which it was sent.

Mr. Fereday communicated a photograph of an example of *Pyrameis cardui* from New Zealand, being the first obtained in those islands: it pertained to the race found in New Holland.

Mr. C. A. Wilson communicated an example and notes on a species of *Xenos* (*Stylopidæ*) found in Australia, parasitic upon *Paragea decipiens*; this was apparently the first instance of these insects being found in that quarter, and was a discovery of Madam Kreusler, of Gawler. Mr. Smith exhibited some of the infested wasps.

Mr. Stainton remarked that a large dipterous larva had emerged from a bug (*Pentatoma*) found by him at Mentone.

Mr. Bates read a communication from Dr. Felder, of Vienna, who is engaged on the *Lepidoptera* of the Novara-voyage, respecting the method of publication of that work, involving a question of priority.

Mr. Bates also read descriptions of new species of Butterflies collected by Mr. Belt, in Maranham.

NEW GENERA OF *LONGICORN COLEOPTERA* FROM THE RIVER AMAZONS.

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

The following descriptions of new genera are published in deference to the wish of M. Lacordaire, who is now preparing the "*Longicornes*" portion of his masterly work, "Genres des *Coleoptères*," and considers it desirable that all who are engaged in writing on the group, should make known the genera in time to be included in his volumes. The description of all the species of Longicorns taken by me on the Amazons, one part of which (the *Lamiadæ*) has already appeared, will shortly be continued. The present genera all belong to the *Cerambycidæ* section, the species of *Prionidæ* and *Lepturidæ* of the Amazons falling into genera already established.

STREPTOLABIS, n. g.

Body oblong, depressed, dilated posteriorly, glabrous. Head small, eyes not prominent, finely facetted, deeply emarginated; muzzle short, mandibles flattened at base and porrect, curved upwards towards their tips; terminal joints of palpi ovate, truncated. Antennæ shorter than the body, stout; basal joint thick, clavate; the rest, from the third, sulcated, dilated at their apices, with inner apical angles produced. Thorax unarmed, anterior and posterior margins with distinct smooth rim. Elytra broadly rounded at the apex, with a sutural tooth. Prosternum narrow, tubercled at the apex, mesosternum plane. Legs stout, glabrous, thighs clavate, toothed beneath, tarsi short, basal joints triangular.

St. hispoides, n. sp. 7½ lines. ♀ (?). Oblong, depressed, coral-red; antennæ, excepting the basal joint, black; elytra black, finely rugose and opake, with elevated, shining, reticulated lines, and six irregular spots, with apex, coral-red; head and mandibles rugose-punctate; thorax smooth, finely punctured.

Ega, Upper Amazons; on the trunk of a dead tree. The species has a great resemblance to the Hispide species *Cephalodonta spinipes*. It also resembles in colours and form of the legs the Longicorn insect *Erythroplatys corallifer* (White), but the muzzle of that species is greatly elongated, and the maxillæ and palpi have the same form as in the Rhinotragine and Callichromine groups; whilst in *Streptolabis* they are conformable to the *Trachyderinæ*, of which group I consider the new species to be an aberrant member.

ÆCHMUTES, Pascoe, M.S., n. g.

Oblong, flattened, dilated behind (*facies* of *Lycus*). Muzzle elongated as in *Oregostoma*. External maxillary lobe greatly elongated; eyes nearly approximating in front, forehead plane. Antennæ much shorter than the body, middle joints greatly dilated, with the inner apical angles produced; 2nd and 4th joints with a fringe of strong bristles on the outside, 4th joint shorter than the 5th. Thorax narrowed in front. Elytra truncated in a waved line at the apex, with both ends of the truncature spined. Legs shortish, stout, thighs clavate, hind legs a little longer than the rest. Tarsi short, broad, joints triangular.

Æ. lycoides, n. sp. 4½ lines (♀?). Depressed, naked, opake testaceous-red. Antennæ black; thorax with two black stripes on each side, extending to the eyes. Elytra with a large common pentagonal patch near the base, and the apical fourth, black. Tarsi and tibiæ black, thighs testaceous, black in the middle. Whole upper surface very closely punctured; elytra with a raised line extending from the shoulders nearly to the apex.

Ega, Upper Amazons. The insect has a striking resemblance to a species of *Lycus*. The genus is interesting as being an intermediate form between *Rhinotragus* and the singular genus *Erythroplatys*.

PANDROSOS, n. g.

Slender, linear, muzzle much shorter and wider than in *Rhinotragus* and *Oregostoma*, the eyes wholly lateral and very widely separate in front. Antennæ

as in *Oregostoma*; filiform, thickening and the joints becoming subserrated towards the apex. Elytra normal, sides nearly vertically deflexed, the upper limits of the deflexed portion carinated, apex obliquely truncated.

P. exilis, White, Catalogue Longicorn Coleop. British Museum, ii, p. 201 (*Rhinotragus*, id).

ARGYRODINES, n. g.

Sublinear, moderately elongated. Muzzle broad, elongated, oblique, front broad, plane. Eyes finely facetted. External maxillary lobe and terminal joint of the palpi greatly elongated. Antennæ filiform, bristly, as long as the body (♀), basal joint clavate, 3rd greatly elongated, swollen at the apex, 4th about one-third the length of the third and three-fourths the length of the 5th. Thorax about two-thirds the length of the elytra, constricted in front and behind, the intermediate portion forming a tumid, rounded mass on each side. Elytra plane, constricted in the middle, obtusely rounded at the apex. Legs short, bristly, hind pair longest, thighs clavate, tibiæ compressed, tarsi rather short, basal joints elongate-triangular. Mesosternum rather broad, plane.

A. pulchella, n. sp. 4 lines. ♀. Deep glossy black: elytra each with three oblique impunctate streaks of silvery-white; two (narrower) before, and one (broader) behind the middle. Head thickly punctured. Thorax with the anterior constricted portion and middle of tumid part on each side impunctate, the posterior constricted portion sharply striated transversely, rest of surface closely foveated, with the interstices forming a reticulated pattern. Elytra closely punctured, except the white streaks and a space on the basal side of the streak. Sides of mesosternum with a patch of white hairs. Hind tarsi clothed with similar hairs.

Ega. The genus is without doubt closely allied to *Cosmisoma*.

CHLORETHE, n. g.

Facies of *Chrysoprasis*. Body clothed with short bristles. Muzzle very short; eyes coarsely facetted: maxillæ with the exterior lobe short and broad. Antennæ a little longer than the body (♂), shorter than the body (♀); third to fifth joints thickened, and, in the ♀, clothed with longer bristles, most numerous and dense on the fifth. Thorax short, sides rounded, unarmed. Legs shortish, as in *Orthostoma*, thighs simple, tibiæ compressed, with two conspicuous spurs at their apices; tarsi short, much more slender than in *Orthostoma*, basal joint in the hind pair sub-linear.

C. Ingæ, n. sp. 3½—4½ lines. ♂ ♀. Head, thorax, basal joint of the antennæ, and breast, brassy-green; rest of antennæ black; legs bronzed-black, elytra silky-green; abdomen red. Head and thorax very closely punctured, interstices reticulated. Elytra finely punctured, with a bristle arising from each puncture. Prosternum transversely rugose; mesosternum coarsely rugose-punctate; metasternum with shallow, scattered punctures, glossy.

Ega; on felled *Inga* trees. The genus will range next to *Orthostoma*.

MICROSPILOMA, n. g.

Body rather short, sub-cylindrical. Muzzle elongated, palpi truncated. Eyes rather coarsely facetted, slightly prominent. Antennæ short, third and fifth joints

dilated, coarsely setose, unarmed. Thorax spined on each side. Elytra cylindrical, apex truncate, unarmed; surface with ivory-like spots, as in *Eburia*. Legs elongated, especially the hind pair, linear; apex of thighs acute on each side; tarsi not half the length of the tibiæ. Mesosternum with a large smooth tubercle in the middle.

M. Dorilis, n. sp. 5 lines. Reddish-tawny, clothed throughout with erect, tawny bristles. Head rugose, forehead sulcate. Thorax strongly wrinkled transversely. Elytra thickly punctured; an ovate ivory spot in the middle of the base, and two similar spots in conjunction on the disk, a little behind the middle, the latter bordered with brown.

Ega; on foliage in the forest. Notwithstanding the elongated muzzle, I believe this genus belongs to the *Eburia* group, standing near *Heterops* (Blanch.).

ATHARSUS, n. g.

Body rather short, sub-linear, depressed, naked. Muzzle very short, palpi sub-securiform, eyes prominent, coarsely facetted. Antennæ clothed with long fine hairs, elongated, third and fifth joints armed at their tips with a short spine; antenniferous tubercles obsolete. Thorax prominent in the middle, but unarmed. Elytra rounded at the apex, briefly truncated near the suture, unarmed. Mesosternum broad, plane. Legs short, setose; thighs clavate; knees unarmed; tarsi short, basal joints elongate-triangular.

A. nigricauda, n. sp. 5 lines. ♂. Reddish-testaceous, neck and pro-thorax red, head (except the neck), antennæ, apex of the elytra, and feet, black; head thickly punctured, thorax very finely rugose and sub-opaque; elytra shining, and finely punctured.

Banks of the Tapajos. The genus belongs to the *Sphærion* group.

TERPNISSA, n. g.

Body elongate, sublinear, scantily clothed with fine, long hairs. Muzzle very short, eyes prominent and coarsely facetted; palpi sub-securiform. Antennæ long and slender, 3rd—5th joints spined at their apices. Thorax sub-ovate, convex, unarmed. Elytra rounded before the apex, the latter at a distance from the suture armed with a spine. Legs elongated, thighs clavate, tibiæ long, linear; tarsi short and narrow. Prosternum extremely narrow; mesosternum plane.

T. Listropterina n. sp. 5½ lines. ♂. Opaque greyish black; four basal joints of antennæ deep black, rest yellow. Head behind and thorax red, clothed with laid silken pile; thorax crossed by two sub-interrupted ridges, sides prominent. Scutellum blackish, semi-oval. Elytra finely punctured, clothed with fine hoary pile, except the basal third, the lateral margin, and a fine streak down the disk of each to three-fourths the length, which are dull blackish. Legs clothed with fine long setæ; blackish. Breast and abdomen blackish, clothed with fine hoary pile, as in *Listroptera*.

Banks of the Tapajos. Resembles certain species of *Listroptera*: but belongs to the *Sphærion* group.

PHRYNOCRIS, n. g.

Body elongated, sub-depressed. Muzzle short, eyes coarsely facetted; antenniferous tubercles prominent. Antennæ elongated, filiform, unarmed; basal joint with a tubercle near the apex beneath. Thorax sub-quadrate, armed on each side with a spine. Elytra prolonged at the apex, and each terminating gradually in a sharp spine; surface punctured, and with rows of small tubercles. Legs stout, thighs large and strongly clavate.

Ph. notabilis, n. sp. 10 lines. ♂. Head and thorax coarsely and scantily tomentose, rest of the body clothed with short hairs. Thorax uneven, and covered with small scattered tubercles. Reddish-tawny. Thorax with the depressed parts black. Elytra ornamented with three strongly undulated black belts, the apex also black; surface shining, punctured and roughened with three or four rows of small tubercles; tips of thighs and tibiæ black.

Ega. Belongs to the *Achryson* group.

ZATHECUS, n. g.

Body elongate, parallelogrammical, depressed. Muzzle short, palpi sub-securiform; eyes prominent, and very coarsely facetted. Antennæ elongated, filiform, finely setose beneath, unarmed; antenniferous tubercles prominent, oblique. Thorax nearly square, unarmed; above sub-convex, uneven. Elytra armed each with two spines at the apex, surface tuberculated. Legs elongated, thighs abruptly and strongly clubbed; tarsi very slender, moderately short. Mesosternum narrow behind.

Z. graphites, n. sp. 8 lines. ♂. Testaceous, head and thorax clothed with silky tomentum. Vertex dusky, basal joints of antennæ blackish beneath. Thorax uneven and finely tuberculated, black, with a curved testaceous belt across anterior part. Elytra near the base and suture marked with a black patch, followed behind by two curved black streaks; the testaceous apical half with a brownish cloud in the middle; whole surface roughened with small scattered tubercles, and irregular, but not large, punctures. Legs and under-surface testaceous, sides of prothorax and breast and basal part of hind thighs blackish.

Ega. The markings of the elytra are similar to those in the genus *Ibidion;* the genus, however, in structure, belongs to the *Achryson* group.

ARÆOTIS, n. g.

Linear, slender. Muzzle slightly elongated and narrow in front; palpi truncated; lower lobe of the eyes very large, upper lobe small, linear; coarsely facetted. Antennæ long and slender, filiform, simple, basal joint long and but slightly thickened. Thorax elongated, sides with a minute tubercle behind the middle. Elytra linear, sub-depressed, apex rounded. Legs long and slender; thighs clavate, tarsi moderately short; hind thighs extending much beyond the apex of the elytra.

A. fragilis, n. sp. 2½ lines. ♂. Slender, yellow-testaceous; apex of antennal joints, from the 3rd, blackish. Abdomen brown. Body above glabrous, head and thorax very finely and closely punctate, elytra more distinctly punctured, legs and antennæ sparingly setose; thorax with a deeply impressed angular line towards the hind margin.

Banks of the Tapajos. The genus will come amongst those ranging between *Obrium* and *Haruspex* (Thomson). The antennal joints are not grooved as in *Haruspex*.

PYRGOTES, n. g.

Body sub-linear, clothed with fine erect hairs, but glossy. Head and thorax narrower than the elytra. Eyes coarsely facetted, muzzle very short. Antennæ very stout, joints strongly flattened and dilated, their surface bi-carinated, with both the apical angles acute and produced; basal joint sub-quadrate, smooth. Thorax elongated, narrow, with an obtuse lateral, and a dorsal, prominence far behind the middle. Elytra obtusely and obliquely truncated at the apex. Legs short and thick; thighs sub-clavate, tibiæ strongly compressed, wide at the apex; tarsi very short and broad, all the joints much broader than long.

P. æneus, n. sp. 3¼ lines. Smooth, shining, finely pubescent; pitchy-red, elytra with the entire disk dark brassy-green. Thorax narrow, elongated, impunctate on the disk, sides with scattered setiferous tubercles, sides and disk behind the middle with obtuse prominences. Elytra punctured, partly in lines, interstices very smooth and glossy, apex very obtusely truncated. The tarsi inserted near the lower apical angle of the broad tibiæ.

Ega. This extraordinary little Longicorn is clearly related to *Piezocera*, Serville, and *Hemilissa*, Pascoe.

DODECOSIS, n. g.

Moderately elongated, sub-cylindrical. Muzzle short, vertical, antenniferous tubercles very large, each surmounted by an acute tooth; palpi very short, terminal joint truncated. Eyes rather coarsely facetted. Antennæ twice the length of the body, stout, filiform, clothed with long hairs, formed of twelve distinct joints, third rather shorter than the fourth, enlarged at the tip on one side, rest (including the twelfth) of nearly equal length. Thorax cylindrical, unarmed. Elytra linear, apex briefly truncated. Legs moderately short and slender; thighs slightly thickened. Prosternum extremely narrow, anterior coxæ conical, contiguous. Basal joint of abdomen not longer than the rest (♂).

D. Saperdina, n. sp. 3½ lines. ♂. Tawny-yellow, sub-opaque, clothed with long fine hairs. Antennæ from the second joint black, bases of joints reddish. Face convex, owing to the great volume of the antenniferous tubercles. Thorax with a tubercle on each side near the anterior angle, and an elongated one on the disk. Elytra finely and very closely punctured, suture and lateral margins raised, also an elevated line along the disk from the base to near the apex, the latter briefly truncated.

Banks of Tapajos. Resembles in general form species of the *Saperda* group. The genus appears allied to *Gracilia*.

NIOPHIS, n. g.

Elongated, linear, depressed. Muzzle not extending beyond the lower margin of the eyes; the latter very large, coarsely granulated; palpi moderately elongated, sub-securiform. Antenniferous tubercles not prominent, vertex plane. Antennæ stout, greatly elongated, fringed with long hairs; basal joint clavate, arcuated, third joint a little longer than the fourth (terminal joints wanting). Thorax elongate, unarmed, narrowed behind. Elytra tapering, depressed, apex of each

terminating in a long spine. Legs long, thighs very long, compressed and thickened in the middle, basal joint of tarsi elongated. Sterna narrow. First segment of abdomen not longer than the second (♂).

N. coptorhina, n. sp. 4½ lines. ♂. Tawny-reddish, opaque, clothed with fine erect hairs; apices of antennal joints darker, tips of thighs black. Thorax with two broad and shallow longitudinal dorsal channels; elytra finely punctured. The thorax is elongate and depressed, and greatly narrowed from the middle towards the hind margin.

Santarem, River Tapajos. This insect also belongs to the *Gracilia* group.

ATENIZUS, n. g.

Sub-linear, depressed, slender. Maxillary palpi elongated. Muzzle scarcely apparent beyond the eyes, the latter large and prominent, coarsely facetted, with a slight emargination only in the upper edge; forehead convex; head greatly constricted behind the eyes, forming a distinct neck; vertex, between the eyes, with a large erect tubercle. Antennæ filiform, hirsute; basal joint enlarged beneath at the apex. Thorax ovate, depressed, sides unarmed. Elytra linear, apex obtusely rounded. Legs short, slender, tarsi with the basal joints linear. Anterior and middle coxæ sub-conical, exserted, contiguous, anterior sockets slightly angular externally.

A. laticeps, n. sp. 2½ — 4½ lines. ♂ ♀. Sub-linear, reddish-testaceous; antennæ from the third joint brown, bases of joints pale-testaceous. Body and limbs finely setose; head and thorax sparingly punctured; elytra regularly and closely punctured.

Pará and Santarem, Amazons, on dry twigs. Notwithstanding the exserted coxæ, absence of pro- and meso-sterna between the coxæ, and elongated labial palpi, I believe the genus to have affinity with *Smodicum* and the allied genera.

Kentish Town: *May*, 1867.

A FEW OBSERVATIONS ON THE SYCAMORE-FEEDING *NEPTICULA DECENTELLA*.

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

Two years ago I received from Herr Anton Schmid, of Frankfort, some pupæ of this pretty species (Ent. M. Mag., vol. iii., p. 82). I have now some further scraps of information respecting the aberrant habits of this species which may prove interesting to some of the readers of this Magazine.

Herr Mühlig, of Frankfort, writes to me as follows:—"In 1866 I had the good luck to breed *Nepticula decentella* in tolerable plenty; some from larvæ which I found at the end of April hanging by long threads from the branches of *Acer pseudo-platanus* (sycamore), some from cocoons, which I found on the stems of those trees. Although we have not yet ascertained the entire mode of life of these larvæ, yet we know now with certainty that the larva must winter on the tree. The

question, however, still remains — whereabouts on the tree? For example, I found larvæ on trees on which there was not a vestige of a leaf or of a seed capsule; hence arises a possibility that, when winter is past, the larva conceals itself in the buds; or could it be possible that the larva should crawl out in the spring from the fallen seeds which lie on the ground in order again to climb up the tree, and then again to make a descent? If so, we should also find them on other trees, for the fallen seeds are often scattered far away from the sycamores." On the 3rd of May, 1867, Herr Mühlig writes again:—"I have this morning collected for you, after some research, seven larvæ of *Nepticula decentella;* some were hanging by their threads from the trees, some had already commenced their cocoons in the crevices of the bark." Ten days later I received a further supply of these cocoons from Professor Fritzsche, of Freiberg, who writes:—"Last December I carefully examined the trunks of the sycamores, and removed all the empty cocoons; from that time—through January, February, March, and April—I could observe no fresh cocoons; but on the 12th May, examining the stems again, I found on them numerous cocoons, of which I now send you some. The trees were then putting out their leaves; hence these larvæ must pass the winter in the crevices of the bark, and not form their cocoons, and change to the pupa state, till the end of April and May,—a very abnormal habit for a *Nepticula* larva."

That the cocoons first appear on the trunks of the trees when spring is tolerably advanced seems now pretty evident from the concurrent testimony of two competent observers; in Herr Mühlig's remarks we have the additional notice that he finds the larvæ descending from above by their silken threads.

Nep. decentella is very closely allied to *N. sericopeza*, but is a larger and duller coloured insect; my *caught* specimen of *N. sericopeza* (taken June 28th, 1863, at Lewisham) is far brighter than any of my *bred* specimens of *N. decentella*.

A notice of the larva of *N. sericopeza*, discovered by Colonel Goureau in the seeds of *Acer platanoides*, will be found in the Entomologist's Annual for 1864, p. 170. With him the seeds attacked by the larvæ fell from the tree the middle of June, and he bred the perfect insect at the end of that month and beginning of July. The dates of my breeding *N. decentella*, in 1865, were from June 21st to July 1st.

So here we have two *Acer*-feeding species of the genus *Nepticula*, both with abnormal habits, yet differing in habit very much from each other; it is a subject which is very far from being exhausted at present.

Lewisham: *June*, 1867.

ON SOME PECULIARITIES IN THE DEVELOPMENT OF *HEMIPTERA-HETEROPTERA*.

BY J. W. DOUGLAS.

(Continued from Vol. ii., p. 272, and Vol. iii., p. 201.)

2nd.—*Abnormal structure of elytra and wings.*

The irregular development of the elytra among the *Heteroptera* is so common an occurrence that it could not fail to obtain the attention of writers on the *Hemiptera*. By some of them the apterous examples of *Velia currens* were deemed to be a species distinct from the winged ones. By others the examples of various species that are apterous or have rudimentary elytra have been considered as larvæ or pupæ endowed with procreative powers; and Curtis even supposed that such imperfectly developed organs indicated a state of existence analogous to that of the pseudimago of the *Ephemeridæ*, although no pellicle, as in that case, was ever known to be cast off by apterous *Hemiptera*. All these theories are inconsistent with the facts that individuals destitute of elytra and wings never attain these organs; that in others the proportion of development of the elytra in any case attained is final; and that, in all instances, the insects are in all other respects perfect and adult, and perform every function of their existence. It is true that in apterous or semi-apterous forms the thorax (especially the pronotum) is less robust and often differs in outline, the reason being doubtless the smaller size of the alary muscles; but this in no way interferes with the course of the insect's life.

The cause of this irregular development is obscure. Some authors have thought that great heat has an influence in perfecting the alary organs, and some of the instances adduced seem to favour this hypothesis. On the other hand, some species are apterous in all climates; in some the ♀ is always semi-apterous; and in those species where perfectly winged individuals rarely occur they are found at the same time and place as those imperfectly developed, all being of the same brood, and subject to the same climatic influences. I remember at this moment that several winged examples of *Velia currens*, a state at all times scarce, were captured in the peculiarly cold and wet autumn of 1866, one of them in Scotland. Rather, I think, should we consider the development or non-development of the organs of flight to be due to the elasticity of constitution (so to speak) inherent in species, whereby, under certain circumstances, some individuals assume the most perfect condition of which their species is capable, and so are enabled to fly away to keep up the vigour of the race by pairing with mates of a different brood, while the remainder are left to the chances and changes

of their location. It may be added in favour of this view, that where one only of the sexes is fully winged, it is the male, which happens in analogous instances among the *Lepidoptera* and *Coleoptera*. Indeed, the idea of a species includes that of an elasticity or power of variation within limits, such as this now before us, or in size, colour, or marking.

The following enumeration shows the indigenous species in which the imperfect development has occurred, the parts of the elytra affected, the degree of the imperfection, and the approximate proportion of the individuals of a species in which the peculiarity has been noticed.

1.—*Elytra and wings entirely wanting.*

Hydrometra Najas, *De G.* .....
Velia currens, *Fab.* .....
Microvelia pygmæa, *L. Duf.* .....
} HYDROMETRINA.

Limnobates stagnorum, *Lin.* .....LIMNOBATINA.

} almost the only form.

2.—*Clavus wanting, or not distinguishable. Corium rudimentary or shortened Membrane absent or merely rudimentary. Wings wanting.*

Myrmus miriformis, *Fall.*.....the usual form .....COREINA.

Pithanus Märkeli, *H. Schf.* .. .. almost the only form.
Sphyrops ambulans, *Fall.*, ♀ .....
Byrsoptera caricis, *Fall.*, ♀ .....
} the only form.
Globiceps dispar, *Boh.*, ♀ .....the usual form.
Systellonotus triguttatus, *Lin.*, ♀..
Agalliastes saltitans, *Fall.* ....
„ Wilkinsoni, *Doug. & Scott*
Orthocephalus mutabilis, *Fall.*, ♀
„ saltitans, *Hah*, ♀ ...
} the only form.
} CAPSINA.

Myrmedobia coleoptrata, *Fall.*, ♀
Zygonotus pselaphiformis, *Westw.* ♀
„ elegantulus, *Bärens.*, ♀
} the only form.
Temnostethus pusillus, *H. Schf.* ...
Piezostethus rufipennis, *L. Duf.* ...
} the usual form.
Acanthia lectularia, *Lin.* ....the only form.
} ANTHOCORINA.

Metastemma guttula, *Fab.* .....
Nabis limbatus, *Dahlb.* .....
} the only form.
} REDUVINA.

3.—*Clavus mostly narrowed. Corium abbreviated, truncate or rounded posteriorly. Membrane wanting or merely rudimentary. Wings wanting or rudimentary.*

Pyrrhocoris apterus, *Lin.* .....the only British form ...CŒCIGENINA.

Rhyparochromus antennatus, *Schill.*...the usual form.
Hypnophilus micropterus, *Curt.* .....almost the only form.
„ hemipterus, *Schill.* .....the only form.
} LYGÆINA.
Acompus rufipes, *Wolff* .....
Ischnodemus sabuleti, *Fall.* ....
} the usual form.

Bryocoris pteridis, *Fall.* .....the usual form.
Teratocoris dorsalis, *Fieb.* .....almost the only form.
Lopomorphus ferrugatus, *Fall.*.....
,, dolobratus, *Lin.* ... } the usual form.
Globiceps selectus, *Fieb.*, ♀ .....
,, flavomaculatus, *Fieb.* ... } CAPSINA.
Idolocoris pallicornis, *Mey.* .....occasional.
Bothynotus Minki, *Fieb.*, ♀ .....the only form.
Eroticoris rufescens, *Burm.* .....almost the only form.
Halticocoris pallicornis, *Fab.*.....the only form.

Coranus subapterus, *De G.* .....
Nabis brevipennis, *Hahn* ..... } almost the only form.....REDUVINA.
,, apterus, *Fab.* .....
,, flavomarginatus, *Scholtz*.....

Aphelocheirus æstivalis, *Fab.* .....the usual form. .....APHELOCHEIRINA.

4.—*Membrane alone rudimentary or not more than half developed.*

Calyptonotus pedestris, *Panz.* .....the only form.
Scolopostethus adjunctus, *Doug. & Scott*...the usual form.
,, affinis, *Schill.*.....
Trapezonotus agrestis, *Fall.* ..... } a common form. } LYGÆINA.
Tropistethus holosericeus, *Scholtz* ..
Rhyparochromus chiragra, *Fab.* ...
Plinthisus brevipennis, *Lat.* .....the only form.
Stygnocoris sabulosus, *Schill.* .....occasional.

Mesovelia furcata, *Muls.*.....the only form. .....HEBRINA.

Nabis dorsalis, *L. Duf.* .....a common form.....REDUVINA.

5.—*Peculiar form of elytra.*

In the Section *Tingidina* the elytra are of a thin, homogeneous, reticulated texture throughout. In the genera *Monanthia* and *Dictyonota*, the division into parts analogous to *clavus*, *corium*, and *membrane* may be traced; but in *Agramma*, *Derephysia*, *Campylostira*, and *Orthostira*, the distinction between *corium* and *membrane* is lost. In *Agramma* and *Derephysia* the elytra are much larger than the abdomen, and one overlaps the other posteriorly; whereas in *Campylostira* the inner margins do not meet in the middle of their length, and in one species (*brachycera*) the elytra do not overlap posteriorly, while in *Orthostira* they meet with a straight margin, and reach only a little beyond the abdomen, with the exception that one species (*obscura*) is occasionally found with elytra fully developed, as in the genera *Monanthia* and *Dictyonota*. We may, therefore, fairly conclude that the ordinary rounded

form of the elytra in the several species in this genus (and also in *Campylostira brachycera*) is only the result of an arrest of development, although the perfect form of some of the species is not known; and this view is strengthened by the fact that when the elytra are short the *wings* are wanting.

Lee, *April*, 1867.

Notes on the transformations of Limenitis Sibylla.—I am very much indebted to the kindness of Mr. Barrett, who most obligingly sent me, on the 14th of May last, several examples of the larva of this species to figure, varying from half-an-inch to their full growth of one inch and a-quarter in length.

At first they ate the young and tender shoots of honeysuckle (*Lonicera periclymenum*), and then the lower leaves, re-ascending to the top of the bare stem to undergo the process of moulting, with the exception of one small larva, that spun the edges of a leaf together and moulted within it; they then ate their way downwards as before, and kept on the sunny side of their food; they appeared to spin much silk along the stems during their career, and to partly secure the leaves by it in a suitable position to steady them during their repast, and, in consequence, their long spines in front became, in some of them, clogged and entangled or tied together by the silk in their twining process among the leaves, though they appeared never wholly to trust themselves from the stem, as their anal prolegs at least were always attached to it; and as they reposed along the spiral stem, or bent aside to feed, they were very elegant creatures, assuming the most graceful positions. They seemed to like the sunshine, and when exposed to it, appeared to be active and hungry.

In structure the body is of nearly equal width, the second and anal segments being the smallest, the divisions and transverse wrinkles well defined, the whole upper surface covered with transverse rows of minute, raised points, and on the third, fourth, and sixth segments, a pair of long, tapering, branched, sub-dorsal spines: similar pairs, but rather shorter, are on the eleventh and twelfth, while on each of the other segments, except the second, are a pair of very short similar spines, two minute pairs of them on the thirteenth; a row of exceedingly small spines are visible above the spiracles. The spiracular region distended, forming a projecting ridge below, armed with very short branched spines; a row of short simple spines above the feet, and a ring of them round each proleg, and on the ventral surface of each segment a central transverse row of them. The head has the crown elevated, and face slightly convex, the whole surface covered with raised points and simple obtuse spines, with a longer and sharper pair on the crown.

In colour the back is of a bright full green, blending gradually into a paler tint at the sides: the minute raised points yellowish; a white spiracular stripe conspicuous from the sixth to the anal segments, with a central yellow blotch on each segment; the edging of branched spines white, beautifully relieved by a crimson or red-brown stripe beneath, beginning on the sixth, or generally the seventh, and ending on the tenth segment.

The ventral surface bluish-green at the divisions, and grass-green across the centre of each segment, and whitish-green on the two or three last segments; the prolegs tipped with pinkish.

The head pale pinkish or greenish, with a crimson or brown stripe on each side of the face, the mouth pink, and mandibles black, the whole face thickly studded with yellowish obtuse spines, with a few black ones, the longest pair on the crown black.

The sub-dorsal spines reddish, and crimson at their tips, where they are branched with black, and below they are yellowish.

When full fed it becomes rapidly paler, and then suspends itself by the anal prolegs to a stem of the honeysuckle or other surface, and hangs with its body downwards in a sinuous curve, with its head bent a little upwards facing the abdomen, and remains motionless for three days, becoming whitish on the abdomen, and remaining very pale green on the thoracic segments.

In the course of the third day, the creature seems to wake up, unbends its head, swings itself to and fro a few times, then stretches itself downwards in a long attenuated line, which causes a rupture of the skin close to the head, which is seen slowly to ascend, exposing the bare and soft shining parts below, from which a flat and forked pair of horns grow out perceptibly as one beholds this wonderful process; the skin continues to glide slowly upwards, and as the soft parts become exposed, they are seen to swell out laterally, and assume the very singular projections of the chrysalis, the skin of the old head gliding up the belly marks the progress of the disclosure, as the colour of the old and new surfaces are at this time alike but the new rather more shining and semi-transparent: occasionally during the bulging out of the soft parts, a kind of convulsive heave or two occurs, but otherwise it remains still until the creature is uncovered as far as the ninth or tenth segment, it then curves its anal extremity by a sudden twist laterally, and in a moment dexterously withdraws the tip of the anal segment from the prolegs by an opening on the back of the skin at that part; at this critical moment one has time to see that the naked shining point is furnished with black hooks, and to expect its fall, but in another moment it has forcibly pressed the curved tip with its hooks against the stem close to its previous attachment of the anal prolegs, which has proved strong enough for the occasion.

The creature now seems endowed with wonderful power and vigour; it swings boldly to and fro, and undulates itself as if to gain longer swings, when presently the old skin that remains is seen to burst away and fall off, the chrysalis gradually becoming quiescent.

The entire metamorphosis, from the first waking to the last movement, occupying nearly seven minutes.

The chrysalis is very angular, and its wing-cases very projecting; the dorsal surface of the thorax rises to a prominent ridge, and a little beyond it is a flat, round, and very projecting process; on the back and from thence to the anal tip, the abdomen is slightly sinuous, and therefore hangs a little on one side; two flat forked processes project from the head. Its colour at first is a greenish-white, but it gradually darkens, and in a few days the thorax and wing-cases are deep olive-green, the centre of the back of the abdomen bright apple-green, its tip and underside being dark brown, which forms on the back a broad band, including

the flat circular prominence at its termination. The hare's-ear-like projections at the head are also dark brown; the nervures of the wings can be seen distinctly, the portions that at first appeared quite white have now been transmuted into metallic adornments, a brilliant golden streak divides the brown colour from the green of the wings, commencing on each side the back of the thorax, and a spot on each side the tip of the tail; three silvery spots decorate the underside of the abdomen, and the head and its prominences are embellished both above and beneath with similar spots and streaks.—Wm. Buckler, Emsworth.

Limenits Sibylla bred.—To-day, a beautiful and large ♂ specimen of *Limenitis Sibylla* has made its appearance, only nineteen days having elapsed since its suspension as a larva, and sixteen since its transformation to a chrysalis.—Id.

Note on the natural situation of the pupa of Limenitis Sibylla.—Wishing to ascertain the situation selected for the change in their natural state, I visited Woolmer Forest again on Friday, 14th inst., and, in the course of several hours' search, found four pupæ and two suspended larvæ. Of these, five were spun up to leaves of honeysuckle, and one to a leaf of *Rhamnus frangula* growing contiguously; and in every case were firmly suspended to a button of silk on the underside of the midrib. Although I searched carefully, I could not find a single specimen attached to a stem or branch.—Chas. G. Barrett, Haslemere, *June 16th.*

Variety of Thecla rubi.—Yesterday I took such a singular specimen of the green hair-streak, that I think it is worth recording. The upper wings, which are usually of an uniform brown, were banded with a beautiful pale irregular edged bar.—B. Piffard, Morlaix, Brittany, *May 18th*, 1867.

Early appearance of Colias Edusa.—When I was at Northfleet a few days ago, I heard, upon good authority, that a worn female of *Colias Edusa* had been taken on the railway bank there on the 2nd inst. This is very early I think. I myself took a specimen on the 30th June, 1859—a very large male—in splendid condition, with iridescent under-wings.—Howard Vaughan, Kentish Town, *12th June*, 1867.

Early appearance of Colias Edusa.—On the 1st of June, whilst rambling on the coast near Sheerness, I was rather startled at a yellow butterfly flying quickly by me. I gave chase, and soon found that it was a very fine male of the above species; but, having only a sweeping net with me, I could not capture him. It was a glorious hot day, and the sloping bank was just the place this species would frequent. *Cynthia cardui* was very abundant; but, as most were in bad order, I presumed they were specimens that had hybernated. Some years ago I noted *Colias Edusa* flying near Gravesend about the 8th or 10th of June.—Samuel Stevens, 6, Holland Place, Brixton Road, *June 12th*, 1867.

Lasiocampa quercûs versus callunæ.—In your last number Mr. Hellins says that Mr. Birchall tells us that only "*callunæ*" occurs in Ireland. I think this is an error, for, as far as I can make out, Mr. Birchall merely says that "*callunæ* var." is the only form he has met with; at all events, I can assert that the other form, *quercûs*,

does occur in Ireland, for some years ago I captured three specimens near Queenstown, and saw many more on the wing, and I have still an example in my cabinet. I, after some years' attention to the subject, am inclined to believe that *quercûs* and *callunæ* are only forms of one variable species.

I have this season pupæ from Staffordshire, which have been lying by all the winter. The imagos are now appearing, and of six individuals which have already emerged, one of them is certainly the form called *quercûs*, and differs in no respect from those that only passed about a month as pupæ, bred some seasons ago, from Cambridgeshire.—Fred. Bond, Adelaide Road, 15*th June*, 1867.

Aberration of Ephyra punctaria.—On May 8th, I captured, in Coombe Wood, a specimen of *E. punctaria* (a species which is tolerably common there), having a very faint trace of the central line on the left fore-wing, but none whatever on the right.—G. B. Longstaff, Southfields, Wandsworth, S.W.

A Micropteryx at light.—On the 8th of May, I took a specimen of *M. subpurpurella* on a gas-lamp. I always thought, before this, that the species of the genus in question only flew in the sunlight.

It may be worth while to remark, that it was a very good night for lamp-collecting; and that, among other things, I got a fine male *S. illustraria*, and a worn *Aglossa cuprealis*.—Id.

Occurrence of a Bucculatrix (*B. artemisiella*) *new to Britain.*—Towards the middle of June, 1865, I paid a visit to Folkestone, with the hope of obtaining *Crambus rorellus*, a rarity which my friend Mr. Sidebotham had previously been fortunate enough to discover in that locality; but on the occasion of my visit a prevailing "sou'-wester" prevented alike any Lepidopteron from showing even its palpi, and the collector from using a net, so that after a seemingly wasted day I returned home with a solitary little larva which I had found upon a yarrow leaf as the result of the day's work. This minute larva, a day or two afterwards, gratified me by spinning a shuttle-shaped cocoon, and in due time—a week or two—there emerged a perfect little *Bucculatrix*, which, after the setting process, was deposited, together with its cocoon, in a collecting-box, and——forgotten.

The other day, stumbling upon them (the cocoon and moth), I placed them in my friend Mr. Stainton's hands, and he considers that they belong to *Bucculatrix artemisiella* of Wocke, a species not hitherto recorded as British.—H. G. Knaggs, Kentish Town, *May 3rd*, 1867.

Capture of Sericoris euphorbiana and other Lepidoptera at Folkestone.—About a week ago, I spent a very pleasant day at Folkestone, in company with my friends, Dr. Knaggs and Mr. Gibson. The weather was fine, and we were lucky enough to capture, among other things, above a dozen examples of *Sericoris euphorbiana*. They were flying among spurge very briskly in the afternoon sunshine, and, owing to their activity, were not very easy to catch. At the same time and place we took a score or so of *Catoptria* (?) *microgrammana* amongst rest-harrow, besides other *Tortrices*, such as *Penthina gentianana*, *Ephippiphora scutulana* and *trigeminana*, *Dicrorampha plumbagana*, *Eupœcilia rupicola*, *Chrosis tesserana*, and *Argyrolepia Dubrisana*, the appearance of some of which is certainly early, unless they be double-brooded.

The "plumes" were represented by *Pterophorus bipunctidactylus*, a stray *fuscodactylus*, *parvidactylus*, and *microdactylus*, the latter in abundance among hemp-agrimony. The only *Eudorea* was a large pale variety of *E. pyralella*, which was pretty common. *Pyrausta ostrinalis* and *Herbula cæspitalis* also occurred, the former being by no means scarce.

We did not notice many *Tineina; Gelechia terrella*, *Elachista cygnipennella*, and, of course, *rufocinerea*, and *Plutella cruciferarum*, *Glyphipteryx Fischeriella*, swarming on grasses, were about all we saw in the perfect state. We met with cases of *Coleophora anatipennella* on sallow, and larvæ of *G. hippophäella* in terminal shoots of sea buckthorn.

As for *Macros*, they were decidedly scarce, but a few *Setina irrorella*, a stray *Acidalia ornata*, and two or three *Melanthia ocellata*, occurred. The larvæ of *Odonestis potatoria* might have been gathered literally by pints, and we secured three or four of *Lithosia complana*, and, after a good deal of working, a very few larvæ and pupæ of *Tapinostola Bondii*. — J. L. Courtice, Camden Town, 14*th June*, 1867.

Occurrence of Pœdisca oppressana.—On the 12th and 13th inst. I visited Edmonton, and had the pleasure of boxing about a dozen specimens of this local *Tortrix* in the locality wherein my friend, Mr. Piffard, rediscovered it some years ago.—H. G. Knaggs, Kentish Town, *June*, 1867.

New locality for Eupœcilia ambiguana.—I have had the good fortune to capture several specimens of this beautiful species in Tilgate forest. They were beaten out from undergrowth.—E. G. Meek, 1a, Paradise Row, Old Ford, E., *June*, 1867.

Early appearance of Argyrolepia Dubrisana.—I captured two specimens of *Argyrolepia Dubrisana* on a railway embankment, near Tunbridge Wells, on Saturday last, May 25th. Surely this is unusually early, as I find July and August are given in Mr. Stainton's Manual as the months in which this insect appears. Can there be two broods?—Thomas de Grey, 23, Arlington Street, Piccadilly, W., *June* 1*st*, 1867.

*** Several instances have lately occurred of precocious appearances of several of the *Tortricina;* on the 1st June I saw *Xanthosetia hamana* and a very wasted *Lozopera Smeathmanniana:* a few days previously I was even more surprised to see an extremely wasted female of *Cataclysta lemnata*, it *looked* as if it must have been out several weeks.—H. T. S.

Note on Catoptria aspidiscana.—At page 16, No. 37, Entomologist's Monthly Magazine, my friend Mr. Hodgkinson's note makes it appear that our new *Catoptria* had been worked out by me, when the credit of determining its specific position should have been given to Mr. Doubleday, who not only compared some of my specimens with veritable continental specimens in his European Collection, but also most kindly presented me with a foreign type of *C. aspidiscana* for comparison; I therefore feel it a duty incumbent upon me to say I am not entitled to the credit my friend would give me.—C. S. Gregson, Liverpool.

Captures at Witherslack, including the new British Tortrix and a new Plume.—On the 19th May I paid my first visit this season to this locality. The day was everything one could desire—calm, hot, and close until after sunset; just one of those days that the entomologist should stick at it and persevere, however hard and oppressive the labour. The following day was cold and stormy, and was almost a blank. My captures may be enumerated as follows:—

Eupithecia indigata, 2; *Thera variata*, 3; *Cabera exanthemata*, 1; *Cidaria corylata*, 1; *Psychoides verhuellella*, a score or more of pupæ; *Lithosia complanula*, 3 larvæ; *Penthina ochromelana*, 2; *P. carbonana*, 1; *Eriopsela quadrana*, 3; *Cnephasia musculana*, 1; *Clepsis rusticana*, 12; *Phoxopteryx siculana*, 2; *P. uncana*, 6; *P. myrtillana*, 2; *Coccyx vacciniana*, 6; *Catoptria aspidiscana*, 1, this is a new species to our lists [*see ante, p.* 16]; *Eupœcilia ruficiliana*, 12; *Psyche roboricolella*, 6 cases; *Tinea bistrigella*, 2; *Micropteryx Allionella*, 12; *Swammerdamia comptella*, 2; *Gelechia junctella*, 1 hybernated; *G. longicornis*, 2; *Pancalia Lewenhöekella*, *Perittia obscurepunctella*, 4; *Gracilaria auroguttella*, 2; *G. straminëella*, 1; *Ornix scoticella*, 2; *O. torquillella*, 4; *O. betulæ*, 1; *Coleophora virgaureæ*, 6; *C. alcyonipennella*, 12 cases on knapweed; *C. pyrrhulipennella*, cases on heath; *C. murinipennella*, cases on grass [? *Luzula*, H. T. S.]; *Elachista Kilmunella*, 4; *Glyphipteryx Haworthana*, 6; *Lithocolletis coryli*, 2; *L. ulmifoliella*, 8; *L. emberizæpennella*, 1; *L. Frölichiella*, 2; *Nepticula aucuparie*, 6; and *Pterophorus Hodgkinsoni*, Gregson (a new species) 8 specimens.

I may as well observe that *Catoptria aspidiscana* has only been quite recently determined, although I have taken specimens for the last five years. Of the plume, I took three specimens in 1863; it appears to be a very early species, and this may perhaps account for my not meeting with it since 1863, as I seldom go there so early in the season. Any one who has been in the habit of looking at plumes may readily see the difference when the insect is at rest. Four of the specimens are very fine; I have obtained a few eggs. The species is closely allied to *P. Löwei*.—J. B. Hodgkinson, 31, Christchurch Street, Preston, *May 22nd*, 1867.

Note on Pterophorus isodactylus.—Twenty years ago, *P. isodactylus* was common in a small alder swamp near Teignmouth: this was fed by a little stream running from Haldon, a heathy moor about a mile distant from it. It was about an acre in extent, and underneath the alder-trees grew sorrel and the golden saxifrage, whilst near them were what might be almost called small thickets, formed by tall plants of *Eupatorium cannabinum*, *Epilobium hirsutum*, and *Equisetum telmateia*, with the marsh-thistle towering up amongst them. It was in these fastnesses that the plumes took shelter. There were also *Senecio aquaticus*, *Caltha palustris*, *Cardamine pratense*, *Lychnis flos-cucubali*, and *Sparganium ramosum*, scattered through the bog, besides rushes and sedges, and a few occasional stragglers from the heath above, such as *Anagallis tenella*, *Wahlenbergia*, and *Pedicularis*, amongst the grass and *Sphagnum*, which formed rather a treacherous footing. The other marsh insects of the locality besides the plume were *Nudaria senex*, *Leucania impura* and *conigera*, *Eudorea pallida*, and *Orthotælia venosa*.

The swamp is now entirely drained, ploughed, and the land planted with cabbages, nor is there any spot resembling it in the whole course of the stream.

But there was no *plant* lost to the neighbourhood by the drainage; the *Eupatorium* is especially abundant in other localities, but *microdactylus* is its only plumed inhabitant. The figure in Wood's Index was published before ever we knew of this locality, and I know nothing of the Orkney habitat recorded in the Manual. It may be suspected, however, that *isodactylus* might be found in many other spots in South Devon if thoroughly searched for.—R. C. R. Jordan, Birmingham.

Larva of Pterophorus isodactylus.—This larva has been discovered near Rotterdam by M. Snellen von Vollenhoven. It feeds in the stems of *Senecio nemorensis*. Several bred specimens of the perfect insect have been submitted to Professr Zeller, so that there can be no question of the identity of the species.—H. T. Stainton, Mountsfield, Lewisham, S.E., *May 23rd*, 1867.

The Irish locality for Pterophorus isodactylus.—At the request of Dr. Jordan, I add to his communication a notice of the Irish locality for *Pterophorus isodactylus*.

It occurs abundantly in July and August, on the bog which lies between the Town Lodge and the precipitous base of Cromaghlan Mountain, near Killarney.

The moth appears to be confined to the dry and somewhat elevated margin of the bog, and my attention was first attracted to the insect by disturbing it in gathering a handful from a magnificent clump of the white variety of *Calluna vulgaris*. I have not been on the ground since, and can throw no light on the food-plant of the larva.

I doubt, however, its being attached to any bog plant, as I did not see a specimen except at the elevated bank amongst the ling.

The date of the last capture was August 10th.

At the western end of this bog is an oak copse, which Bouchard pointed out to me as the place where he had taken *Ophiodes lunaris* at sugar.—Edwin Birchall, Bradford, *May 18th*, 1867.

Further notes on the larva of Pterophorus hieracii.—I was again at our forest on Saturday last, and at first had some trouble in finding the larvæ of *Pt. hieracii*; but I soon found out how they feed.

When I first found them they had not changed their first skins, and were sitting on the top of the leaves. After the first moult, they at once go down the stem until they get to within about an inch and a-half of the bottom, and then eat the stem just half way through, causing the parts of the plant above where it is bitten to bend down, and soon to become half dead and very soft; on this part the larva feeds, and as the plant getting only a small supply of sap is not able to grow up, the neighbouring plants, in two or three days, overtop it and cover it up, so that one cannot see it till one looks well for it under the other plants.

One plant supplies food enough for a single larva; for as soon as the bent part is eaten the larva is full fed, and it then descends to just below where it had bitten the stem half through, which is very short and stiff, and attaches itself by the tail, and changes to pupa with its head downwards.

It will be perceived what a clever little fellow this larva is; for, in the first place, by stopping the growth of the food-plant, and allowing the neighbouring

plants to shoot above it, it has at once a snug place of concealment; and then the upper part of the plant being bent down, or inverted, while the larva still attaches itself to what was the upper side of the leaf, it is effectually protected from rain (for none of these plume larvæ, I think, like wet); and, lastly, when it is full grown, a very stiff short stem of its own preparing, nicely covered over so that the wind cannot disturb it, is ready for it to affix itself to before becoming a pupa.—N. Greening, Warrington, *May 20th*, 1867.

*** I have this day (14th June) reared the perfect *Pt. hieracii* from larvæ with which Mr. Greening most kindly supplied me.—H. G. K.

Notes on variation in Lepidoptera.—Having read with much interest the articles on variety-producing, I am induced to offer a few observations.

As to the action of light producing variation in a state of nature, either through the larval or pupal stages, I cannot subscribe to it. Practically, it is well known that, as a rule, most larvæ retreat from light instinctively; and as for pupæ, unless they be "surface changers," light cannot affect them.

As for length of time passed by the insect in the pupal state making any difference in the future imago, my experience is decidedly opposed to it. I have been a "forcer," and to a very large extent, some thirty years, but, out of thousands of "short-timers," have never reared any varieties. Last year, a man who collects for me got a second brood of *A. Caja*, but there was no variation; another had several broods in rapid succession of *N. plantaginis*, and also of *E. russula*, but no varieties; and treble broods of *S. lunaria* produced nothing out of the ordinary way, Another had treble broods of *A. subsericeata*, which begat *mancuniata*, because they were "hungered" into dwarfs, some of them no larger than *osseata*. In fact, all my observations have tended to one point, viz.,—that variation is caused by disease, brought on mainly, if not wholly, by starving the larva, which causes the bulk of varieties to be more or less crippled. Last year I looked over an immense number of *V. urticæ*, bred by a good feeder, and there was not a variety amongst them; while another man had got what they call a swarm, and let them starve or eat the band-box in which they were kept, if they would, and out of the survivors he bred a good many buff varieties, others with strong black nervures through the wings, others wanting the two spots entirely. Indeed, I got more varieties from that one man than I had ever seen before. I questioned him only yesterday, and he said there were a great many cripples among them. Again, another friend had a lot of *betularia* eggs; the larvæ were feeding up well, when he had occasion to go from home, and when he returned he found a number of them dead, and the rest all apparently too weak to change to pupa. He put some soil in the box, and they managed to wriggle in, and some forty odd changed, which produced twenty black males and twenty intermediate (half-mourning) females.

Respecting *S. illustraria*, I have never bred it myself, but a friend of mine at Cockermouth reared a large number; a second brood was *delunaria*, and a third brood was *delunaria*. I have had *illustraria* from Perthshire, and have seen Norwegian specimens; but I never saw *delunaria* from either of these places, though the same transformation may go on as at Cockermouth. I hardly think that the "long term" principle has anything to do with variation.

As for food, it is a more complex affair. If one looks at *A. agathina* and *porphyrea*, *A. myrtilli*, *C. Haworthii*, and other heath-feeders, they seem made up of heather stalks and flowers; and the members of the genus *Retinea* carry a very similar appearance to the pine shoots in which their larvæ feed. Perhaps geological influences on the vegetation may cause such differences as we meet with in *Sciaphila Penziana*, in which species the Cornwall and Westmoreland specimens are similar, while those from the Isle of Man are slate-coloured, and the Scotch (*Colquhounana*) again are more suffused than the Irish ones.

I scarcely think that varieties can be produced by substituting other than the regular food; but I am quite aware of having seen a fine series of the "currant-moth" (*A. grossulariata*), which had been fed up on lettuce, and had departed from the common type. But what were the parents like?

I have no doubt that in currant moths the various forms become hereditary. They and "tigers" (*A. Caja*) and "ermines" are almost like domesticated animals, and will live upon what is set before them.—J. B. Hodgkinson, Preston.

Note on retardation of the pupal stage in Lepidoptera.—The gentlemen who have done me the honour to criticise my passing remarks on variety-breeding appear to credit me with the paternity of the assertion that variation in the imago may be caused by retarding or cutting short the duration of the pupal stage. I have already stated that this is not my own original idea.

Any one desiring further information on the subject, will find papers to the point, by distinguished authors, interspersed among the Entomological literature of the Continent. For example, in the French "Annales" for 1858, p. 301, the late Mons. Bellier de la Chavignerie remarks to the following effect:—"One day a "friend of mine brought me several *Vanessa urticæ*, which, owing to the wings "being excessively dark and adorned with large, intensely black spots, immediately "excited my admiration: he assured me that these remarkable specimens had been "reared from backward larvæ collected by him in the autumn, and that he had "delayed the appearance of the perfect insect by keeping the pupæ in an ice-"house." It seems to me, therefore, that, rather than discuss the question at the present time, it would be better to set about investigating this interesting matter patiently and practically.—H. G. Knaggs, *May 11th*, 1867.

A day's collecting at West Wickham Wood.—On the 3rd of this month I paid a visit to West Wickham Wood, with my friend Mr. G. B. Longstaff. The weather presented a lovely contrast to that of the previous fortnight, and the sun shone brightly all day from a nearly cloudless sky. Proceeding from Croydon towards the little village of Addington, we examined a great extent of fence, in the hope of—but alas! without—taking *carmelita*. The lovely "prominent" was not to be found; indeed the fence was unusually bare, and nothing fell in our way beyond *X. lithorhiza*, *E. nanata*, and *T. punctulata*. After a brief halt at the little Addington inn, we struck into the wood, where *F. atomaria*, already well out, was enjoying the sunshine among the heather. An occasional specimen of *L. petraria* was to be beaten from the brushwood; and a *Drepana*—to all appearance *falcataria*—con-

trived to elude us. The next thing that fell in our way was *L. lobulata*, seated on a huge fir tree. And now, getting well into the midst of the larger birch trees, we found fresh and beautiful examples of *T. punctulata* by no means rare. Here, too, were some little *Eupitheciæ: nanata, abbreviata*, and *pumilata*. At the foot of a large lime tree was seated *T. piniperda*. The metallic *Micropteryges* were darting busily around the birch twigs—*sub-purpurella* being most abundantly represented; while freshly-emerged specimens of *L. faginella* reposed on the trunks of the beech trees. Here, too, on fir, was *T. crepuscularia*, so sluggishly tenacious of its hold that some manœuvring was necessary to get it into a box. A large *Bombyx* careered madly among the birches, giving us just enough of a glance to suggest the idea of *versicolora*. The hot sunshine meanwhile lured various reptiles from their concealment, and two large vipers appearing suddenly in our path, we slew them for the benefit of Coleopterists. Numbers of lizards were also to be seen darting to their refuges as we approached; and, besides these, we met with the common English snake, the blindworm, and a third viper, which we missed.

Returning along the fence, we found a number of *Coleophora* cases, some already containing pupæ, and a few common *Tineæ*, such as *G. Swederella* and *E. rufo-cinerea*.

Reaching home, I found a lovely *A. berberata*, the third I have bred this year, waiting to be placed upon the setting-board. The season, so far, appears to be an early one; and the species of *Lepidoptera*—as far as my experience goes—are very well represented.—J. B. Blackburn, Grassmeade, Southfields, S.W., *May*, 1867.

A visit to Ailsa Craig.—Some friends of mine have just visited Ailsa Craig, and one of them (Mr. Coutts) has brought me back three kinds of caterpillars. The first, a geometra, evidently *Abraxas grossulariata*, was found in plenty, feeding, as my friend assures me, on *Cotyledon umbilicus!* There are no gooseberry or currant bushes on the rock. The next, a small larva of one of the *Lithosidæ* (probably of *Nudaria*), was in profusion on the bare stones, with no vegetation, excepting smooth lichens, near them. The other, a single larva of one of the *Noctuina*, but it was in a dying state when I saw it, and too far gone for hazarding any guess as to its identity. A pupa of one of the *Hepialidæ* was also found. The rock, which is eleven miles from the land, was not well examined, for, during the whole time (two nights) that the party were on it, the weather was very bad.—T. Chapman, Buchanan Street, Glasgow, *June* 10*th*, 1867.

Capture of Telephorus Darwinianus, in the South of Scotland.—This *Telephorus*, hitherto only taken at Aberlady, near Edinburgh, was yesterday captured under turf at the side of the Solway near the mouth of the Nith. The pinkish-yellow pupa was also abundant in the turf, close to the high water mark. I also captured, at the same time, *Phædon concinnum*, *Erirhinus bimaculatus*, two or three large species of *Dyschirius*, the small *Heterocerus sericans* (?) of Crotch's Catalogue, several specimens of a large *Bledius*, *Anchomenus atratus*, &c., &c.—W. R. McNab, M.D., Southern Counties Asylum, Dumfries, 17*th May*, 1867.

Review.

Coleopterologische Hefte. Part I; edited by Baron E. v. Harold, Munich (London, Longmans). This new publication may briefly be described as a German "Abeille." It is 8vo in size, and the first part contains 84 pages (price 2s.), the contents being, 1, a paper on *Canthidium (Coprophaga)* and its allies, with descriptions of 41 species, by the Editor; 2, Entomological Notes by Dr. Schaufuss, being an addition to his "Monographie der Sphodrinen" (pub. in the Dresden Isis, 1865), containing descriptions of a new genus (*Morphnos*) and two new species; 3, descriptions of five new species of *Leptusa*, from the Apennines and Pyrenees, by Dr. Scriba; 4, notes on the synonomy of *Gymnopleurus mundus* and *G. fastiditus*, by the Editor; and, 5, Diagnoses of 25 new species of exotic *Coprophaga*, also by the Editor. It appears that there will be from 4 to 6 parts every year.

We wish this new venture every success.

General Information.

The Entomological Club.—The annual dinner will take place on Wednesday, the 3rd of July, at the "Bull Inn," Birch Wood Corner. Mr. E. Newman in the Chair. Tickets 16s. each.

Hammerschmidt redivivus.—Since 1834, and until recently, there appeared in the list of Honorary Members of the Entomological Society of London, the name of Hammerschmidt of Vienna, who published many valuable memoirs, especially on gall insects, and entomological anatomy and physiology. During the troublous times in Austria about the year 1848, this gentleman seemed to disappear from the scientific world; and about six years since, as no information could be obtained as to his being still alive, the name was erased, and the place filled up. Within the last month, the Society has been somewhat startled at receiving from Paris a card bearing the name of "Dr. Abdullah Bey, Chevalier de l'ordre du Medjedié, Lt. Colonel et Médecin d'Etat-Major, Constantinople," and adding that he was formerly known as Dr. Hammerschmidt, of Vienna. Thus an enigma has to be solved. Being reasonably supposed to be dead, his position as Honorary Member was cancelled, and another gentleman (we do not say more worthily) occupies it. Which of the twain is now entitled to the honour?

The late Rev. Hamlet Clark, M.A., F.L.S.—With great sorrow we record the decease of this gentleman, at the early age of 44.

Indefatigable in collecting, possessed of an earnest love for Entomology, and uniting an innate rapidity of perception to a capability of unwearied application, Mr. Clark has long and worthily stood in the first rank of Coleopterists, who have indeed lost in him at once a courteous friend, and a persevering fellow-labourer. Of him it may most truly be said, that he was not only pre-eminently energetic himself, but the constant cause of energy in others.

As far as regards the limited field of British Entomology, Mr. Clark will long be remembered as one of that band of pioneers which cleared a starting point for us out of the confusion of older authors; and it is by his labours in the *Hydradephaga*, *Phytophaga*, and certain groups of the *Rhynchophora*, that the Coleopterists

of this country have chiefly benefited. His works, however, on exotic *Phytophaga* and *Hydradephaga* have procured for him an universal reputation; his last published labour being the first part of a projected Catalogue of the *Phytophaga* of the world, which we had occasion to notice at p. 23 of our third volume.

It is, perhaps, beyond the scope of such a notice as this to refer to private matters; but we may be pardoned for testifying that the same energy that prompted Mr. Clark in the cause of Entomology, urged him, and with a higher motive, to the unceasing discharge of his ministerial duties; so that, to those who knew him well (and he endeared himself by his amiability to all with whom he came in contact), the old simile of the sword wearing out its scabbard must inevitably recur.

About two years ago, repeated and severe attacks of illness warned him (unfortunately, too late) that he must take rest. He accordingly retired to Rhyl, in North Wales, where he died on the 10th of June, at an age when it is generally supposed that our capability for mental and physical endurance is most mature.

The passion for work ruled strongly in him to the end; for it is but a few weeks ago that he began collecting materials for a Brit. Mus. Catalalogue of *Hydradephaga*, being too weak to handle the larger boxes of exotic *Phytophaga*. Surely such an adherence to the text of "work" is not without its significance.

Some few years ago, Mr. Clark paid a short visit to Brazil, where he made valuable collections and observations. His collection of exotic *Phytophaga* is almost unrivalled, as he spared neither labour nor money in its formation. We cannot at present state what will become of it: possibly (but let us hope not) it will meet the fate of dispersion that too frequently attends the accumulations of the devotion of a life.

Correction of an Error.—With reference to Mr. Alfred E. Hudd's note, Ent. Mo. Mag., iv., 16, the "Japan silkworm" alluded to by Captain Hutton in the paper read at the January meeting of the Entomological Society was not *Bombyx Yamamai*, but a mulberry feeder producing a green cocoon: see Proc. Ent. Soc., 7th January, 1867.—J. W. Dunning, *June*, 1867.

Entomological Society of London. *June 3rd*, 1867.—Sir John Lubbock, Bart., F.R.S., in the Chair.

Mr. Pascoe exhibited a collection of beetles from Grahamstown, South Africa, which included several fine new species of *Longicorns*.

Mr. Wood exhibited a peculiar race of the North American butterfly *Vanessa Milberti*, from British Columbia.

Mr. Stainton read a letter, received from Professor Williamson, respecting a *Tortrix* which had occasioned great damage to the cotton crop in Upper and Lower Egypt, through boring into the seeds. The moth, of which he exhibited specimens, was *Earias siliquana*, which had always been considered a very scarce European species.

Mr. Bond exhibited a *Tortrix* from Darenth Wood, apparently new to this country; also a singular variety of *Adela De Geerella*.

Mr. Smith exhibited an old razor case, in one of the divisions of which was a collection of the cells of *Odynerus quadratus*; from this nest he had bred ten males

and four females, the latter appearing considerably after the others. He remarked also that, in allied insects, the number of males was generally in excess of the females.

Prof. Westwood said that he had recently seen a nest of a bee formed in the toes of a Mexican drinking vessel, formed in the shape of an imaginary quadruped.

Mr. McLachlan remarked that he had recently found a considerable number of the males of the saw-fly *Strongylogaster cingulatus*. The females of this species were universally abundant on the young fern-tops, but the male was rarely met with. He alluded also to the apparent absence of males in many *Tenthredinidæ; e.g.*,—*Selandria stramineipes*, the females of which are very common.

Mr. Smith said that, during many years, he had only once found the males of the *Strongylogaster*.

Mr. Stevens exhibited a *Gordius* which swarmed in his garden that morning after the heavy rain of the preceding night. He had been told that at the same time it was very abundant in Kent, twisting itself round the foliage of rose-trees; and Mr. Weir stated that he had been informed of a similar occurrence having been observed in another part of the country.*

The President exhibited a minute apterous Dipteron which he had found under bark in his grounds at Farnborough; he thought it was the *Epidapus venaticus* of Walker's work. Professor Westwood thought it might be identical with a species figured by De Geer.

Prof. Westwood enquired if any Member had observed any constant difference of colour in the larvæ of the sexes of *Lepidoptera*. Authentic information on this point is very desirable.

BRITISH HEMIPTERA: ADDITIONS AND CORRECTIONS.

BY J. W. DOUGLAS AND JOHN SCOTT.

(Continued from page 6.)

Section 9.—Capsina.

Family 3.—Miridæ.

Genus 2a.—Teratocoris, Fieb.

♂ Developed form.

Elytra horizontal, longer than the abdomen; *clavus* with a flexible suture; *cuneus* long, trapeziform, rounded at the apex, suture not flexible; *membrane* entire, with one long and somewhat oval cell; sub-coriaceous next the cuneus, and reaching to the apex of the latter.

♀ Unknown.

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* At the Linnean Society, on the 6th June, living examples of this were exhibited which had been found at Epsom under similar circumstances, and it was mentioned that it had occurred at many other places. Dr. Cobbold said it was the common *Gordius aquaticus*, and had apparently emerged from the ground in unusual numbers, owing to the heavy rain-fall.

All the other characters as in the "Europaischen Hemiptera," p. 245, and "Entomologist's Monthly Magazine," Vol ii., p. 248.

As the insect described below appears to be the developed form of this curious genus, the characters originally laid down by Dr. Fieber in the "Europaischen Hemiptera," and by us in the "Entomologists' Monthly Magazine," are not any longer strictly applicable. We, therefore, have to add the following, in order to make the characters complete. Besides this, it seems probable that the genus will require to be removed from the *Bicelluli* and placed in the Division *Unicelluli*, as we can only observe a single cell in the membrane. For the present, however, it is as well to leave it where it now is until a series of examples has been examined, in order to ascertain whether there is any variation in this respect.

Species 1.—Teratocoris viridis, Douglas and Scott, pl. 1, fig. 2.

Green, sparingly clothed with short, sub-erect, yellow hairs.

Head—Black, somewhat shining. *Crown* with a yellow spot adjoining each eye behind the transverse channel. *Face* yellow, central lobe with a black streak down its centre. *Antennæ* piceous, clothed with short darkish hairs; 1st joint greenish or greenish-yellow, with a broadish piceous streak on the outside, along its entire length; 2nd reddish, apex narrowly piceous; 3rd and 4th piceous. *Rostrum* yellow, apex black.

Thorax—*Pronotum* black, with two yellow spots in the middle, sides green, the colour widening out into a triangular form as it reaches the posterior margin. *Scutellum* black, within the basal angles a short brownish-yellow streak next the transverse channel. *Elytra* green, finely shagreened. *Clavus* inner margin narrowly black. *Membrane* pale fuscous; cell greenish, sub-coriaceous next the cuneus; cell nerve pale fuscous, with a narrow, darker margin exteriorly. *Sternum* green or greenish-yellow. *Mesosternum* in the centre black. *Legs* yellow, sparingly clothed with short darkish hairs. *Thighs* of all the pairs inclined to reddish at the apex. *Tibiæ* at the base, especially the 3rd pair, narrowly black. *Tarsi* pale reddish-yellow; apical half of the 3rd joint black. *Claws* reddish-yellow.

Abdomen underneath green, two or three of the apical segments greenish-yellow or yellowish. Length 2 lines.

We have only seen a single example of this insect. It was taken

by the Rev. T. A. Marshall, at Rannoch, and is the insect referred to by him as *Globiceps* (?) in his note on the *Hemiptera* of that place in the "Ent. Mo. Magazine," Vol. ii., p. 118.

Family 5.—Deræocoridæ.

Genus 1.—Deræocoris, Kirschb.

Species 8a.—Deræocoris alpestris, pl. 1, fig. 3.

Capsus pabulinus, *Meyer*, Caps. 48, 7 (1843).
Calocoris alpestris, *Fieb.*, Europ. Hem., 253, 7 (1861).

Green, or greenish-yellow, clothed with fine, depressed, yellowish hairs.

Head—Antennæ, 1st joint greenish or yellowish-green, the extreme base narrowly black; 2nd yellowish, apical half brown; 3rd and 4th brown, base of the former narrowly yellow. *Eyes* black. *Rostrum* greenish yellow, apex piceous.

Thorax—Pronotum constricted in front, hinder angles slightly raised; disc convex, deflected to the callosities, the latter connected in front by a short transverse band. *Scutellum* very convex, considerably raised above the clavus, with a slight central keel extending from the transverse channel to the apex. *Elytra* finely punctured throughout. *Clavus* flattish, convex between the inner margin and the nerve, from thence to the suture suddenly deflected. *Corium* almost flat at the base, slightly convex posteriorly. *Membrane* pale fuscous, anterior margin darker, inner marginal nerve piceous; cell nerves yellow. *Legs* greenish-yellow, clothed with fine, short, yellow hairs. *Thighs* inclined to reddish at the apex. *Tibiæ* with fine, short, somewhat spinose, blackish hairs. *Tarsi* brownish, 3rd joint darkest.

Abdomen—Underneath greenish yellow. Length $4\frac{1}{2}$—5 lines.

We have examples of this species from Mr. E. Brown, of Burton-on-Trent, who believes he captured them in the woods near there; and from Mr. T. J. Bold, who took them at Gibside, in July.

Family 6.—Litosomidæ.

Genus 1.—Litosoma, Douglas and Scott.

Species 1a.—Litosoma diaphanus, Kirschb.

Capsus diaphanus, *Kirschb.*, 78, 97, and 145, 15 (1855).
Capsus (Capsus) diaphanus, *Flor*, Rhyn. Liv. i. 613, 89 (1860).
Orthotylus diaphanus, *Fieb.*, Europ. Hem., 290, 9 (1861).

Somewhat elongate, anterior margins of the corium parallel.

Very pale green or yellowish-green, shining, clothed with somewhat erect whitish hairs, which in certain lights have a pale brownish lustre. *Antennæ* short, a little more than half the length of the body, thickly clothed with very short pale brown hairs; 2nd joint stout. *Thighs*, 1st pair on the underside with two rows of long, very fine, somewhat spinose hairs.

Head—*Antennæ* 1st and 2nd joints greenish or yellowish-green; 3rd and 4th pale greyish or brownish-yellow. *Eyes* black or pitchy-black. *Rostrum* yellowish-brown, tip black.

Thorax—*Pronotum* callosities not divided, their posterior margin arcuate. *Scutellum* almost level with the clavus, flattish convex, the anterior portion as far as the transverse channel not clothed with hairs. *Elytra* diaphanous, longer than the abdomen, very finely but unevenly wrinkled transversely. *Clavus* deflected to the corium. *Corium* horizontal as far as the junction with the cuneus, which is deflected; between the claval suture and the first nerve flat, from thence to the anterior margin rounded. *Membrane* very pale fuscous, iridescent; cell nerves bright green. *Legs* pale greenish-yellow. *Tibiæ* yellowish, apex of all the pairs narrowly brown. *Tarsi* brown. *Abdomen* underneath pale green, shining, clothed with fine, somewhat erect, whitish hairs.

Length $1\frac{3}{4}$ line.

Hitherto scarce. It has occurred at Lee and Eltham in August. Probably it may have been overlooked as *L. viridinervis*, but it may be easily separated from that insect by the shorter antennæ, and especially the thicker 2nd joint.

Family 9.—Globicepidæ.

Genus 1.—Globiceps, Fieb.

Species 4.—Globiceps dispar, Boh., pl. 1, fig. 4 ♂, 4 ♀.

For synonyms see the Ent. Mo. Mag., Vol. ii., p. 249.

♀. Developed form. 2nd joint of the antennæ (apical half) greatly incrassated, fusiform.

Head—*Antennæ*, 1st joint yellow, extreme base black; 2nd pitchy-black; 3rd yellow, towards and at the apex piceous; 4th piceous.

Elytra longer than the abdomen. *Clavus* with a pitchy-black triangular patch below the scutellar angle not extending entirely across the disc, but leaving the suture pale. *Cuneus* pale, apex faintly pitchy. Length $1\frac{1}{2}$—$1\frac{3}{4}$ line.

All the other characters as in the ♂.

In the undeveloped form the *elytra* are scarcely half the length of the abdomen, rounded at the apex, without a distinct *clavus* or *cuneus*, but in the former the pitchy-black patch is distinct. The *membrane* is rudimentary, and without cells. *Abdomen* above and beneath black and shining. Length 1½ line.

We are indebted to Mr. Bold, of Newcastle-on-Tyne, for both forms of this sex of this species. He found them together with the ♂'s at the roots of grass on the sea coast near Hartley, Northumberland, and also in a similar locality to that in which the Rev. T. A. Marshall found the specimens we have previously described.

The insect agrees in every way with Dr. Flor's description in the Rhynchoten Livlands, i., 472, 3, and thereby enables us to establish our *G. ater*, Ent. Mo. Mag., 248 (1866), as a distinct species.

Family 11.—Oncotylidæ.

Genus 2.—Macrocoleus, Fieb.

Species 2.—Macrocoleus sordidus, Kirschb.

Capsus sordidus, *Kirschb.*, Caps. 87, 116, and 150, 18 (1855).
Macrocoleus sordidus, *Fieb.*, Europ. Hem., 320, 5 (1861).

Dusky-yellow, clothed with erect black hairs. *Thighs* with minute brown spots.

Head—*Antennæ* pale yellowish; 1st joint at the apex with one or two erect, somewhat spinose, black hairs; 2nd clothed with yellowish hairs. *Rostrum* brownish-yellow, tip piceous.

Thorax—*Pronotum*, in front and on the sides, rather greenish; callosities distinct. *Scutellum* almost level with the clavus, flattish convex, with a pale greenish central streak. *Elytra* longer than the abdomen. *Clavus* with scattered deepish punctures. *Corium* not so deeply punctured as the clavus, interior margin pale greenish, apex with a brown patch between the claval suture and the 1st nerve. *Membrane* iridescent, fuscous; between the apex of the cuneus and the lesser cell-nerve a triangular white patch; cell nerves orange-yellow; cells yellowish, the apex of both brown. *Legs* yellowish. *Thighs*, on the upper side, with a row of minute brown spots down the middle; 2nd and 3rd pairs, in addition, with a few scattered, minute, brown spots at the apex. *Tibiæ* with erect, somewhat spinose, black hairs. *Tarsi* brownish-yellow; 3rd joint black.

Abdomen—Underneath greyish-yellow, clothed with depressed, white hairs. Length $1\frac{1}{2}$—$1\frac{3}{4}$ line.

Not uncommon at Darenth Wood and Mickleham on *Origanum vulgare;* by beating and sweeping in July.

Family 14.—Lygidæ.

Genus 5.—Lygus, Hahn.

Species*.—Lygus rugicollis.

Lygæus rugicollis, *Fall.*, Mon. Cim. 76, 30 (1807).

Phytocoris rugicollis, *Fall.*, Hem. Suec. 79, 6 (1829).

Capsus rugicollis, *H. Schf.*, W. I. iii., 80, f. 299; Nom. Ent. 49 (1835); *Sahlb.*, Geoc. Fen. 102, 23 (1848); *Kirschb.*, Caps. 182, 55a (1855).

Phytocoris marginata. *Zett.*, Ins. Lap. 271, 5 (1839).

Capsus (Capsus) rugicollis, *Flor*, Rhyn. Liv. i., 537, 38 (1860).

Plesiocoris rugicollis *Fieb.*, Europ. Hem. 272 (1861).

Green or yellowish-green, clothed with exceedingly short pale hairs; anterior margin of the *corium* yellow.

Head—Shining. *Crown* with a central channel, hinder margin narrowly keeled. *Antennæ* green or greenish-yellow; 2nd joint at the apex brown, 3rd and 4th brown, base of the former narrowly whitish or yellowish. *Rostrum* greenish, apex black.

Thorax—Shining. *Pronotum:* callosities joined in front by a short transverse keel; disc deeply punctured and coarsely wrinkled transversely. *Scutellum* convex, raised above the clavus, finely wrinkled transversely. *Elytra* not shining. *Clavus* very finely but unevenly punctured, inner margin narrowly blackish. *Corium* very finely but unevenly punctured; anterior margin yellow, the colour extending for a little way upon the disc. *Membrane* pale fuscous; cell nerves green. *Legs* green or yellowish-green. *Tibiæ* at the apex narrowly blackish. *Tarsi* pale brownish, 3rd joint at the apex black.

Abdomen—Underneath green, clothed with very fine pale hairs. Length $2\frac{1}{2}$ lines.

We have only seen a single example, taken by Mr. F. Archer, of Liverpool, "by sweeping on low-lying ground, just inland of the sand-hills at Formby and Crosby, end of August."

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* Should stand before *L. pabulinus* in our work.

After death the head, thorax, and scutellum become more or less yellow. The hairs on the corium are so very minute that they can only be seen in certain lights, appearing like atoms.

Family 17.—Lopidæ.

Genus 1.—Lopus, Hahn.

Species 1*.—Lopus superciliosus.

Cimex superciliosus, *Lin.*, S. N. ii., 728, 85 (1767).

Lygæus albomarginatus, *Fab.*, E. S. iv., 180, 164 (1794).

Capsus albomarginatus, *Fab.*, S. R. 245, 24 (1803); *Fall.*, Hem. Suec. i. 117, 3 (1829).

Phytocoris gothicus, Ab. b., *Burm.*, Handb. ii., 272 (1835).

Capsus (Capsus) gothicus, var., *Flor*, Rhyn. Liv. i. 480 (1860); [*nec* Lopus albomarginatus, *Hahn.*, Wanz. i. 140, t. 22, fig. 72 (1831); *Fieb.*, Europ. Hem. 267, 1 (1861); *neque* Phytocoris albostriatus (*Klug*) *Burm.*, Handb. ii., 271, 21 (1835)].

Black, with black hairs, a line on the crown close to each eye, and the anterior margin of the *corium* only, yellowish-white; sides of the *abdomen* beneath with a reddish line.

Head—With erect hairs, the superior side of the orbit of the eyes with a distinct yellowish-white line. *Antennæ*, 1st and 2nd joints, with projecting hairs.

Thorax—*Pronotum* slightly convex, wholly deep black, with fine, distant punctures and erect hairs. *Scutellum* black, smooth. *Elytra* fuscous-black throughout, except the *corium* narrowly yellowish-white on the anterior margin, the hairs few, short, prominent; *cuneus* and *membrane* concolorous with the corium, next the anterior margin of the membrane a broad, darker shade, the small cell and the inner margin also darker. *Wings* fuscous, iridescent. *Sternum* and *legs* entirely black.

Abdomen—Black, beneath with fine, short, projecting hairs; on each side an indistinct reddish line. Length 3 lines.

Differs from *L. gothicus* in being fuscous and not deep black, and in the absence of all lighter markings, except on the head, corium, and sides of the abdomen underneath as stated.

Linné's description, *l. c.*, applies perfectly to our insect:—"Corpus nigrum, mediocre. Abdominis latera subtus utrinque litura rufa. Antennæ longitudine corporis, apicem versus angustiores. Palpebra

superior et elytrorum margo exterior alba." Fabricius' description, *l. c.*, also agrees, except that he says, "Thorax niger in altero sexu margine rufo, in altero immaculato;" but this may be correct if both sexes were examined. Fallén's description is exact. Burmeister puts the insect as a var. of *Ph. gothicus*. Flor merely says that he has not found "the variety *albomarginatus*, Fabr., Fall." Fieber quotes the foregoing names of Linné, Fabricius, and Fallen for his var. B of *Lopus gothicus*, but his description does not accord with our insect, for he says, "Sides of the pronotum only in front with a whitish streak, only the point of the scutellum orange." It appears to us that our insect possesses sufficient characters to constitute a distinct species.

We have never met with the species; but Mr. Dale has two or three examples, taken by himself at Middlemarsh Wood, near Glanvilles Wootton, Dorset, early in July.

Species 2.—Lopus flavomarginatus.

Cimex flavomarginatus, *Donov.*, Nat. Hist. Brit. Ins. vii., 79, pl. 245 (1798).

Lopus miles, *Doug. & Scott*, Brit. Hem. 476, 2, pl. 15, fig. 7 (1865).

The species described by us, *l. c.*, is, without doubt, that described and figured by Donovan; for although his description is accurate as far as it goes, it omits all mention of the yellow streaks on the head, and the rings on the thighs and tibiæ; yet, as the omissions are made up by the figure, in which all these marks are represented, Donovan's name must be substituted for ours.

(To be continued.)

NEW SPECIES OF INSECTS FROM THE PROVINCE OF CANTERBURY, NEW ZEALAND, COLLECTED BY R. W. FEREDAY, ESQ.

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

So little is at present known of the Insect Fauna of New Zealand, that Entomologists have reason to feel greatly indebted to Mr. Fereday, formerly well known as a British collector, who, being now resident near Christchurch, in the Middle Island, is devoting his leisure hours to the observation of insects of all orders in his neighbourhood, and has sent home two very interesting collections to his old friends Messrs. Lynch and Knaggs, to whom I am indebted for the opportunity of examining them. They consist of a set of *Coleoptera* preserved in spirits, and a series of nearly all orders pinned, and in remarkably fine condition.

The following descriptions are those of the principal new species of *Coleoptera* and diurnal *Lepidoptera;* the numerous species of moths and *Trichoptera* have yet to be examined.

The Insect Fauna of New Zealand is said to be extremely poor. With respect to the diurnal *Lepidoptera* this is no doubt true; but it will require the exertions of many resident collectors, with the knowledge and ardour of Mr. Fereday, before we can come to any definite conclusion regarding the *Coleoptera* and other families and orders. The southern colonies of Australia are also extremely poor in butterflies, although it is now known they have an exceedingly rich Coleopterous Fauna. The butterflies sent home by Mr. Fereday comprise only six species,—*Pyrameis Gonerilla* (Fab.), *Argyrophenga antipodum* (Dbldy.), *Chrysophanus Edna* (Dbldy.) and *Feredayi* (n. sp.), *Lycæna Oxleyi* (Felder), and *L. Boldenarum* (White). Amongst the *Coleoptera* are three *Lucanidæ* (one new), three *Cicindelæ* (one new), three *Feroniæ*, two interesting new genera described below, and many unexamined *Heteromera* and *Curculionidæ*. With regard to the relations of the Fauna with those of other countries, it would be premature to discuss this important question before possessing much more knowledge of the insect productions than we have at present.

Chrysophanus Feredayi, n. sp. (*Lepidoptera Rhopalocera*).

C. Ednæ (Doubled.) simillimus; differt palpis antice griseo-albo et nigro hirsutis, alis posticis subtus brunneo nebulosis. ♂ ♀.

Similar in size, form, and colours to *C. Edna*, but differs from all the varieties of that species in the palpi in front being clothed with whitish hairs mixed with black, instead of yellow hairs. The black marks of the upper surface are also larger and more confluent, and the under surface of the hind-wings is yellow, with a broad curved discal patch, and a wide posterior border (confluent at the apex) violet-brown. The wings above are violet-black, with the discal area and a macular belt of six quadrate spots on both wings shining fulvous, the discal area in the fore-wing being divided by three spots and the black nervures, and on the hind-wing by one spot. There is a sub-marginal row, also of three fulvous spots, near the anal angle of the hind-wing, and the basal fourth of both wings is clothed with tawny-brown hairs. Both sexes are alike in colours and markings.

There are a pair (male and female) in the last collection sent by Mr. Fereday.

Cicindela Feredayi, n. sp.

C. oblonga, sub-depressa, supra opaca, viridi-obscura; labro curto,

albo, medio triangulariter producto, dente mediana valida instructo, angulis lateralibus rotundatis: thorace transverso, opaco, lateribus valde rotundatis, sulcis antico posticoque profundis; elytris apice dehiscentibus, supra æqualiter haud profunde punctatis, lunula magna humerali, marginibus lateralibus, vitta mediana obliqua angulata (cum margine connexa) et lunula apicali, albis. Long. 5-lin. ♀.

This very interesting new species is not closely allied to any other at present known, and it belongs to quite a different group from the rest of the described species from New Zealand, being nearer the European *C. litterata* and its allies. The transverse-oval thorax, with its very broad, deep sulci, gives it a peculiar appearance. The body is depressed above; the elytra have rectangular humeral angles, and are gradually widened beyond the middle; they are singly rounded at the tip and gaping at the suture, the raised sutural margins terminating in a spine some distance from the apex. The head is but little depressed between the eyes, and very finely strigose, the striæ not being more conspicuous near the eyes, as is usual in the genus *Cicindela*. The thorax is apparently impunctate, but with a powerful lens it appears very finely strigose; the sides are regularly and strongly rounded. The elytra have an even surface, and are regularly and not very closely covered with shallow punctures; the white lateral margin is of regular width, except near the lower curve of the humeral lunule, where it is very narrow; the apical lunule forms part of it, its upper curve only being visible as a triangular projection from the white border; the central vitta is wide at its commencement on the border; it runs obliquely as a thin line to the middle of the elytron, and then bends at an obtuse angle, and runs nearly parallel to the suture for some distance down the disc. The under surface is blueish-black; legs and coxæ, and four basal joints of the antennæ, brassy-green. The head in front, and the basal joints of the antennæ, have a few distinct punctures. The legs are moderately slender, and of pretty nearly the same proportions as in *C. litterata*.

One example.

CERATOGNATHUS ALBOGUTTATUS, n. sp. (*Lucanidæ*).

C. parvus, ovatus sub-depressus, brunneo-obscurus, thoracis lateribus late rufescenti-brunneis, elytris maculis nonnullis albis e squamulis longioribus formatis. Long. 3¼-lin. ♂.

One of the smallest species of the stag-beetle family. The mandibles are only one-half the length of the head, very broad or

dilated externally near the base, and abruptly narrowed towards the tips; they are horizontal, and the apex of each is bifurcated. The palpi are elongated and filiform. The leaflets of the antennæ are rather short, not longer than the basal joint, and are clothed with longish hairs. The head, thorax, and elytra are covered with round punctures or foveæ, and short brownish hair-scales; on the thorax there is a smooth dorsal line, and a few irregular smooth spots; the elytra have also a few short linear irregular smooth spaces, and several small white spots formed of fascicles of longer hair-scales; six of these spots are more conspicuous, and are arranged in two longitudinal rows on each elytron. The thorax is much narrowed anteriorly, and the sides are rounded. The external edges of the tibiæ are serrated; the fore and middle tibiæ have, besides, an acute tooth below the middle, and the fore tibiæ a recurved apical tooth.

One example. Mr. Fereday has also sent many specimens (♂ ♀) of the rare *Ceratognathus Helotoides*, Thoms., and *Lissotes reticulatus*, Westw., both belonging to the *Lucanidæ*.

Sphallax, nov. gen. (*Carabidæ*).

Facies of *Peryphus* (*Bembidiidæ*); body depressed, head and thorax scarcely half the width of the elytra, the former ovate, not contracted behind; eyes scarcely prominent; the thorax small, narrow, cordate. Labrum transverse, slightly emarginate in the middle. Mandibles moderately short, curved and acute. Mentum with a bifid tooth in the middle of the emargination, lateral lobes rounded outwards, and terminating each in a longish acute spine. Ligula elongate, lanceolate, pointed, horny, glossy, and convex, wholly detached from its paraglossæ, which are shorter than it, and curved inwards. Palpi rather short and stout; terminal joints considerably longer than the penultimates, obtusely pointed. Antennæ moderately short, filiform; third joint the longest, second very short. Legs moderately short and slender; all the tibiæ sulcated above and beneath; anterior tibiæ deeply notched. Anterior tarsi, in the ♂, with four joints moderately dilated, triangular; clothed beneath with a dense brush of short pale hairs. Prosternum not produced; mesosternum concave; epimera of the mesosternum much widened externally, and not reaching the socket internally. Elytra obliquely truncated, without sinuation.

The assemblage of characters as above indicated show that this curious little Carabide is not closely allied to any known genus or subfamily. The integuments are quite glabrous, and forbid its association

with the *Chlæniinæ*, with which it agrees in the clothing of the fore-tarsi in the ♂ ; it differs also from them in the condition of its tongue and paraglossæ. With the *Bembidiinæ* it has nothing in common, except general form and the triangular outline of its mesosternal epimera; and it has no near alliance with the *Lachnophorinæ*. It will probably have to form a distinct sub-family.

Sphallax Peryphoïdes, n. sp.

S. depressus, æneo-obscurus, glaber, supra subtiliter alutaceus, vix nitidus; capite prope oculos rugoso; thorace auguste marginato, supra longitudinaliter sulcato, transversim strigoso; angulis rotundatis; elytris latis, depressis, striatis, striis latis minime profundis, 2ndo bi-, 3tio uni-foveolata; stria scutellari distincta. Long. 3¼-lin. ♂ ♀.

Above of a dark, obscure bronze colour, scarcely shining, owing to the surface being very finely coriaceous, and the thorax transversely strigose. The anterior angles of the thorax are closely applied to the neck, and the posterior angles are rounded and inconspicuous; the anterior transverse and the longitudinal sulci are deeply marked. The elytra have eight broad and shallow impunctate striæ, besides the well-marked scutellar line; the marginal stria is very wide and shallow, and has a row of shallow punctures; the second stria from the suture has two large punctures, and the third one puncture. Body beneath shining.

Three examples.

Bembidium (*Peryphus*) Maorinum, n. sp. (*Carabidæ*).

B. convexiusculum, nigro-æneum, nitidum, trophis et antennis piceo-rufis, pedibus nigro-piceis: fronte utrinque rugoso-sulcata, prope oculos fovea rotundata notata; elytris punctato-striatis, interstitiis latis, planis, 3io tri-, 5to bi-foveato, stria obliqua apicali profunda; palpis articulis penultimis elongatis hirsutis. Long. 3-lin. ♂ ♀.

Resembles in general form our common *Bembidium littorale*, except that the thorax is smaller and narrower, and the elytra more convex. The whole insect is very glossy; the thorax is wrinkled transversely, and the posterior angles are not so prominent as in *B. littorale*. The general colour is a dark bronze; the striæ continue well marked to the apex, and the short oblique apical sulcus is very distinct. The long and hairy penultimate joints of the palpi are remarkable.

Two examples, male and female.

Lepidoptera observed during an excursion in Italy and Switzerland.—In travelling through Italy and Switzerland in 1866, I devoted a little time to Entomology; but what with other fascinating objects which allure the wandering *Homo*, my time for collecting was much reduced.

The following list contains the result of my peregrinations; but, before beginning it, it will be as well to say a few things about the various localities mentioned therein.

Rome. I was here from the end of March to the beginning of May. My usual hunting-ground was among the Ilexes and in the meadows of the beautiful grounds of the Villa Borghese, well known to all visitors of the "Eternal City."

Capri, where I was in May, is a little island at the extremity of the Bay of Naples. It is nearly surrounded by high precipices of Cretaceous limestone, of which the island principally consists. The surface of the island is very hilly, there being scarcely a level place on it. The central valley of the island consists of Eocene sandstone and marl, covered by volcanic dejections.

Florence, which I visited in June, is about 174 feet above the sea. The hills surrounding it consist of sandstone and limestone; but the Valley of the Arno, in which my hunting-ground, the Cascine, lay, is a modern alluvial deposit.

Como (or rather Cernobbis, on Lake Como), where I was in July, is about 700 feet above the sea.

Le Prese, in the Canton Grisons, Switzerland, is on the Italian side of the Bernina Pass, and about 3,000 feet above the sea.

Pontresina, on the other side of the Bernina Pass, is about 6,000 feet above the sea. I can but echo Mr. Stainton's remarks (vide Annual for 1866, and Ent. Mag.) on this delightful valley of the Inn (Engadine). I never saw so many insects in my life; and yet I fancy that if the previous season were bad there, 1866 was worse. In short, Pontresina and the Engadine generally is a kind of entomological and botanical paradise. The rocks of the Bernina range are schistous.

The book I have employed in determining the species not occurring in Britain, is Mr. Kirby's excellent "Manual of European Butterflies," of which I can only say that I wish he would continue his labours and give us a manual for European moths. I find, however, that the list of Italian species given in Appendix I. is not quite so complete as it might be, many species that I observed not being mentioned therein. These species (which number 32 for Italy and 3 for Switzerland) I have indicated in the following list by an *. Where I have especially recorded the month in which a species was observed, it is because the true appearance observed is different from that given by Mr. Kirby.

RHOPALOCERA.

* *Papilio Podalirius*; neighbourhood of Lake Como, Italy. This once reputed British species seems specially to affect roads, on the dust and mud of which it loves to sit and walk. * *P. Machaon* L.; Rome and Capri.

Parnassius Apollo, L.; Le Prese and Pontresina. Strong on the wing.

Aporia cratægi, L.; Le Prese, in July.

* *Pieris brassicæ*, L.; Rome, Capri, Florence. *P. napi*, L.; Rome, Florence. *P. rapæ*, L.; Rome. * *P. Daplidice*, L.; Rome, Capri.

* *Anthocaris Tagis*, H.; Capri. * *A. cardamines*, L.; Rome, Capri.

* *Leucophasia sinapis*, L.; Florence and Como. Var. *erysimi*, not uncommon.

Colias Palæno, L.; Pontresina. Only saw the male. *C. Phicomene*, Es.; Pontresina. * *C. Hyale*, L.; abundant near Lake Como. * *C. Edusa*, Fab.; Rome, Capri, Florence, and Como; Le Prese, Switzerland. ♀ Var. *Helice*, H.; two specimens at Le Prese.

* *Gonepteryx rhamni*, L.; Rome, in April; Florence, in June; Como, in July. * *G. Cleopatra*, L.; Rome, in April; Capri, in May; Como, in July. This species and *G. rhamni* both occur at Rome; *Cleopatra* only in Capri.

Melitæa Maturna, L; Pontresina, July. *M. Artemis*, L.; Pontresina. *M. Phœbe*, Fab.; Rome, Florence, Pontresina. *M. didyma*, Es.; Rome, Como, Pontresina. One specimen that I caught has the black spots represented by black dashes. * *M. Deione*, H.; Pontresina. *M. Dictynna*, Es.; Le Prese and Pontresina. * *M. Britomartis*, A.; Como and Le Prese.

Argynnis Euphrosyne, L.; Le Prese, Pontresina. *A. Pales*, W. V.; Pontresina. *A. Amathusia*, Es.; Le Prese. * *A. Lathonia*, L.; Florence and Como. *A. Aglaia*, L.; Le Prese and Pontresina. *A. Niobe*, L.; Le Prese and Pontresina. This species closely appproaches *Adippe*, but has yellow instead of silvery spots on the underside. A variety with silvery spots was not uncommon. *A. Adippe*, W. V.; Como. Var. *Chlorodippe*, Es., which is greenish below; and var. *Cleodoxa*, V. G., in which the silver spots are replaced by yellow, were caught. *A. Paphia*, L.; Como.

Grapta Egea, Cr.; Rome, and Naples in May. *G. C-album*, L.; Como and Le Prese.

* *Vanessa polychloros*, L.; Rome and Como. *V. urticæ*, L.; Pontresina. *V. Io*, L.; Rome.

* *Pyrameis Atalanta*, L.; Rome and Capri, in April and May. * *P. cardui*, L.; Rome, Capri. This species and *Atalanta* were abundant on the summit of Monte Solaro (1800 feet), the highest point of Capri.

Melanagria Galathea, L.; Florence, Como, Le Prese.

* *Lasiommata Megæra*, L.; Rome, Capri, Florence, Como. *L. Ægeria*, L.; var. with the spots yellowish fulvous; Rome and Como. * *L. Mœra*, L.; Capri, Como, Le Prese.

Hipparchia Hermione, L.; Como. *H. Semele*, L.; Capri and Como. The specimens I saw in Italy were larger than any British specimens I have seen. *H. Janira*, L.; Capri, Florence. Capri specimens are very large and bright coloured. I caught in Capri an aberration (♂), in which the dull brown is replaced by a light ochreous colour and fulvous markings. *H. Ida*, S.; Capri, in May.

Cœnonympha Arcanius, L.; Como and Le Prese. *C. Philea*, H.; Pontresina. *C. Pamphilus*, L.; Rome, Florence, Como, &c. Var. *Lyllus*, common. Another var. on Monte Bisbino, near Como.

Erebia Melampus, Flu.; Le Prese, Pontresina.

E. Ceto, H.; Le Prese. *E. Tyndarus*, Es.; Pontresina. *E. Gorge*, S.; Le Prese, Pontresina.

Libythea Celtis, Es.; Como.

* *Nemeobius Lucina*, L.; Como.

* *Thecla acaciæ*, Fab.; Florence.

Chrysophanus virgaureæ, L.; Le Prese, Pontresina. *C. Eurydice*, Rg.; Pontresina. *C. Gordius*, S.; Le Prese. * *C. Phlæas*, L.; Rome, Florence, Como, Le Prese. The Florence specimens are very dark, and have the copper-colour strongly suffused with black.

Polyommatus bæticus, L.; Capri, in May. *P. Telecarus*, Ht.; Rome, in April; Florence, in June. * *P. Ægon*, W. V.; Rome, Florence, Le Prese. * *P. Argus*, L.; Florence, Como, Pontresina. *P. Optilete*, Kh.; Pontresina. *P. Battus*, W. V.; Como, in July. * *P. Hylas*, W. V.; Rome. *P. orbitulus*, S.; Pontresina, at about 8,000 feet. * *P. Medon (agestis)*; Le Prese. * *P. Icarus* Rg. *(Alexis)*; Rome, Capri, Florence, Pontresina. *P. Chiron*, Rg.; Rome, in April; Como. *P. Admis*, W. V.; Como. *P. Corydon*, Si.; Le Prese. * *P. argiolus*, L.; Rome, Capri. * *P. Alsus*, W. V.; Capri and Como. *P. Cyllarus*, Rg.; Capri. *P. Arion*, L.; Le Prese and Pontresina.

Pyrgus malvarum, L.; Rome, Florence, Como. *P. marrubii*, R.; Como. * *P. malvæ*, L. (*albeolus*); Rome, Como, Le Prese.

* *Pamphila Thaumas*, Hg. (*linea*); Florence, Le Prese. * *P. lineola*, O.; Florence. * *P. Sylvanus*, Es.; Florence, Le Prese. * *P. comma*, L.; Capri, Pontresina.

Nocturni.

Anthrocera, Minos, W. V.; Como, Le Prese. *A. trifolii*, Es.; Como. *A. filipendulæ*, L.; Como. *A. onobrychis*, Fab.; Como.

Syntomis Phegea; Como, Le Prese.

Procris statices, L.; Pontresina.

Deilephila euphorbiæ, L.; Capri. Found larvæ of all sizes feeding on two species of *Euphorbia*. As I had no proper receptacle for rearing larvæ, I contented (?) myself with four specimens, which entered the pupa state about the same time. In about three weeks afterwards (in June) moth No. 1 made its appearance. The other three did not come out for some time, and then at distant intervals, the last not appearing till October! Remembering the interesting account of the larvæ of this species in Mr. Stainton's Manual, I tried the Capri larvæ with the milky juice of the *Euphorbia*, and found that they readily sucked it up; indeed, Mrs. White quite made pets of these handsome caterpillars, and carried them about from one *Euphorbia* bush to another, feeding them with the euphorbiaceous milk, which they seemed to enjoy as much as kittens (not *Dicranura furcula*, but our fireside friends) enjoy cream.

Macroglossa stellatarum, L.; Rome, &c.

Setina irrorella, Hb,; Le Prese. *S. aurita*, Esp.; Como, Le Prese.

Lithosia rubricollis, L.; Le Prese.

Deiopeia pulchella, Es.; Capri.

Chelonia plantaginis, L.; Pontresina. Var. *hospita*, W.; Pontresina.

Arctia villica, L.; Capri. Flying at noon.

Phragmatobia fuliginosa, L.; Como.

Liparis salicis, L.; larvæ at Le Prese.

Geometræ.

Hyria auroraria, W V.; Rome. *Acidalia ornata*, Scop.; Rome. *Timandra*

amataria, L.; Florence. *Sterrha sacraria*, L.; Capri. *Pellonia vibicaria*, L.; Florence. *Aspilates citraria*, Hb.; Florence. *Larentia cæsiata*, W. V.; Pontresina. *L. ruficinctata*, Le Prese. *Eupithecia centaureata*, Roes.; Rome. *Melanippe unangulata*, Haw.; Rome. *Camptogramma bilineata*, L.; Rome, Florence, Como. *Eubolia mensuraria*, W. V.; Le Prese. *E. bipunctaria*, W. V.; Le Prese. *Anaitis plagiata*, L. Rome. *Tanagra chærophyllata*, L.; Le Prese.

NOCTUÆ.

Caradrina cubicularis, W. V. *Agrotis corticea*, W. V.; Florence. *Triphæna pronuba*, L.; Rome, in May. *T. orbona*, Fab.; Como. *Anarta melanopa*, Beck.; Pontresina. *Agrophila sulphuralis*, Hb.; Como. *Acontia luctuosa*, W. V.; Como. *Plusia gamma*, L.; Rome, &c. *Toxocampa craccæ*, W. V.?; Florence. *Ophiodes lunaris*, W. V.; Lake Albano, near Rome. *Euclidia glyphica*, L.; Como.

PYRALIDES.

Pyrausta punicealis, W. V.; Rome. *Botys verticalis*, Hb.; Florence. *Stenopteryx hybridalis*, Hb.; Rome, Florence.

CRAMBIDES.

Ilythia carnella; Florence. *Crambus cassentiliellus*; Florence,

TINEÆ.

Psyche helix; Capri, Como. The cases of this interesting species, which is said to be a constant example of true parthenogenesis (vide Siebold), were very abundant at Capri; less so at Como.—F. BUCHANAN WHITE, M.D., Perth, 1867.

Indian Lepidoptera.—I send a list of some captures here and in the plains. You would confer a great boon on us out here if you could devote an occasional chapter in your valuable work to Indian genera. There are no public libraries here, and very few entomologists at work.

Captures at Simla during May.—*Polyommatus Laius*, rare; *Lycæna Cnejus*, rare; *L. bætica*, common; *Chrysophanus Parana*, common; *Ilerda Sena*, common; *Dipsas Melampus*, rare; *Dodona Durga*, rare; *Gonepteryx nipalensis*, common; *Pieris brassicæ*, common; *P. Gliciria*, common; *P. Daplidice*, common; *Colias Edusa*, rare; *C. Hyale*, very rare; *Papilio Machaon*, common; *P. Memnon*, rare; *P. Protenor*, common; *P. dissimilis*, rare; *Vanessa cashmirensis*, common; *V. xanthomelas*, rare; *Pyrameis Callirhoe*, common; *P. cardui*, common; *Junonia Orithyia*, common; *Argynnis Niphe*, rare; *A. Issæa*, very common; *A. Kumala*, rare; *Neptis aceris*, common; *N. Hordonia*, rare; *N. Vikari*, rare; *Athyma opalina*, common; *A. Leucothoe*, rare; *Erebia Skanda*, rare.

Jounpore, N. W. Presidency (plains), in July.—*Lycæna Pluto*, *L. Cnejus*, *L. bætica*, *Aphnæus Etolus*, *Callidryas Pyranthe*, *C. Hilaria*, *C. Alcmeone*, *C. Philippina*, *Terias Hecabe*, *T. Læta*, *T. venata*, *T. Sari*, *Pieris Mesentina*, *P. Eucharis*, *P. Coronis*, *Thestias Enippe*, *T. Marianne*, *T. Pyrene*, *Papilio dissimilis*, *P. Sarpedon*, *P. Hector*, *P. Memnon*, *P. Polytes*, *P. Pammon*, *P. Erithonius*, *Danais limniacæ*, *D. similis*, *D. Cleona*, *D. Plexippus*, *D. Chrysippus*, *Euplœa Core*, *E. Telchinia*,

E. violæ, *Pareba Vesta*, *Junonia Lemonias*, *J. Œnone*, *J. Orithyia*, *J. asterii*, *Atella Phalanta*, *Melanitis Leda*, *M. Banksia*, *M. Bela*, *Mycalesis Samba*.—F. J. Atkinson, Bengal Civil Service, Simla, *May 27th*, 1867.

[We beg to remind our correspondent that it rests with entomologists resident in India to furnish notes on the productions of that country. We shall always be delighted to receive their communications, especially when they contain information on the habits and metamorphoses of Indian species.—Eds.]

Occurrence of a Tortrix (Grapholitha ravulana, H.S.) new to Britain.—A short time since Mr. E. G. Meek, one of our most energetic and successful collectors, placed in my hands for identification some specimens of a *Tortrix* of which he had secured an example in 1866, but was then unable to get named, and of which he had captured several in June last, by beating undergrowth in Darenth Wood. Being convinced that it was a species new to our lists, I at once sought the assistance of Dr. Staudinger, of Dresden, who has most obligingly furnished me with its name, adding that it has also been taken under 69° north latitude in Finmark, near the North Cape, that Dr. Herrich Schäffer's figure (143) is not exact, and that the species is very rare.

Dr. Staudinger has also very kindly submitted the specimens in question to the inspection of his friend Dr. Wocke.—H. G. Knaggs, *July 5th*, 1867.

Occurrence of a Scoparia (S. ingratella, Zeller) new to Britain.—I have for some time been impressed with the idea that a *Scoparia* which occurs abundantly enough in the Folkestone Warren was distinct from the *pyralella (dubitalis)* of our cabinets, more especially as its size averages considerably larger than in the last-named, black markings are absent or very faint, and the habit of the perfect insect is to rest on lumps of chalk, &c. A few months ago, whilst overhauling Mr. Stainton's collection, I came across some specimens which my friend had received from Prof. Zeller, ticketed *ingratella*, and at once observed that they were identical with the Folkestone insect; an opinion in which Mr. Stainton coincided, and the correctness of which Drs. Staudinger and Wocke have just confirmed. Still, although there can be no doubt that the Folkestone specimens are specifically identical with the continental *ingratella*, I am by no means over positive that both may not possibly some day turn out to be varieties of *pyralella*, which is certainly an excessively variable species.—Id.

Capture of Sesia scoliæformis in Scotland.—A fine female of this species was taken on the 15th inst., near Loch Rannoch, by my son, Benjamin Cooke, jun. I found an empty pupa-skin protruding from the trunk of a birch tree in the same locality three years since, but was not so fortunate as to meet with the imago.

I believe this to be the first instance of its capture in Scotland.—Nicholas Cooke, Spring View, Liscard, *17th July*, 1867.

Description of the larva of Hadena genistæ.—By the kindness of Mr. Doubleday, who liberally supplied me with part of a young brood reared from eggs, I have been able to take figures and notes of this species.

They fed well on *Alsine media* and *Polygonum persicaria*, and were one-third grown by July 14th, and by the 29th, some had obtained their maximum size, and the others by August 7th, and had all retired below the earth by the 14th. The moths came forth from June 11th to 13th, in the following year 1866.

When young, the colours of these larvæ were brighter and darker than they afterwards became, with distinct paler dorsal and sub-dorsal lines outlined with darker, and black spiracular lines, otherwise their markings were similar to the following. When full grown, they were very plump creatures, varying from an inch and five-eights to an inch and three-quarters in length, cylindrical, and tapering towards the head; the back and sides, as far as the row of spiracles, of very mottled dull brown, brownish-grey, dull greenish-grey, deep purplish-brown, or dirty olive-greenish, for all these tints were found in the brood. The dorsal and sub-dorsal lines outlined with darker brown, in many instances only visible on the anterior segments, and in others also at the segmental divisions.

A series of darker brown diamond and wedge-shaped marks down the middle of the back, on the fifth to the twelfth segment, inclusive, viz., on each of those segments a diamond united to a wedge shape on either side, the broad ends of the wedges extending to the end of the twelfth segment only, and to about one-third from the ends of the other segments, each wedge pointing forwards reaching a-third into the segment in advance. The tubercular dots blackish, the upper pair placed on the edges of the diamonds, the lower pair on the broad ends of the wedges; in the purplish-brown variety the dots and lines paler than the ground colour, and in some instances not visible.

The whitish spiracles edged with blackish are placed along the terminal line of the above brown colouring, and the remaining surface below, including the legs, is of a dirty whitish or pale drab colour, the legs tipped with brown.

Head with two central black streaks across the face; a dark brown plate on the second segment, sometimes marked with one pair and in others two pairs of pale spots.—Wm. Buckler, Emsworth.

Description of the larva of Hadena adusta.—The larvæ of this species seem easy to rear as far as their full growth, on lettuce, knot grass, hawthorn, and sallow; about the end of September they become torpid, and hybernate until the warmth of spring awakens them, when they spin a slight cocoon under moss and dead leaves, the perfect insects appearing towards the end of June; but it frequently happens that in confinement the larvæ die during hybernation, as it is difficult to prevent their being attacked with mildew if kept moist, and on the other hand they die off if too dry.

The full-grown larva is about an inch and a-half to an inch and five-eights in length, cylindrical, and of nearly uniform width, of a full green colour, with the whole upper surface of back and sides as far as the spiracles freckled with a deep purplish-red, which down the middle of the back becomes aggregated in the form of diamonds, each occupying the area of a segment within the sub-dorsal lines, these last, and the spiracular line with the space between them, are freckled and streaked obliquely with the same red colour. The dorsal line only indicated by a dusky spot at each segmental division; the tubercular dots blackish.

The spiracles white, edged with black, the belly and legs of the green ground colour.

I am indebted to the kindness of Mr. Steele, of Congleton, for the subjoined varieties.

Var. 1.—Ground colour a brilliant yellow, the upper surface as above mentioned, suffused with deep rose-pink; the dorsal stripe composed of two darker pink lines, confluent at the beginning of each segment, forming a spot; the sub-dorsal stripe bright yellow, only visible on the anterior halves of the segments; the tubercular spots and two transverse streaks near the end of each segment also of the bright yellow ground colour.

Var. 2.—A dull pale yellowish-green, the dorsal stripe faintly outlined with orange-red, with a spot at the segmental divisions; sub-dorsal line of same colour, but interrupted on the hinder half of each segment; tubercular dots red, and situated on the faint reddish outlines of diamonds, which are very delicately freckled within; spiracles as in the others, white ringed with black.—ID.

Description of the larva of Hadena thalassina.—Early in July, 1865, Mr. Doubleday kindly sent me several examples of the larvæ of this species, that had been reared from eggs, and were fed with *Polygonum aviculare*, there were several varieties in colour, but not a green one, as quoted from Freyer, in Stainton's Manual.

They were full fed early in August, and the moths appeared from May 31st to June 4th, 1866, the next year: remarkably fine specimens.

The larvæ were about an inch and a-quarter to an inch and a-half in length, cylindrical, and uniformly plump, the head being rather smaller than the second segment. The following are the three varieties amongst them.

Var. 1.—Reddish-brown above, as far as the spiracles, a dull brown plate on the second segment, through which the dorsal and sub-dorsal lines are traced; the dorsal line pale ochreous on the anterior segments, but on the others much suffused with the ground colour, except at the segmental divisions, where it re-appears as an ochreous spot.

The sub-dorsal line ochreous, and much suffused with brown.

On the fifth segment to the twelfth, inclusive, a dorsal diamond shaped of mottled brown, darker than the ground colour, and on each side a wedge shape of very dark brown, pointing forwards, their broad ends a little distance from the segmental divisions, their sides edging the lower half of the diamonds and the sub-dorsal lines. The wedge marks gradually increase in size towards the twelfth segment, where they are largest and darkest, and most conspicuous, by the sub-dorsal line being there suddenly paler, and united by a transverse pale line at the base of the wedges.

Spiracular line black, on which are the white spiracles, and, running immediately beneath, is a pale greyish stripe, its upper edge whitish, belly and legs brownish-grey, head pale brown.

Var. 2.—A rich cinnamon-brown, mottled with ochreous above; belly and legs paler and greenish-ochreous; dorsal and sub-dorsal lines paler than the ground colour, but not very distinct, the diamond marks hardly visible; the blackish wedge marks strongly defined, but with the addition of two or three fine streaks of ground

colour cutting transversely through them all; the tubercular dots black, in the following order: a transverse row of eight dots on the third and fourth segments, and on the fifth to the twelfth, inclusive, the anterior dorsal pair distinct, the posterior pair hardly visible, by being placed in the broad ends of the wedges, a lateral anterior dot midway between the sub-dorsal and black spiracular line; a dull brown plate on the second segment; head brownish-ochreous, with a blackish stripe on each lobe from the crown to the mouth.

Var. 3.—A dull greyish-brown; the dorsal and sub-dorsal lines, and penultimate transverse mark, very little paler than the ground; the tubercular dots black, the wedge marks black, with a thin transverse line of ground colour cutting them through towards the broad end.—Id.

Endromis versicolor in Worcestershire.—On the 3rd June last I took three clusters (in all 38) of the larvæ of this beautiful insect upon birch in Bewdley Forest, Worcestershire. It was evident they had not emerged from the eggs many days; they were clustered towards the tips of the lower branches; in colour almost black, and might readily be passed by (unless carefully examined) as the larvæ of saw-flies, their heads being thrown backwards over the body, in which position, when not feeding, they rest motionless.

I shall be happy to part with a few, should any entomologist think them worth notice.—Edwd. S. Haines, Brettell Lane, Stowbridge, 18*th July*, 1867.

[Is our correspondent quite sure as to these very young larvæ being those of *E. versicolor?*—Eds.]

Coleoptera at West Wickham.—I have, during the last two years, often taken hurried journeys to this well-known entomologists' haunt,—my attention being chiefly directed to the sand-pits on the outside of the archbishop's wood, in which the majority of the insects mentioned in this note were taken.

The best pits are to the left of the high road, behind a row of small cottages running at right angles to it, and just past the "Volunteer" public-house; there is, also, a very productive little pit on the left-hand side of the lane in which Shirley Church stands. It is some distance beyond the church, within a little plantation, and is easily reached by getting over a wooden gate over which a Notice-to-Trespassers-Board frowns in vain. The recently cut pits, with straight sides (and especially if the sand be rather damp, and of a very fine quality), are the most remunerating; and the best time for hunting is in early spring,—when the warm and balmy air tempts our favourites to indiscriminate gambols on the wing after their long winter's rest.

The following are some of the more noteworthy species that have occurred to me at this locality.

Lebia chlorocephala, a peculiarly small and apparently permanent variety; it occurs in profusion on young broom plants, near Shirley Church, about the middle of May. *Dyschirius politus*. *Notiophilus rufipes* and *substriatus*. *Calathus piceus*, common in moss. *Amara fulva*. *Harpalus tardus*. *Haploglossa nidicola*, in profusion, under sand-martins' nests. *Aleochara bisignata* of Wat. Cat. *Atemeles emarginatus*,—here, for the first time, seen by me, when lazily allowing itself to be

carried about by its little landlord, *Formica*. *Myrmedonia limbata*, common. *Ilyobates propinqua* and *forticornis*. *Callicerus obscurus* and *rigidicornis*. *Calodera umbrosa*. *Tachyusa scitula*. *Oxypoda rufula*, *exigua*, *annularis*, *misella*, and *brachyptera*. *Homalota planifrons* (both sexes), *occulta*, *angustula*, *linearis*, *triangulum*, *sublinearis*, *sodalis*, *divisa*, *Thomsoni*, *coriaria*, *variabilis*, *hospita*, *amicula*, and *palustris*. *Placusa infima*, under bark; and another sp. not yet determined. *Trichophya pilicornis*, under fir branches in the pits: this insect occurs also in profusion, at times, on the windows in the corridors of the Crystal Palace. *Leucoparyphus silphoides*. *Tachyporus solutus*. *Lamprinus saginatus*, in moss at the foot of the archbishop's palings. *Conurus immaculatus*. *Mycetoporus longulus*, *clavicornis*, and *longicornis*. *Philonthus decorus*, common in moss at foot of the palings. *P. ventralis*, *villosulus*, *signaticornis*, and *proceralus*. *Baptolinus alternans*, under fir-bark. *Lathrobium geminum*. *Achenium depressum*. *Stilicus geniculatus*. *Scopæus sulcicollis*. *Stenus biguttatus*, *lustrator*, and *geniculatus*; the two latter usually in moss at roots of heather near palings. *Bledius longulus*. *Platysthetus capito*. *Oxytelus insecatus* and *speculifrons*. *Syntomium æneum*. *Omalium planum*, *florale*, and *vile*. *Megarthrus hemipterus*, *Choleva nigrita*. *Colon brunneum*. *Scydmænus scutellaris*, *collaris*, and *angulatus*. *Anisotoma nigrita* and *calcarata*. *Colenis dentipes*. *Agathidium lævigatum*, *varians*, and *nigrinum*. *Carcinopus minimus*. *Epurœa* 10-*guttata*, *melina*, *pusilla*, *oblonga*, and *florea*; the first and last at sap,—*florea* abundantly,—and *pusilla* and *oblonga* under pine bark,—*pusilla* in the greatest profusion. *Soronia punctatissima*. *Meligethes memnonius*. *Ips ferrugineus*, in the pits, and most abundantly under pine bark. *Rhizophagus perforatus*. *Sarrotrium clavicorne*, common on sand. *Monotoma longicollis*. *Silvanus unidentatus*. *Atomaria umbrina*, *linearis*, and *nigriventris*, swarming in the pits. *Byrrhus fasciatus* and *dorsalis*. *Serica brunnea*, being dragged off by ants,—still alive, though stupified by the violence of its contact with the sides of a sand-pit during nocturnal flight. *Throscus dermestoides*. *Telephorus lateralis*. *Byturus fumatus*. *Notoxus monocerus*, a curious sight so far from the sea. *Bruchus cisti*. *Apion scutellare*, *ebeninum*, and *pubescens*. *Sitones cambricus*, *humeralis*, *flavescens*, *puncticollis*, &c. *Tropiphorus carinatus*. *Plinthus caliginosus*, with the coarse punctures cleanly defined, and not choked up with chalk, as usual,—owing to its sandy habitat. *Gronops lunatus*, common on the sand (the last time I visited Hampstead Heath I found fourteen of this weevil in one little sand-hole). *Trachyphlœus scaber* and *scabriculus*, both very common, sunning themselves on the warm sand, and at the roots of grass. *Cœnopsis fissirostris*, rare, in thick wet moss, accompanied by *Otiorhynchus picipes*; which, when both are wet, it simulates vastly. *C. Waltoni*, not uncommon, with the *Trachyphlœi*. *Otiorhynchus pubulinus* of our Catalogues, common in moss at the foot of palings. This insect appears not to be the *pubulinus* of Panzer, which is nothing but a colour-variety of *O. ovatus*. Dr. Sharp informed me some time ago that he and Mr. Crotch had made it out to be the *O. muscorum* of Brisout (Grenier's Cat.), with which insect it certainly seems to accord. This identification appears as yet to have escaped record. *Tychius nigrirostris* and *venustus*, the latter on flowering broom, in the early part of May, in the greatest possible profusion, though in a very limited space,—a hollow near the gravel pits on Shirley Common, where it was accidentally dis-

covered by Mr. Henderson, of Glasgow. It is astonishing how such a conspicuous species should have escaped the nets of the many collectors who frequent this locality; some, indeed, having been specially on the look-out for it, as the late Mr. Walton once took it at Shirley in great quantity. Some idea of its numbers may be formed from the fact that I bottled upwards of 300 in less than an hour. *Smicronyx cicur*. *Sibynes primitus* (not rare) and *potentillæ*, both on sand. *Orthochætes setiger*. *Acalles ptinoides*, very common in the pits, especially after a high wind, when the dead twigs in which it lives get broken off the trees. *Ceuthorhynchus melanostictus*, *crux*, *asperifoliarum*, and *cyanipennis*. *Gymnetron beccabungæ*, var. *veronicæ*, not uncommon in the pits. *Hylastes cunicularius*, in the pits, especially to be found after wind; *H. ater*, &c. *Phlœophthorus rhododactylus*. *Tomicus micrographus*, *laricis*, and *bidens*. *Crepidodera ventralis*. *Phyllotreta nodicornis* and *lepidii*. *Thyamis nasturtii*, *lycopi*, *atricapilla*, and *fuscicollis*. *Psylliodes hyoscyami*. *Cassida nobilis*. *Scymnus frontalis*, *capitatus* and *discoideus*. *Alexia pilifera*. *Bythinus puncticollis*.

My journeys have chiefly been hurried, and somewhat late in the evening, after office hours, so that I can lay no claim to having properly worked the locality, —the bulk of my captures having indeed been "flukes." It may, however, be guessed from the above list (in spite of its containing nothing very startling) that Wickham and its neighbourhood are well worth visiting.—E. C. Rye, 284, King's Road, Chelsea, S.W., *July*, 1867.

Note on some species of Ceuthorhynchus frequenting Sisymbrium officinale.—The arid and uninviting aspect of this plant,—which, when rather old, looks like nothing so much as a loose handful of straight wires,—and its habit of affecting the dustiest and most unlikely places, such as road sides and old brick fields, probably prevent many young Coleopterists from paying such attention to it as it deserves; at least, I judge so from the absence, or great rarity, in most collections of certain species of *Ceuthorhynchus* which are to be found upon it. Of these, *C. chalybeus* is by far the most common, and seems to occur wherever the plant is found, often in great profusion. With it I occasionally get *C. cyanipennis* (readily distinguished by its larger size and flatter interstices, and the light-coloured penultimate joint of its tarsi), though that species is more abundant on *Erysimum alliaria*. Neither of these insects is common in ordinary collections; but there are two other species, also to be found on *Sisymbrium*, which have hitherto been of the greatest rarity. One of these, the *C. inaffectatus* of Walton and others, now definitely determined to be *C. rapæ*, Gyll.,—*inaffectatus* being a nonentity,—has appeared sparingly in our cabinets, having been taken by single specimens at different times (and fortuitously) by Mr. Pelerin, to whom most London Coleopterists are indebted for it. It has also been taken by Messrs. S. Stevens and F. Smith. Mr. Waterhouse's sons afterwards took it sparingly at Tottenham,—still without its food-plant being discovered; and I have myself in vain visited their locality for it. Since then, Dr. Sharp found one or two examples at Lee on *Sisymbrium* (not unaccompanied by the pestiferous *C. assimilis*), and one in his own garden at St. John's Wood! Dr. Power also found the insect at Dr. Sharp's locality; and, after a year's interval, or more, I also took it there, accompanied by the rare *C. constrictus*.

Knowing the plant, I again visited Tottenham, and, after a long tramp to find *Sisymbrium*, at last got several of the *Ceuthorhynchus*. Its larger size and more torpid habits readily distinguish it in the net from *C. assimilis*. The other and still rarer species, *C. tarsalis*, appears only to have been met with by Mr. Waterhouse, who some years ago found it on *Sisymbrium*, near Erith, in June. I have visited this locality for it in vain, until the present year, when I obtained a single specimen near Belvedere station; a hot and dusty day's walk searching for more of the plant resulting in nothing but the eternal *chalybeus*, *quadridens*, *floralis*, *pyrrhorhynchus*, &c., and the tantalizing *sulcicollis*, which is very like *tarsalis*, save that the latter has lighter tarsi, and a slight metallic tinge. My solitary capture is due to a very curious coincidence. Writing to Dr. Sharp in Scotland that I intended again visiting Erith for *tarsalis*, he replied that, among some beetles casually taken at Belvedere (the next station) and sent to him, was one fine *tarsalis*. My search, accordingly, commenced at Belvedere, and resulted in the only specimen I obtained all day. My friend, the Rev. W. Tylden, has also recently found *C. tarsalis* near Hythe, Kent.—Id.

New species of Brachelytra described in the Stettin Ent. Zeit.—Dr. Bethe, in the Stettin Ent. Zeit., 1867, p. 307, describes as new two species of *Brachelytra* found by Dr. Eppelsheim at Dürkheim, in Bavaria. The first of these, *Oxytelus Eppelsheimii*, is in the group of its genus with laterally crenulated thorax, and allied to *O. rugosus* and *O. insecatus*; but is distinguished by its narrow parallel build, its close and even longitudinal rugosity, its red antennæ and legs, and the sexual characters of the male, in which the 5th segment of the abdomen beneath has a sharp, prominent, pitchy-black tubercle in the middle of the hinder margin; the 6th segment is longitudinally foveolated, and with two tubercles on its hinder margin; and the 7th segment is trilobed. The other species, *Evæsthetus Mariæ*, which is black and almost opaque, appears most to resemble the *E. pullus* of Thomson,—differing from that insect in its darker colour, parallel and flatter build, male characters, &c. Its smaller size, independently of sexual distinctions, separate it from *E. scaber* and *E. lævisculus*; and its darker colour and thicker punctuation distinguish it from *E. ruficapillus*.—Id.

Notes on spring collecting in the vicinity of London.—The best thing to be got near Wandsworth in February and the beginning of March is, perhaps, *N. hispidaria*, for which object, in company with Mr. J. B. Blackburn, I paid a good many visits to Richmond Park. Unfortunately, however, we obtained nothing better than *P. pilosaria*, *H. leucophearia*, *progemmaria*, and such-like, and, thinking we were too early, had resolved to wait a week or so, when that unseasonable weather set in, which continued with unmitigated wretchedness till the close of the month. May I ask other collectors whether *N. hispidaria* has been unusually scarce in the Park this season?

Notwithstanding the severity of the weather the sallows were rather forward, and by the 20th March were well out in the neighbouring woods. The next week we spent in unprofitable expeditions to sallows in our immediate neighbourhood, but as nothing better turned up than a stray *T. munda* or *C. vaccinii*, we determined to have an evening at Croydon.

Arrived at the sallows, almost the first insect that met my gaze was a fine *T. leucographa*. This was a good beginning; after this came *T. munda*, which turned up at intervals with *T. gracilis*, while the four common species swarmed, especially *stabilis*. In the meantime *S. satellitia* put in an appearance, accompanied by numbers of *C. vaccinii*, the deplorable wretchedness of whose condition could not but enlist our compassion. Of some *Geometræ* that were flitting about I managed to knock down one with an umbrella. It proved to be *T. laricaria*, Stainton. Just as we were leaving, Mr. Blackburn, who had been rather unlucky, amply retrieved his fortune by the capture of a splendid pair of *H. croceago*.

April 4th.—Mr. J. B. Blackburn went again to the same locality, and, in addition to *T. leucographa*, took *miniosa* and *populeti*.

April 5th.—Went myself to Croydon; my luck was identical with that of my friend's the previous day, minus the *T. populeti*. The sallows were now getting unmistakeably over.

April 13th, 15th, and 17th.—We visited the hollows on Wimbledon Common, where nothing turned up but *T. gracilis* and *rubricosa*; it is curious how these two insects abound in this locality, to the almost total exclusion of everything else. Mr. Blackburn also took *Xylocampa lithorhiza* and *Eupithecia pumilata*, just out of the pupa, while *Larentia multistrigaria*, *Depressaria umbellana*, and other common insects occurred at intervals.

In bringing these remarks to a conclusion, I may observe that I am perfectly aware that they chronicle no capture of note, but still they may serve to show that by a little diligence all the *Taniocampæ* (for *opima* also has occurred at Croydon) may be obtained in the London district.—C. J. Buckmaster, Southfields, Wandsworth, *April 19th*.

Lepidoptera at light.—Several visits to the lamps on the high roads in our own neighbourhood, have produced a few lepidoptera. We usually had a muster of three or four entomologists, and amicably took alternate lamps; so that, while one "clomb," the others stood below to net any stray specimens that flew. *C. fluviata* gave us all a turn, and of this pretty little species I have a few larvæ feeding up on groundsel. The light-loving genus *Eupithecia* was also well represented by eight species,—*centaureata*, *exiguata*, *vulgata*, *nanata*, *coronata*, *assimilata*, *abbreviata*, and *pumilata*. A fine *illustraria* put in an appearance at Wimbledon, and near the same locality we met with *L. camelina* and *L. dictæa*. Nearer home we took *H. rostralis* and *S. illunaria*, together with specimens of *S. hybridalis*, the pretty little *L. adustata*, *E. pendularia*, and *H. abruptaria*.

I have lately bred a few of the beautiful *A. berberata*, and, during the last three or four days, have taken specimens of *L. Smeathmanniana*, flying in the evening over its food-plant, *Anthemis cotula*.—J. B. Blackburn, Grassmeade, Southfields, S.W., 31*st May*, 1867.

Manx captures of Lepidoptera.—I visited the Isle of Man in the beginning of last September, but, as it rained every day during my stay there, my entomological doings were necessarily very limited. During the few intervals of dry weather I visited the *Silene maritima*, which grows plentifully on the rocks near Douglas; and in the seed capsules I found larvæ of *Dianthæcia capsophila*, from which I have

bred four imagos during the present month. These appear to be much darker than any Irish specimens I ever remember to have seen; one is entirely without white markings, and is moreover shot with a delicate blueish bloom, somewhat reminding one of the rosy-purplish tint of *D. cucubali*. I have also bred from the seed-capsules *D. capsincola*, differing scarcely at all from our ordinary English examples, except, perhaps, in being a little darker.

The larvæ of *Abrostola urticæ* were not uncommon on stinging-nettle; and chamomiles produced *Homæosoma nimbella* in plenty, nearly every flower-head having a tenant.

In the imago state I only caught two species that are not common or abundant everywhere, viz., *Stilbia anomala* (1), and *Melanippe galiata* (1).—Howard Vaughan, Kentish Town, *June 27th*.

Psyche calvella at Hampstead.—Yesterday my friend Mr. McLachlan and I took a walk to Bishop's Wood, Hampstead, to look for the cases of this species; we, however, only succeeded in securing two, one on hawthorn, the other on hornbeam. In previous years my experience has indicated bramble and hazel as the plants to which it is most attached. I expect our want of success was due to a strong easterly wind, which must have shaken the cases from their positions.—H. G. Knaggs, *May 15th*.

Colias Edusa.—Some of your correspondents seem to think the appearance of *Colias Edusa* in May and June as something remarkable, and are evidently unacquainted with the œconomy of this species, which is precisely the same as that of *Gonepteryx rhamni*. There is only one brood in the year, and both sexes hybernate and re-appear in May and June, when the females deposit their eggs on white clover, lucerne, &c.—Henry Doubleday, Epping, *July 13th*, 1867.

Vanessa urticæ.—A short time since, Professor Westwood expressed his surprise that a specimen of *Vanessa urticæ*, captured in the spring, proved to be a male. Both sexes always hybernate, and I believe this is the case with every species of butterfly that passes the winter in the perfect state.—Id.

Captures in Kent, Essex, and Surrey.—During the months of June and July I have taken the following:—*Euthemonia russula, Limacodes asellus, Miltochrista miniatia, Erastria venustula, Epione advenaria, Coremia picata, Madopa salicalis, Hypæna crassalis, Pempilia formosa, Antithesia sauciana, Olindia ulmana*, and *Chrosis Audouniana*. I have also had the pleasure of taking six of that most beautiful species, *Hypercallia Christiernana*, in splendid condition.—Thomas Eedle, 9, Maidstone Place, Goldsmith Row, Hackney Road, *July 12th*.

Correction of an error.—Cœnonympha Iphis, W.V.—Mr. Butler having, at my request, kindly examined the types on which I founded *C. Mandana* (Proc. Ent. Soc., 1862; and Man. Eur. Butt., pp. 66, 67, fig. 7), informs me that it is merely the female of *C. Iphis*, as I have suspected for some time. It will be seen, on referring to my Manual, that I had even then serious doubts as to its distinctness; and I now wish to correct my error by withdrawing the name, *C. Mandana*, altogether.—W. F. Kirby, Dublin, *June 23rd*.

Additions to Mr. Birchall's list of the Lepidoptera of Ireland.—*Sesia philanthiformis* freely on the coast at Howth, from the Baths to the Round Tower in Dublin Bay, where the sea-pink (*Statice armeria*) grows upon the rocks. June and July.

Pempelia subornatella, Zeller, plentifully on the rocky places on the slopes where *Sedum* grows in the above-named locality. I fancy that this insect has been mistaken for *P. dilutella* in the above-named list, and also for *ornatella*, neither of which have been met with by me at the Hill of Howth. June and July.

It would be very interesting if both *dilutella* and *ornatella* were proved to be entitled to be retained in the Irish list; the former is said to be a Southern species, the latter a Scotch one, from Arthur's Seat, Edinburgh, or Duddington, and was discovered some years ago by my old friend Mr. Logan: both of them are very distinct from *subornatella*.—C. S. Gregson, Stanley, Liverpool.

*** *P. ornatella* occurs pretty commonly at Sandgate, on the south coast.—H. G. K.

Notes on variations.—The question of varieties and their causation is just now attracting great attention, and is undoubtedly well worthy of it. The term *variety* is, however, a very wide one; and it is very evident that a cause producing one sort of variety may be totally inoperative as regards another sort: for this reason it is, I think, desirable to obtain some more limited and definite use of the word; and, in order to do this, I would call attention to the fact, that there appear to be three tolerably distinct and definite kinds of variation, viz., race, variety, and aberration.

A race is generally found under evidently somewhat different circumstances to the type form of the species to which it belongs, and is distinguished by constant though slight characters; but specimens forming the passage from the race to the type occur, though in many cases very rarely. As instances of race, *Bombyx callunæ* and *Bembidium riparium* may be mentioned. The second kind of variation, and to which the appellation variety should be limited (though it would be better to find a fresh term for this form, and use the word variety in a generic sense, as including all the three forms of variation), is a form which a species has a tendency constantly to assume, independently of locality and of its immediate ancestry. As a good instance of it may be mentioned the var. *spurcaticornis* of *Anisodactylus binotatus*; this variety appears to occur wherever the type occurs, but never away from it.

The third kind of variation or aberration is a slighter and less constant form than the preceding; variations of colour, and such like circumstances, in individual specimens, are instances of what I mean by aberration.

A moment's consideration will be sufficient to convince us that it will take very different causes to produce an aberration and a race.

An aberration is the only form of variation that can be produced readily by experiment or by accident (*i. e.*, a slight change of conditions of life); and it is a very interesting fact that, while some species are very subject to aberration, in other species it does not occur: there is, I believe, a reason which could be assigned for this; I will not consider it now; but I think a list of the species of British *Lepidoptera* most subject to aberration, and another of those least subject to it, would be very interesting and instructive.

A race, it will be seen from the definition I have given of it, approaches very nearly in validity to a species; indeed the connecting forms are the only reason that can satisfactorily be assigned for its non-distinctness. It is, in fact, a species nearly formed; and it is probable that, under a somewhat greater differentiation of the circumstances in which the type and race live, intermediate examples would cease to occur, and the race would become a distinct species.

The second form of variation or variety is apparently the most inexplicable one

at present. I will not here attempt any speculations as to the reason of its occurrence, but, if I find my suspicions strengthened by observation, may perhaps say something of it at a future time. I may state I consider sexual differences for which no object is probable (as those of the orange-tip butterfly) to be really, as regards their manner of origin, varieties, as also the differences constantly occurring in conformity with the season of the year, as in *Selenia illunaria*.—D. Sharp, Dumfries.

Notes on Acari.—Trombidium lapidum, Hermann, occurs just now in countless numbers on the flint gravel covering the approaches to Elmersend Station, in this neighbourhood.

Acarus phalangii, De Geer. Of this species, so named from its infesting the harvest spider (*Phalangium Opilio*), and described and figured by Curtis under the name of *Leptus phalangii* ("Farm Insects," page 200, and pl. G, figs. 50 f, and 51) as occurring on an *Elater (ruficaudis)*, I found yesterday two specimens on *Lagria hirta*, Linn. Both of them (one full-, the other half-grown) were attached by the rostrum to the head of the beetle, just beneath the left antenna.—Albert Müller, Penge, S.E., *July 8th*, 1867.

General Information.

Swiss Entomological Society.—We are requested to state that this Society has appointed Messrs. Dulau and Co., of 37, Soho Square, its agents in England, and that they are empowered to receive subscriptions for the Journal ("Mittheilungen der Schweizerischen Entomologischen Gesellschaft") of the Society.

Texan insects.—Dr. Boheman informs us that Herr Gustav Belfrage, many years resident in North America, has now settled in Texas, and is prepared to supply entomologists with insects from that State. Address—P. O. Box 106, Houston, Texas, U. S. America.

"*Mimicry and other protective resemblances among animals.*"—The last number of the Westminster Quarterly Review (July, 1867) contains, under the above title, one of the most important and exhaustive papers that has ever been written on this subject which is now attracting so much attention among naturalists, being a *resumé* of the observations of the various writers on mimicry. The reviewer, whom we believe we recognise in the person of one of the most accomplished and philosophic naturalists of the present age, a devoted follower of, and fellow-worker with, Mr. Darwin, brings forward a multitude of proofs of the existence among organised beings of certain laws (subtle, it is true, yet patent to any observer) by which the weak are enabled to protect themselves from the strong, and by which the latter can more readily sustain themselves in the universal strife raging in Nature. No one, whether he be a disciple of the Darwinian school or a follower of the old system, can fail to derive, from a careful perusal of this paper, an amount of information such as is rarely to be found condensed in so small a space. Many curious instances of mimicry of animate or inanimate objects must have struck all naturalists, even those who attend only to the limited field of British Natural History; but the writer truly observes that "the Natural History of the tropics has never yet been studied on the spot with a full appreciation of what to observe in this matter. The varied ways in which the colouring and form of animals serve for their protection, their strange disguises as vegetable or mineral substances, their wonderful mimicry of other beings, offer an almost unworked and inexhaustible

field of discovery for the zoologist, and will assuredly throw much light on the laws and conditions which have resulted in the wonderful variety of colour, shade, and marking which constitute one of the most pleasing characteristics of the animal world, but the immediate causes of which it has hitherto been most difficult to explain."

Entomological Society of London. 1*st July*, 1867.—Sir John Lubbock, Bart., F.R.S., President, in the Chair.

Dr. G. W. Davidson, of 13, Union Place, Edinburgh, was elected a Member.

Mr. Busk mentioned that the hair-worms exhibited at the last meeting were not *Gordius aquaticus*, as Dr. Cobbold had at first supposed, but the true *Mermis nigrescens*.

Mr. McLachlan exhibited an example of the spider *Cinifio ferox*, the abdomen of which was strongly infested with branching fungoid growths. It had been found by Dr. Knaggs, at Folkestone, under a log. He also exhibited a living example of a gigantic spider and centipede found in the hold of a ship recently arrived from Manilla.

The Secretary exhibited branches and fruit of an orange-tree from Queensland, received from Mr. Moore, of the Botanic Gardens, Sydney, said to be infested with insects. Professor Westwood said that there were two species of *Coccus* on the branches, but the fruit was apparently injured by fungi only.

The Hon. T. De Grey exhibited *Eupœcilia rupicola* and *E. anthemidana* from Norfolk. It will be remembered that the latter little-known species was bred from flower-heads of *Anthemis cotula* by the late John Curtis. He remarked also that he had just captured five examples of the rare *Hypercallia Christiernana* in Kent.

Mr. Stainton exhibited a large collection of *Micro-Lepidoptera* bred from larvæ obtained at Cannes and Mentone, &c., in the early spring. The most remarkable of these were many examples of *Depressaria rutana* from *Ruta angustifolia*, two species of *Gelechia* (one apparently identical with our *G. marmorea*) from *Silene nicæensis*, a new *Zelleria* from *Phillyrea angustifolia*, and a *Nepticula* from the cork-oak.

Mr. Wallace exhibited a collection of Malayan *Cetoniidæ*, and read a paper on the species from that quarter, enumerating 181, of which 70 were described as new.

Mr. John Lowe, of Edinburgh, communicated a long paper on Dzierzon's theory of reproduction in the honey-bee, in which he combated Dzierzon's ideas on this subject. He backed his arguments by the results of various experiments on *Apis mellifica*, *A. ligustica*, and *A. fasciata*, instituted with a view of ascertaining what the hybrid progeny of these so-called species would be like. He drew the conclusion that these, both drones and workers, were always affected in some way by the male parent. Mr. Smith said that the examples exhibited presented unmistakeable hybrid characters. He was inclined to consider *A. fasciata* a good species, but looked upon *A. ligustica* as merely a variety of *A. mellifica*. A long discussion ensued, in which the President, Mr. Busk, and others took part.

This was the last meeting before the recess; the next will take place on the 4th of November.

THE NATURAL HISTORY OF *LYCÆNA MEDON*, HUFNAGEL (*POLYOMMATUS AGESTIS*, OCHSENHEIMER).

BY PROFESSOR P. C. ZELLER.

Diagnosis of the larva—

Larva—læte virida, capite nigro, albido-setosa, obsoletissime dilutius oblique strigata, linea dorsali vittaque lata laterali purpureis.

Diagnosis of the pupa—

Chrysalis—pallide succinea, linea abdominis dorsali vittaque laterali purpureis roseisve, lineola oculi arcuata nigra.

In Kirby's "Catalogue des Rhopalocères d'Europe dont les chenilles ne sont pas connues ou ne le sont qu' imparfaitement" (Annales de la Société Entomologique de France, 1865,) *Polyommatus Agestis* stands amongst those of which we briefly read "les chenilles ne sont pas connues." Wilde also in his work "Die Pflanzen und Raupen Deutschlands," 1861, II, p. 41, knows nothing of the larva. The notice which Stainton gives of the appearance of the larva according to Westwood, in the Manual, I, p. 62, is incorrect; the food only is correctly stated. The only correct notice of the natural history of this species of *Lycæna*, which I communicated in the "Isis," 1840, p. 126, runs thus: "the eggs are laid on the under-side of the leaves of *Erodium cicutarium*, often several together, but scattered. In eight to ten days the larvæ emerge. In the middle of April I found a tolerably well-grown oniciform larva, which was pubescent and greenish, with darker dorsal line, and with rosy lateral margins. It hid itself between the stipulæ of the leaf-stalk, and ate holes in the former and in the young leaves. I have not bred it." So would the larva belong at least to the "imparfaitement connues," even if it should appear, from what follows, that it can be otherwise defined with few words.

After several attempts, which I made in the beginning of the summer of last year, to observe the female whilst ovipositing, and which were always fruitless, through the weather, I at last succeeded on the 22nd of August. A female settled on a fallow field on the bare ground. As I observed in her vicinity some young *Erodium* plants just developed from the seeds, I did not disturb her; consequently I saw how she approached towards one of these plants, and, after a short rest, curved her abdomen, and deposited an egg on the under-side of a small leaf; having done this, she flew away. This egg had the ordinary form of those of the genus *Lycæna*, was greenish-white, and retained this colour till the 31st August, when it was white, and had above a large kidney-

shaped hole, through which the larva had escaped. The plant with the egg I had fastened with a pin to a larger plant in a flower-pot, so that it should not dry up.

Suspecting that more eggs had probably been deposited in the same locality, I re-visited the place on the 5th September, and cut off about 100 plants (which were now rather more grown) close above the roots, without shaking them, and placed them in a pocket handkerchief. The following day, when they were becoming rather withered, I shook them out, whereby, in addition to sundry green aphides, and some larvæ and pupæ of *Syrphus*, I obtained eighteen onisciform larvæ. These were from one to two lines long, dull pale greenish, with rather long white hairs, the lateral margins rather paler, the head black. They remained half-an-hour or longer before they crawled away from the spot where I had placed them; they repaired to the under-side of the leaves, and ate during the sunshine the tips of the primate leaves, leaving only the upper skin remaining, which soon curled up and withered.

On the 11th September I tried the same plan of operations on a sunny slope, where the imago had not been scarce in the spring. Here I found what I took for the full-grown larva, only I was struck by its shape being so slightly onisciform, since the body was narrow and gradually attenuated behind. The largest were pale green, with the head honey-yellow, spotted with black; a pale rose-coloured dorsal stripe on each segment, an elongate black spot on each side; beneath the black spiracles ran a wavy pale red longitudinal stripe, the prothorax was yellowish. Yet I reputed this to be the *Medon* larva I was seeking, till I observed the following day that it had no anterior legs: I believe it was the larva of one of the *Curculionidæ*. As they were eating up my food unnecessarily, and I did not feel certain that they might not be disposed to make a meal of one of my true *Medon* larvæ, I turned them away altogether. I had, however, amongst them truly obtained some larvæ of *Medon*. By a third expedition I increased my stock to more than fifty, so that now there seemed good hopes of bringing some safely through the perils of winter; I divided them into three flower-pots, but I had great difficulty with the food-plants, since the young plants died quite as soon as the old ones planted with injured roots. At the same time, the larvæ grew very slowly; however, by degrees they assumed the colouring and markings of the adult larvæ. Early in December, when frost set in, I distributed the three flower-pots for the winter, so that two (covered over with gauze) were placed outside a window facing north, and the other (quite uncovered) stood

in a cold room. From time to time I watered the plants to keep them alive. On the 14th February I searched for the larvæ which had survived the winter, in order to put them again in the sunshine. In the flower-pots which had been exposed to the open air I found both the plants and larvæ were dead; in the third flower-pot I found fifteen larvæ of rather different sizes: they had sat motionless the whole time, either on the stems of grass, or on or under living leaves of *Erodium*. As I had not spared anything necessary for their rearing, I come to the conclusion that the reason the females are so fruitful in autumn is that many larvæ may be destroyed during the winter without injury to the species; and that this is truly the case seems to be shown from the fact, that the multitude of larvæ which are to be found in autumn does not at all correspond to the number of butterflies of *Medon* which appear in spring.

Supplied with fresh food, which would probably taste well in the sunny window, my larvæ cast their skins several times. Although I could not make any precise observations, yet it is certain that the number of moultings does not differ from what occurs in other species of *Lycæna*. Of the fifteen larvæ seven died by degrees. One, just dead, which I described on the 14th March, was already nearly five lines long. Its shining black head had a grey face; the body pale green, with a deep, rather narrow, posteriorly attenuated, dark red dorsal streak. The warts near it on each segment with about twelve unequally long, pointed, pale bristles, which, on the anterior segments, stand almost perpendicularly, on the middle and hinder segments are inclined more posteriorly. I could not perceive that these larvæ had a cone capable of being protruded (like that which we find in *Lycæna Corydon*, and which the ants are so fond of licking). Pectoral legs black; ventral legs of the same colour as the pale belly, which, on each segment from the fourth, has on each side a black streak reaching to the lateral wart; these streaks, however, are not perceptible in the living larva. The red lateral stripe as usual.

Having planted three vigorous plants, the remaining larvæ prospered so well, that by the 8th April, I could look upon them as quite, or almost quite, full grown. They devoured the primate leaves—gnawed the stem of the leaf, hence causing the upper part to wither, and did not spare the young shoots, when the plants assumed at last a very injured appearance, and were abundantly sprinkled with grains of brown-green excrement. The larvæ crawl very slowly whilst they spin a white thread, which they fasten to the right and left, and on

which they place their legs. They are not easily perceptible on the food-plant, since they are the same shade of green, and even their bristles have the same colour as the hairs on the leaf-stalk.

The full-grown larva has a length of $6\frac{1}{2}$—7 lines. Its body is much arched, and so contractile, that the creature can appear $1\frac{1}{2}$ lines shorter, whereby it naturally becomes more deeply arched. The much concealed black head has a whitish transverse streak above the mouth; the dark palpi are whitish at the base. The ground colour of the body is an agreeable pale green; the deeply-seated, brownish-purple coloured dorsal line reaches from the beginning of the mesothorax to the beginning of the penultimate segment; the rather flat anal plate is semi-oval, and in the middle of each side slightly concave. On each side of the body from above obliquely downwards and posteriorly go faint pale stripes, only just perceptible, and in many points of view quite invisible. The incisions of the segments are deep above, whereby on each segment near the dorsal line an eminence arises, which bears a multitude of white bristles of unequal length, almost radiating. Below this wart-like eminence is a second less conspicuous, with similar bristles. Both eminences have hollows in the middle, which the larva can raise or depress at will. The lateral wart, clothed with longer projecting bristles, in which the spiracle is not perceptible, is purple-red, and forms the rather broad lateral stripe, which, however, does not reach the head, since the prothorax is either altogether green at the sides, or is only pale reddish posteriorly. The anal plate is purple-coloured only for a narrow space anteriorly at the sides. The belly is pale green, with many whitish bristles. The ventral legs are short, pale yellowish, rather transparent, with short cylindrical feet, with a darker yellowish circlet of hooks; the pectoral legs are spotted with black anteriorly.

When the time of pupation approaches, the larva becomes of a paler green, and creeps about restlessly, in order to seek a place for spinning. As I once lost the larvæ of *Lycæna Amyntas* at this period of their lives, because they could find no place suitable for their change, I laid crumpled paper, gauze, dry elm and poplar leaves, and old *Artemisia* stems, amongst the *Erodium* plants. As, however, with the larvæ which first became restless all this appeared of no avail, I shut up the two most bleached and shrunk in a small wooden box, in which both gauze and paper lay. Here they changed after five or six days (since eventually they merely sat still) to pupæ without spinning. The others in the flower-pot changed on the earth, nearly free. I had almost come to the conclusion that spinning in *Medon* is altogether

omitted; however, two spun up quite in the usual *Lycæna* style, on a white silken web, and with a thread round the body; one of these was in the cavity of an old elm leaf, the other on a willow leaf between stems of *Artemisia*, which it had drawn together with some transverse threads, forming as it were the rudiments of a cocoon. By the 28th of April all the eight had assumed the pupa state. (Out-of-doors the larvæ, owing to the hitherto inclement weather, were certainly not so far advanced).

The pupa has the usual *Lycæna* form, is 4—5 lines long, the males small and more slender than the females, naked, only at the head and on the upper part of the back with isolated very short whitish bristles, only perceptible by the aid of a lens; the colour is a rather transparent pale amber, more or less greenish, with slight lustre, the opaque abdomen is more of a pale yellow. Over the eye is a short, curved, shining black line. The convex thorax is separated from the equally convex back of the abdomen by a saddle-like depression. The abdomen has along the back a longitudinal line of reddish-purple, more or less brilliant, and a similar lateral stripe of different breadth, which also shines through the upper margin of the wing-cover. The anal end, which is concealed in the empty larva-skin, is bluntly rounded and without spines or bristles. It is immoveable, and is held fast by a fine white thread, which is drawn round the commencement of the abdomen, and by the exuvia, on its silken couch. The exclusion of the imago takes place according to the temperature, in from two to three weeks.

It appears now to be generally accepted that *Lycæna Artaxerxes* is only a variety of *L. Medon*. The former in the larva state feeds on *Helianthemum vulgare*. Although it appears to me extremely improbable that the larva of *L. Medon* should habituate itself to this food, and although I even doubt whether it could be fed with species of *Geranium*, yet I will endeavour to make some experiments on this head. But as it depends very much on accident whether I can obtain the needful eggs, it would be very desirable that others, who are disposed to the solution of such important questions, should not allow any favourable opportunity which occurs to them to escape. I should much rejoice if some other Entomologist were to be beforehand with me, and would publish his attempts in detail. I do not recognize in my four English *Salmacis* any transition to my ten specimens of *Artaxerxes*, in all of which the black transverse streak in the white discoidal spot of the anterior wings is entirely wanting.

Meseritz, 1867.

NEW SPECIES OF INSECTS FROM THE PROVINCE OF CANTERBURY, NEW ZEALAND, COLLECTED BY R. W. FEREDAY, ESQ.

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

(*Concluded from page* 56.)

Coptodera antipodum, n. sp.*

C. brevis, depressa, punctata, nitida, picco-ferruginea, fulvo-pubescens; thorace rufo, elytris fuscis, marginibus posticis macula elongata discoidali prope suturam, alteraque rotundiori juxta angulum suturalem, rufo-testaceis. $2\frac{1}{2}$ lin.

Rather short, depressed, rather closely and finely punctured on the elytra, punctures more scattered on the head and thorax. Head finely strigose, labrum, palpi, and antennæ paler rufous, the latter thickening from base to apex. Thorax much broader than long, anterior margin strongly incurved, posterior margin produced in the middle portion; anterior angles rounded, posterior scarcely distinct; colour rusty-red. Elytra clothed with laid tawny pubescence, and marked with indistinct ribs, blackish-brown, with the posterior half of the lateral margins, an elongate spot before the middle near the suture, and an obscure rounded spot near the sutural angle, reddish-testaceous. Body beneath shining, and, with the legs, pale pitchy-rufous; denticulations of the tarsal claws small and few in number.

One example. Belongs to the division *Agonocheila* of Baron Chaudoir.

Metaglymma, nov. gen. (*Carabidæ*, Broscini).

Similar to *Broscus* in general form. Head not narrowed behind the eyes, the latter prominent. Antennæ short, reaching to one-third the length of the thorax, and composed (with the exception of the first joint) of nearly globular, equal-sized joints. Mentum slightly concave, tooth narrow, curved inwards towards the œsophagus, apex bifid; lateral lobes very broad at the summit. Maxillæ terminating in a thick hook curved nearly at a right angle; ligula not longer than the mentum, rounded at apex; paraglossæ horny, not longer than the ligula and adherent. Palpi short and thick, terminal joints sub-cylindrical, truncated; penultimate of the maxillaries one-half the length of the preceding and terminal joints. Mandibles broad, strongly curved near the apex. Thorax similar in form to that of *Broscus*, but very abruptly narrowed towards the base; separated from the elytra by a

* This and the following descriptions are supplementary to those published in the preceding number. The number of joints of the male anterior tarsi in the genus *Sphallax* clothed beneath with a brush of hairs was stated as *four*: this is a misprint, it should be *three*.

neck formed by the mesosternum, with the scutellum very distant from the elytral striæ. Elytra oblong-oval, elegantly punctate-sulcate. Legs stout; anterior tibiæ at the end prolonged in the ♂ externally into a long stout tooth; middle and posterior tibiæ furnished with a projecting tooth in both sexes. Tarsi short, stout, without sexual difference in dilatation or clothing of the under-surface; but the joints of the fore and middle tarsi in the ♂ prolonged each, on one side, into a stout tooth. Mesothoracic epimera very wide and dilated exteriorly.

METAGLYMMA MONILIFER, n. sp.

M. nigrum, subnitidum; capite thoraceque lævibus, hoc explanato-marginato, fovea magna utrinque basali, lineaque impressa longitudinali. Elytris sulcis decem fortiter punctatis, apicem versus confluentibus. Long 8—9 lin.

The body is convex, black, more or less shining. The labrum is broad and short, with its front edge obtusely rounded. The antennæ and legs are in some examples pitchy-red; the flattened margins of the thorax are transversely furrowed throughout; the furrows are, however, obsolete in some examples. The depth of the elytral sulci and their punctures also varies. There is no rudimentary scutellar stria; the sulci nearest the suture are straight and entire from base to apex, but the four lateral sulci on each side are much abbreviated towards the base, and the middle sulci are blended in a cluster of punctures before reaching the apex. The under-surface of the body is very glossy. The frontal suture of the head is strongly impressed, but does not reach the margin, being joined on each side to a short longitudinal line extending towards the labrum. The outer sides of the middle and posterior tibiæ are rough with impressed points and acute denticulations.

This very distinct genus seems to partake of the characters of *Cnemacanthus* and *Broscus*, having the wide mesothoracic epimera of the one, and the prolonged apices of the tibiæ of the other. It bears no resemblance to *Promecoderus* and *Oopterus*, which are the only other Australasian representatives of the sub-family. *Cnemacanthus* is peculiar to the southern extremity of America, and *Broscus* is found only in the temperate portions of the old world. The 2nd joint of the antennæ scarcely perceptibly shorter than the 3rd is a remarkable feature, approximating the genus to *Scarites*. The mandibles in some specimens exhibit a distinct striation, which is also a Scaritideous character.

BEMBIDIUM (*Peryphus*) CHARILE.

B. gracile, pedibus elongatis; nigro-æneum nitidissimum, elytris lividis, æneo-tinctis. Long 3 lin.

A slender species, similar in form to the European *B. eques*, but smaller. Head with a deep, roughened furrow on each side. Antennæ and palpi testaceous, blackish towards their tips. Thorax small, narrow; base longitudinally striated. Elytra dark livid-brassy, or paler with a brassy tinge; punctate striate, third interstice with four, fifth with two, foveæ. Coxæ (except those of the hind legs), trochanters, and base of femora, reddish-testaceous; femora black, tibiæ and tarsi pale-testaceous.

Many examples.

NEW SPECIES OF *SCOPARIA (LEPIDOPTERA)* FROM NEW ZEALAND, COLLECTED BY R. W. FEREDAY, ESQ.

BY H. G. KNAGGS, M.D., F.L.S.

My kind old friend, Mr. Fereday, has forwarded to England a most interesting collection, in which are six species of this interesting little group (of which, up to the present, four species only had been described from New Zealand). Four of the species forwarded by Mr. Fereday being new to science, I venture to describe them. It may be added that only two species have been discovered in Australia.

Scoparia Feredayi, n. sp.

Thorax cum capite et palpis rufo-brunneo. Alæ anticæ sub-triangulares roseo-griseæ, ad apicem concinnè rotundatæ, fasciâ mediâ rufo-brunneâ, externè albo-marginatâ, stigmatis fere obsoletis. Posticæ albidæ.

Exp. alar. 9‴. Hab. N. Z. 1 ♂.

Head, palpi, and thorax rich reddish-brown; fore-wings somewhat triangular, neatly shaped off at the apical and anal angles, basal area reddish-grey; first line arched, the concavity facing the base of the wing; medial area rich reddish-brown, the stigmata being barely perceptible; second line bordered with white, almost straight, and parallel with the apical margin; apical area grey, tinted with reddish-brown, being in certain lights faintly lilac; cilia pale reddish-brown. Hind-wings silky-whitish, with a slight fuscous tint.

This is one of the prettiest and most striking members of the group with which I have yet met.

Scoparia rakaiensis, n. sp.

Alæ anticæ sub-oblongæ, longæ, griseæ, angulum analem versus suturatioræ, lineâ primâ S-formi, secundâ denticulatâ.

Exp. alar. 11‴. Hab. N. Z. 2 ♂.

Fore-wings long, of tolerably uniform width, ground colour pale grey; basal area with a few dot-like dashes interspersed; first line

S-shaped; medial area, orbicular stigma indistinct, attached to first line, claviform detatched, reniform 8-shaped; second line sinuated, denticulated; apical area, sub-terminal shade darker than ground colour, especially towards the anal angle; apical border and also the bases of the cilia dotted. Hind-wings whitish, with a fuscous tint, the hind-margin being conspicuously dark.

Scoparia ejuncida, n. sp.

Gracilis: alæ anticæ basin versus angustæ, griseæ; costâ leviter concavâ; margine apicali obliquo; strigâ basali, strigis duabus discoidalibus signatis; lineâ secundâ et umbrâ sub-terminali obscurè radiatis. Posticæ albidæ. Exp. alar. 10‴. Hab. N. Z. 2 ♂.

Slender: fore-wings narrow at the base, gradually widening towards the apical margin, which is very oblique grey; costa slightly hollowed at the middle third—the areas ill defined; there are three conspicuous longitudinal narrow black streaks—one at the base, another at the position of the orbicular, and a third at the position of the reniform stigma; the second line and sub-terminal shade are indicated by faint longitudinal streaks. Hind-wings whitish.

This species is, perhaps, most nearly allied to our *gracilis*.

Scoparia exilis, n. sp.

Alæ anticæ perangustæ, costâ rectâ, apice acuto, strigis geminis duabus basalibus, lineâ prima 3*-formi, stigmato claviformi amplo, nigro, reniformi* 8*-formi, strigâ pallidâ obliquâ apicali. Posticæ angustæ, griseæ.* Exp. alar. 8‴. Hab. N. Z. 1 ♀.

Fore-wings very narrow, costa straight, apex acute, hind-margin slightly emarginate, in colour a mixture of fuscous, black, and whitish; basal area with two twin dashes towards the inner margin; first line 3-shaped; medial area dark towards second line, claviform stigma large, black, and detatched from first line, with a patch of fuscous below and beyond it, reniform, 8-shaped, the lower half being filled in with white, the upper with fuscous; second line whitish, 3-shaped; apical area with an oblique pale streak from the apex, and a dark transverse line towards, and parallel with, the apical margin. Hind-wings narrow, grey.

This species reminds one most of our *angustea*.

Besides the above, there are two ♀s of *S. diphtheralis* (a handsome and variable species) and 1 ♂ and two ♀s of *linealis*. Of the two other known species (*S. minusculalis* and *minualis*) my friend has not yet sent over any examples.

London, *August*, 1867.

Note on Sitones lineëllus, Gyll.—For many years past I have taken this insect; but, looking upon it as only a pretty variety of *S. tibialis*, have unceremoniously ejected it from the sweeping net. In May of last year (1866), however, happening to secure some fine examples, and noticing their totally red legs, it occurred to me that they *might* be the much doubted *lineëllus*. A careful examination of Gyllenhal's description showed me that I had, without doubt, the insect described by the learned Swede. When in good condition, it is indeed a beautiful thing; the white dashes on the elytra being very conspicuous, especially in the smaller examples.

Bleak and storm-beaten is the Northumberland coast, exposed to the tempestuous winds of a stormy sea: a boreal insect may there find a fitting home. Towards the north end of Whitley-sands the banks become high, rugged and uneven, from the frequent land-slips, and have a dense cover of coarse grasses, thistles, docks, cow-parsnips, rest-harrow, &c. By sweeping among these the insect is taken; but on which particular plant I am unable to say. I have seen it astir early in April, and through the following months to the end of September.—Thos. Jno. Bold, Long Benton, Newcastle-on-Tyne, *July 23rd*, 1867.

Note on Sitones meliloti, Walton.—This very distinct species appears to be of rare occurrence everywhere, perhaps to a great extent owing to its habits. It was so in my case; for although I had for some years known of a locality for it, yet the most careful "sweeps" failed to produce more than single specimens. Last year, however, I found two bushes of the food-plant—the Melilot-trefoil—growing on the edge of the sands, with the beetles feeding thereon. Now the reason why I had not before been able to take a series was that the extreme timidity of the creatures causes them, as soon as they are approached, to drop down amongst the dense herbage, where they are quite in safety. This stratagem did not answer on the sand; for, although they adroitly tucked in their legs, fell on their backs, and simulated death with much patience, they were quickly seized and bottled, in spite of their being nearly of the same colour as the sand. The first specimens were got on the 25th of August, and others up to the beginning of October, when my captures were put an end to by some sheep escaping from a neighbouring field and devouring my traps.—Id.

[Mr. G. Lewis used to take this species sparingly in Charlton sand-pits; and, in the beginning of August, I once took a few specimens on the straggling yellow-flowered Melilot-trefoil in Hammersmith-marshes, accompanied by many of the *Tychius* and *Apion* peculiar to that plant. Before that month the *Sitones* had been found in some numbers there by Messrs. S. and J. Stevens.—E. C. R.]

Note on Calathus micropterus and Miscodera arctica.—In the "Geodephaga Britannica" Mr. Dawson speaks of both these species as being somewhat rare, but as having been taken by him on the high moors near Llangollen, in August. I found each species abundantly in the locality indicated, about the middle of last month. *C. micropterus* was plentiful everywhere, and occurred here and there in profusion. *M. arctica* appeared to be rather more local, but was very plentiful. It would seem that either this must have been an unusually good season, or that June is a better time to search for these beetles than August. I suspect the latter supposition is the correct one.

Among other *Geodephaga* I found *Tarus vaporariorum*, but not very commonly; it was, I fancy, rather early for that insect. *Leistus rufescens* was in great abundance, and I captured two specimens of *Carabus arvensis*. It may possibly be worth mentioning that it appears of little use to search for *Geodephaga* until near the summit of these hills, and then only where there is plenty of heather;—at least, that was my experience.—T. Vaughan Roberts, 15, Neville Street, Onslow Gardens, *July 24th*, 1867.

Coleoptera taken in Coombe Wood.—The frequent specification of "Coombe Wood" as a locality for rare insects of all orders in the writings of entomological authors of the past generation has invested that place with the sanctity of an insect paradise in the minds of most present collectors. Still, of late years, it has been but little—if at all—worked; owing, perhaps, to the strictness with which it is preserved for shooting purposes by the Duke of Cambridge,—from whose agent (Mr. Clutton, of Whitehall Place), however, it is possible to obtain a ticket of admission in pursuit of insects; without which ticket the collector is sure to be refused entry, or to be summarily ejected if he do get in on the sly.

Rumours of the wood being destined to annihilation by railway cuttings, and of its being sold for building purposes, have lately been circulated; but, as I am informed by the Rev. W. Cockerell, who lives at its entrance, these reports are void of truth. It would, indeed, be a great pity if the slow process of absorption now being undergone by Wimbledon Common should extend to this (to us) classical spot. Well do I remember my joy, when, wandering to the wood in my earliest entomological days, after a due apprenticeship to *Pieris brassicæ*, *Eristalis tenax*, and *Harpalus æneus*, such insects as *Gonepteryx*, *Anthocaris cardamines*, *Argynnis Euphrosyne*, *Strangalia armata*, and the broad blue-bodied male of *Libellula depressa* swarmed before my astonished eyes,—a tropical sight! Here, also, an enthusiastic rural policeman told me he had seen the "Clouded Yaller" (*sic*). Him I disbelieved, not having sufficient faith: nevertheless he was right, in all probability; for I have myself taken *Edusa* not uncommonly in a meadow on the skirts of the wood in later years, near the little stream, in which I have found the running-water *Agabi* (*maculatus*, *didymus*, &c.) and *Hydroporí* (*elegans*, &c.) plentifully, with *Haliplus fluviatilis* commonly, amongst others.

In the past few years, and originally excited by my friend, the Rev. H. S. Gorham, taking *Tetratoma Desmarestii* at the wood, I have occasionally strolled there after beetles. These, however (with some few exceptions), I have seldom found abundant; a circumstance possibly owing to the great number of pheasants contained in it, which must make great havoc among the insects generally. Neither have I found anything particularly valuable; though on the whole the place generally repays a visit.

On the posts at the entrance I have picked up *Melasis buprestoides* (scarcely crediting my eyes the while), *Cerylon histeroides*, *Cis villosulus* and *hispidus*, *Pogonocherus*, *Liopus*, *Clytus*, *Toxotus*, &c.; and, under their scanty patches of dry bark, *Læmophlæus duplicatus*, *Omalium iopterum*, &c. From dead cats, shot by gamekeepers, and "sus. per coll." on trees at the foot of the hill running up the wood (on which hill *Primus* has ere this, in its lumbering flight, been taken by

collectors returning at eve after a hard day's work), I have beaten *Haploglossa pulla* (a few examples), *Necrobia violacea* (common,—but hitherto rare to me) and *rufipes*, *Dendrophilus punctatus* (!!), *Nitidula bipustulata* (abundantly), *Dermestes murinus*, *vulpinus*, and *lardarius*, many *Cholevæ*, *Necrodes littoralis*, with its œdemerous male, and swarms of the common *Omosita colon* and *discoidea*, *Hister cadaverinus*, *Saprinus nitidulus*, *Creophilus*, &c.,—not unaccompanied by *Silpha thoracica* and *Necrophorus vespillo*. Smaller and drier carcases, such as weasels, &c., with which there is a tree ornamented as with a fringe on its branches, produced many *Cholevæ*, viz., *C. nigricans*, *nigrita*, *tristis*, *grandicollis*, *Kirbyi*, *morio*, *chrysomeloides*, *velox*, *Watsoni*, and *fumata*; some of these, with *C. spadicea* (rarely), being also found in fungi. Under cut grass at the sides of the path I have taken *Hister unicolor*, *Aphodius porcatus*, *Philonthus succicola*, *punctiventris* (swarming), *decorus*, and the boreal *puella*.

General beating and sweeping have never been productive; such ordinary species as *Rhynchites pubescens*, *populi*, and *megacephalus*, *Balaninus turbatus* and *venosus*, *Mordellistena abdominalis*, *Anaspis subtestacea*, *Apion minimum* and *Spencii*, *Orchestes avellanæ*, *Ceuthorhynchus cochleariæ*, *Cneorhinus exaratus*, *Chrysomela lamina*, *Pria*, *Meligethes lugubris* and *memnonius* being the best. The (when freshly disclosed) elegantly mottled *Corymbites holosericeus* is not rare here; I once found it in profusion on wet decaying oak-apples; *Cercus bipustulatus* occurs on *Epilobium*; *Nanophyes lythri* absolutely swarms, in all varieties, on *Salicaria*; and all our species of *Cionus*, except *scrophulariæ*, are exceedingly common.

The gravel pit at the top of the hill has entrapped some not very abundant insects; amongst them being *Notiophilus rufipes* (not rare), *Harpalus honestus*, *Haploglossa nidicola*, *Callicerus rigidicornis* (common), *Myrmedonia limbata* (very common, with a little light yellow *Myrmica*), *Atomeles*, *Stenus fuscicornis*, *Amphicyllis globus*, *Byrrhus dorsalis*, *Ochina hederæ*, *Apion rubens*, *Acalles ptinoides*, *Cænopsis Waltoni*, *Orobitis cyaneus*, *Tritoma bipustulata*, and *Coccinella hieroglyphica*.

Sifting dead leaves has produced *Mycetoporus lucidus*, *clavicornis*, *angularis*, &c.; *Homalota hepatica*, *Ocalea picata* and *badia*; *Oxypoda rufula*, *Stenus geniculatus*, *Habrocerus capillaricornis*, *Quedius maurorufus*, *fumatus*, &c.; *Liodes humeralis*, *Agathidium nigrinum* and *atrum*; *Bythinus Curtisii*, *Aspidophorus orbiculatus*, &c.; and in rotten stumps I found *Scaphidium 4-maculatum*, *Scaphisoma assimilis*, and *Bolitochara bella*;—the latter abundantly, but incautiously not bottled in numbers, on account of its simulating *Oxypoda alternans*. From the dry decayed knobs, whence large branches have fallen from the trunks of oaks, I was lucky enough once to beat both sexes of *Conopalpus testaceus* and of the rare *Abdera 4-fasciata*.

It is, however, through its plentiful autumnal crop of fungi that Coombe is chiefly remembered by me;—not that I have ever found anything peculiarly good (except, perhaps, *Aleochara mycetophaga*, of which I once took half-a-dozen there, in the middle of the summer, accompanied by the bustling *Oxyporus rufus*), —but because such numbers of beetles are to be seen at once. There is to me a peculiar and somewhat melancholy pleasure in this fungus hunting; the dull russet hue of the leaves, the autumnal chill and smell of earth, and the silence of the wood, —where the scratching of the *Tachini* and *Bolitobii*, as they scramble over one's paper,

and the chirp of the attendant bright-eyed Red-breast (which I have known even to settle upon my pad), are the only sounds to be heard,—all combine to impress this season upon the memory. Here, at Coombe Wood, *Cryptophagus lycoperdi* swarms in puff-balls, but never accompanied by *Lycoperdina*. Many species of *Gyrophæna* are to be found, often very commonly; *gentilis* and *fasciata* being the most abundant, and *lævipennis* and *pulchella* the rarest. *Agaricochara lævicollis*, *Bolitobius atricapillus*, &c., *Autalia impressa*, and *Oxypoda alternans* also abound;—sometimes with *Engis* and *Triphyllus punctatus*, and stray *Cholevæ*, *Aphodii*, &c. I remember once being much astonished at finding *Geotrupes sylvaticus* and two specimens of *Necrophorus mortuorum* stowed away in a very small round rotten fungus, that looked as if it could not possibly contain such bulky insects.

I shall be glad if these notes tempt any beginner to try the time-honoured wood of Coombe; and will conclude with the remark that if the ghost of the late J. F. Stephens could revisit his old happy hunting-grounds, it would be considerably astonished by the row of rhododendrons planted on each side of the hill by the Duke, and looking very out of place,—though good enough traps for *Longicornes*.—E. C. Rye, 7, Parkfield Cottages, Putney, *August*, 1867.

Description of the larva of Tanagra chœrophyllata.—On the 28th and 30th of May last, I had the pleasure to receive six larvæ obtained from the flowers of earth-nut (*Bunium flexuosum*) by Mr. Howard Vaughan, who has my sincere thanks for making two excursions in quest of the larvæ to a locality where the perfect insects were known to occur.

It is, therefore, to this gentleman we are indebted, not only for a knowledge of the larva, which hitherto has been most inaccurately described, but also for that of its food-plant, which, being one of the *Umbelliferæ*, had doubtless been mistaken for *Chœrophyllum*; but experience proved that chervil could not be the proper food, as young larvæ obtained from eggs refused it, and starved.

This larva, when full-grown, is nearly three-quarters of an inch in length, cylindrical, stout in proportion, and about equally thick throughout, rather shining, and with distinct lines, as follows:—

Ground colour of the back green or bluish-green, becoming on the sides gradually paler towards the spiracular region. The dorsal line darker green, and on the anal segment becoming dark red and thicker, forming a very conspicuous mark. The sub-dorsal stripe of a darker green than the ground-colour, and running between two fine lines of pale whitish-green, which in some individuals are also seen to be very finely edged externally with darker green.

The spiracles are red, and below them the green fades into a whitish stripe, and it is forcibly contrasted beneath by a darker tint of the green of the back softening gradually into a paler green on the ventral surface, where there are three longitudinal whitish stripes, the middle one being the widest.

The larvæ had all retired to earth by the 8th of June, and the moths began to appear on the 27th, and the whole six were out by the 29th of the month.—William Buckler, Emsworth.

Notes on the larva of Apatura Iris.—It is as difficult to convey a just sense of my gratification at having been able to observe the wonderful larva of this imperial

species as it is to express adequately my grateful thanks to my kind friend Mr. Doubleday for the two fine examples sent me on the 5th June last, feeding on sallow—*Salix capræa*.

This larva is not slow in its movements, which are very graceful as it turns and accommodates itself to the various positions necessary to its progress amongst the leaves, eating rapidly and voraciously, cutting out a large portion of a leaf in a few seconds; but it is easily alarmed, for a touch of the leaf or slight shake of the spray transforms it into a very different looking creature. Its structure cannot be well understood until it is walking or feeding; then the flexile motions of the head become apparent, furnished as it is on the crown with a pair of long forked tapering horns, blunt at their tips, curved on their inner sides and concavely bent a little in front, and covered with raised points on their front surfaces; they are much like those of a snail, but not retractile or moveable, though when the head is rapidly in action, as in feeding, so the horns are displayed perpendicularly or sloping backward and forward, or horizontal when at rest or in alarm. The crown is slightly notched and the face rather flattened above, but a little convex towards the lower part where it is widest. When full-grown and stretched out it attains the length of two inches, is rounded and tapering towards both head and tail, the anal segment terminating in an elongated, rather flattened point, which is, however, divided and slightly forked at its extremity; the prolegs short and thick, and a fringe of short hairs above them along the sides. The segments are sub-divided into five portions, the anterior being much the widest, and all studded with rows of minute raised points.

When alarmed the segmental divisions and deep sub-divisions disappear, as it suddenly contracts its length, and are all drawn up so closely together as to make the raised points resemble the pile of a rich velvet: at such times, and when at rest, the head is bent down, the horns appear in a line with the body, the back much arched, thickened, and rounded, remaining a long time motionless, assimilating admirably with the leaf on which it rests. It reposes on a leaf, generally on the under-side, but not invariably so, and spins a quantity of silk, to which it firmly adheres.

In colour, the larva is a bright full green on the back and sides, as far as the sixth segment, thence blending gradually into a yellower green, and the three last segments much paler, the whole surface studded with minute yellow points.

On the back of each horn, and extending along the second, third, and fourth segments, is a sub-dorsal stripe of pinkish or yellowish flesh colour; and on each side of the other segments, as far as the tenth inclusive, a thin oblique stripe of dull yellow slightly edged with red, running backwards from the spiracular region of one segment to the sub-dorsal region of the next; the most conspicuous is that which begins on the sixth and ends on the back of the eighth segment, being longer and thicker, especially at the end, which is bordered above by a purplish-brown or crimson mark; the raised points there being much longer and larger than those on the other lines, as they also are longer than those of the green surface.

A pale yellowish lateral stripe on the anal segment, extending to the tips. The spiracles are red, and below them the green softens into a pale whitish-green, with a fringe of white silky hairs above the prolegs; these last are of a pale transparent bluish-green, the ventral surface whitish. The head, behind, is the same

colour as the back, and the face a pale shining whitish-green, the horns in front bluish-green, which colour extends as a stripe down each side the face, the tips of the horns brownish-red, and a little below they have a few raised black dots.

When full-fed it spins a large quantity of silk on the under-side of a leaf, to which it attaches itself by the anal prolegs, and slightly with the anterior pair of ventral ones, and remains motionless for about four days; it then relaxes its hold by the ventral legs and hangs down, suspended only by the anal pair, and within an hour the transformation to a pupa is complete.

The form of the pupa is broad and flattened on the sides, the outline of the abdomen and wing-cases nearly straight, while that of the back forms a very obtuse angle, having a thin and rather sharp ridge, projecting to a point about midway, from which it slopes off to the anal point and to the head, which has a short, pointed, and flattened, forked pair of appendages; seen only from the back or front it would appear a rather long and slender pupa in comparison with a side view.

Its colour is a very pale whitish-green, with whitish oblique lines on the sides, also nervures on the wing-cases and dorsal ridge. In three weeks the perfect insect was disclosed.—Id.

Descriptions of four varieties of the larva of Epunda nigra.—I am indebted to the kindness of the Rev. J. Hellins for many examples of the very beautiful larvæ of this species collected in the spring of 1866 by Mr. Thomas Terry and others, found chiefly on *Galium mollugo* and other low plants, though in confinement they preferred hawthorn.

When full-grown, they attained from an inch and a-half to an inch and three-quarters in length, and were cylindrical, of nearly uniform thickness, with the head rounded, and but little smaller than the second segment, the anal segment tapering at the extremity.

They were full-fed from the middle of May to the 10th of June, and the moths emerged towards the end of October.

There are several very distinct varieties, and others that may be subdivided into further variations, but it will be sufficient to give details of four, distinct in colour.

1. Ground colour a brilliant pale yellow-green, sometimes a very bright grass-green, others of a bright olive-green, deepest in tint at the extremities, and often suffused with pink anteriorly.

The dorsal broad stripe in some being faintly blackish, in others reddish, but intensely black or red, forming a dark mark just at the beginning of each segment; in others this dark spot is confluent with the two anterior tubercular large black dots, thus forming blunt arrow-head marks pointing forwards. The sub-dorsal stripe of red or blackish is sometimes complete, but oftener interrupted in the middle of each segment; the skin-folds at the incisions are bright yellow.

The spiracles in all varieties are white, placed in semi-circular black marks, and immediately beneath them is a narrow stripe of pale sulphur-yellow or of greenish-yellow; belly and legs pale green, tipped with red at their extremities. The tubercular dots are sometimes absent, but when visible are black, and the anterior pair very much larger than the pair behind them. The head green suffused with

pink; a dull pinkish plate on the second segment. One olive-green larva had the plate dark red, and a large crimson spot on the top of each lobe of the head.

2. Ground-colour cinnamon-brown; a narrow pale greenish-yellow stripe beneath the spiracles; the folds of skin at the segmental divisions greyish; dorsal stripe faintly indicated by a dusky spot at the beginning of each segment; the sub-dorsal stripe more distinct and faintly blackish.

3. Deep dingy crimson on the back and sides; below the spiracles a greenish-yellow stripe; the belly and legs, with head and dull plate on second segment, rather paler than the back; a broad dorsal and narrow sub-dorsal stripe of faint blackish, but just at the beginning of each segment quite black.

4. The whole of the back between the sub-dorsal lines a brilliant deep citron-yellow, the sides from the sub-dorsal to the line of spiracles of the same ground-colour, but almost entirely suffused with dark red; the head and thoracic segments, with the anal extremity, also suffused with red. The dorsal stripe composed of two red confluent lines forming a broad stripe, with blunt arrow-head shapes of red at the beginning and end of each segment, and anteriorly margined with short black streaks; the tubercular dots black, the anterior pairs being much the largest; sub-dorsal line black, and interrupted in the middle of each segment.

Spiracles white in semi-lunar blotches of black, and edged below by a pale greenish-yellow stripe; belly greenish, with a large red blotch along the sides above the legs, the latter being orange-red.—Id.

Notes on the earlier stages of Acidalia emutaria.—Through the kindness of Messrs. Fenn and A. H. Jones, I am enabled to give some account of the earlier stages of this species.

The egg-laying female was captured on the 13th July, 1866, in a cultivated marsh, flying amongst the reeds which line the sides of the dykes. This locality would point to some marsh-plant being its natural food, but we reared our larvæ in confinement upon *Medicago lupulina*, *Lotus corniculatus*, and *Polygonum aviculare*.

My larvæ hatched July 22nd, 1866; hybernated when about one-third grown; began to feed again about the end of February, 1867; moulted *twice* during April and May; spun up in the second week of June; and the moths appeared on July 7th and 10th, full-sized specimens, and one of them especially deserving Haworth's name of *subroseata*.

The eggs are of an elongated pear-shape, the stalk-end being cut off flat;* ribbed longitudinally, and finely punctured: when first laid their colour is pale bluish-green, afterwards changing to a straw colour with spots and irregular splashes of pink.

The little slender larvæ, when first hatched, are pale greenish, with pinkish heads; afterwards becoming very plainly coloured—pale ochreous-grey, with a few dingy black lines and markings.

One of my four larvæ died early in winter, but the other three bore the cold very well, whilst in the same outhouse the extreme frost slew some of the more tender species of hybernating larvæ—*Agrotis ripæ* and *lunigera* for example. I had

* N.B.—I notice that the eggs of several species of *Acidalia* exhibit this truncated form at one or both ends.

one fright about them, however. One has heard of the grass growing under the feet of a sluggard; and it is a fact that during the winter, while they were resting almost as motionless as the withered stalks of their food, two of my three larvæ became decidedly tinged with bright green; and, on examination with a lens, I found that this tint was caused by the young growth of a species of moss! (*Tortula*—?).

However, it luckily proved to be less than skin deep, and was without difficulty got rid of at the first spring moult.

When full-fed the larva is about an inch in length, following the *imitaria* type, *i. e.*, long, cylindrical, slender, and tapering slightly towards the head; the skin evenly ringed; the head a little flattened above, and rounded at the sides.

The colouring is so plain and dull in many of the *Acidalia* larvæ, that one fears a detailed description may give the idea of something much more ornamental than the reality; and yet it is necessary to give the little details, in order to show how the various species differ.

The ground colour of *emutaria*, then, is a pale ochreous-grey; the dorsal line is a very fine whitish-ochreous thread, distinct at the beginning of each segment, but soon almost extinguished by the union of the blackish lines which border it, and which shade off towards the sub-dorsal line through a brown into the ground colour, making the region of the back look darker than the sides: just at each segmental fold there is a pair of brown or blackish wedge-shaped spots: the sub-dorsal line is also a very fine whitish thread, edged below with a black line, which is most distinct about the middle of each segment, whence also some very fine oblique lines slope downwards behind each spiracle.

The spiracles are black; and just below them comes a sooty-brown line shading off gradually into the pale grey of the centre of the belly.

Of the two larvæ which I retained for myself, one spun up against the side of the flower-pot, covering itself with a thin but opaque flat web, into which it drew a few bits of moss, &c.; the other spun up on the surface of the earth in the pot, forming an irregular oval cocoon as big as a horse-bean, and nearly covered with fine bits of earth and grains of sand; the pupæ I did not examine until after the exit of the moths.—John Hellins, Exeter, *July 29th*, 1867.

A curious visitor at sugar.—I had "sugared" abundantly along the lovely "Waters Meet" valley near Lynmouth, N. Devon, on the evening of the 14th June last, and, on re-visiting, early the ensuing morning, the scene of operations, found at the foot of one of the trees a melancholy object for compassion and warning.

The common bat (*Vespertilio pipestrellus*) lay in prostrate humiliation before me, so far gone as to appear "tight"-ened even to death! On attempting to lift him, however, a rollicking, one-sidy flounder or two, accompanied by a hiccupy squeak, affirmed "all right" so unmistakeably, that, solemnly registering one more vow against the Circean cup, I lifted him carefully by the collar of his coat, and deposited him in the broad space made by the branches of a noble oak-tree, some five feet from the ground, in order that he might recover and regret at leisure and in safety the ignoble example to which he had yielded, and the firmament from whence he had fallen. On my return, some hours later, my jovial brother collector had departed—"nor in the cleft, nor near the rock was he."—Edw. Hopley, 14, South Bank, Regent's Park.

Re-occurrence of Stathmopoda pedella.—On the 7th inst., my brother secured a single specimen of this species at West End, Hampstead, in exactly the same spot as the two specimens captured there in 1861 (vide "Intelligencer," Vol. x., p. 131). He saw another, but it escaped him. I have been twice since, but have not met with any further examples.—Percy C. Wormald, 35, Bolton Road, St. John's Wood, N.W., *9th July*, 1867.

Note on the œconomy of Colias Edusa.—Aug. 16.—While out for a walk to-day, I observed a female *Edusa* very busily engaged in depositing its eggs on some clover, and was fortunate enough to secure three of the eggs. I find, on consulting several works on *Lepidoptera*, that the *larva should be looked for in June and July*, and here we have eggs in the middle of August. If any of your readers can tell me whether the insect remain in the egg state until the spring I shall feel obliged.—J. Ingram, Nettlestone, Ryde.

Capture of Dianthœcia Barrettii.—Mr. Birchall having kindly indicated to us the locality for this insect, Mr. A. G. Moore and I went to search for it on the 27th of June. We were fortunate enough to take six specimens, but at this date somewhat worn, so we conclude that a week earlier would be a better time to find the insect in perfect condition. On the same occasion we met with *D. capsophila* (1), *D. cucubali* (1), *Eupithecia venosata* (very fine), *Melanippe galiata*, *Acidalia subsericeata*, *Eupœcilia albicapitana*, &c. The above insects are now in the collection belonging to the Royal Dublin Society.—W. F. Kirby, R. D. S., Dublin.

Note on the colouring and markings of Anthocaris cardamines, &c.—In the August number of this Magazine, Dr. Sharp offers an opinion that no object is probable for the variation of the sexes in *A. cardamines*. It is true that in *Anthocharis* and the allied genus *Zagris*, the "orange tip" is often peculiar to the males, but in some species both sexes are without this adornment. In an interesting note read at the Entomological Society, May 4th, 1863, Mr. T. W. Wood has shown the use of the colouring of the under-side of *A. cardamines*, as assimilating it to the colour of the plants on which it prefers to settle. The question of the greater adornment of the male sex in animals has frequently been discussed; but in the case of *Anthocaris* I am about to suggest a reason for the female being without the orange spot. The females of most Lepidopterous insects are much less noticed on the wing than the males. Now, if we consider that the safety of the females is of greater importance to the continuance of the species than that of the males, we can understand why they are less adorned and less conspicuous. Moreover, the want of the orange blotch assimilates the appearance of the females to that of the genus *Pieris*, several species of which are abundant in Europe. It is not improbable that the elimination of the orange spot may be still going on; for in the aberrant European species of the *Belia*-group the orange blotch is wanting in both sexes, and in *Zagris Eupheme* it varies greatly in size and conspicuousness, so far as I know, without reference to sex.—Id.

Notes on Œgoconia quadripuncta (Kindermanniella, Z.).—This not generally abundant little moth has been tolerably common in the cellar of this house during

the last ten days, about forty examples having been captured. It particularly affects a little window plentifully festooned with coal-dust-covered cobwebs. I have been not a little interested by the contempt the insect appears to have for the spiders, and by the manner in which it flies into and among the webs without becoming entangled. These webs are full of the remains of ordinary house *Tineæ*, &c., but only once did I observe there a fragment of *quadripunctata*, and very frequently the latter seemed to prefer the webs as a convenient resting-place; yet there is no very evident structural reason why it should not meet the same fate as its less fortunate companions. The yet unknown larva probably feeds on some dry vegetable matter, but, without some guide to its habits, it is next to impossible to detect it among the heterogeneous lumber that accumulates in these domestic store-houses.—R. McLachlan, 1, Park Road Terrace, Forest Hill, *3rd August*, 1867.

Acidalia interjectaria at Plumstead.—At the beginning of July I found this species rather commonly in Plumstead Marshes, but not distinguishing them at the time from *osseata*, regret to say I took but few. I am indebted to the kindness of Mr. Thomas Brown, of Cambridge, for types of this insect, and also for the identification of my own captures.—Howard Vaughan, Kentish Town, *14th August*, 1867.

Variety of Acontia luctuosa.—Early in June I captured a few *Acontia luctuosa* near Gravesend, and, on setting my captures, discovered that it had been my good fortune to have taken amongst them a rather striking variety. This specimen differs from the type in that the white blotch on the upper wing is remarkably small, somewhat trifoliate, and entirely detached from the costa; and in the hind-wings the ordinary transverse fascia can best be described as resembling the bowl of a tobacco-pipe with a very short stem, and is entirely separate from the hind margin.—Id.

Additions to List of Irish Lepidoptera.—

Lithosia complana—Bred from larvæ taken in June, feeding on lichen, near high-water mark at Howth.

Dianthœcia cæsia—Bred by my friend Warren Wright, of Dublin, from larvæ taken on the South Coast of Ireland, feeding on *Silene maritima*. The specimen which he has kindly sent to me for examination does not differ from those taken in the Isle of Man.—Edwin Birchall, Bradford, *August* 14*th*, 1867.

Heliothis peltigera and Sterrha sacraria in South Wales.—On July 22nd I took *H. peltigera*, which was disturbed from dwarf willow near the sandhills on Port Talbot Moors, in this county (Glamorganshire).

On August 9th *Sterrha sacraria* came to light near my house, in the Vale of Neath. This specimen is in very fine condition, and answers to the variety described by Mr. Ingram in No. 18 of the Magazine, with the red costal stripe. As both these species are scarce, the record of their occurrence in a new locality may be interesting.

I have also taken 15 *Camptogramma fluviata*, 2 fine cream-coloured varieties of *G. papilionaria*, and some other fair things, *T. retusa* among them.—John T. D. Llewelyn, Ynisygerwn, Neath, *August*, 1867.

P.S.—I have the pleasure to announce the captnre of another specimen of *Sterrha sacraria*. It came to light here on Aug. 15th, and was found resting with the wings arched, after the manner of *Cilix spinula*. She has since laid a batch of ova.—J. T. D. L., *Aug.* 16*th*, 1867.

Note on Bedellia somnulentella.—The larva of this little uncertainty is about again this season. On the 28th of last month, when passing through Stroud Green, Norwood, I picked a leaf of *Convolvulus arvensis* growing in a cottager's garden, containing four larvæ; a week later they all entered the pupa state. Yesterday, being in the same locality, I noticed the larvæ somewhat common on plants growing in the hedge-rows.—Chas. Healy, 74, Napier Street, Hoxton, 12*th August*, 1867.

General Information.

Meetings of the Entomological Society.—The meetings for the Session 1867-8 are fixed for the following Mondays, at 7 p.m.:—Nov. 4th, 18th; Dec. 2nd; Jan. 6th, 27th (*Anniversary*); Feb. 3rd, 17th; March 2nd, 16th; April 6th; May 4th; June 1st; July 6th.

Introduction of Bombyx Cynthia into Australia.—We read in a colonial newspaper that the *Ailanthus* silk-worm has been successfully introduced into our southern possessions, where, under the influence of a favourable climate, its cultivation will probably one day form an important branch of industry.

Collection from the Upper Amazons.—A large collection of insects (*Lepidoptera* and *Coleoptera*) has been received in London from the veteran South American collector, Mr. John Hauxwell; together with a fine series of birds and some reptiles. The locality in which the collection was made is Pebas, on the northern bank of the Upper Amazons, in Peru, and interesting as being situated on a prolongation of the mainland of Equador, east of the River Napo, into the alluvial plains of the Amazons. As a result of this geographical position, several species hitherto known only from the eastern slopes of the Andes, are contained in the collection, including one species of humming-bird. There is a large amount of novelty, however, among the insects, shewing the richness of the locality. Among the Diurnal *Lepidoptera* are two or three fine new species of *Papilio*, a superb addition to the splendid genus *Callithea*, three species of *Pandora* (one of them new), besides the rare *Batesia hypochlora* (Felder) allied to *Pandora*, and a fine series of *Ageronia*; these three genera form a tolerably well-defined group of *Nymphalidæ*, and Pebas seems to be their head-quarters. Mr. Hauxwell was previously known only as an ornithological collector; it is to be hoped that he may continue his labours in all branches, and explore, for the benefit of science, the region of the Napo, one of the richest districts in tropical America.

BRITISH HEMIPTERA: ADDITIONS AND CORRECTIONS.

BY J. W. DOUGLAS AND JOHN SCOTT.

(*Continued from page* 52.)

Section 11.—OCULATINA.

FAMILY 1.—SALDIDÆ.

Genus 1.—SALDA, Fab.

Species 4*.—SALDA CONSPICUA, n. sp., pl. 1, fig. 5.

Long-oval, black, with yellow hairs. *Antennæ* long, black, 1st joint broadly yellow inwardly. *Pronotum* narrow in front, sides straight. *Scutellum* with two posterior, cuneiform, yellow spots. *Corium* with 6—7, mostly long, spots, and, before the apex, a conspicuous large exterior blotch, yellow. *Thighs* at the base more or less fulvous.

Head—punctured, clothed with fine yellow, wavy hairs. *Crown* with a short yellow line close to the eyes, sides of the clypeus much incrassated, yellow. *Face*, lobes yellow. *Antennæ* long, black, finely haired, 1st joint broadly yellow on the inner side. *Eyes* black. *Ocelli* piceous, yellow in the centre. *Rostrum* black.

Pronotum—clothed with fine yellow wavy hairs, long, trapeziform, narrow in front; sides flattened, the margin straight, scarcely reflexed; posterior margin very deeply concave across the scutellum; anterior callosity very large, with a deep fovea in the centre. *Scutellum* clothed with fine yellow hairs; basal half depressed posteriorly, punctured; apical half transversely crenate. *Elytra* with fine, short, distant, depressed hairs; *Clavus* with a long cuneiform yellow spot before the apex; *Corium*, anterior margin forming a long slight curve, disc with 6 (rarely 7) yellow spots, whereof 4, narrow and elongate, are in a line parallel with but not close to the claval suture, 1 larger close to the nerve and the posterior margin (sometimes a small one lies above it), and 1 on the marginal field, near the middle of its length, but distant from the margin; besides these, on the posterior third of the marginal field, occupying it from the nerve to the margin, is a large sub-quadrate yellow spot, but the apex of the corium beyond is broadly black, in the form of a rounded spot. *Membrane* ochreous, inner basal angle black; membrane-suture, nerves, and a long spot in each cell, pitchy-black or fuscous; exterior to the cells, the membrane is outwardly shaded with fuscous, and below the 1st cell, except next the apex of the corium, is wholly black. *Legs* long; *thighs* black or piceous, base of the 1st pair, basal third of 2nd and 3rd pairs, and apex of

all, fulvous or ochreous; *tibiæ* fulvous or obscure brown, extreme apex black, sides set with very fine short spines; *tarsi* black, 2nd joint and claws fulvous, the end of the 2nd joint of the 3rd pair beneath with two long spinose hairs.

Abdomen—beneath, black, shining. Length 2 lines.

In the marking, resembles *S. orthochila*, but quite different in form, in shape of pronotum, colour of legs, length of antennæ, &c.

Taken by Messrs. Marshall and Rye, on the mountains near Rannoch, in Perthshire, in June, 1866.

Section 12.—Reduvina.

Family 2.—Nabidæ.

Genus 2.—Nabis, Lat.

Since the publication of "the British Hemiptera," we have seen examples of a *Nabis* captured by Mr. B. Cooke, Dr. Power, and the Rev. T. A. Marshall, which have convinced us that they should be referred to *N. flavomarginatus*, Scholz, and that the species we have described under that name is *N. pilosulus*, Först. The name and synonymy at page 554 should therefore stand thus:—

Species 5.—Nabis pilosulus.

Nabis pilosulus (Först.), Fieb. Europ. Hem., 161, 7 (1861).

Nabis flavomarginatus, *Doug. & Scott*, Brit. Hem., 554, 5, pl. 18, fig. 5 (1865).

The following description should come between species 4 and 5:—

Species 4*.—Nabis flavomarginatus.

Nabis flavomarginata, *Scholz*, Arb. u. Veränd, 114, 6 (1846).

Nabis flavomarginatus, *Flor*, Rhyn. Liv. i., 696, 3 (1860); *Fieb.*, Europ. Hem., 161, 5 (1861).

Nabis dorsatus, *Dahlb.*, Vet. Akad., Handl., 227 (1850).

Nabis nervosus, *Bohem.*, Vet. Akad. Förh., 77, 35 (1852).

Nabis Lhesgicus, *Kolen.*, Mel. Ent. vi., 53, 258 (1857).

Above, pale dingy-ochreous. *Head* with a broad black line down the centre. *Pronotum* on the first two-thirds gradually, on the last third suddenly, widened; down the entire centre, and on each side of the narrower portion, a black line. *Elytra* generally not half the length of the abdomen, but when developed reaching beyond it. *Abdomen* above black, with very short, silky, yellowish pubescence. *Legs* entirely ochreous; *thighs* of the 1st and 2nd pairs with transverse black lines, 3rd pair with 2 rows of black dots.

Head—covered with dense yellowish pubescence; down the middle extends a smooth, broad, black mark, widest at the front of the

crown, before and behind the eyes a large black spot; underside wholly ochreous. *Antennæ* yellow-brown; 1st joint piceous at base and apex, 2nd at the apex only, 3rd and 4th joints darker than the others. *Eyes* and *ocelli* brown or piceous. *Rostrum* yellow-brown, a line on the outer side of the 2nd joint, and the apex of the 4th pitchy-black.

Thorax—Pronotum with fine, short, yellowish pubescence, especially on the sides, convex, on the first two-thirds gradually, on the remainder suddenly widened; down the middle a black line, broad on the narrow part, slender on the wide portion, on which also are sometimes two indistinct fuscous streaks or clouds at each side of the central line, but more often these are wanting; sides of the anterior portion, except the extreme margin, black. *Scutellum* black, with a large wedge-shaped ochreous spot on each side. Elytra pale ochreous, when developed as long as the abdomen; *Corium* with the nerves pale, more or less shaded with fuscous; *Membrane* with the nerves fuscous. When the elytra are not fully developed, as is generally the case, they reach less than half the length of the abdomen, both the corium and membrane being present, but abbreviated. In this state the colour is darker than in fully-developed elytra. *Sternum* black in the middle and on the sides, but on the latter the colour is interrupted with ochreous on the prosternum posteriorly. *Legs* very finely pubescent, ochreous or light brownish, unicolorous; *thighs*, inwardly on the 1st and 2nd pairs, with fine transverse black lines and an indistinct row of dots, on the 3rd pair two rows of black dots; *tarsi* ochreous, the joints at the apex pitchy-black, sometimes the 1st and 2nd joints of the 3rd pair entirely blackish; *claws* black.

Abdomen—above black, or broadly reddish down the middle, clothed with very fine, short, silky, yellowish pubescence; beneath, ochreous-brown, smooth, shining, black or fuscous in the middle and on the sides. *Connexivum* pale ochreous, narrow in the ♂, wide in the ♀, on the underside at times a longitudinal reddish streak. *Genital segments* in the ♂, form a truncate apex by reason of the large falcate processes; in the ♀ the apex is rounded off to a small obtuse point. Length $3\frac{1}{2}$—4 lines.

Differs from *N. pilosulus* in the lighter colour, in the absence of the paleness on the anterior margin of the corium, in the elytra being usually short, in the legs being unicolorous, in the pilosity of the upper surface of the abdomen, and in the form of the processes of the genital segments, besides other minor characters.

Apparently rare in the South of England. Grange, near Manchester (B. Cooke); abundant in a field close to Loch Rannoch (Marshall).

Sub-Div. 2.—HYDRODROMICA.

Section 1.—Hydrometrina.

Family 1.—Hydrometridæ.

Genus 1.—Hydrometra, Fab.

Species 3*.—Hydrometra Costæ.

Hydrometra Costæ, *H. Schf.*, Wanz. ix., 71, t. 301, fig. 927 (1850); *Fieb.*, Europ. Hem., 107, 5 (1861).

Hydrometra rufoscutellata, *Costa*, Cent. 2, t. 2, fig. 8 (1843), nec. *Latr.*

Above blackish-brown, robust, very broad across the region of the middle coxæ; *pronotum* broadly ferruginous.

Head—especially on the sides, with golden hairs, cheek-plates and *labrum* yellow, *rostrum* black. *Antennæ* yellow-brown, last joint black, apex of all the others blackish.

Thorax—*Pronotum*, anterior portion black, much depressed (except in the middle), sides incrassate; posterior portion broadly ferruginous, the sides only black, clothed with very fine golden scale-hairs; posterior angles prominent but obtuse, disc obscurely punctured, sometimes close behind the anterior portion transversely crenate; the central longitudinal keel on the anterior part yellowish, then black, and posteriorly of the ferruginous colour of the disc; on the under-curved sides, posterior to the constriction, a ferruginous line extends as far as the posterior angles. *Elytra* brown; nerves black with golden scale-hairs, the space between the first inner nerve and the next usually whitish for some distance, the other intervals sometimes yellowish. *Wings* fuscous, pale at the base, nerves darker. *Sternum* flat, black, with fine golden hairs, especially on the sides of the mesosternum; *Prosternum* yellowish in front of the coxæ; *Metasternum*, in the ♂, with a small tubercle; sheaths of the 2nd pair of coxæ very large and projecting; on their underside, and also on that of the 3rd pair, a large ochreous spot. *Legs*—1st pair: *fulcra* yellow, broadly black beneath; *thighs* black, with a broad yellow-brown line on the inner side; *tibiæ* yellowish-brown, with a black line on the outside; *tarsi* black; 2nd and 3rd pairs: *coxæ* and *fulcra* black above, ochreous beneath; *thighs* dark brown above; yellowish-brown beneath; *tibiæ* and *tarsi* black.

Abdomen—black; in the ♂, on the underside the first 5 segments have each three wide, but very shallow, contiguous depressions; on the 6th, throughout its length, is one larger and deeper depression, of which the edges are brown; the posterior margin has a deep rounded excision in the middle. *Connexivum* yellowish outwardly but brown on the edge, the points not prolonged nor acute. *Genital segments* in the ♂, above, black, broad, sides sub-parallel, extending far beyond the points of the connexiva; 2nd segment very short; beneath yellow-brown; the 1st constricted at the base, spread out posteriorly round the base of the 2nd, which is large and globose; 3rd as above: in the ♀, above, the 1st trapeziform, tapering posteriorly, and not projecting beyond the points of the connexiva, is brown in the middle and yellow-brown at the sides; 2nd black, short; beneath both yellow-brown, the 1st convex, regular, sloping gradually towards the upper side; 2nd as above. Length $5\frac{1}{2}$ lines.

Resembles *H. thoracica*, but distinguished by its greater size and robustness, especially across the region of the middle coxæ; by the broader ferruginous colour of the pronotum, the form of the genital segments, and other minor characters.

First brought from Rannoch in 1865 by Mr. McLachlan, and taken freely in the same locality in June, 1866, by Mr. Rye and the Rev. T. A. Marshall.

Species 5*.—Hydrometra odontogaster.

Gerris lacustris, var. e, 3, *Latr.* Gen. 133 (1807).

Hydrometra odontogaster, *Zett.*, F. Ins. Lap. i., 506, 3 (1828); Ins. Lap. 282, 3 (1839); *H. Schf.*, Wanz. ix., 67 and 73, t. 299, fig. Q to S., t. 301, fig. 931 (1850); *Flor*, Rhyn. Liv. i., 738, 4 (1860); *Fieb.*, Europ. Hem. 109, 11 (1861).

Gerris odontogaster, *Schum.*, Beitr. 36, 4, t. 3, fig. 8—10 (1832); *H. Schf.*, Nom. Ent. 62 (1835).

Black, dull, with golden scale-hairs; in the ♂ the 6th abdominal segment beneath with two short, obtuse processes; in the ♀ the 1st genital segment with a deep transverse basal furrow.

Head—at the sides, with a silvery gloss, cheek plates yellow outwardly. *Antennæ* and *rostrum* black.

Thorax—*Pronotum*, anterior region impunctate, regularly depressed inwards from the moderately incrassated sides, middle and sides with a yellow line, anterior angles with a small node; posterior

portion roughly punctured; middle keel slight; tubercles of the hinder angles small but distinct; under-curved sides, below the hinder angles only, with a yellow, hindwardly widened streak. *Elytra* blue-black, apex fuscous, nerves with golden-yellow scale-hairs. *Sternum*, especially at the sides, with a silvery gloss, in the ♀ brassy, but in both sexes grey or blackish next the pronotum; *prosternum* yellow, black in the middle; *metasternum* posteriorly, in the ♂, with a very small tubercle; sheaths of all the coxæ unkeeled, black, 2nd pair on the middle and at the inner side with a silvery streak. *Legs—Coxæ* black above, yellow beneath; *fulcra* yellow, 1st pair with a black central streak; *thighs*, 1st pair black, yellow inwardly at the base, 2nd and 3rd pairs black-brown above, yellow-brown beneath; *tibiæ* and *tarsi* all black.

Abdomen—beneath with a silvery gloss, in the ♀ brassy at the sides; in the ♂, on the 6th segment, in the middle, two short, stout, obtuse, forwardly directed, black, spinous processes; posterior margin in the middle with a deep, rounded excision, on each side of which the colour is brown; in the ♀ the posterior margin of the 6th segment is raised, brownish in the middle, and slightly and regularly excavate. *Genital* segments, in the ♂ long, on the upper-side the 1st long, quadrangular, projects much beyond the points of the connexiva, black, posterior angles brown; 2nd very short, obtuse; beneath, the 1st posteriorly almost squarely cut out, the middle projecting a little on to the 2nd, the sides receding gradually to a point; the 2nd long, cylindrical, rounded behind, black, brown posteriorly, covered with a whitish gloss. In the ♀ beneath, short, the 1st yellowish, trapezoidal, tapering posteriorly, with a deep rounded furrow across the base; 2nd very small.

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

Most like *H. lacustris*, but easily distinguished by being always black beneath; the ♂ by the processes on the 6th abdominal segment; the ♀ by the furrow on the 1st genital segment.

Hitherto not common, or overlooked. Taken at Lee and Gravesend, on still water, in April and May.

CRYPTOCERATA.

Section 5.—Corixina.

Family 1.—Corixidæ.

Genus 1.—Corixa, Geoffr.

Species 9*.—Corixa præusta.

Corisa præusta, *Fieb.*, Syn. Coris No. 14 (1848); Spec. Coris. 28, 30,

t. 1, 17, fig. 1—18 (1851); *Walleng.*, Oefv. K. Vet. Akad. Förh. xi., 146, 9 (1855); *Kolen.*, Mel. Ent. vi., 70, 276 (1857); *Fieb.*, Europ. Hem. 95, 21 (1861).

Corisa (Corisa) præusta, *Flor*, Rhyn. Liv. i., 787, 2 (1860).

Black-brown with ochreous markings, slightly shining. *Pronotum*, *clavus*, and *corium* distinctly rastrate. *Pronotum* with 8—9, mostly entire, black lines. *Clavus* and *corium* with similar, undulating, sub-parallel, interrupted lines. *Legs* ochreous: 1st pair, in the ♂—*thighs* with a spot at the base; *tibiæ* with a large spot above, black; *palæ*, on the first half, sub-parallel with the upper-side, broadly reflexed; on the second half widened and turned spirally inwards: 3rd pair—*tarsi*, 1st joint posteriorly with a broad black band.

Head—yellowish-brown, darker in front of the crown; *face* ochreous, in the ♂ extending upwards to, in a line with, the middle of the eyes.

Thorax—*Pronotum* elongate, rounded behind, disc with 8—9 equal black lines, entire, except the middle ones, which are interrupted, and the ends overlap each other; the ochreous intervals about the same breadth as the lines. *Elytra*—*Clavus* and *corium* with similar, undulating, sub-parallel, often interrupted lines, except five or six at the base of the clavus, which are wide, straight, and entire; anterior marginal channel of the corium pale livid throughout; line of the membrane-suture indistinct; *membrane* covered with broad, hieroglyphic pale marks, sub-parallel on the inner margin, anterior margin black. *Sternum* black; *scapulæ*, *pleuræ*, and *parapleuræ* ochreous, *scapulæ* inwardly, *pleuræ* at the base, and inwardly black. *Legs* ochreous; 1st pair, in the ♂—*thighs* with a black spot at the base; *tibiæ* arcuate, with a large black spot above; *palæ*, on the first half sub-parallel, the upper-side broadly reflexed and depressed, on the second half widened and turned spirally inward, the upper margin black; in the ♀, *palæ* cultrate, regular, apex acute, base on the under-side rather wider than the apex of the tibiæ: 2nd pair—*thighs*, often towards the apex, and *tibiæ* and *tarsi* at the apex, brown: 3rd pair—*tarsi*, in both sexes, 1st joint posteriorly with a broad black band from side to side, mostly covered by the long black cilia, therefore more distinctly seen on the under-side; 2nd joint clear yellow, margins black.

Abdomen above, black, connexivum ochreous; beneath, dusky ochreous; in the ♂ the first 4 segments, except on the posterior margin, in the ♀ the first two at the base, fuscous. Length $3\frac{1}{2}$—$3\frac{3}{4}$ lines.

In early spring and in autumn, mostly in stagnant water ; Eltham ; Lee ; Cowley ; Stevenston, Ayrshire ; Rothesay, Isle of Bute.

Species 10.—Corixa Wollastoni, D. & S.

During 1866 we have seen several examples of a *Corixa* which, except in coloration, agree so well with the above species that we conclude they belong to it, and that our description (Brit. Hem. p. 603) was made from immature specimens. Indeed we had but two, ♂ and ♀, the latter having so collapsed in drying that it was just recognizable, and useful only in showing the character of the palæ in that sex. Our description, therefore, will have to be amended in the following particulars :—

Colour above, dark brown. *Sternum* black, *scapulæ*, *pleuræ*, and *parapleuræ* yellow, the two former black on the inner side. *Legs :* 1st pair—*thighs* yellow, in the ♂ a black spot on the inner side at the base ; *tibiæ* short, yellowish, in the ♂ swollen, constricted at the base, above black ; *palæ* yellow-brown, in the ♂ (rarely in the ♀), with a black orpiceous line on the upper edge ; 2nd pair brown ; *thighs* yellowish on the basal half ; *tarsi* with a dark spot at the apex ; 3rd pair yellowish, *tarsi* with black cilia, 1st joint posteriorly with a large, black, angular spot on the inner side, beginning rather beyond the middle of the length and widening gradually till, at the end of the joint, it occupies all, or nearly all, the breadth (the cilia being dense and long and covering the spot it may be overlooked) ; 2nd joint clear yellow with black margins.

Length 2 lines.

One specimen from the loch near Kirn, Argyleshire, in May (*Scott*), and several from peat pits on the moor at Rannoch, in June (*Rye* and *Marshall*).

EXPLANATION OF PLATE 1.

Fig. 1, *Mesorelia furcata*, Muls. and Rey. ; 1*, side view ; 1*a*, head beneath ; 1*a**, head in front ; 1*b*, elytron (undeveloped) ; 1*c*, hind-leg and tarsus.

Fig. 2, *Teratocoris viridis*, Doug. and Scott ; 2*a*, elytron ; 2*b*, head in profile.

Fig. 3, *Derœocoris alpestris*, Mey.

Fig. 4, *Globiceps dispar*, Boh. ♂ ; 4*, antenna ; 4*a*, head in profile ; 4**, antenna ♀ ; 4*a**, head in profile.

Fig. 5, *Salda conspicua*, Doug. and Scott.

Errata.—Page 47, line 7, for *pabulinus* read *alpestris*, and for 48 read 49.

ON SOME BRITISH *CYNIPIDÆ*.

BY THE REV. T. A. MARSHALL, M.A.

(*Continued from page* 8.)

ii. Thorax coriaceous or glabrous, not villose. Maxillary palpi 5,— labial 2-articulate.

Gen. ANDRICUS, Hartig.

The species are minute, and differ from *Cynips* only in a few unimportant points. The antennæ are frequently longer than the body, and more distinctly sub-clavate. Both sexes are known. The abdomen of the ♀ is more compressed than in *Cynips;* that of the ♂ is often very small. The disc of the thorax is free from villosity, except in *A. quadrilineatus*, Hart., and *A. Hartigii*, described below, which thus serve to connect the two genera. These insects either form galls for themselves, or are bred parasitically in those of *Cynips*.

Andricus Hartigii, n. sp.

Antennæ 15-jointed, rufo-fuscous. Body ferrugineous; head black. Mesothorax with a broad medial black band, reaching the collar, but abbreviated posteriorly, and on either side a narrower stripe, abbreviated in front, but reaching the scutellum: the disc glabrous, the sides with some traces of villosity; the discal sutures strongly marked. Scutellum sub-rugose, villose, depressed, rufous, margined with black at the base; declivity of the metathorax black, with a rufous dot on each side above. Petiole rufous. Abdomen black and polished above, at the base and beneath, rufescent; carinated from about the middle to the apex; slightly villose at the base. Terebra and legs rufous; the last joint of the tarsi fuscous. Wings hyaline; nervures rufo-fuscous. ♀.

Long. $1\frac{1}{4}$; alar. exp. $4\frac{1}{4}$ lin.

Most like *A. quadrilineatus*, Hart., but irreconcileable with his short description. It appears to be an *Andricus*, although the palpi are unobserved, and cannot be seen without destruction of the specimen, which is in Mr. Walker's collection, and is the only one I have seen.

Andricus trilineatus, Hart.

Black; antennæ at the base, abdomen, and legs, rufous. Disc of the mesothorax transversely rugose, rufous or testaceous, with three black bands. Abdomen at the apex, and hinder coxæ at the base, black. ♀.

Long. $\frac{3}{4}$; alar. exp. $2\frac{1}{4}$ lin.

A. trilineatus, Hart., in Germ. Zeits., 2, p. 191.

It differs from the preceding in being much smaller. The 15-

jointed antennæ are incrassated towards the apex, and have the first five joints testaceous, the rest fuscous. The longitudinal bands of the mesothorax are more obscure. Scutellum black. Abdomen fuscescent beneath and at the apex.

Common on oaks, being, according to Hartig, an inquiline of *C. fecundatrix*.

Andricus noduli, Hart.

Black; antennæ at the base, abdomen, and legs, rufescent; apex of the abdomen, and base of the posterior coxæ, black: hinder tibiæ fuscous, the tarsi pale; ♀.—The ♂ is similar, but the antennæ are hardly darker at the apex. Long. $\frac{2}{3}$; alar. exp. $1\frac{3}{4}$ lin.

Var. 1. Mesothorax with traces of three testaceous stripes at the back.

Var. 2. Legs entirely testaceous.

A. noduli, Hart., in Germ. Zeits., 2, p. 191; 3, p. 337.

This species, according to Hartig, inhabits the young twigs of the oak, causing them to become distorted and loaded with excrescences. A twig one inch in length produced 30 flies, each issuing from a separate excrescence. It is common in England.

Andricus moniliatus, Hart.

Black; squamulæ and legs ferruginous, hinder coxæ black at the base; hinder tibiæ sub-fuscous. Antennæ moniliform. ♂.

This is the whole of Hartig's description. I have four specimens which correspond to it, as far as it goes, but the only tangible character consists in the moniliform, or sub-moniliform antennæ. These are 15-jointed, having the four basal joints testaceous. Mesothorax glabrous, black, narrower than the head; sutures of the parapsides faintly marked. Scutellum black, hemispherical, sub-rugulose. Abdomen much shorter and narrower than the thorax, black, shining, narrowly testaceous at the base. Legs testaceous; tips of the tarsi, and the hinder tibiæ, pale fuscous. ♂. Long. $\frac{1}{2}$—$\frac{3}{4}$; alar. exp. 2—$2\frac{1}{4}$ lin.

A. moniliatus, Hart., in Germ. Zeits., 2, p. 192.

Eight other species of *Andricus* are briefly indicated by Hartig, several of which might be found in this country.

(To be continued.)

ADDITIONS, &c., TO THE BRITISH *TENTHREDINIDÆ*.

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

Having undertaken, with the assistance of Mr. F. Smith, to work out the British saw-flies for the general Catalogue purposed to be pub-

lished by the Entomological Society of London, I have of late paid considerable attention to these insects. On going over the results of several years' collecting, I find some species which I can with confidence name as yet unrecorded for Britain, and have accordingly noted them below.

Thanks to the elaborate system of division employed by Hartig, the generic separations are comparatively easy,* and the same may be said for specific distinctions in many genera; but the great difficulty rests with the numerous species of *Nematus* and the black *Doleri*. For the former genus I find neither the short descriptions by Stephens, nor the detailed ones of Hartig, of much avail, but do not yet despair of discovering some means whereby the subject may be partially elucidated. The black *Doleri* may yet prove the more difficult. Hartig separates numerous species of these by characters which, to say the least, appear to me to be of a most uncertain nature, such, for instance, as slight differences in the colouration of the leg-spurs. Zaddach, while remarking on the insufficiency of these distinctions, makes yet more species, but grounds them on far more important structural differences, viz., the forms of the saw of the females. These characters should be of the greatest value, but they are very difficult to apply, especially in dry insects.

The *Tenthredinidæ*, as a family in which many species seem to be absolutely without males, are greatly deserving of the attention of the more advanced naturalist; and the great diversity of structure exhibited in the various genera renders them worthy of being no longer left with those groups that have as yet failed to attract the attention of workers.

Hylotoma metallica, Klug. I took this at Darenth in the spring of this year; and examples are in Stephens' collection mixed with *H. ustulata*. It differs from the latter only in the reddish antennæ, and more yellowish colouration of the basal veins; but I do not feel at all sure that it is more than a variety of *ustulata*.

Lophyrus frutetorum, Fab., Klug. A single ♀ example was taken at Rannoch, by Mr. Hislop, during the time we were there in June, 1865, and was kindly presented to me by that gentleman. It affects *Pinus sylvestris*.

Harpiphorus lepidus, Klug. I beat one example from an oak tree near Croydon, on the 30th May, 1867. It is the only European species of the genus.

* Whilst paying this tribute of admiration at the lucid manner in which Hartig has divided the family, I cannot, at the same time, sufficiently condemn the plan he follows in making numerous *named* sub-genera, divisions, sections, &c., almost *ad infinitum*, subordinate to what he calls a "genus." Succeeding writers have mostly considered each of these as a genus in itself, which accords with my own views, that a division of any kind, if worthy of a name, should be looked upon as generic.

Phyllotoma ochropoda, Klug. I have one example of which I neglected to note the locality. The insect in Stephens' collection under *Heterarthus ochropodus* seems to be *Pœcilostoma obesa*, but I do not know if this be the example referred to in the "Illustrations" (Mand. vol. vii., p. 94) as being then in Mr. Ingpen's collection. The description suits the true *ochropoda;* hence this may really not be an addition to our list.

Phyllotoma microcephala, Klug. Bred by Mr. Healy from a larva which mines the leaves of *Alnus glutinosa*, forming large blotches at the tip: it changes to pupa in the mine.

Phyllotoma melanopyga, Klug. Bred by Mr. Healy from a larva which has similar habits to the last, only that it affects *Salix capræa*.

Phyllotoma tenella, Zaddach (*Beschreibung neuer oder wenig bekannter Blattwespen*, p. 28, fig. 17, 1859). Beaten from birch at Rannoch in June, 1865.

Phyllotoma aceris, n. sp.

Nigra, sparse griseo-pilosa. Antennæ subtus ad apicem sub-testaceæ; 11*-articulatæ. Oculorum margines frontales, palpi, alarum anteriorum humeri, pedesque in parte, albidi. Alæ fumosæ; venis nigris; pterostigmate saturatiore. Long. corp.* $1\frac{2}{4}'''$*; exp. alar.* $3\frac{5}{6}'''$ (♀).

Larva sub-cutanea, folia Aceris campestris *et* A. pseudo-platani *incolens. Pupa in thecâ circulare, ex folii parte constructâ, occulta.*

Black, shining, with very short and sparse grey pubescence. Antennæ 11-jointed, scarcely so long as the abdomen; the last four or five apical joints somewhat testaceous beneath, and more thickly pubescent than the basal portion. Eyes black. Ocelli conspicuous, bright reddish. Palpi whitish, the two basal joints suffused with blackish. The margins of the eye-sockets on the face, the shoulder-scales of the anterior wings, and two raised scale-like lobes on the metathorax, whitish. Legs whitish; the coxæ and trochanters (except at the apex), a line on the exterior surface of the intermediate femora, expanding at the apex, the posterior femora wholly (the extreme apex excepted), and the tarsi (save at the sutures of the joints) more or less black. Abdomen wholly black. Wings smoky; the veins strong and black; pterostigma dilated, blackish, becoming paler in the lower portion.

Bred by Mr. Healy from larvæ which make great blotches in the leaves of *Acer campestre*, and occasionally in *Acer pseudo-platanus*. Changes to pupa in circular cases cut from the mine, varying from $6\frac{1}{2}$ to $9'''$ in diameter. The full history of this interesting species is detailed in the succeeding article by Mr. Healy. I find nothing like it previously described.

Blennocampa nana, Klug. Beaten from birch at Rannoch in June,

1865. This species is introduced by Stephens (Illust. p. 41), but the single exponent in his collection is only *Fenusa pumila*.

I remark *en passant* that *Monophadnus nigerrimus*, Klug, a widely diffused species, is the same as *Selandria brevicornis* of Stephens (Illust. p. 49). What the true *brevicornis* may be, I know not.

That my own small collection should contain so many novelties in this family (and I believe those here numerated are probably only one-half of what I really possess) is a convincing proof, if any were required, of the little that is yet known, in this country, concerning these interesting insects.

Forest Hill, London: 10*th Sept.*, 1867.

OBSERVATIONS ON THE ŒCONOMY OF THE SAW-FLY (*PHYLLOTOMA ACERIS*, McLACH.) THAT MINES THE LEAVES OF MAPLE.

BY CHARLES HEALY.

It is now upwards of eleven years (June, 1856) since my friend, Mr. Charles Miller, first drew the attention of the Entomological world to this peculiar mining larva, at p. 110, vol. i., of the "Entomologist's Weekly Intelligencer." Speaking of the full-fed larva, he observes, "It constructs a circular case out of the upper cuticle and a layer of the lower cuticle of the leaf, not forming a hole through the leaf, as a piece of the lower epidermis is still left untouched." From the fact of the larva cutting out a case he was doubtless led to throw out the suggestion as to the possibility of its being something allied to the micro-lepidopterous *Elachista* (*Antispila*) *Treitschkiella*. The mines made by these larvæ are very conspicuous on the leaves of *Acer campestre* during the months of June and July; occasionally I have met with them on *Acer pseudo-platanus*. At about the end of the first week, or the middle, of the month of June, the larva commences its mine, and if we then inspect the leaves of the Maple growing in a locality frequented by this species, some of them will be found to contain a minute blotch situate near the edge of the leaf; at times, nay, frequently, a leaf may be found containing three or four similar little blotches, and in some few instances, I have noticed each of the five lobes of a leaf to be similarly disfigured by a mining larva; it always feeds solitarily, there never being more than one in a mine: it feeds with the underside of its body facing the upper surface of its food. The young larva's body is white, dorsal vessel greenish, head brown, darker at the sides, and with brownish markings; the back of the second segment is deco-

rated with a black plate, divided down the centre by a line of the same colour as the body; the back of the third segment is furnished with a thin black plate, which is also divided in a similar manner to the markings on the back of the second segment; the ventral surface is very differently adorned to that of the dorsal, for although the second, third, fourth, and fifth segments each possess a black plate, yet they all differ in shape and size; for instance, the second segment has an *x*-like plate, number three a somewhat oval shaped black spot, number four a circular black dot, and number five a mere black speck only. The feet are encircled at the top and bottom with black, and the ventral surface of the anal segment is nearly encircled with black.

At the first moult the body becomes quite white and spotless, the head and second segment having an especial hyaline look; in a few hours (during which the larva remains inactive and fasting) the whole of its markings slowly re-appear, and are at first pale brown, but gradually deepen in tone to their original colour. After resuming its feeding for a few days, it undergoes its second moult, and, on examining the back of the third segment, we now almost miss the thin black interrupted line, so prominent before this moult took place; the part of the dorsal vessel shewing through the back of the fifth segment is now of a dull orange hue; body white, having a greenish tinge imparted to it by the sombre green-coloured fluid contained in the dorsal vessel. Each time the larva moults it throws off its skin from the front, and entire. A few days after the second moult it becomes full-fed. The "frass" lies loose and dry in the mine, so much so, that when the mined leaf is tilted up it becomes scattered about.

When nearly full-fed the larva becomes so stout that its body slightly dilates the upper part of its mine; when quite full-fed it is about six lines in length, and throws off its larval skin for the third time. At this moult it casts aside for ever all the various sized black markings which had previously decorated its body, and appears in the new dress in which it is destined to remain for some nine or ten months until the period of its pupation arrives; its head and body white, mouth pale brown, dorsal vessel green. It then sets to work at the construction of its winter abode, choosing for that purpose a portion of its mine, and cutting out a circular piece from the upper cuticle, or, more properly speaking, I should have said, it only partially does so, for at short intervals, as it proceeds with its labours, we perceive that it leaves certain portions of the upper surface uncut, which, to my mind, is intended as a precautionary measure, the larva appearing to be quite

conversant with the fact, that if it entirely cut out the upper part of its intended case, the first puff of wind would, in all probability, blow it away, whilst still engaged in cutting out the bottom of its case.

After it has cut out as much of the top of its case as it considers necessary, it then devotes its attention to the formation of the lower half, using for that purpose a layer only of a part of the inner skin of the leaf, which latter is of so exceedingly thin and shining a character, that it reminds one of the substance called "goldbeaters' skin." It then fastens the upper and lower parts of its case together, after which it completes the cutting out of the upper portion, and makes itself snug by binding together the inner margins with silk, the cast-off skins and "frass" being carefully excluded from the interior of the case. The latter being entirely liberated from the leaf is blown to the ground by the first gust of wind. The cases are not all made of the same size, some being almost half as large again as the others. All that I have examined (with one or two exceptions) have been cut out with the strictest accuracy.

After the larva has resided in the case for a few days, its body loses a portion of its previous greenish tinge; the fifth and sixth segments become somewhat narrower than the others, thus giving it the appearance of being nipped in at that part of its body, and, being slightly shrunken, is about five lines in length. During the winter months it is still further shrunken, so that by the arrival of the month of March it is only between three and four lines in length. It enters the pupa state either at the end of March or the beginning of April.

If the larva or pupa be ejected, its development is at once arrested; this fact I have tested on several occasions. I have been prevented from studying its pupal changes solely from the above-mentioned cause. We thus see that it is absolutely necessary for it to remain inside its case, otherwise its certain destruction follows. The perfect insect makes its appearance during the month of May, by bursting its way through either the upper or under-side of its case, whichever happens to be uppermost at the time, after having been entombed, as it were, for the space of about ten months.

4, Napier Street, Hoxton, N.

Notes on Coleoptera in the south of Scotland.—For some reason or other Scotland has always been deficient in Coleopterists; some fine collectors and good entomologists have worked there, but there has never been a sufficient band of them to ascertain with anything like an approach to completeness how rich the Coleopterous fauna of Scotland really is. The past three years have, however, been memorable

for the visits paid by English collectors to Scotland; and our catalogues and collections have been thus considerably increased. These visits, however, have always been to the Highlands, and the productions of the south of Scotland are still almost unknown to entomologists. The following list, therefore, of the rarer species that I have met with in a few days' collecting during the present spring and summer may, perhaps, possess some interest. The species marked with an asterisk have not, I believe, been previously recorded as natives of Scotland.

In April and May I resided at Dumfries, and had occasional opportunities of collecting in the neighbourhood. Among other things I met with, *Dyschirius nitidus* and **salinus* abundant on the banks of the Nith, and with them also, but very rarely, **D. politus*, **Dromius melanocephalus*, *Lebia chlorocephala*, **Anchomenus pusillus*, in the salt marshes towards the mouth of the Nith; **A. micans* in abundance in a marshy place on the banks of the Cairn Water; **Bradycellus distinctus* and **fulvus* in moss; **Perileptus areolatus* under small stones on the banks of the Cairn Water, in some numbers, but its time of appearance did not extend over more than the last fortnight of April and first week of May; **Bembidium stomoides*, a single specimen on the banks of the Nith; *Silpha dispar* occurred very rarely in carrion in the salt marshes; *Omosita depressa*: of this species Mr. W. Lemon has obtained a considerable number of specimens by placing some bones as a trap. I have myself only found a single specimen with *Silpha dispar*. **Rhizophagus perforatus* found in great profusion under a log; **Syncalypta setigera*, about a dozen specimens at the roots of rushes at Caerlaverock; *Throscus dermestoides* in great numbers on nettles under birches; I obtained some hundreds of specimens from a single patch of nettles. **Ceuthorhynchus Dawsoni*, a single specimen at Caerlaverock; before only found on the south coast of England! *C. viduatus*, two or three specimens on a wall; **C. crux*, one specimen on a wall, another in company with *Anchomenus micans*; *Cœliodes subrufus* on oak near New Abbey. *Cryptorhynchus lapathi*: up to the present time the evidence for this species being found in Scotland has been insufficient, but I found several specimens on sallows close to Dumfries, and Mr. W. Lemon (a most successful collector) afterwards found some scores of it. *Erirhinus æthiops*, a single specimen among flood refuse; Dr. McNab and Mr. Lemon have since found over a dozen specimens by sweeping in a marsh. *Erirhinus bimaculatus* in some numbers in the salt marshes. *Erirhinus salicinus* locally abundant on sallows in blossom; **Tanymecus palliatus* in two or three places on the banks of the Nith; **Polydrusus chrysomela* bred from pupæ found on the shores of the Nith; in company with this species great numbers of *Telephorus Darwinianus* in all its stages were found, and must be covered with the salt water at high tides. *Sitones cambricus*, several sporadic specimens; **Phædon concinnum*: this species, hitherto very rare in collections, lives at the roots of plants in the brackish water; at high tides they are floated up into corners and quiet places. I found one spot where this species could have been taken out of the salt water with a water-net literally in pints. *Hyperaspis reppensis*, about a dozen specimens in wet moss among young Scotch fir; **Bryaxis hæmatica* near New Abbey; *Bythinus Curtisii, securiger, Burrellii*, and *puncticollis*, in company among rubbish on the banks of the Cairn—males of each species occurred; in the case of *Burrellii* and *securiger* the proportion was one male to about forty females. *Aleochara brevipennis* in company with

Hyperaspis. **Philonthus lucens*, one specimen on a dusty road, a second under a stone by the side of the Cairn. *Philonthus fumigatus* extremely abundant in the salt marshes. **Scopæus Erichsonii?*: this elegant species I found in company with *Perileptus*, and considered it to be an addition to our British catalogue; but, on sending it to Mr. Crotch, he informed me that my specimens are specifically identical with the *Scopæus* found by Mr. Wollaston in Wales, but not since re-taken, and on the authority of which examples *S. lævigatus* took its place in our lists. I have not since this had an opportunity of examining my species again, but I was certainly of opinion that it did not agree with the description of *lævigatus*, but came at any rate very close to *S. Erichsonii*. **Bledius tricornis* abundant in the salt marshes.

I spent the month of June at the the head of Loch Ken, and in this neighbourhood I met with *Orectochilus villosus* in great profusion under stones at the edges of the streams; sometimes twenty or thirty specimens might be seen under one stone, but it is very difficult to capture, its agility being something extraordinary. *Hydroporus* 9-*lineatus* in Loch Ken; *Cryptohypnus maritimus*: this rare species almost vies in agility with the preceding; it is to be found on mild, but not very bright, days, sitting on stones, and must be approached with the greatest caution, or it will not be secured. It is extremely local, so much so that I have only been able to find it here on a very dry and barren island in the Water of Ken, and it appears not to occur elsewhere in the neighbourhood. Turning the stones, though diligently worked at, quite failed to yield any specimens; but by repeating this stalking process day after day I procured a fine series: seven males occur to every female found. *Diacanthus impressus*, sweeping in a marshy place; *Hydrocyphon deflexicollis* abundant on alders by the sides of the burns; *Telephorus abdominalis*, six specimens with the preceding; **T. figuratus*, two specimens beaten from sallows; **T. unicolor*, a pair found by sweeping in the woods at Dalry; *T. testaceus* sparingly in a marshy place, certainly a distinct species from the common *T. limbatus*, though very local; *Cœliodes ruber*, *subrufus*, and *geranii*, the last in great profusion in the flowers of *Geranium sylvaticum*; *Anthonomus brunneipennis*, in company with *Telephorus testaceus*; its food-plant is, I have little doubt, *Comarum palustre*. *Magdalinus carbonarius* beaten from hazel: *Rhynchites megacephalus*, about a dozen examples on birch; a very wary beetle. *Erirhinus majalis*, a pair beaten from sallows; **Brachytarsus varius* beaten from hazel; *Cryptocephalus* 6-*punctatus*, a single ♀ near Dalry; *Chrysomela varians*, not uncommon on a small species of *Hypericum*; *Lina ænea* on alders; *Gonioctena pallida* beaten from sallows; **Bryaxis Lefebvrii*: this species, hitherto unique as British in Mr. Waterhouse's collection, I obtained somewhat commonly on the banks of the Water of Ken, but it was apparently confined to a few square yards of ground, and I could find it nowhere else. The male is very much rarer than the female, but becomes commoner after the species has been out some time. *Aleochara ruficornis*, a beautiful specimen, crawling in the road. *Tachinus elongatulus*, five specimens crawling in the road, all in one week.

If any of my friends want any of the species I have mentioned above as tolerably common, will they kindly write to me for them?—D. Sharp, Bellevue, near Thornhill, Dumfriesshire, *August*, 1867.

Notes on Coleoptera at Southend and its neighbourhood.—Having been located here since the beginning of May, with leisure to resume my entomological pursuits, I have been able to investigate a little the riches of this place as regards beetles. The following are among the most noteworthy I have observed, but I have captured many small species, undetermined at present, of which I hope to send a supplemental account.

The sand-banks between this and Shoebury are the great feature here, and these have produced to me *Faiagria thoracica*, *Quedius humeralis*, *Sunius filiformis*, *S. intermedius*, *Xantholinus tricolor*, *Crypticus quisquilius* (this species is very common here, and seems to delight chiefly in such parts of the sandhills as have moss growing in the sand, when, by parting the moss with the digger, they appear in little companies, instantly diving headlong again for shelter), *Anthicus instabilis*, *Trachyphlœus scaber*, *scabriculus*, and *spinimanus*, *Omias Bohemanni*, *Otiorhynchus raucus*, *Orthochætes setiger*, *Chrysomela Banksii* and *lamina*, *Cassida nobilis*, *Lasia globosa* (abundant), and *Psammœchus bipunctatus*.

Damp places between the town and the Shoebury bank contain *Stenus picipennis* and *Molytes coronatus*.

My best captures, however, have been among the wood-feeders: in decayed oak I observed *Helops cœruleus* (the larva of which must be two years at least before maturing, as I saw it in all sizes, as well as the perfect beetle), *Euglenes oculatus*, and *Dorcatoma flavicornis*, *chrysomelina*, and *rubens* (the latter I only found dead, being too late for it; in one tree, however, it must have abounded); I also took *Paromalus flavicornis*, *Symbiotis latus*, *Quedius cruentus*, *Scolytus rugulosus*, and *Hylastes cunicularius*; and, in dead broom, *Phlœophthorus rhododactylus* (common) and one *Hylurgus pilosus (?)*. In fungi there were to be had *Oxyporus rufus*, *Pocadius ferrugineus*, and *Triphyllus suturalis*. Casually I found in the road, near Benfleet, *Panagœus 4-pustulatus*, and, in a similar situation, near Rochford, *Taphria nivalis* was common one day, and nothing else to be seen. *Harpalus rupicola* is common at the west of Cliff Town, and *Baridius lepidii*, *Cœliodes exiguus*, *Lissodema 4-guttata* (common in dead sticks), *Colon* sp?, *Syntomium æneum*, and *Thiasophila angulata*, occurred in chance places.

Taking the hint given by Mr. Rye in a former No. of the Magazine, I visited some plants of *Sisymbrium officinale*, and soon had the pleasure of getting a good series of certain *Ceuthorhynchi*:—*C. cyanipennis*, *chalybæus*, *quadridens*, *floralis*, *pyrrhorhynchus*, and *contractus*, making quite a family party. Notes like his are much to be valued, affording as they do pleasure to read, and more practical results in the enrichment of collections. A *Ceuthorhynchus*, which Mr. Rye informs me is the *C. vicinus* of Brisout, hitherto considered by British entomologists as a small variety of *C. chrysanthemi*, occurs on the sand rarely.—Henry S. Gorham, 10, Cambridge Terrace, Southend, *August* 17*th*, 1867.

Notes on Coleoptera in Morayshire.—While spending a portion of June and July of the present year in Morayshire, I gladly availed myself of the opportunity of becoming acquainted with its Coleopterous inhabitants. As the soil in the neighbourhood of Forres, where I had my head quarters, is very different in its character from that of the district in which I usually reside, I anticipated the pleasure of falling in with a few desirable species. For several miles inland,

embracing what is called the Laigh of Moray, the surface is generally level, and the soil very light. Towards the south the country gradually rises into moorland, and culminates in the "Knock of the Braes of Moray" at about sixteen miles from the coast. This eminence yielded me but little beyond a specimen of *Carabus nitens*. The Cluny Hills, near Forres, forming part of the town lands, and to which unrestricted access is allowed, are about 200 feet in height, planted chiefly with fir, oak, and birch, and intersected by numerous well-constructed footpaths. These hills afford excellent hunting-ground to the Coleopterist. Here occur *Blethisa multipunctata*, *Pterostichus lepidus*, *Amara curynota*, *Bradycellus harpalinus*, *Harpalus tardus*, *Amphycillis globus*, and *Agathidium laevigatum* and *nigrinum*. Of *Thalycra sericea*, seemingly rare in all parts of the country, two specimens were secured, and *Melolontha hippocastani* was not uncommon. *Clerus formicarius* and *Cis lineato-cribratus* were occasionally met with, and *Anobium nigrinum*, though mutilated in four instances out of the five, was an agreeable capture. *Orobitis cyaneus* was not unfrequent on *Viola canina*; and on the broom growing near Nelson's Monument I was not a little surprised to find a dozen or more of the pretty *Tychius venustus*; *Anthonomus pubescens*, *Magdalinus phlegmaticus* and *M. carbonarius*, *Rhinomacer attelaboides*, and *Rhynchites æneo-virens*, none of which I had ever seen alive, were specially acceptable. *Dorytomus tortrix* was not scarce upon the aspen, *Acanthocinus ædilis*, *Pogonocherus fasciculatus*, and *Asemum striatum* were the only noteworthy *Longicornes*; *Tachinus pallipes*, and *T. elongatus* and *Quedius ruficollis* among the larger *Brachelytra*.

In the town, after a keen hunt in many questionable localities, I succeeded in obtaining a few of *Blaps mortisaga* of Linnæus, which presents very decided marks of distinction from the common insect formerly known under that name, but now catalogued as *B. mucronata*. Of this species I previously possessed only one specimen, taken several years ago in an outhouse belonging to an inland farm in Forfarshire.

At Burghead, among stones that had occupied a place in fortifications, supposed to have been reared by the ancient Caledonians and subsequently renewed by the Danes, I found a single specimen of *Leistus montanus*. It had evidently fallen from the high estate of its progenitors and most of its contemporaries, for the spot of its capture is not more than thirty feet above the sea level, and within half a stone's throw of high-water mark.

On the banks of the Findhorn, near the Suspension Bridge, *Dorytomus pectoralis* and *D. maculatus*, with *Crepidodera aurata*, were beaten from sallow, while *Bembidium paludosum* careered over the damp sand in considerable numbers. There, also, turned up a specimen of *Morychus aeneus*; and *Lagria hirta*, not hitherto observed north of the Tweed, was evidently quite at home. Farther south, on the Divie (a tributary of the Findhorn), near its confluence with the Dorbach, *Bembidium pallipes*, *Cryptohypnus maritimus*, and *Euryporus picipes* occurred—all, alas! in single blessedness. At Altyre and Relugas, *Otiorhynchus septentrionis* was found; in the one place by beating, in the other, and more plentifully, under dead leaves along with *Ot. picipes* and *Quedius fulgidus*. Near Dunphail I obtained *Magdalinus phlegmaticus*, *Rhinomacer*, and *Anobium nigrinum*, with two species of *Tomicus* and a dozen *Salpingus castaneus*, all from a single branch. Although a specimen of *M. carbonarius* may have been found on hazel, as recorded by the late

Mr. Walton, and a second have been taken on the same tree by my friend Dr. Sharp, I am fully satisfied that the ordinary food-plant of both the northern species of this genus is the Scotch fir. An almost certain method of taking them, as well as *Rhinomacer* and *Anobium nigrinum*, in localities where they do occur, is to cut off a few branches of that tree about the beginning of June, and in ten days or a fortnight afterwards to pay occasional visits for the purpose of carefully beating them over a collecting net or an open umbrella. I reserve a notice of a few other species for a future number.—R. Hislop, Blair Bank, Falkirk, 10*th August*, 1867.

Ceuthorhynchi on Sisymbrium officinale.—Like Mr. Rye in the south, I was led to pay special attention to *Sisymbrium officinale* growing near Forres. It may interest your readers to know what species frequent the plant in that latitude. I found *C. assimilis, erysimi, contractus, constrictus, floralis, quadridens, cyanipennis*, and *chalybæus*. A single specimen like *sulcicollis*, if not that species, was bottled, but cannot now be found. Who knows but it may have been *tarsalis* !—Id.

Note on Oxytelus flavipes, Stephens.—In Mr. Murray's "Catalogue of Scottish Coleoptera," p. 128, *Oxytelus flavipes*, Steph., is given on the authority of Mr. Hardy, as having been captured by him on the "sea-coast near Cockburnspath." Last year Mr. Murray kindly presented me with a specimen of *O. flavipes*, taken by Mr. Hardy himself, and which turns out, on careful examination, to be *O. maritimus*, Thomson. Dr. Sharp, who has seen the specimen, confirms me in this opinion. In Mr. Waterhouse's Catalogue no mention is made of *O. flavipes*, Steph.; and Mr. Rye, who has examined the Stephensian cabinet in the Brit. Mus. for me, informs me that there is not only no exponent of that species therein, but that there is even no label for the name of it. The first locality given in the Manual, "Dung, London district," renders it extremely improbable that Stephens had the maritime and algæ-frequenting species in view when describing his insect; though the second, "Devon," might possibly point towards it: in the "Illustrations" it is stated to occur near Dover, and in the metropolitan district. At all events it seems a pity that Mr. Hardy, who evidently had a good species in view, did not describe it under a name different from that used by Stephens.—W. R. McNab, M.D., S. C. Asylum, Dumfries, *4th September*, 1867.

Endromis versicolor in Worcestershire.—Referring to the query at the foot of my note (ante p. 64), allow me to add that I am quite certain the larvæ were those of *E. versicolor*. It must be borne in mind that they were taken on the 3rd June. My note is dated the 18th July, by which time the larvæ had grown considerably. I compared them with the illustration and description given in "Westwood's Moths," and have not the slightest doubt as to their identity. I am sorry to say that only eight of the number turned to pupæ, the remainder shrivelled up and died.—Edward S. Haines, Brettell Lane, Stourbridge, *Sept.*, 1867.

Occurrence of a new British Noctua (Polia nigrocincta, Ochs.) in the Isle of Man.—On Tuesday, August 22nd, I had the pleasure of breeding a new British *Noctua*. The larva from which I bred it fed on *Silene*, and was quite new to me; and when

the moth emerged I felt positive that it was a fine addition to our lists. Mr. Doubleday, to whom I have sent the specimen, informs me that it is *Polia nigrocincta*. I shall feel much obliged if you will make a note of it in the Magazine for next month.—N. Greening, Warrington, *September 13th*.

Occurrence of a Fumea (*F. crassiorella, Bruand*) *new to Britain.*—I have bred several specimens of a *Fumea* this year which prove to be *Fumea crassiorella*, Bruand. The ♂s are larger than either *F. nitidella* or *roboricolella*, to which group they belong. The ♀ is also larger and more obese. I have had males in my cabinet for some time, but it was only this year, by breeding the female, that I was enabled to make out the species; there are good figures in Bruand's monograph, fig. 68 *a* ♂, *b* ♀, plate 2.—Fred. Bond, 21, Adelaide Road, N.W., *11th September*, 1867.

Note on Acidalia interjectaria.—This species occurs tolerably abundantly at Folkestone. M. Guenée informs me that in *A. osseata* the costa is always "*rouge*," which I take it is about the colour of a penny postage-stamp, or, at the least, of burnt clay. I have certainly never met with British examples of so-called *osseata* possessing this peculiarity. My friend, Mr. Bond, has a series of specimens taken years ago in Cambridgeshire which present certain differences from the Folkestone individuals, and also from types of *A. interjectaria* kindly sent to me by Mr. Brown, of Cambridge, but, though they might be described as fuscous, or even fawn-coloured on the costa, one could not very well call them "rouge." No doubt the extremes of these two forms are distinct enough, but it is a confessedly difficult job to draw the line between them; for M. Guenée, in his great work, endorses M. Delaharpe's opinion that one begins where the other leaves off.—H. G. Knaggs, Kentish Town, *September 9th*.

*** Since writing the above I have received, in answer to a query, the following reply from M. Guenée * * "*Quant à l'osseata la côte est toujours rouge de la coleur à peu-près de vos timbres d'un 'penny'*" * * * H. G. K.

Capture of Sterrha sacraria at Highgate.—On the 20th inst. I had the good fortune to meet with an example of this species on a gas-lamp at Highgate. The specimen is a male, and differs slightly from the ordinary form in the transverse streak being brown instead of pink or crimson; and the remainder of the fore-wing is of a uniform straw-yellow, without the least indication of costal stripe, as mentioned by Mr. Ingram in the Magazine, Vol. ii., p. 134. When at rest on the lamp, my capture had the wings deflexed, after the manner of *Pionea forficalis*.—H. J. S. Pryer, 10, Holly Village, Highgate, N.W., *29th August*, 1867.

Sterrha sacraria at Newark.—"On the 19th August, at eleven p.m., whilst sitting reading at the open window of my dining-room, and (must I confess it) sipping hot whisky-toddy, the well-known indication of a "flop" in the gas above the table caused me to investigate results. For some time I could discover nothing, until, at length, a flutter in the sugar-basin revealed—*Sterrha sacraria* (♀).

With the exception of the loss of one antenna she was unscathed, and, by next day, had laid one yellow egg, now bright pink, which I take to be a proof of fertility. I shall, of course, take whisky-toddy every night at eleven, with the window thrown open, for some time to come.—George Gascoyne."

[Perhaps the above extract from the letter of an esteemed entomological friend, whose permission I have to publish it, may interest the readers of the E. M. M.—Edward Hopley.]

Occurrence of Sterrha sacraria in the North of Perthshire.—At about two o'clock in the afternoon of the 14th of August, after walking over an unproductive tract of country in the north of Perthshire, during my stay at Rannoch, I was meditating on the consolations to be derived from my untouched flask of "whoskey" and its companion pipe, and reflecting rather ruefully on the few *Tortrices* in my pocket—sole result of four hours' labour, when a small moth, flitting gently from a patch of grass, settled almost at my feet. I knelt down to examine the crevice into which the new comer had retreated, and there—most lovely and welcome sight—was *Sterrha sacraria!* Nothing but the biggest pill-box I had about me could be worthy of so illustrious a visitor; and, having sumptuously installed him therein, I postponed my lunch *sine die* and set to work to find another. Whether the sight of an entomologist on his knees had proved propitiatory I cannot say, but a few steps further on a second specimen stole gently from his retirement, and went to keep the first company. In about an hour I found a third, and with these—all males!—I trudged home well pleased. Many profitless hours I spent afterwards at the same spot, in hopes of obtaining the other sex.—J. B. Blackburn, Grassmeade, Wandsworth, *September*, 1867.

Sterrha sacraria in Dorsetshire.—My son Edward took a male *sacraria* here on Saturday last.—J. C. Dale, Glanvilles Wootton, Dorset, 3*rd September*, 1867.

Note on the œconomy of Colias Edusa.—I have lately heard from Mr. Jeffrey, of Ratham, near Chichester, that towards the middle of August he observed a ♀, very bright and fresh-looking, laying eggs on clover leaves, some of which he gathered and took home; and in a few days the young larvæ hatched, but died from neglect during his absence.

Query:—Was it a hybernated ♀ living till then, or the parent of a second brood?—Wm. Buckler, Emsworth, *September 4th.*

*** *Colias Edusa* has been observed to oviposit even as late as the middle of September.—H. G. K.

Cucullia gnaphalii bred.—On June 2nd I was delighted to see a specimen of this rare "shark" sitting on the side of my breeding-cage. The larva from which it was bred was taken by me last autumn.—E. G. Meek, 1a, Paradise Row, Old Ford Road, E.

Forficula auricularia flying.—Last night, in our garden, I caught with my net a large earwig flying. Papa told me that its proper name is as above, and that it is rarely seen on the wing.—William D. Douglas, 7, Kingswood Place, Lee, *Aug.* 31*st*, 1867.

Discovery and description of the larva of Lithostege niveata.—For our knowledge of the early stages of this species we have to thank Mr. T. Brown, of Cambridge, who has found the larvæ feeding on *Sisymbrium sophia*, in the locality where he had been accustomed to take the moth.

The larvæ, however, which I have had this summer, whether bred or captured, throve equally well on *Erysimum cheiranthoides*, seeds of which had been sent me in mistake for those of *S. sophia*.

Mr. Brown sent me eggs on June 18th and 25th, and the larvæ appeared soon after, and fed up in about a month, all of them having gone to earth by August 1st.

On August 3rd, Mr. Brown sent me some larvæ which he had just captured in their locality, and some of these continued feeding for nearly a fortnight longer.

The larva, when full-grown, is nearly an inch long, rather slender, flattened beneath, of uniform bulk throughout; the head full large, and rounded.

The colour is very variable; the larvæ reared on *Erysimum cheiranthoides* were mostly paler than the captured ones sent me by Mr. Brown, and as these did not vary much among themselves, we have taken their colouring and markings to form Var. 1. Ground-colour dull olive-green all over, except the spiracular region, which is pale yellow; very fine dorsal line of darker tint of the ground-colour, sometimes there is a similar line on either side of it, and sometimes again these appear only as a pair of olive-brown or purplish wedge-shaped dashes just before each segmental fold: sub-dorsal line greenish-grey with darker edgings; the spiracles black, and just above and behind them, in the yellow spiracular stripe, are suffused blotches of the colour of the dorsal wedges.

Var. 2. Ground-colour of a fresher, more yellowish-green, dorsal region full green; spiracular region yellowish, and the blotches in it of a darker purplish tint than in No. 1, and more clearly defined.

Var. 3. Ground-colour greenish-white; three very fine purplish-brown or blackish lines down the back, of which the *central* one becomes wider and darker just *before* each segmental fold, and the *other* two *across* the fold; sometimes these lines are interrupted, appearing only in the thickened parts; sometimes again they are all united by a transverse band just before the segmental fold: the sub-dorsal line paler than the ground, but edged below with the dark colour; the spiracular region not differing from the rest of the ground-colour, with its wedge-shaped blotches, not only above the spiracles, but also with similar ones below them; in some specimens the spiracular stripe being itself interrupted by these pairs of upper and under blotches becoming partially united; the anal flap and the anal pair of legs dark blackish-green, or purplish-brown.

This last variety caught the eye, when upon its food, readily enough, but the other two were hard to distinguish from the seed-pods of the mustard-plants.—J. Hellins, Exeter, *September 16th*, 1867.

Note on the larva of Agrophila sulphuralis.—Hübner's figures of this species leave me little that is new to say about it; still I feel much indebted to Mr. Brown for enabling me to rear a larva which Mr. Buckler has figured.

Unluckily—although the moth had laid several eggs—they all perished in the Post-office save one, and the single larva did not live to become a pupa, having been hatched on June 25th, and dying on August 15th.

I potted for it a small plant of *Convolvulus arvensis*, and on two little shoots of this, bearing in all not more than five or six very small leaves, it fed and grew and moulted contentedly during the first half of its fifty days' life, its longest journey all that time not exceeding an inch and a half.

Had the other eggs escaped *squashing* on their journey, probably I might have had the pleasure of seeing both the varieties which Hübner figures, but the green one yet remains a desideratum; my single larva was his brown variety.

When first hatched, it was a dingy-grey little looper, with a black transverse dorsal hump on each of the four middle segments; but at each moult these humps became less, till at last there remained nothing but the usual dorsal dots, black and distinct, and these too afterwards disappeared. When full-grown the larva is about an inch long; the legs twelve; the body cylindrical, thickest at the fourth segment; the segmental divisions deeply indented; when at rest the middle segments are generally arched, and the head bent down. The colour a rich chocolate-brown; dorsal line rather darker, and edged with very fine paler lines; subdorsal line also darker, but scarcely visible; spiracular stripe broad, of a pale yellow, and with a fine brown thread running throughout its length, immediately after the last moult; there were some rich yellow and orange spots also in it, but these disappeared, and the whole stripe grew paler.—Id.

Note on Cucullia scrophulariæ and verbasci.—In the following notes I hope to be of some service to those who, like myself, have entertained doubts concerning the real distinctness of the two species, from inability to distinguish the larvæ found feeding on *Scrophularia aquatica* and *nodosa* from others on *Verbascum thapsus* and *nigrum*. It is therefore with great pleasure I acknowledge my obligations to Mr. Doubleday, by whose kindness I am at length made acquainted with the real *scrophulariæ*, in four fine larvæ he presented me with on the 4th and 8th of last July, feeding on flowers and seed-vessels of *Scrophularia nodosa*, the sight of which immediately dispelled all my previous doubts, as it did also any existing in the minds of Mr. Hellins and Mr. D'Orville, through whose hands they passed to mine; the latter gentleman having for years had great experience in, and devoted much attention to, this particular genus in their larval state.

The larva of *scrophulariæ*, when full-grown, is 1⅝ inches in length, plump, and cylindrical; the head rounded, and a trifle smaller than the 2nd segment. Viewed sideways, it appears of uniform thickness; but seen on the back, it tapers behind from the 10th to the anal segment.

In looking on the back, its most valuable character, by which it can be instantly identified, is apparent in the bright yellow dorsal mark; for whether little or much intersected by black, it is distinctly seen to be a blunt-pointed triangle of yellow, close to the beginning of each segment, pointing forwards, its transverse base being longer than the sides, placed on rather less than the first half of each segment. The ground colour in front of the two sides of the triangle, with belly and prolegs, is whitish-grey, or pale blueish-grey, or greenish-white; but the broad space behind the base of the triangle is a bright full green, varying individually towards blueish-green or grass-green. Thus it will be seen there is a broad green band across the end of each segment. The black marks on the back

may be regarded primarily as particular developments of the usual four spots, varying in each individual, and more or less like thick oval spots run together in blotchy marks; that is to say, each anterior spot is confluent only with the posterior one below it, but does not unite transversely with the others. In one variety the black spots resemble tadpole forms united by the tails; in another these tails are thickened equal to the spots, and appear as blotchy curves; and in one variety these blotchy curves are so thick and confluent as to include some of the ordinary side spots, thus completely surrounding two sides of the triangle with a blotchy black border.

To conclude the description briefly, there is a yellow spot on the spiracular region of each segment excepting the 2nd; the usual black spots laterally and on the prolegs; occasionally some fine, short, transverse black streaks on the sides. The head bright ochreous yellow, mottled with red, and spotted with black; anterior legs reddish-yellow.

C. verbasci is a larva similar in form, but rather larger and thicker when full grown. The segmental divisions and wrinkles marked with black interrupted streaks; the ground colour whitish, greenish-white, or blueish-green; a transverse, equally broad band of yellow, extending to below the spiracles on either side, is seen on the middle of each segment. This character is alone sufficient for its identity; and though this species varies much in colour and size of markings, yet the design remains in all.

In rudimentary marked varieties, the transverse central yellow band is often interrupted slightly on the centre of the back, and completely, or partially so, at the sides. The upper pair of dorsal black spots entire, and never united to those below. In richly marked individuals, the hinder pair of spots become elongated and approach each other, with tails slightly turning upwards; in others not so confluent, a small twin pair of dots are seen instead on the yellow band in the centre, midway between the large spots. The yellow transverse bands largely developed on the thoracic segments; the ordinary spots, dots, and streaks of black on the sides well developed. In some instances the ventral divisions are broadly black, and occasionally the whole surface of the belly black. Perhaps hardly two larvæ could be found exactly alike in the minutiæ; but the transverse band of yellow is the conclusive character, strengthened by the additional one of the black anterior dorsal spots never being united to the posterior pair.—Wm. Buckler, Emsworth.

Notes on, and description of, the larva of Colias Edusa.—On the 10th of June last, my friend, Mr. James Terry brought me a fine ♀ of this species, that he had caught with his hat. It measured 2⅝ in. in expanse of wings, and had evidently been, before hybernation, a splendid insect, though it was then in a worn and ragged condition.

I placed the butterfly on a plant of Dutch clover (*Trifolium repens*), and stood it in a window facing the west, and supplied it with a little honey and water; and two days later I had the satisfaction of seeing ten eggs. The insect was then removed to fresh plants of clover, but the day following being dull and cloudy, no eggs were laid; and the two succeeding days proving bright and sunny, she re-

commenced laying, and deposited about forty or more eggs. The weather again becoming dull, there were no additions till the 18th, when on fresh plants there were distributed another large batch of eggs; and the following day the insect expired, after depositing the final egg on a spray of *Lotus corniculatus*, placed with the clover as an experiment.

The eggs were oval, but very sharply pointed at each end, and were laid on the upper surfaces of the leaves in an upright position, standing on end. They were shining, and at first whitish-yellow, rapidly turning darker yellow, changing by the fourth or fifth day to reddish, and in ten days to pink. At that time being obliged to leave home, I had not the satisfaction of seeing the young larvæ when first hatched; but reports of their progress were duly sent to me, whereby I became aware of their beginning to hatch out on the 24th of June. The young larvæ were at first of a pale brown, and afterwards dull green; some were bluish-green, and all with a line of whitish along the spiracles, then and afterwards assimilating well with the clover, of which they ate voraciously; and probably, during my absence, the supply of food had not been equal to the demand, for when I saw them on 6th of July, their numbers had greatly decreased, and the survivors were clustering on the bare stems of the plants they had stripped in the course of the day.

From that time they were abundantly supplied with fresh food, and though their progress seemed satisfactory, it soon became evident that they had not been able to recover the check sustained when young; for they began to suspend themselves from July 16th, and change to pupæ before attaining the size I had hoped for. The first perfect insect came forth on the 6th of August, and the others followed during about a week. They were most lovely examples of colour, but smaller than ordinary captured specimens.

After the young larvæ became green, they so remained through all their subsequent moultings, and no variety worth mention occurred in the brood. Their habits were rather sluggish, especially as they matured. The size attained by the largest was little more than one inch and a quarter in length, moderately stout, of nearly equal size throughout, rounded above, and rather flattened beneath; the head globular, and rather smaller than the 2nd segment. The segments subdivided by transverse wrinkles or folds into six portions, the second portion the widest.

The colour was a deep, dull grass-green, the dulness being caused by their being irrorated with excessively minute black points, and each point emitting a very short fine hair, added a velvety appearance to the surface of both head and body.

In some examples, a darker dorsal pulsating streak was visible, though in general hardly noticeable.

It was adorned with a whitish or else a yellow spiracular stripe, which was further embellished on each segment by a pink or red blotch in the middle of it, and a black spot immediately under it, while a little in advance of the red was seen the oval whitish shining spiracle. The legs and ventral surface similar to the back.

The pupa was attached by the tail, and with a cincture of silk thread around it close below the thorax, after the manner of the *Pieridi*; the head was generally upwards, though in some cases a horizontal position, or nearly so, was chosen.

The pupa moderately stout; the thorax round, and projecting on the back; the head terminating in a sharp point; the wing-cases long and well-developed, projecting below the abdomen. The colour of the back and body a very pale yellow-green, and a pale yellowish stripe on each each side below the wing-cases on the abdomen: on the under-side, beneath them, were three minute black dots, followed by a stripe of dull dark red. The wing-cases were a rather deeper and yellower green, which a few hours before the insect emerged became suffused with red. In the centre of each wing was a minute black dot, and a row of five similar dots near their lower borders. The point at the top of the head dark olive-green above, sharply contrasted on the under-side with pale primrose-yellow, and both gradually blending into the colours below.—Id.

Note on Agrotis saucia.—On the 25th of May a large *Noctua* was brought me which had been attracted by light the previous night. The markings were much confused and rubbed, and it was only after much careful examination that, by the aid of the invaluable "Manual," it was decided to be *Agrotis saucia*. It proved to be a ♀, and deposited eggs the following day, which hatched in about a fortnight. The larvæ fed well on *Plantago lanceolata*, passed into the pupal state during the first week in August, and appeared as perfect insects during the last ten days.

This differs much from the history given of the species in the Manual. It is there stated that the moth appears in July, August, and September, and that the larva feeds in November.

Imagining that the insect hybernates in the perfect state, I have not attempted to keep up the breed.—George J. Hearder, Powick, near Worcester, *September 9th*, 1867.

General Information.

The proposed Catalogue of British Insects.—It is pretty generally known that, for some months past, the Entomological Society of London have had under consideration the desirability of publishing a complete Catalogue of our insect-fauna. Since the appearance of Stephens' Catalogue (1829), no attempt of this kind has been made by scientific men, and the rapid strides in Entomology during the last thirty years have rendered that work virtually obsolete, notwithstanding the immense amount of labour that its compilation must have cost the late J. F. Stephens;—a labour which, for the unassisted efforts of one man, looks Herculean. On this matter being proposed to the Society, the Council appointed a Committee of gentlemen, who were known to be working at certain groups, to consider, and report upon, the best means of furthering the object in view, and the first step taken by this Committee was to ask the assistance of specialists; its requests were promptly acceded to. Thus the Catalogue may now be considered in preparation, though we cannot even hazard a conjecture as to the probable time by which it will be completed. We opine it must of necessity be published piecemeal, the separate parts being united when the whole shall have been finished. Certain orders (*e. g. Lepidoptera* and *Coleoptera*) could be done in a short time; others (*e. g. Hymenoptera* and *Neuroptera*) are well worked up as far as some families are concerned; others, again (*e. g. Diptera*), yet remain in a chaotic condition. The

advantages of a division of labour are here most manifest, and though the various compilers must, to a certain extent, be allowed to adopt the plan that may, to their individual opinions, seem best, yet the whole will be under the supervision of the Committee, who will endeavour to secure uniformity, so far as that may be practicable. The Catalogue will be synonymic, especially with regard to the names given by British authors, so as to render it serviceable to our continental friends. The scheme having been fairly launched, we wish the co-operators in it every success and—may we add?—a speedy termination to their labours.

Departure of Dr. Hagen for America.—Before the present number is in the hands of our readers, Europe will have lost, perhaps for ever, one who has probably done more than any other to facilitate the study of Entomology. Dr. Hagen, late of Königsberg, is on his way to take charge of the Entomological Collections at Cambridge, Massachusetts, on the invitation of Prof. Agassiz. His appointment is at present only provisional, but we scarcely expect that our 'cute friends on the other side will allow him to escape when he shall be once on their soil.

The late Rev. Hamlet Clark's collections.—It is with great satisfaction we learn that the *Phytophaga* and water-beetles amassed by Mr. Clark will not be dispersed. Having become national property, they will serve to swell the collection of the British Museum.

Review.

Letters Home from Spain, Algeria, and Brazil, during past Entomological Rambles. By the Rev. Hamlet Clark, M.A., F.L.S. Van Voorst, 1867.

This modest little volume, rendered sadly interesting by the circumstances under which it was published, will doubtless find a corner in the library of every British entomologist; not so much for any pretension to science (and, indeed, there is no *pretension* of any kind in it), as for the healthy tone, the unstudied exhibition of energy, and the genuine ring of its contents. "Letters home," however clever they may seem to their recipients, usually fail to make any mark when (as is too often the case) afterwards addressed to the general public. But our entomological public is so limited, that it may—or, at least, *should*—be considered as a single family; so that the letters now being noticed are not likely to fail in exciting interest. They contain, moreover, many passages exhibiting a power of rapid perception of scenery and minute details of character; so that it is evident that their lamented author could, if such had been his intention, have easily written a book that would have had a far wider range than among his fellow naturalists. Such passages as relate to Entomology only make the reader long for more; and amongst them the description (p. 152) of the habits of insects of various orders frequenting a certain wounded tree for its sap, and the writer's ponderings upon their ways and instincts, may be mentioned as peculiarly pleasing.

The book is illustrated by some well-executed lithographic copies of landscapes by J. Gray, Esq., a name well known in connection with those of Messrs. Wollaston and Clark.

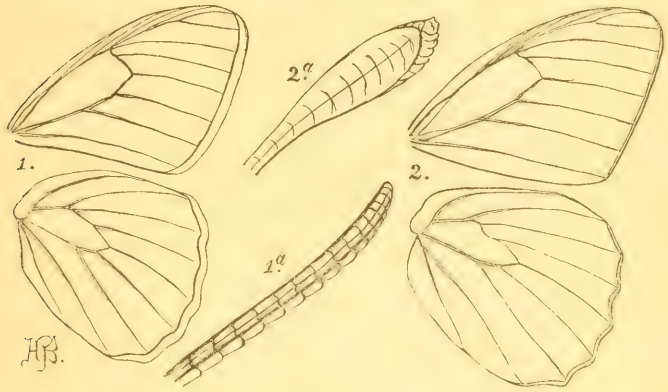
DESCRIPTION OF A NEW GENUS AND SPECIES OF DIURNAL *LEPIDOPTERA*.

BY A. G. BUTLER, F.Z.S.

The present genus is closely allied to *Hipparchia*, from which it chiefly differs in the form of the antennæ, the character of the markings, and the longer fringe to the wings; the arrangement of the veins is very similar in both genera.

Genus AULOCERA, gen. nov.

Alæ magnæ, nigræ albo-fasciatæ; ciliis latis albis nigro-variegatis;



Neuration of
1. *Aulocera Brahmenus.*
1*a*. Club of Antenna.

Neuration of
2. *Hipparchia Proserpina.*
2*a*. Club of Antenna.

venis anticarum velut in HIPPARCHIA, *ad basin autem minus tumidis: posticæ venis velut in* HIPPARCHIA, *cella autem discoidali magis integra; costa magis convexa: corpus lanare; palpis velut in* HIPPARCHIA.

Antennis, clava gradatim formata, subtus stria media longitudinali leniter excavata.

This group is exclusively an Indian one. All the species are black above, with white bands and spots. The species most nearly approaching them in colouring is *Hipparchia Proserpina.*

Sp. 1.—AULOCERA BRAHMINUS.

Satyrus Brahminus, Blanchard, in Jacquemont's Voyage in India, pl. 2, figs. 4—6 (1844).

Satyrus Swaha, Kollar, in Hügel's Kaschmir, p. 441, tab. xiv., figs. 1, 2 (1844).

N. India, Nepaul, Himalayas. B. M.

Sp. 2.—AULOCERA SARASWATI.

Satyrus Saraswati, Kollar, in Hügel's Kaschmir, p. 445, tab. xiv., figs. 3, 4 (1844). B. M.

Sp. 3.—Aulocera Padma.

Satyrus Padma, Kollar, in Hügel's Kaschmir, p. 445, tab. xv., figs. 1, 2 (1844). B. M.

Sp. 4.—Aulocera Avatara.

Satyrus Avatara, Moore, Cat. Lep. East Ind. Comp., 1, p. 229, n. 481 (1857).

North India (F. Moore).

Sp. 5.—Aulocera Scylla, sp. nov.

♂. *Alæ supra nigro-fuscæ, fascia discali alba, anticarum maculari, posticarum tenui et apud angulum analem obsoleta, ad apicem anticarum bifurcata, et maculam nigram ovalem includente; ciliis albis ad venarum fines nigro-variis: corpus nigrum, antennis flavo-clavatis.*

Alæ subtus pallidiores, nigro-strigosæ; macula sub-apicali anticarum ocellata; posticæ minime flavescentes; serie discali macularum albidarum extus nigro-cinctarum; fascia discali ad angulum analem distincta. Exp. alar. unc. $2\frac{1}{4}$.

Near Sylhet. B. M.

Most nearly allied to *Brahminus*, but differs in its much smaller size, less sinuated margins, more slender central band, and on the under-side in having a row of white spots placed in an arc outside the central band. I have seen three specimens of this species, which all appear to agree in size, pattern, and coloration.

DESCRIPTION OF A NEW *COCCYX (LEPIDOPTERA TORTRICINA)*.

BY H. G. KNAGGS, M.D., F.L.S.

The Argus-eyed Mr. E. G. Meek, whose perseverance as a collector of *Lepidoptera* entitles him to the success with which his efforts have been frequently crowned, has again been fortunate in bringing to light another new species, which in the present note it is my purpose to describe under the specific name of *vernana*.

Coccyx vernana, n. sp.

C. argyranæ *persimilis, sed obscurior; alis anticis angustioribus, lunulâ dorsali inconspicuori; posticis saturatioribus fere concoloribus, basim versus vix pallidioribus; subtus cinereo-tenebrosis.*

Exp. alar $4\frac{1}{2}'''$. 3 ♂.

Hab., W. Wickham. Apparet imago mense Martis.

C. vernana, in the obscurity and confusion of the markings, as well as in the shape of the fore-wings, slightly reminds one of *Heusimene*

fimbriana, but it is in reality far more closely allied to *Coccyx argyrana*, so much so, indeed, that at first I rather inclined to consider it a small dark narrow-winged variety of it.

My friend Mr. Bond, however, has all along asserted it to be a distinct species, and now that his opinion has been confirmed by that of Dr. Staudinger, with whom I have had some correspondence on the subject, my doubts have given way, and I am induced to furnish it with a name.

It may be distinguished from *argyrana*, which is the only insect with which it can possibly be confounded, firstly, by the fore-wings being narrower and darker, the dorsal patch being inconspicuous; and secondly, by the hind-wings of the male being pretty uniformly dark and without the pale base, such as is noticed in *argyrana*.

Mr. Meek informs me that he captured these three examples by beating undergrowth at West Wickham, towards the end of March, 1866, that its habits were similar to those of *Coccyx splendidulana*, and that *argyrana* did not appear till a month later.

Kentish Town, 3*rd October*, 1867.

ADDITIONAL NOTICE RESPECTING THE MAPLE-MINING SAW-FLY (*PHYLLOTOMA ACERIS*).

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

At page 104 of this volume I was induced to describe the above-mentioned saw-fly as new, not having been able to find anything like it mentioned in any work or papers devoted to European *Hymenoptera*. However, on looking over Kaltenbach's paper on the plant-feeding German insects ("Die deutschen Phytophagen aus der Klasse der Insecten") published in the "*Verhandlungen des naturforschenden Vereins des preussichen Rheinlandes*," vol. 13, I find, at page 257, No. 40, what is undoubtedly the same species, described by Herr Kaltenbach under the same name as that which I applied to it—*Phyllotoma aceris*. Hence this is one of those rare instances in which ignorance of a previous description has *not* created a synonym. Herr Kaltenbach describes the antennæ as "12-jointed," whereas I can only find 11 in my few specimens, but the number of joints is variable in other species of the genus. Also, from his description of the habits of the larva, he would seem to have observed it just before it detached the circular case, which latter he describes as a cocoon. The "*Verhandlungen*" referred to is difficult to obtain access to in England, but I fortunately found Kaltenbach's paper in a separate form in the well-known library of a colleague.

Forest Hill, *October*, 1867.

ON SOME BRITISH *CYNIPIDÆ*.

BY THE REV. T. A. MARSHALL, M.A.

(*Continued from page* 102.)

iii. Thorax glabrous, not coriaceous, nor villose. Maxillary palpi 4,— labial 2-articulate.

Gen. NEUROTERUS, Hartig.

The ♂ unknown, except a single individual.— ♀ The radial cell extends at least two-thirds of the distance between the areolet and the tip of the wing: in *Andricus* not more than half the same distance. The transverse veins and base of the radial are frequently clouded with brown. The wings are longer: the abdomen more compressed, and more constricted at the base. The antennæ are longer, 15-jointed: in *Andricus* ♀ only 13-jointed. Scutellum more prominent and more depressed.

Eleven species are described by Hartig, but so briefly, that without German types it must be for ever impossible to identify those of our country. These species are divided into two groups, according to the sculpture of the mesonotum. In the former the sutures of the parapsides are visible, dividing the disc into three more or less convex areæ (*N. Malpighii*, *inquilinus*, *Reaumurii*): in the latter the mesosternum is undivided, convex and glabrous, as in the genus *Allotria*, Westw. (*N. defectus*, *politus*, &c.).

It is probable that Mr. Walker's description of this genus (Ent. Mag. iii, p. 167, No. XXVI) refers rather to *Spathegaster*, Hartig, for he describes both sexes, and attributes 14 joints to the antennæ of the ♀.

Sect. I. Sutures of the mesonotum not invisible.

Neuroterus Malpighii, Hart.

Black; inner orbits of the eyes, and genitalia, ferruginous. Antennæ at the base and legs testaceous; coxæ, femora at the base, and hind tibiæ at the apex, more or less blackish. Abdomen strongly compressed, carinated above. Wings hyaline, the base of the radial cell, the outer side of the areolet, as well as the basal transverse vein, incrassated, black, suffused at the edges with brown. The basal transverse vein also emits two pale brown splashes, one triangular, reaching to the areolet, the other following the course of the anal vein. ♀.

Long. 1; alar. exp. $3\frac{1}{2}$ lin.

A. Malpighii, Hart., in Germ. Zeits., 2, p. 192.
? Diplolepis lenticularis, Oliv., Enc. méth.
? Cynips longipennis, Fab., Piez., 148, No. 21.
N. Malpighii, Ratz., Forst., III, pl. 5, fig. 3 (gall).

This insect, whatever be its name, is the inhabitant of the well-known oak-spangle. See Reaum., Ins., III, pl. 42, fig. 8—10; Malpighi, Opera omnia, pl. 7, fig. 15; Westwood in the "Arboretum Britannicum," p. 1827, and Smith in Tr. Ent. Soc. 1839, Vol. 2, Proc. p. 43. Last spring I made a large collection of the galls in the month of March, and after keeping them three or four days, had the gratification of obtaining from them some hundreds of the flies, but all ♀. They are parasitically infested by a species of *Eurytoma*. It is not easy to distinguish the present insect from *Spathegaster baccarum*, Lin., which I also bred last spring in quantities, from the currant gall of the oak, ♂ ♀. The latter has the maxillary palpi 5-articulate, and the labial 4-articulate, the petiole longer, and the antennæ of the ♀ 14-articulate; the legs are also nearly free from black markings.

Neuroterus fumipennis, Hart.

Black; the two basal joints of the antennæ, the legs, and the basal third of the abdomen, testaceous. Sutures of the parapsides faintly marked. Wings smaller than in the preceding; the radial cell shorter; infumated, darker towards the tips; the base of the radial cell, the outer side of the areolet, and the basal transverse vein more suffused with brown. The brown dashes on the outer side of the basal transverse vein are united into one. The abdomen is less compressed. The tips of the tarsi are fuscous. ♀. Long. 1; alar. exp. 3 lin.

N. fumipennis, Hart., in Germ. Zeits., 3, p. 339.

Common in England upon oak trees, but its gall does not appear to have been remarked. It is named in the older collections *longipennis*, Fab.,——upon what authority I know not. The Fabrician description is "Atra, abdomine compresso; alis elongatis, *albis*, punctis 2 nigris;" which is certainly more applicable to *N. Malpighii*. Fabricius could not have failed to indicate the more salient characters of the insect, such as the blackish wings, and the testaceous base of the abdomen.

Sect. II. Sutures of the mesonotum invisible.

Neuroterus politus, Hart.

Minute, black; mouth, base of the antennæ, and the legs, dull testaceous, coxæ black at the base. Mesonotum smooth and shining,

without sutural lines or punctures. Scutellum shining in the middle, opaque and punctured at the sides. Wings hyaline; the basal transverse vein, the sub-costal, and the base of the radial cell brown, distinct, but not suffused; the areolet and the other veins decolorous, obsolete. ♀.

Var. The femora and tibiæ more or less fuscous.

Long. $\frac{1}{2}$; alar. exp. 2 lin.

N. politus, Hart., in Germ. Zeits., 2, p. 193; 3, p. 339.

Several times taken on oak trees in Leicestershire. Hartig thinks that this section of *Neuroterus* is of parasitic habits, like *Allotria*, which it so much resembles in its minute size and polished mesonotum. One species, *N. parasiticus*, Hart, inhabits the galls of *Cynips globuli*, Hart.; and if this be the habit of the others of the section, they should constitute a separate genus, and be referred to the group of *Inquilini*, the "After-Gallwespen" of Hartig.

(To be continued.)

THE LARVA OF *DEPRESSARIA ULTIMELLA*, STAINTON.

BY P. C. T. SNELLEN.

(Translated from the Tijdscrift voor Entomologie, 2nd Series, Vol 2, Part 1, pp. 26—30).

It chanced that my finding, early in July, some larvæ of *Depressaria nervosa*, which had already long been known (also to myself), resulted in my obtaining possession of the larva of *ultimella*, which, as far as I know, is still undescribed.

I had found the larvæ of *nervosa* on the flowers of *Phellandrium aquaticum*, at a rather distant part of the fen, which still remains near Rotterdam, and, as I had to feed these larvæ for some time, I sought for some food which occurred nearer to the town. I then found in a dry ditch close by the town some plants, on which I also found specimens of the larvæ. Knowing that, as some other *Depressariæ* do, they change to pupæ within the stems of the *Umbelliferæ* frequented by them, I resolved to cut off and examine some of the stems of these plants. In the very first I found two spun-up larvæ of *nervosa*, but along with them another larva, unknown to me, which had evidently fed on the interior of the stem, as was manifest from the indications of gnawing on the sides. Incited by this discovery, I examined not only the plants in my neighbourhood, but also those which grew further along the ditch, and repeated my expedition the following day. By diligent

search I collected about 20 larvæ, mostly full-grown. For these I prepared a fitting habitation by cutting off a piece from the lowermost part of the plants above the first knot, and planting them with one or two roots in a preserving bottle in moist earth. I then placed my larvæ on the open ends of the stems, and had the pleasure of seeing them quickly make a way through the shoot which closed the lowermost joint of the stem, and the opening thus made, they afterwards fastened up with some silk. I now placed my bottles in a cool place, and left them undisturbed for about three weeks.

At the expiration of that time I examined my nursery, and found that most of the larvæ had changed to pupæ; some were in their cocoons still unchanged, whilst two or three, which had been the smallest specimens, were now about full-grown, and still feeding. One of these I separated in order to describe it.

On examining the cocoons and pupæ, which were mostly *in* the stems, I found, not without some surprise, that they completely resembled those of *Depressaria nervosa*, which I had placed in separate bottles, and which in the mean time had also changed, only they were rather smaller; so that I came to the conclusion that the new larva was also a *Depressaria* larva, since the pupæ of that genus show a great similarity by which they may be immediately recognised. I had anticipated something else.

In consequence of this similarity, I now carefully collected the pupæ of the new species, put them on dry sand in a separate vessel, and the larva which I had set aside for description, after carefully describing it, I again supplied with fresh food, in order to bring it to its change, which actually happened. Although I had imagined to myself distinctly the difference there ought to be between the imagos of the new larvæ (which I now suspected to be that of *Depressaria Yeatiana*) and *D. nervosa*, I kept, nevertheless, the pupa from the described larva separate, because I conceived the possibility that in the stems which I had given to my new larvæ, and which naturally I had not opened, pupæ of spun-up larvæ of *nervosa* might occur; for this cannot be ascertained from the outside, as the larvæ often close up very adroitly the holes which they make in order to get inside the stem, either beneath a knot or elsewhere.

That I was not mistaken in this hypothesis of a mixture with *nervosa* was, as I imagined, evident to me, when, after some of my pupæ of *nervosa* had come out in my box, a moth appeared in the cage in which I kept my new species, which I also took for only a rather smaller, poor specimen of *nervosa*. To my great astonishment, how-

ever, in the vessel in which I had expected *Yeatiana* nothing appeared but such small specimens of *nervosa*. I could not possibly conceive that *nervosa* had two sorts of larvæ so little resembling one another. I thus began to suspect that I had got hold of the species most closely allied to *nervosa*—the *ultimella* of Stainton, which suspicion turned out to be certainty when I referred to the description of the species in Stainton's volume of the Insecta Britannica. By the help of that I was well able to separate my *ultimella* from *nervosa* (two of which species truly appeared amongst my *ultimella*). After this lengthy introduction, which, however, is not superfluous, since it shows how easily one can fall into error,* I pass on to the description of the larva of *ultimella*, and shall afterwards point out the points of difference between the imago of that species and that of *nervosa*.

The larva of *ultimella*, of which I found no specimens smaller than those which were nearly half-grown, which were quite similar to the larger ones, is 20 millimetres long when quite full-grown, slender, cylindrical, very little thinner anteriorly than in the middle, thus rather different from the usual form of moth-larvæ. The head is small, the feet also; the creature is, however, very nimble, and can move up and down along the walls of its abode very quickly. The colour of the body is a rather dirty pale sea-green without markings, the ordinary spots are very small, dark brown, the head light brown, the anterior legs and the thoracic plate very pale brown. The pupa, which reposes in a thin white cocoon in the stem, is of a shining chestnut-brown; it is compressed like all the pupæ of *Depressariæ*, and has an obtuse tail-end.

Thus one observes a considerable difference between the unicolourous larva of *ultimella* and the gaily marked, much more slender larva of *nervosa*, which will shortly appear in all its stages in the work of Sepp; on the other hand, the perfect insects resemble one another closely, and wasted specimens are not easily distinguished with certainty.

If one places a series of eight fresh-bred specimens of each species side by side, one sees that in both species the same variations of colour occur; there are brownish-grey, yellowish-grey, bark-coloured, pale brown, and reddish specimens of *nervosa*, as well as of *ultimella;* the design of the markings of the anterior wings is the same in both species. There is, for instance, a small dark spot at the base of the wing, along the nervures are small dark longitudinal streaks separated by pale scales, a very sharply angulated pale streak indistinctly margined, and

* To do this it only needed, for instance, that I, knowing the pupæ of *nervosa* were to be found in the stems of those plants of which the larvæ had fed on the flowers, had delayed my search for the pupæ so long that *ultimella* had also assumed the pupa state, I should then actually have had *nervosa* and *ultimella* coming out together, have overlooked the points of the difference, which are not very perceptible, and have taken all for one species.—P. C. T. S.

with the point directed towards the apex of the wing towards the hind margin, and dark spots before the cilia, which are intersected by a darker line, whilst the median nervure shows at its end a nearly black spot. The palpi, abdomen, and under-side, with the legs, are similar in both species.

The principal and best character to distinguish the two species is the neuration of the posterior wings. For instance, in *nervosa*, veins 2, 3, and 4 not only always start from one point at the inner marginal angle of the median cell, but veins 2 and 3 are always distinctly united on one stalk for a shorter or longer distance, and often all the three veins are on one stalk. In *ultimella*, on the contrary, veins 2, 3, and 4 also spring from the inner marginal angle of the median cell, but only 2 and 3 come from the same point, and in none of my eight specimens have they a common stalk, and vein 4 is at its origin distinctly separated from 2 and 3. By this difference in the neuration more or less wasted specimens of the two species may be readily separated.

Moreover there is an evident difference in the size. My eight specimens of *nervosa* have an expanse of 21.5 to 23 millimetres. Eight specimens of *ultimella* have an expanse only of 19.5 to 20.5 m.m.; then the colour of the anterior wings in *nervosa* (as Stainton also observes), is much less, and not so frequently, mingled with red; and, finally, in *ultimella* the head and thorax is very perceptibly paler than the anterior wings, which is either not at all the case in *nervosa* or only to an inconsiderable degree.

This last point of distinction, however conspicuous in setting and in unexpanded specimens of both species, is less distinct in pinned specimens, and is easily altogether lost when the specimens become greasy.

Moreover I ought to mention that the anterior wings of *ultimella*, by a thicker though shorter black streak and more abundant pale scales thereabouts, have a more variegated appearance than in *nervosa*, and the pale streak not *so* sharply angulated runs more distinctly along the inner margin than in the last-named species. That the black streak in *nervosa* on the median nervure before the middle, and the black beyond the middle, should be ringed with white, as stated by Stainton in his diagnosis, I have not only been unable to confirm, but almost observed the contrary, as above related.

By the discovery of the larva of *Depressaria ultimella* near Rotterdam, a new locality in our country is added for this species, the ♂ moth having hitherto only been observed in the dune district and in North Brabant (see Bouwstoffen voor eine Fauna van Nederland, Vol. iii., p. 242, under No. 96).

Rotterdam, *October* 12*th*, 1866.

Note on a new British Ichneumon.—The following species was detected by me last autumn, in a marsh near the sea at Gellyswick, in this county. Specimens were forwarded to Mr. Desvignes, who referred them to M. Wesmael, by whom they were pronounced to be new to science. Under these circumstances, I requested Mr. Desvignes to draw up a description of the species. He has kindly complied, and I now forward it for publication. The insect belongs, according to M. Wesmael, to his sub-division *Ichneumones Pneustici*, so named on account of the circular spiracles. It belongs to Section IX of Gravenhorst's genus *Ichneumon*. —T. A. Marshall, Milford Haven, *October*, 1867.

Description of a (British) new Ichneumon.—Ichneumon cambriensis, nov. spec. Statura et proportio partium maris Ich. latratoris, Grav. Pedibus et segmentis 1—3, 4, abdominis rufis; tibiis posticis basi et apice, nec non geniculis, articulo quoque 5° tarsorum omnium nigris. ♂.

Longitudo 3.75—4 lin. *Caput* buccatum, thorace parum latius, genis tumidis, facie et vertice convexis, lineolâ impressâ supra clypeum; mandibulis piceo-ferrugineis, palpis pallidioribus. *Antennæ* setaceæ, dimidio corporis longitudine æquales, in medio dilatatæ. *Thorax* gibbus, subtiliter punctatus, antice trilobus, suturis valde distinctis, metathorace sensim declive, areolis distinctis, areola supero-media pyriforme. *Scutellum* sub-triangulum, lateribus elevatis. *Alæ* fumato-hyalinæ, stigmate vel nigro vel piceo, basi pallido, radio testaceo-fusco, areola perfecto 5-angulari. *Pedes* rufi, apice femorum posticorum, nec non basi et apice tibiarum, articulo quoque quinto omnium tarsorum nigris. *Abdomen* elongatum, thorace perangustior, lateribus æqualibus, rectis, apice acuto, segmentis 1—3 rufis, quarto toto rufo, vel lateribus solum rufis, sequentibus nigris, petiolo nigro aut rufo, parte antica segmenti primi post tuberculum transversum angusta. — Thos. Desvignes, Woodford, *October*, 1867.

Lebia crux-minor in Scotland.—When out collecting Coleoptera on September 24th, I had the good fortune to take, among other things, a single specimen of *Lebia crux-minor* in fine condition. The specimen is a female: I found it in the immediate neighbourhood of Dumfries, and, so far as I know, this is the second example of its occurrence in Scotland.—W. Lennon, Crichton Royal Institution, Dumfries.

Swarms of Drosophila fenestrarum in London.—Several houses in Holborn have been of late infested with small flies, of which I send you specimens. To such an extent have they increased during the last week that the windows are positively darkened by them. I should much like to hear if this visit is likely to have been caused by any local influence, and if it is in any way exceptional.—H. Newman, 5, Oval Road, Kennington, S., *September* 21*st*, 1867.

*** The flies sent by my correspondent have been submitted to a friend versed in these matters, and he informs me that they are *Drosophila fenestrarum*, a generally common species, the larva of which feeds on vegetable *débris*, such as sawdust, &c. Their great abundance in Holborn is doubtless owing to the presence of some condition favourable to their development.—R. McL.

Sterrha sacraria near Birkenhead.—I had the pleasure of taking a fine male of this species on the 16th, and a second on the 21st, of last month—the first (and another which I missed) occurred in a plantation near the coast, and the second at Poolton quarry—all three were on ragwort flowers. As this insect has hitherto, I believe, only been taken at light, or flying, my captures seem to me to be particularly interesting, as there is certainly more chance of finding an insect at the flowers which it habitually frequents than at light; and I should not be surprised if this hitherto rare insect were to become common in collections, now that one of the flowers which attracts it is known. I learned too late the value of my captures, otherwise I should have tried to get more specimens.—E. L. Ragonot, 130, Conway Street, Birkenhead, *September 23rd*, 1867.

Sterrha sacraria at Plumstead.—On the afternoon of Saturday, the 7th September, I captured, among some long rough grass at Plumstead, a specimen of *Sterrha sacraria*.—Charles Boden, 127, Tooley Street, S.E.

Sterrha sacraria at Babbicombe.—I took a fine ♂ example of *S. sacraria* on the night of August 26th: it was pale yellow, with a brownish-pink stripe.—T. Terry, 2, Princess Street, Babbicombe, *October 18th*.

Sterrha sacraria near Brighton.—On August 27th I captured a fine male *S. sacraria* in a rough clover field near the Lewes Road, Brighton.—J. W. Russell, 10, St. John's Terrace, Roman Road, N., *10th October*, 1867.

Capture of Sterrha sacraria and other Lepidoptera in Devonshire, &c.—I spent the period between August 24th and September 11th in a visit to "lovely Devonshire." I fully agree with Mr. Stainton's remark—"An abundance of insects is certainly not one of the attractions of Devonshire" (E. A., 1865). This was particularly true of the *Tortrices*; even *Dictyopteria contaminana* was by no means abundant. Two species, viz., *Larentia olivata* and *Alucita polydactyla* appeared to be generally distributed and not uncommon.

I commenced operations by beating thatch at Exeter, when a ♂ *Camptogramma fluviata* was the first insect to fly out, followed by *Depressaria charophyllæ*, *nervosella*, *albipunctella*, *Alstræmeriella*, and *heracliella*.

At Bideford, *Gnophos obscurata* and *Depressaria badiella* occurred. Sugar was visited by a solitary *Phlogophora meticulosa*, which grinned derisively for a few minutes, when *it* retired into the darkness—*I* to the "New Inn" (so called), weary and disgusted. At Ilfracombe, a lady of our party saw "a large dark brown, almost chocolate-coloured butterfly, with a broad white edge to all the wings." I started off to the spot indicated, and saw common *Vanessæ*, "whites," and *Macroglossa stellatarum*, but no *Antiopa*.

At sugar, at Lynton, I took a specimen of *Triphæna fimbria*, and a splendid series of *Agrotis saucia*, besides a few *Amphipyra pyramidea* and *Cymatophora diluta*. By beating in the day-time I got nothing better than *Eupithecia coronata*.

At Barnstaple, where *Depressariæ* were very common, I obtained *Dep. albipunctella*, *Alstræmeriella*, *propinquella*, *Yeatiella*, *Heraclidella*, and *nervosella*.

I was most successful at Exmouth, though my stay was short. *Camptogramma fluviata* occurred both by beating in the day-time and at lamps. In one lane I captured *Eupithecia subfulvata*, and *Melanippe rivata*; and as I was returning,

doggedly beating the hedge, a small whitish moth rising from the grass caught my eye. I netted him, and gazed in admiration * * * *Sterrha sacraria!* (a ♂); and after working in vain for more, I went home contented.

Since my return from Devonshire I have taken *Simæthis pariana* in my garden, frequenting apple, nettle, and yew.

I have visited Coombe Wood and Wimbledon Common several times with my friends the Messrs. Blackburn, at first with the intention of capturing several *Peronea*, but when we found that the *genus* is apparently extinct in those localities, we turned to larvæ. By sweeping heath on the common, we obtained *Anarta myrtilli* and *Eupithecia minutata;* but White Poplar appears to be the best food-plant now; on it we found larvæ of *Clostera curtula* and *Notodonta ziczac* (afflicted with ichneumons). On one occasion *half* a *larva* of *Acronycta megacephala* fell a victim to the beating-stick. The handsome larva of *Hadena pisi* occurred on the Common, and nearer home that of *Hadena chenopodii* and *Coleophora annulatella (?)*. We have now in pupa several species of *Eupithecia*, among which is probably *E. albipunctata*.—G. B. Longstaff, Southfields, Wandsworth, S.W.

Occurrence of Polia nigrocincta in Cornwall.—It is interesting to learn that Mr. Greening is doubly the discoverer of *P. nigrocincta*. Placed at the head of a series of *P. flavocincta* was what I considered a strange var. of that species; and some twelve months ago, while Mr. Greening was examining my collection, I drew his attention to it. He unhesitatingly averred that it was not *flavocincta*, but altogether new to our lists. By himself rearing a ♂ from the larva, it has been his singular felicity to corroborate his own penetration.

The example in my possession (a ♀) came direct from the collection of the late Mr. George Fisher, and was taken during daylight, by Mrs. Fisher, from off the window of a lighthouse, near Padstow, in Cornwall, about the middle of August, 1862.—Ed. Hopley, 14, South Bank, Regent's Park.

Early appearance of Dianthœcia capsophila.—On the 15th of August I bred an imago of this species from a larva found (with others) in the Isle of Man in June last.—Chas. Campbell, Dark Lane Farm, Chorlton, near Manchester, 17*th September*, 1867.

Acidalia circellata bred.—This insect is now making its appearance in my breeding-cage. The ova were hatched about the 20th July, and the larvæ were fed upon knot-grass (*Polygonum aviculare*).—Id.

Eupithecia distinctata in the Isle of Man.—I captured this species in fine condition in the Isle of Man, in June last.—Id.

Colias Hyale at Margate.—My parents captured two specimens of this insect in a clover-field at Margate during August last; also one of *C. Edusa*, var. *Helice*.

I have myself lately met with several specimens of the latter at Folkestone and Sandgate. *C. Edusa* was in great profusion at both places. One day I saw at least two hundred in less than an hour.—H. Ramsay Cox, 1, Medina Villas, Knight's Hill, Lower Norwood, 30*th September*, 1867.

Colias Edusa, var. Helice, near Folkestone.—I took a specimen of this variety in very good condition, about seven or eight miles from here, on the 14th August.—Henry Ullyett, Folkestone.

Occurrence of Psyche crassiorella at Hornsey Wood.—Some four months ago, whilst *en route* for *Perdisca oppressana* at Edmonton, I struck out of my path to visit the remains of what was once known as Hornsey Wood, thinking it not improbable that *Psyche calvella* might not yet be extinct there. I found no trace of it, however, but in its stead an abundance of little *Psyche* cases, very distinct in appearance from those of *P. nitidella*—so uniformly and constantly so, indeed, that I, and my son who accompanied me, devoted an hour or two to the collecting of them; whereas, had I conceived that they pertained to *nitidella*, I should certainly not have troubled myself concerning them. Well, I divided my stock between my friends Messrs. Doubleday and Greening, keeping a few for myself, and from the latter have had the pleasure of breeding imagos (♂s and ♀s) precisely similar to, and evidently identical with, those referred to by my friend Mr. Bond (at page 113, ante) in a note wherein he records his interesting discovery of this novelty.—H. G. Knaggs, Kentish Town, *October 5th.*

Lepidoptera captured at Herne Bay.—During a three-weeks' stay in this locality in August and September, I devoted a portion of my time to Entomology, but met with no very great success. Butterflies were very scarce, and I did not once see either species of *Colias*, though both occur here, and the weather was truly glorious. *Eremobia ochroleuca* occurred at rest on thistles, on the cliffs by day, and on the same ground *Aspilates citraria* and *Leucania straminea* were pretty common; *Pterophorus trigonodactylus* and *acanthodactylus* also occurred, while the swarms of *Eubolia mensuraria* were perfectly bewildering.

On my last available night for sugar *Agrotis saucia* was apparently rather common; but, unfortunately failing to recognise its identity, I only secured five: (I may remark *en passant* that the al. exp. given in the "Manual" as 1″ 1‴ is an evident misprint for 1″ 11‴; being unacquainted with the insect, this at first caused me some perplexity). *Triphæna fimbria*, *Cerigo cytherea*, and *Pyralis glaucinalis* were also visitants at sugar, accompanied by swarms of commoner species, not to forget the ever-welcome *Catocala nupta*—(a delicious reaction after my Rannoch experience; where, night after night, sugar produced nothing).

One evening, which, though apparently perfectly similar to its predecessors, was chiefly remarkable for the entire absence of insects at sugar, kindly rewarded me by *Emmelesia unifasciata* at flowers of ragwort. Lastly, a number of pupæ, extracted from thistle-stems, produced a fine series of *Gortyna flavago*. To obtain this insect it is quite unnecessary to examine the whole of the infected plant; they are almost invariably found about three inches from the ground.—C. J. Buckmaster, Southfields, Wandsworth, *October 2nd.*

Occurrence of Acherontia Atropos at Wolverton.—Perhaps it may interest you, or some of your readers, to know that the larva of *A. Atropos* has been found here during the last week or so. I have taken one specimen myself, have had two

more brought to me, and have heard of twelve or fourteen others being taken, all of them in the village; and what is rather remarkable, all have been found on *Lycium barbarum*, and not one, so far as I know, on potato or jasmine.—Jos. Barlow, 1, Thompson Street, Stantonbury, Wolverton, Bucks, *August 20th*, 1867.

Agrotis saucia—double-brooded.—At the latter end of October, 1845, my father brought me from the ivy blossoms a fine female of *A. saucia*, which laid abundance of eggs.

These hatched in the early part of November, after about a period of two weeks, and the larvæ fed well on grass and clover, so that at the end of January I had seventy larvæ three parts grown. Then a severe frost deprived them of their stock of food, and the greater number of the larvæ died. Two, however, came to perfection, the one appearing on the 29th March, 1846, and the other on the 14th of April.

Agrotis saucia is, therefore, double-brooded, like its congener *suffusa*. The following dates will show that this is also the case with *Agrotis puta*. A pupa dug up in April producing a moth on the 1st of May, the moth being usually common at Sugar in Devon during August and September. These dates of the appearance of *Agrotis saucia*, though rather earlier than usual, from the larvæ being kept under shelter, when taken with those given by my friend Dr. Hearder, complete the annual history of the insect.—R. C. R. Jordan, 35, Harborne Road, Edgbaston, Birmingham, *October 2nd*, 1867.

Notes on Agrotis saucia.—I read with much interest Dr. Hearder's note of September 9th, on this species, but I think the following facts, taken in connection with the one mentioned by himself, will go to show that it is *double-brooded*, rather than that it hybernates in the perfect state.

On September 30th, 1865, at Torquay, Mr. H. Terry captured a ♀ moth, which immediately deposited a large batch of eggs. The weather being very warm at the time, the larvæ began to hatch on the *third* day, and were all quickly out of the shell. Very nearly at the same time eggs were obtained by Mr. Wright from a moth captured by him near Hastings, and in this case again the larvæ were hatched on the *fifth* day.

Both these broods of larvæ fed away at once: I, indeed, was unlucky with those that were entrusted to me, and brought none to the pupa state; but Mr. Buckler fed up a large number, which became pupæ about Christmas. In the spring of 1866 an attack of rheumatism made him a prisoner for a time, and on getting about again in June, he found that the moths had come out, and were all dead and stiff. Most likely they had emerged in May.

Now we may fit in Dr. Hearder's capture of the moth on May 25th, and I think the battering it had given itself at the lamp would fully account for its apparently hybernated condition. About the very same date, Mr. T. Terry, of Torquay, assures me, he also took a moth at a lamp in his neighbourhood, in bad condition, caused, I again suggest, by its flying to light.

Now come in order three captures of full-fed *larvæ*; one made by myself some time in July, 1861, the moth appearing on September 22nd; and two made by Mr. D'Orville on August 2nd and 4th of the present year, the moths being bred on September 14th and October 5th.

Now if moths captured in September and October lay eggs immediately, and the larvæ are hatched within a week, I cannot think the species is likely to hybernate in the perfect state; and if these September larvæ feed away so rapidly, we cannot suppose that those captured in the following July can have remained ten months in that state.

I think we must conclude that there are two broods, one on the wing in May and June, the other in August, September, and October.

Suffusa, I know, hybernates in the perfect state, but then it does not pair till the Spring.

I shall be glad if others will publish any facts they may know bearing on this subject.—J. Hellins, 12*th October*, 1867.

Notes on Cirrædia xerampelina.—I have to thank Dr. Hearder and Mr. A. Edmunds for their kindness in sending me eggs of this species, and my own awkwardness in somehow failing to rear the caterpillars. However, the larva has been safely figured, and the account of my failure with it in an early stage will be followed by that of Mr. Buckler's success at a later date.

Dr. Hearder sent me eggs in the autumn of last year, which I suppose were not kept cold enough, for the larvæ came forth about December 10th; of course the ash (*Fraxinus excelsior*) had neither flower nor leaf then, so I cut some twigs, and picked open some buds for them, and for a time hoped they would feed contentedly, but they soon died off, one or two surviving the others for a short time, and sustaining themselves by eating the inner bark of the twigs.

Mr. Edmunds sent me eggs on 21st last February, having prevented the unnaturally early exclusion of the larvæ by keeping them in a room with a cold aspect. I continued to treat them in the same way, and the larvæ did not appear till the second and third week in April, when they came out at intervals of a day or two.

Now, of course, I thought I was all right, and having procured some bunches of the budding ash-blossoms, expected to have no further trouble. But, whatever was the cause (perhaps it might have been the juicy dampness of the buds shut up in the bottle), *xerampelina* would not thrive, and again I lost all the brood. Meanwhile other larvæ throve on the same buds, and the sight of their frass appearing, whilst they themselves were hidden in their food, kept me some time in ignorance of the full extent of my loss. At last the deceivers appeared—three or four *Cheimatobia brumata*, two *Cosmia trapezina*, and one *Xylina petrificata*. *Brumata*, probably, had been hatched some little time, but the others must have been introduced in the egg state, and I scarcely think that *they* destroyed the *xerampelina*, because the latter must have been all dead before the former had grown big enough to be cannibals, for I fancy they are contented with vegetable diet until nearly half-grown.

The egg of *xerampelina* is of the usual round convex-topped button shape, ribbed with sixteen ribs, long and short alternately; eight of them meeting together at the top, whilst the other eight stop short, and do not touch the angles formed by the meeting of the longer ribs on either side of them; the surface between the ribs is reticulated transversely.

Mr. Edmunds informs me that the colour when fresh is a rich orange, but it changes in a few days to a leaden grey.

The larvæ, when newly hatched, are little dingy things, with black shiny heads, looking as if they could pierce the hard black coats of the ash leaf-buds.—Id.

Description of the larva of Cirrœdia xerampelina.—In April, 1866, the Rev. Joseph Greene kindly sent me a larva he had found concealed in a chink of an ash-trunk; but as the imago did not appear, its identity was not established till the present season.

On the 22nd of May last, I had the pleasure to receive another similar larva, detected in a like situation near Leominster by Mr. Thomas Hutchinson, who also generously consigned it to me, enabling me to secure two figures of it in mature growth.

When full fed, it spun a rather small cocoon, covered with grains of earth to which a few particles of moss adhered; and the perfect insect came forth on the 5th of September.

The first larva was found before the ash trees had put forth blossoms, and ash buds were given it for food, into which the larva ate round holes, burrowed, and devoured the interiors.

The second and full-grown larva came after the ash had assumed its foliage, and it partook of young shoots for a few days before spinning. The larva had then attained nearly one inch and a quarter in length, and was rather broad in proportion, the head rather smaller than the next segment. Viewed sideways, it appeared tapering gradually towards the head, and from the eleventh segment to the anal extremity; but seen on the back, it looked of almost uniform width, excepting just at each end. The divisions deeply cut, giving each segment a plump appearance.

The larva, when two-thirds grown, is very suggestive of lichen, and of a lichen-feeder. Its head is shining dark grey-brown, mottled and streaked with darker blackish-brown; a black shining plate on the second segment having two rather broad angulated whitish stripes. The back and sides are brownish-grey, delicately mottled with a darker tint of the same.

The dorsal stripe is dirty whitish, edged with black, and is on the third and fourth segments continuous, but contracted and expanded, while on the others it is only visible, and expanded towards the end of each segment, excepting the twelfth and thirteenth, where it is widened into a broad blotch, extending to the sub-dorsal region, and strongly margined with black; from its base on the middle segments is a brownish-grey streak on either side, curved obliquely forward to the middle of the sub-dorsal line. The tubercular dots whitish, delicately ringed with black, and with minute black centres, each with a short and very fine hair.

The sub-dorsal line is a very thin thread of dirty whitish, delicately and interruptedly edged with black; the space between it and the spiracular region is greyish-brown, darker than the back, and having a paler blotch in the middle of each segment.

The spiracular stripe is a pale freckled brownish-grey, edged above by a black line; the spiracles dirty whitish, outlined with grey, and inconspicuous. The belly and legs a slightly mottled greenish-grey.

When full grown, the broad dorsal stripe of dirty whitish appears faintly continuous, and widest in the middle of each segment, and margined at each segmental division before and behind with short thick black curves.

On the anal extremity a thick cruciform black mark.

Its perfect assimilation to the crevices in the bark of ash trees accounts partly for its remaining so long undiscovered, or at least undescribed, in this country.—Wm. Buckler, Emsworth.

Description of the larva of Miana furuncula.—In April last I had the pleasure to receive several larvæ of this species, for which I am greatly indebted to the most kind exertions of Dr. Knaggs, who has thus brought another unknown larva to light.

These larvæ were found feeding in stems of *Festuca arundinacea*, the interiors of which they entirely devoured, leaving only the outer cuticle, in which, towards the end of June, they spun a very slight envelope of silk, and changed to the pupa state; the moths appearing from July 9th to 19th.

This larva, when two-thirds grown, is about three quarters of an inch in length, very smooth and shining, cylindrical, and plump, but tapering a little at both extremities, and the head very small and slightly flattened. The ground colour is a yellowish flesh-tint, and it is marked on each segment with three transverse bands (the widest in front) of dull mottled reddish or dingy pinkish, very distinct on the back, but paler on the sides, and through them run the dorsal and sub-dorsal stripes of the clear ground colour. The spiracles are minute and black. The head dark reddish-brown; a small pale reddish-brown plate on the 2nd and anal segments. The anterior legs dark brown, and the prolegs tipped with dark brown.

As the larvæ became full grown their markings faded away, until they appeared uniformly of a yellowish-white, with a dark grey pulsating vessel showing through some of the anterior segments.—Id.

Note on Coleophora albicans.—Mr. N. Greening has succeeded in finding the larva of this species on the seeds of the *Artemisia vulgaris*, near Warrington; the larva uses a flower, of which it has already devoured the interior, as a case, and thus, like "a wolf in sheep's clothing," so exactly resembles the other flowers on which it afterwards feeds, that it is extremely difficult to detect.

We were aware that the species occurred in this country, but I am not aware that a British larva had previously been noticed.—H. T. Stainton, Mountsfield, Lewisham, *October 5th*, 1867.

Note on Lasiocampa quercûs.—A female has just made its appearance in a friend's breeding-cage. The larva was taken with two others last September, and they spun up about the middle of the month. Is it not an uncommon occurrence, for the insect to remain in the pupa state a full year, and to emerge at this season? The two other pupæ are awaiting their change: when will they appear?—Richard Tyrer, Grove House, Mansfield, *September 21st*, 1867.

Captures at Witherslack.—On the 28th of May I visited this locality, and met with *Numeria viridata*, 12; *Coryela temerata*, 3; *Eriopsela quadrana*, 1; *Anchylopera*

biarcuana, 3; *A. siculana*, 3; *Phlœodes crenana*, 1 (this species I have not met with here before); *Stigmonota puncticostana*, *Catoptria aspidiscana*, 2; *Lobesia reliquana* 4; *Rœsana arcuana*, 4; *Eupœcilia cnpiciliana*, in plenty; *Lampronia luzella*, 1; a specimen of the variety of *Incurvaria masculella* which has both the spots confluent; *Nemophora metaxella*, 3; *Ornix Loganella*, 6; *Stephensia Brunnichiella*, 1; *Elachista biatomella*, 2; *E. triseriatella*, 2; *E. rhynchosporella*, 6.

On the 14th of June I went to Humphrey Head, near Ulverston, and met with *Botys terrealis*, *Acidalia subsericeata*, *Eupithecia constrictata*, *Ennychia octomaculalis*, and about 40 *Coleophora salinella* in a neighbouring salt-marsh; *Psychodes verhuellella* was flying in the hot sunshine. After a warm walk of nine miles I reached Witherslack, and there met with *Procris Geryon*, *Eucosmia undulata*, *Penthina prælongana*, 1; *Parasia Metzneriella*, 1; *Coleophora fuscociliella*, 2; and many commoner species; also *Gelechia tenebrella* and *G. tenebrosella*. I think these are distinct species, as I have taken *G. tenebrella in copulâ*. On the 28th of June I again re-visited Witherslack, and obtained 6 *Euchromia rufana*, *Ypsolophus marginellus*, and 6 *Bucculatrix frangulella*, on buckthorn. I had not previously met with this neat little species. Of *Lobophora sexalisata* I met with four flying at dusk in the highway, also *Lithosia mesomella*, *Drepana lacertula*, *Miana arcuosa*, *Euthemonia russula*, *Polyploca comitella*, and *Tinea semifulvella*; and I found *Ellopia fasciaria*, and *Polia nebulosa* just emerged from the pupa, drying their wings on the stems of trees. All this time I was undergoing martyrdom from the midges.

July 14th I again went to Witherslack, and met with *Scotosia vetulata* and *Ligdia adustata* for the first time in this district, also *Spilonota laricana*, a number of larvæ of *Depressaria cardnella*, *Hypenodes humidalis*, 12 *Dicrorampha consortana*, *Tinea albipunctella*, &c., &c.—J. B. Hodgkinson, 31, Christchurch Street, Preston.

Captures of Lepidoptera at Rannoch.—The following are notes of an entomological visit with Mr. C. J. Buckmaster to the north of Perthshire during the latter half of July and the greater part of August in the present year.

Work began gloomily on 22nd July by a walk of eight miles in the rain, from Kinloch Rannoch to Camachgouran—that paradise of Scotch insects and desert of all the ordinary conveniences of life—which was enlivened only by the capture of a solitary specimen of *E. cricetaria*. Once established in head-quarters, work became vigorous, and the evening of arrival was celebrated by a "sugaring" expedition, which ended ignominiously in the capture of nothing. Whether the season has been unfavourable or not generally for sugar, it assuredly was so in this instance, and the only moth taken on the sweets not called in Mr. Stainton's "Manual" either "common" or "abundant" everywhere was a specimen of *R. tenebrosa*. The total produce of sugar furnished about an average of one specimen on every thirty trees per night, as the result of twenty expeditions, and a delightful reminiscence of glorious mountain sunsets and ten o'clock pipes, waiting for the lingering northern darkness to come on.

"Mothing" at dusk produced more, but not much. In the Black Forest, which was the scene of frequent nocturnal collecting, *E. fasciaria* occurred not uncommonly, with swarms of *L. cæsiata* and *C. populata*, in infinite variety of colour, flying numerously over beds of *Vaccinium*. Near Kinloch *E. blandiata* was

common in a locality divulged through the liberality of Dr. White, of Perth, then located at Kinloch, with whom we had several pleasant days of collecting. *Plusia pulchrina* and *A. purpurea* were taken at dusk, flying near the "burn." *C. graminis* was rather common at Ragwort flowers, and *G. papilionaria* fell to Mr. Buckmaster's net near Camachgouran.

Day collecting proved far the most productive, and furnished many highly-prized insects. On the moors round Loch Rannoch *C. Davus* occurred in extreme abundance, and *E. Blandina* was captured commonly on some grassy hills. *H. velleda* (var. *carnus*) was taken sitting on a stone wall and on old stumps; fine specimens of *P. fuscelina* and *A. tincta* were found. On the rocks that apparently sluggish but inexplicably worn insect *D. obfuscaria* was rather plentiful, and *P. interrogationis* was repeatedly seen flying wildly over flowers—seldom caught, however, till the idea suggested itself of looking for it at rest on rocks, and especially on stumps. *A. fimata* and *E. cricetaria* occurred in great numbers flying over heath, and towards the middle of August *C. imbutata* and *P. fessa* were taken in the same way,—the former not uncommonly, while *M. belgiaria* was seen and missed. An experimental search of stumps one morning at six o'clock produced *A. occulta* in fine condition, and a repetition of the dose on the following day was rewarded by *Stilbia anomala*. The lucky recollection of the recorded habits of the latter insect led to a careful search of the ground at dusk, and in a few days we had the pleasure of securing considerably more than a fine series. *M. palustrana* was plentiful everywhere, and *S. ustomaculana* occurred freely in the Black Forest; while *E. atomalis*, *G. galbanella*, and *A. prolongana* were taken on tree trunks, in heathy places, and among birches respectively. *T. ochraceellus* was not uncommon round nests of *Formica rufa*, and *A. similella* was to be had in plenty on fir logs in an old shed.

Near the foot of Cross Craig, *S. decrepitalis* occurred, and *C. ericellus* was not uncommon on the neighbouring moors. At Dahl *L. cinerana* was in profusion on the trunks of poplars, and *P. Solandriana* of every colour and pattern was beaten in plenty from birches, together with *H. Paykulliana*, *G. scriptella*, and *A. Gedartella* and *pygmœella*, the latter more frequently from sallow.

The Black Forest produced *E. brunneata* flying in swarms in the sunshine, and *H. angustana* frequent on sallow leaves. Here also were taken *A. uncana*, *A. cnicana* (partial to thistles), and *C. farinatella* (beaten from Scotch firs).

Much time during the expedition was devoted to working the mountains, which, perhaps, scarcely at that time of year repay, entomologically, more than one or two visits; but those will not wonder at frequent ascents who know and appreciate the perfect beauty of Perthshire scenery—wooded valleys sweeping down from one's feet to the margins of lakes far bluer than Great Britain is generally credited with, and countless mountain ranges of every form stretching far away across the horizon.

About a thousand feet above the sea *E. Cassiope* occurred commonly, flying over short grassy slopes; and from this elevation to the tops of the mountains *S. alpinalis* was frequently roused from the ground. On the sides of streams *L. casiata* was so abundant that the air sometimes seemed suddenly full of it when a shadow passed across a rock, and was often accompanied by *C. munitata*. *L. flavicinctaria*, so far as our experience goes, does not occur in the Rannoch district,

despite curious advice offered us to seek this mountain-rill-loving species in the Black Forest. On the extreme summits of mountains *P. trepidaria* was taken occasionally, *C. furcatellus* not uncommonly, and two specimens of the rare *Eudorea alpina*. Here, also, *S. alternana* occurred.

A long and tedious expedition to Loch Ericht yielded nothing on the way, but ended in the capture of *P. monticolana* commonly on rough grassy slopes above the lake, and a view which certainly may vie in surpassing grandeur with any in Scotland.

The leading peculiarity of the season in the north has certainly been its lateness. Many species were more than a month behind time—as instances of which it may be stated that *F. brunneata* was not well out before 5th August, and that *E. Cassiope* occurred in good condition on Ben Lawers as late as 15th August.

Many larvæ were very plentiful at Rannoch this year; but for the difficulty of conveying them home, this mode of collecting would prove very profitable. *C. furcula* was abundant, but only just out of the egg; *N. dromedarius* was found both young and full-grown; *C. reclusa* was common on sallows; and *D. fuscelina* occurred frequently on heath, with numbers of *F. atomaria*. Careful work would, no doubt, have produced other larvæ.—T. & J. B. Blackburn, Grassmeade, Southfields, Wandsworth, S.W.

Vanessa Atalanta at light.—*Vanessa Atalanta* came to light at half-past ten the other night. I put up a gas-light at a closed window, because I had caught *Eupithecia albipunctata* at it, and after about an hour *V. Atalanta* made his appearance; I opened the window, and he soon came in, and I caught him.—R. C. R. Jordan, M.D., 35, Harborne Road, Edgbaston, Birmingham.

Emmelesia albulata partially double-brooded.—I captured a fresh and perfect specimen of this moth on 23rd of last August, showing that the species may be *partially* double-brooded; when I reared it in confinement the larvæ spun up early in July, but no moths appeared until the beginning of June in the next year.—J. Hellins, *October 9th*, 1867.

Heliothis armigera at ivy-bloom.—On Tuesday (Oct. 16th) I took two males of this species; one in very fine, the other in rather worn, condition: I hope to secure more.—T. Terry, Babbicombe, *October 18th*, 1867.

Opostega reliquella, a new British species.—Three specimens of this insect (which is closely allied to *O. salaciella*) have been captured by the Hon. Thomas de Grey, M.P., near Thetford. One was taken last year in an open grass plot on the outskirts of a wood; another was caught exactly in the same spot about the middle of June this year (but unfortunately escaped); the third specimen, which I have seen, was beaten early in August from mixed growth in a grassy ride in the woods, about 150 yards from the spot where the other two were taken.—H. T. Stainton, *October 22nd*, 1867.

General Information.

The proposed Catalogue of British Insects.—The Rev. T. A. Marshall (Milford, S. Wales) who has undertaken the *Proctotrupidæ*, and others of the obscure groups

of *Hymenoptera*, requests us to state that he shall be glad if any gentleman possessing any of the families *Belytidæ*, *Diapriidæ*, *Ceraphrontidæ*, or *Figitidæ*, will temporarily entrust them to his care for examination.

The Scientific Societies.—We remind our readers that the Session of 1867-8 commences in November. "The Entomological" will hold its first meeting on the 4th, and the "Linnean" on the 7th. The more convivial meetings of the Entomological Club have also commenced.

Death of J. Aspinall Turner, Esq.—This gentleman died in London on the 28th September, aged 70. Mr. Turner was well known and respected in the manufacturing districts, both in a commercial and magisterial capacity. He represented Manchester in Parliament from 1857 to 1865. Notwithstanding his other numerous and arduous occupations, he was strongly attached to the study of Entomology, and his collection of exotic *Cetoniadæ* is almost unrivalled. He belonged to the Entomological Society since 1854.

ON SOME NEW LAMELLICORN BEETLES BELONGING TO THE FAMILY *MELOLONTHIDÆ*.

BY CHARLES O. WATERHOUSE.

Genus Cyphochilus (*gen. nov.*).

Mentum broader than long, very little contracted in front, bitruncate at the apex, the truncatures being unequal, and forming a very obtuse angle on the margin, which is nearer to the left than the right side of the mentum; the two ridges rising near the insertion of the palpi, meeting near the front margin, form an obtuse angle. Maxillæ short, truncate at the apex, and divided into three unequal lobes. Mandibles very short, curved, and acuminated. Labrum divided by a notch into two unequal lobes; one being dentiform, projecting and bending towards the other, which is rounded. Clypeus rounded in front, or truncate, with the angles rounded, distinctly separated from the head by a transverse line. Eyes prominent. Antennæ 10-jointed. Anterior tibiæ bi- or tri-dentate; the four posterior without any evident notch or tooth. Claws strongly toothed. The upper surface of the insect densely covered with scales.

The species of this genus have hitherto been confounded with *Leucopholis*.

Sect. I. Mesosternum armed with a spur.

1.—Cyphochilus candidus.

Mel. candida, Oliv., Entom., Vol. 1, g. 5, p. 15, pl. 8, fig. 98 (1789).

Var. ? C. septentrionalis.

This insect differs from *C. candidus*, irrespective of its smaller size, in being entirely black, except the elytra, which are fuscous, the covering

of scales being of nearly a uniform yellow colour; those scales, however, which are on the sides of the thorax and margins of elytra are rather paler. The thorax is much contracted in front. Long. $8\frac{1}{2}$—9 lin.

Habitat, N. India. In Mus. Brit.

2.—C. TRICOLOR, sp. nov.

C. elongatus, ovatus, convexus, fuscus, supra squamis magnis, ovatis, densissimis tectus; prothorace brevi, lato, ante medium angustato, marginibus incrassatis, angulis quatuor acutis. Elytris lineis duabus elevatis sub squamis vix perspicuis; sterno squamoso et piloso; abdomine squamis minoribus dense tecto.

In form resembling *C. candidus*. Fuscous; head clothed with brownish-yellow scales, those on the clypeus, which has the angles much rounded, nearly of equal size with those on the back of the head. Thorax with the sides somewhat angular, broadest behind; the anterior angles slightly prominent, acute; the posterior angles acute; the upper surface of the thorax is clothed (except the anterior half of the lateral margin) with scales, those at the anterior angles yellow, those occupying the part next the scutellum white, the remaining scales being brownish-yellow. Elytra clothed with white scales, except a brownish-yellow sublateral band reaching from the shoulder to (and including) the apex; the margin, as far as the sub-apical callosity, clothed with more closely-packed yellow scales. Under-side fuscous, clothed with pale brown (nearly white) scales, less closely packed than on the upper-side of the insect; the scales on the under-side of the abdomen being nearly uniform in size and equal to those on the sides of the elytra; on the sternum the scales are mixed with pubescence. Long. $8\frac{2}{3}$ lin.

Habitat, Siam. In Mus. Brit.

I have seen an insect which I think may prove to be identical with *C. tricolor*, but which has the scales of a uniform yellowish colour; the scales, however, diminish in size towards the margins of the elytra. Locality unknown.

The angular sides to the thorax and the acute posterior angles will distinguish *C. tricolor* both from *C. candidus* and *C. septentrionalis*.

3.— C. NIVEOSQUAMOSUS, Blanch.

Leucopholis niveosquamosa, Blanch., Cat. d. col. d. Mus. de Paris, I, p. 158.

"*Parallela, infra testaceo-rufa, supra nigro-picea, squamis magnis, ovatis, niveis, densissimis tecta; clypeo rufo, reflexo; antennis cum palpis rufis, clava obscura, elongatissima; prothorace brevi, lato, marginibus*

inerassatis ; elytris lineis tribus elevatis sub squamis perspicuis ; pedibus rufis ; sterno longe fulvo-piloso ; abdomine testaceo-rufo, parce niveo-squamoso." Long. 11½ lin.

The clypeus reddish, truncate in front with the angles rounded, the margin being reflexed; the scales elongate and not very closely packed. Eyes very prominent. Antennæ reddish, the three terminal joints pubescent, forming an elongate club equal in length to the seven preceding joints taken together (♂). Labrum with the lesser lobe not so evenly rounded as in the other species of the genus. Palpi pitchy-red; the 1st and 3rd joints of the maxillary palpi elongate, about equal in length to each other, the 2nd joint much less elongate; the apical joint of the labial palpi scarcely longer than the antepenultimate. Thorax transverse, covered, except the anterior half of the lateral margin, with large, nearly round, glossy-white scales, which, with those on the elytra, in some lights reflect a faint rose-colour. Sides of the thorax contracted anteriorly; posterior margin much produced at the scutellum. Elytra elongate, with the sides parallel, covered with scales similar to those on the thorax, the scales being less dense just before the deflexed margin. Suture of the elytra raised, except near the scutellum; each elytron with two distinct longitudinal costæ, and a third which is almost obliterated. Sternum covered with long pubescence, the spur of the mesosternum very short, acute. Abdomen sparingly covered with very small scales; pygidium broad, rounded at the apex, scarcely arched, moderately covered with small scales.

Habitat, N. India. In Mus. Brit.

Sect. II. Mesosternum unarmed.

4.—C. FARINOSUS, Reiche* (MS.?).

C. niger, aut nigro-fuscus, squamis angustis (♂), *aut elongato-ovatis* (♀), *niveis, aut ochraceis, densissimis tectus ; clypeo rotundato, leniter reflexo ; antennis, oreque rufis, clava antennarum obscura, elongatissima* (♂), *ovata* (♀); *prothorace brevi, lato, convexo ; elytris lineis tribus elevatis sub squamis perspicuis ; pedibus rufis ; sterno mutico, fulvo piloso ; abdomine squamis parvis, tenuis, griseis, dense tecto.* Long. 10 lin.

Head with a more or less distinct fovea between the eyes. Clypeus completely rounded in front, with the margin gently reflexed. Eyes very prominent. Antennæ with the club pubescent, longer than the seven preceding joints together. Thorax short, convex, with a faint

* I have seen this insect named *farinosus*, Reiche, but have hitherto failed to find it described, and believe the name to be merely manuscript.

groove along the anterior margin; posterior margin bitruncate, but little bowed at the scutellum; sides distinctly angular. Elytra broadest before the apex; margins suddenly deflexed, the deflexions being of nearly uniform width; suture raised; each elytron with three distinct costæ; mesosternum simple, clothed with fulvous pubescence. Abdomen moderately thickly covered with small hair-like scales.

Pygidium narrow, triangular, with the apex rounded, clothed with small yellowish scales. Legs pitchy-red. The head, thorax, and elytra are clothed with almost uniform, small, pointed, white scales in the ♂, and with elongate-ovate scales in the ♀.

The female has the eyes less prominent; the club of the antennæ ovate; thorax more suddenly contracted in front; elytra more dilated posteriorly.

Var. Above of a uniform yellow colour. (♂ ♀.)

Habitat, N. China. In Mus. Brit.

5.—C. APICALIS, sp. nov.

C. niger, squamis ovatis, niveis et ochraceis densissimis tectus; clypeo rotundato, reflexo; antennis oreque rufis; antennarum clava elongatissima, obscura; prothorace brevi, convexo; elytris lineis tribus elevatis sub squamis perspicuis, apice late deflexo; pedibus rufis; sterno mutico, griseo piloso; abdomine squamis parvis, ovatis, dense tecto.

Long. 9¾ lin.

Head with a somewhat indistinct fovea between the eyes; clypeus rounded in front, but less so than in *C. farinosus*, margin reflexed. Eyes prominent. Antennæ as in the foregoing species. Thorax without any groove along the anterior margin; sides less decidedly angular; posterior margin bi-emarginate, the emarginations forming an obtuse angle at the scutellum. Elytra with the sides nearly straight, a little broader at the apex; margins suddenly deflexed, the apical deflexion double as broad as the lateral; suture raised, each elytron with three costæ, the third somewhat less distinct. Sternum unarmed, clothed with grey pubescence. Abdomen clothed with very small ovate grey scales.

Pygidium triangular, acuminate (♂), thickly clothed with very small elongate-ovate yellow scales. The head, thorax, and elytra are thickly clothed with larger, flat, ovate scales, which are white, except those on the apical deflexion of the elytra, where they are yellow.

The female has the eyes less prominent; the club of the antennæ is ovate; the pygidium is nearly semi-circular.

Habitat, China. In Mus. Brit.

Genus Exopholis.

Motschulsky (Etudes Entom., 1859, p. 98).

This genus, founded by M. Motschulsky upon *Melolontha hypoleuca*, Wiedm., is separated from *Leucopholis*, with which it had hitherto been confounded, on account of the labrum having a central tooth ; a character first pointed out, as I believe, by M. Lacordaire in his Genera des Coléoptères (vol. iii., p. 300, note). As the genus has never been properly characterized, I have thought it well to do so now.

Mentum sub-rectangular, toothed in the middle of the anterior margin, anterior angles produced: two oblique ridges, springing immediately below the insertion of the palpi, unite with a third (part of which forms the central tooth in the anterior margin) and form an inverted Y. Maxillæ short, with five or six blunt teeth on the inner side. Mandibles acuminate, with three or four blunt teeth on the inner side. Labrum with a central acute tooth, slightly emarginate on either side. Apical joint of the labial palpi equal to the two preceding joints together. Head sub-quadrate ; clypeus with the angles rounded, the anterior margin very slightly reflexed. Antennæ 9-jointed ; first joint elongate, second sub-ovate, third and fourth joints elongate, sub-equal ; the three last joints forming a short ovate club. Thorax transverse, with the sides more or less rounded, anterior angles acute, posterior obtuse or sub-rectangular. Elytra oblong, costate. Anterior tibiæ with two or three teeth, and with a spur. Posterior legs as in *Leucopholis*. Mesosternum but little prolonged. The upper surface of the insect is almost destitute of scales. The under-side covered, except the suture of the mesosternum and abdomen, with fine yellow or white scales, especially the sides of the abdomen.

M. Motschulsky describes (*loc. cit.*) a species of this genus (*Ex. Birmannica*) which appears only to differ from *E. hypoleuca* in its greater size, broader and more oval form ; the punctuation and rugosity being stronger on the thorax and less on the elytra ; the anterior angles of the thorax more prominent ; and the prolonged part of the anterior tibiæ narrower and not dilated at the extremity.

Ex. Birmannica may possibly prove to be only a local variety of *hypoleuca*. M. Motschulsky seems only to have seen a single specimen. I have before me a number of specimens, all of which I believe to be *hypoleuca*, from Tenasserim, Penang, Java, and Borneo, varying in colour from testaceous to dark chestnut-brown, and from 7 to 13½ lines in length, with every intermediate degree. There is some diversity of form even in those from the same locality ; the specimens from Borneo (with one from Sumatra), however, have the sides of the thorax less rounded than is usual.

The following species from Borneo, of which I have only seen a single specimen in the collection of the British Museum, appears to be undescribed: I propose to name it *E. Lacordairei.*

EXOPHOLIS LACORDAIREI, spec. nov.

E. ovata, parum convexa, punctata, nitida, nigra; elytris singulis 7-costatis, iridescentibus, apice fuscescentibus. Long. 15 lin.

Head in front rounded, thickly punctured, with the very slightly reflexed margin and a discoidal spot smooth. Thorax as in *E. hypoleuca*, but less arched, more thickly and rugosely punctured, with a mesial longitudinal smooth line, which is slightly raised. Scutellum punctured. Elytra $3\frac{1}{2}$ times as long as the thorax, gradually enlarged towards the apex, where they are somewhat suddenly deflexed; each elytron with seven smooth iridescent costæ; the first nearly entire, terminating very little short of the apex, broader than the others; the second short, abbreviated before and behind, broad towards the scutellum, diminishing towards the apex of the elytra; the third and fifth narrow, springing from the base, and uniting (with the fourth) at the sub-apical callosity; the fourth and sixth costæ incomplete and irregular; the seventh complete, lateral; interstices strongly and rugosely punctured; the apex rugulose, fuscescent, sparingly powdered with fine white scales. Anterior tibiæ very slender.

Habitat, Borneo. In Mus. Brit.

British Museum, *Sept. 4th*, 1867.

ON SOME BRITISH *CYNIPIDÆ.*

BY THE REV. T. A. MARSHALL, M.A.

(*Continued from page* 126.)

In a small consignment* of *Cynipidæ* sent to me by Mr. Parfitt, of Exeter, I find a specimen of *Neuroterus fumipennis*, ♂, not yet described. It exactly resembles the other sex, except in having longer

* Among the insects referred to is a genuine *Cynips* reared by Mr. Parfitt from "woody galls near the base of oaks." Although no existing description exactly fits this specimen, it may possibly be the *C. ilicis* of Fabr., Piez., 145, No. 10. "Atra, nitida, thorace pedibusque pallide flavis."

Cynips ——————?

Head, prothorax, and scutellum rufo-testaceous, coriaceous, hardly pubescent; declivity of the metathorax, and the abdomen, black. Legs testaceous; coxæ, and a line on the middle and hinder femora and tibiæ blackish; tarsi broken off. Antennæ 14-jointed, testaceous, the last 4-5 joints black. Eyes fuscous. Head large, as broad as the prothorax, sub-rugose. Prothorax transversely rugose, the *parapsidum suturæ* very distinct. Scutellum coarsely rugose-punctate, red, bordered all round with black; in the black hinder margin are two smooth foveolæ. Abdomen two-thirds as broad as the thorax, raised and compressed at the apex, which forms a sharp carina above: shining black, reddish laterally at the base. Ovipositor testaceous. Wings hyaline, the nervures pale testaceous, except the apical half of the sub-costal, the basal transverse vein, the base of the radial cell and the outer side of the areolet, which are black and incrassated. Long. 1; alar. exp. 3 lin.

antennæ, and a smaller and more linear abdomen. Respecting the hitherto unnoticed gall of this species Mr. Parfitt writes as follows:—

"I see you mention in last Ent. Mag. that *N. fumipennis* has not "been bred, or rather that its gall is not known: I am happy to say I "can supply that deficiency, as I bred several last year. The species is "bred from galls about the size of peas, attached to the under-side of "oak leaves; they are attached generally to the veinlets, and are hairy, "or covered with longish white filaments. The walls of the gall are "thin, green, with generally a rosy hue. The larva is very small for "the size of the gall, and the comparatively large interior; so that the "creature rolls freely about when the leaf is shaken. The gall is of a "succulent character, similar to the currant-gall on the male flowers of "the oak, only the walls are not so thick. I gathered the galls "July 15th, and the insects came out soon afterwards."

These galls are exceedingly common near London, where I have often taken them, but have failed in obtaining from them the imago. They have been reared by Mr. H. Waring Kidd, of Godalming, as well as by Mr. Parfitt; for I find a bred specimen (♂) in a box belonging to the former gentleman, ticketed "Hairy pea-gall, oak leaf."

Among Mr. Parfitt's insect is a specimen of

Neuroterus Reaumurii, Hart.

Black; antennæ shorter than in *Malpighii*, with the second* joint and the base of the third testaceous. Legs testaceous; coxæ, base of femora, and apex of hind tibiæ, blackish. Wings hyaline, nervures dark brown, partly incrassated as in *Malpighii*, but not suffused at the edges. All the nervures are distinctly visible, while in *Malpighii* they are very pale, almost decolorous, except the base of the radial cell, the outer side of the areolet, and the basal transverse vein (see p. 124). In other respects the species are very similar. ♀.

Long. 1; alar. exp. $3\frac{1}{2}$ lin.

N. Reaumurii, Hart., in Germ. Zeits., 3, p. 339.

Stated by Mr. Parfitt to have been "bred from silky button-galls on oak leaves." Hartig (*l. c.*) says that "these very elegant little red galls, of which 30—40 are found upon a single leaf, exactly resemble small shirt buttons covered over with silk."

b. Scutellum depressed.

Genus Teras, Hartig.

Palpi as in *Neuroterus*. Body glabrous. Antennæ ♂ 15-, ♀ sub-

* Or, according to the other way of reckoning, adopted by Hartig, the 3rd joint and the base of the 4th.

14- articulate, the two last joints being connate. Ovipositor shorter than in *Cynips*, at least as long as the abdomen. Scutellum short, broad, and flattened above, not much overhanging or concealing the metathoracic declivity. Wings as in *Cynips*, but the radial cell shorter and broader.

The genus is barely indicated in Hartig's "Uebersicht der Gattungen." I can find nothing structural, except the palpi, to warrant its separation from *Cynips*.

Teras terminalis, Fab.

Entirely testaceous, glabrous; the abdomen more or less slightly fuscescent above. Eyes black. Ocelli red. Antennæ after the fourth joint more or less fuscous. Tips of the tarsi fuscous. Wings hyaline, with brown nervures; the usual portions incrassated. Apterous specimens occur. ♂ ♀. Long. $\frac{1}{2}$—$1\frac{1}{2}$: alar. exp. 2—$3\frac{1}{2}$ lin.

C. terminalis, Fab.: Hart., in Germ. Zeits., 3, p. 193; 4, p. 407.

The synonym *C. ramuli*, Lin., given by Hartig with a query, must be struck out, see p. 8 of this volume, and cf. Dahlbom, Onychia och Callaspidia, Tab. synopt. 2, sp. 45. The insect is well known, and its gall—the oak-apple—still better. From May to August the imago emerges in batches of 50—60 (each brood being of the same sex and size) from the oak-apple. Sometimes a very minute oak-apple will produce only one specimen. A curious account is given by Mr. Walker, in the Zoologist (vol. iv., p. 1457), of parasites and casual insect refugees* detected in a large mass of oak-apples collected at Southgate. The list includes most of the orders of insects; the number of the *Teras* produced is estimated at 30,246, that of the interlopers at 24,417.

(To be continued.)

A LIFE HISTORY OF *GRACILARIA SYRINGELLA*.

BY CHARLES HEALY.

Towards the end of the first week of May the imago of this little garden pest generally makes its appearance, settling on, or flying over, the lilac, privet, and ash. About a fortnight later, on examining the under surface of the lilac, privet, and ash leaves, certain little whitish, somewhat iridescent, blotches or undulating streaks are perceptible. On closely examining one of these blotches by the aid of a lens, some little oval-shaped elevations, which at first sight look like so many bubbles, are observable, each of which, when placed under a microscope,

[* See, also, Mr. C. G. Barrett's note in our present No., p. 153.—Eds.]

and examined by a low power, is found to contain a newly hatched larva; some may be observed extended at full length in the egg-shell, whilst others are in a coiled position.

The young larva has a very hyaline look, the mouth with a pinkish tinge, with a small white spot on each side of the back of the second segment, the dorsal vessel is white, but only visible on the 7th—10th segments; the head is somewhat wedge-shaped. As soon as the larva is sufficiently developed, it quits the egg-shell and pierces the cuticle of the leaf, and commences feeding on the parenchyma, where it is afterwards joined by its fellow larvæ, and they continue feeding side by side in little communities, varying in numbers from two to twelve. The part of the leaf where the larvæ are feeding becomes slightly discoloured, in consequence of the tissues having been devoured by the larvæ, and thus gives the first outward indication of their presence.*

If we take up a larva at this early period of its life, we find that, when dropped, it has not a silken cord ready to break its fall, but falls helplessly to the ground.

After the first moult the head of the larva becomes roundish, and is slightly suffused with pale brownish, and it has three minute dark brown marks on each side; the mouth is brown, the body is white, but without its previously glassy look, the dorsal vessel is darker, and is traceable as far as the penultimate segment.

When arrived at this stage of its development the larva is not content, as previously, with eating the mere surface juices of the parenchyma, but eats large trenches in the cellular tissues of the leaf, always, however, taking care not to pierce the outer cuticle

At the expiration of three or four days the 4th—9th segments become dull yellowish, the anterior and posterior segments still retaining their previous appearance. After the interval of one day the mouth of the larva becomes of a dull red, the whole of the body becomes white, and the dorsal vessel turns pale green; in doing so, however, it imparts a greenish tinge to the body; the larva now, for the first time, possesses the power of spinning a silken cord.

By this time the leaf on which the larva and its companions have been feeding has become much blotched; the larvæ now enter upon a new phase of their existence, for, quitting the mine in which they have hitherto lived by biting holes in the upper surface of the leaf, they

[* It is at this period of its existence we can most easily check the ravages of this insect; we have but to pick the leaves that are just blotched, and we destroy all the larvæ within them. Each individual larva, if allowed to grow to its full size, would have destroyed or discoloured two or three lilac leaves. - H. T. S.]

wander on to some adjoining leaf, the tip or side of which they roll downwards, and, in the roll thus formed, they feed greedily on the outer covering or epidermis, both of the upper and under surface of the leaf; and as soon as the stock of food within their immediate reach is exhausted, they roll the leaf a bit further along its length or breadth, and continue to repeat this process on other leaves till they are full fed.

The larvæ do not always confine themselves to merely rolling the leaf along its under side, as some may be observed living inside leaves which have been doubled over, with their two edges united along their whole extent; others, again, may be found feeding between united leaves, after the fashion of the larvæ of *Chimabacche fagella* and *Gelechia triparella*. I have never observed them feeding in this manner on privet, but on ash and lilac I have met with them repeatedly so situated; in the autumn of 1866 I particularly remember seeing a fine old ash tree in the Seven Sisters' Road, Holloway, on which very many of these larvæ were feeding between united leaves.

The fondness of the larvæ for their three food-plants is exhibited by them in a marked manner; for instance, if we collect three mined lilac leaves inhabited by these larvæ when about to quit their mines, and place over the first a leaf of privet, over the second an ash leaf, and over the third a lilac leaf, we shall find that the larvæ which had previously fed entirely on lilac will attack with perfect indifference the three leaves offered to them.

When not overcrowded, this larva is a sociable little animal: I have placed those from several different localities together, and they fed quite amicably, and went through their transformations; but, if they are overcrowded, they do not get on quite so comfortably together; thus, I once placed 26 larvæ between two large lilac leaves, and, on the third day, I observed several larvæ that had been bitten by their companions were scattered on the leaf in a dying state. I have noticed that after the larva is once bitten, it never recovers from the effects of the bite; the bitten part of the body turns black, the larva refuses all food, decreases gradually in size, and, after languishing for a few days, dies.

(*To be continued.*)

A NEW SPECIES OF *CONIOPTERYX* FROM AUSTRALIA.

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

The species described below is interesting as proving the occurrence in Australia of these minute *Neuropterous* insects. It differs from the European and American species in its dark coloration, and in the almost entire absence of the usually conspicuous powdery covering; yet the structural characters appear to be identical.

CONIOPTERYX DETRITA, nov. sp.

Fusca: antennis fuscis, basi griseo-testaceis; palpis pedibusque griseo-testaceis; ore rufo-piceo; abdomine sordide aurantiaco; alis anticis posticis fere æqualibus, sub-hyalinis, fuliginosis, venis fuscis. (♀?)

Long. corp, $\frac{3}{4}'''$; exp. alar. $2\frac{1}{2}'''$.

Habitat ad Adelaide in Australia meridionali. In collect. Mus. Oxon.

One example in good condition. Under a high power the wings show a few scattered dark powdery granules. In neuration and general structure it is similar to *C. psociformis*.

Forest Hill, S.E.

Erebia Euryale of Esper, a species of Lepidoptera possibly new to the British lists.—I have just examined the typical specimens of Stephens' *Erebia Ligea*; and provided they were, as Mr. Stephens seems to say, actually taken in Great Britain, we shall be obliged to add another *Erebia* to our lists, inasmuch as the two insects which he has described and figured are undoubtedly distinct.

The following are Mr. Stephens' remarks concerning his *Ligea* (Illust. Brit. Ent., Haust., vol. i., p. 61) :—

"Few cabinets contain this insect, which is more to be esteemed from its apparent rarity than for its beauty. The only indigenous specimens which have come to my knowledge were captured in the Isle of Arran, I believe by Sir Patrick Walker and A. MacLeay, Esq.; but I am not aware of the true locality, or of the period of the year, which is probably about July or August." He then adds, "the plate has been executed from a fine pair of the insect in my collection."

Surely we may argue from this that the specimens in Mr. Stephens' collection are those taken by Messrs. Walker and McLeay, and, since two gentlemen had a hand in their capture, we may surmise that they were possibly taken in different localities; but however that may be, the insect which Stephens figures as the male of his *Ligea* is most assuredly the male of Esper's *Euryale*, and represents the variety figured by Freyer in his "Neuere Beiträge," vol. 1, tab. 61, fig. 3 (1833); it is much too small for *Ligea*, and has minute and blind ocelli on the upper-side; the under-side of the hind-wings has scarcely a trace of the white band, and the ocelli have ferruginous irides.

The sexes of *Ligea* do not differ in size or coloration, whilst those of *Euryale* are very dissimilar.

The figures of these insects, being drawn by measurement, exceed the insects themselves in expanse of wing, as the setting makes a difference of three-sixteenths of an inch in the size of the flies: the colouring of the figures is not so bright as in the insects themselves.

As regards the distinctness of *Ligea* and *Euryale* I have not the slightest doubt, as I have this year taken both sexes of either species in Switzerland; and I noticed that the latter was most likely to be found near water, or in moist situations, at a great elevation, whilst the former could be obtained everywhere.

Freyer remarks "It may at once be seen, by comparison, that *Euryale* is very distinct from *Ligea* both in size and coloration, and *Euryale* can scarcely be a modification of *Ligea*. Particularly since the female examples differ considerably on the under-side of the hind-wings, whilst the female of *Ligea* never has so conspicuous a band as that of *Euryale*." The female of *Euryale* has a broad yellowish band, such as exists in some females of *Blandina*.—Arthur G. Butler, Zool. Dept., Brit. Mus., 23*rd October*, 1867.

*** No person has, as yet, been able to confirm the assertion that *Ligea*, or a species allied thereto, occurs in the Isle of Arran; and the above note by Mr. Butler renders it doubly probable that some error occasioned the introduction of *Ligea* into our lists.—Eds.

Phycis adelphella bred.—I took a larva, which turns out to be of this species, about five miles from Worcester, July 18th, 1859, feeding between leaves of aspen, of which I find the following description in my journal:—"Olive, with darker stripes, those above spiracular line broadest; spiracular line paler; head and shield dark olive, clouded with black; pale hairs." The pupa is entered as "formed between leaf and box, in a strong white web; long, light brown, a shining, dark obtuse swelling at the tip." The perfect insect emerged June 24th of the following year." I am indebted to Mr. Tompkins for detecting this species in my collection, as well as a new species of *Tineina* which I had overlooked.—E. Horton, Powick, Worcester, *November* 1*st*, 1867.

Occurrence of Ypsolophus ustulellus, Fab., a Lepidopteron new to Britain.—I have sent to Mr. Stainton two examples of the new species of *Tineina* mentioned in the above notice, which he informs me are *Ypsolophus ustulellus*, Fab., a species new to Britain; and I now send a few words about their capture. The finest was taken, with another as fine, about eight miles from here, May 29th, 1864, sunning itself on lime leaves. I took *Roeslerstammia Erxlebella* at the same time. The worn specimen was taken close at home in 1865—I forget the time of year, but I know that I beat it out of hazel. There are no lime trees near the place that I know of.—Id.

Capture of Ypsolophus ustulellus.—An example of this new species, of which I believe Mr. Horton has sent an account for publication in the Ent. Mo. Magazine, was captured by myself six years ago; it is, so far as I know, the first that has been taken in this country: it is in fine and perfect condition. Neither Mr. Horton nor I could determine the species at the time.

A year or two afterwards Mr. Horton captured two or three, and very lately Mr. Tompkins, who was paying me a visit, called upon Mr. Horton, and pointed out that the insect was new to our lists.—Abraham Edmunds, Cemetery House, Astwood Road, Worcester, *November* 13*th*, 1867.

Occurrence of Ebulea catalaunalis, Dup., a species of Lepidoptera new to Britain.—The captor, Mr. W. C. Boyd, writes to me as follows:—

"I took it in our garden at Cheshunt, September 18th, flying over a flower

bed in the dusk of the evening. I should probably not have paid much attention to it, taking it to be only *P. forficalis*, which was extremely plentiful that evening, if I had not been struck with its peculiar flight, hovering backwards and forwards more like the common house-fly than anything else I know."—H. T. Stainton, Mountsfield, *November*, 1867.

Micro-lepidoptera bred or captured at Darlington.—During the past season I have bred the following:—*Gelechia rhombella*, *G. Sangiella*, *Nepticula splendidissima*, *N. ulmivora*, *Lithocolletis insignitella*, and *Elachista taeniatella*. I have also captured *Gelechia Sircomella*, *G. intaminatella*, and *Coleophora melilotella*. — John Sang, Darlington, *November 5th*, 1867.

Note on Lepidopterous inquilines.—In February last, my friend Mr. H. W. Kidd, of Godalming, sent me a living specimen of *Heusimene fimbriana* which he had bred, from among a lot of small specimens of the marble gall of the oak (gall of *Cynips lignicola*). I immediately went over and examined his galls, in hopes of finding traces of either the larva or pupa, but failed to do so. I then collected great numbers of similar galls, and also of the artichoke galls of the oak (galls of *Cynips fecundatrix*), in hopes of breeding more, but failed to obtain anything from them, except a number of young larvæ of one of the green tree-grasshoppers, probably *Meconema varia*, the eggs of which must have been laid among the bracts of the artichoke galls. Mr. Kidd was more fortunate, for in May he bred *Carpocapsa juliana* from artichoke galls, but, as this seems to be an acorn-feeder, it must have merely chosen the gall to spin up in.

In May I examined the oak-apples (galls of *Teras terminalis*), which were very abundant this year, and found in many of them the larva of a *Tortrix* burrowing under the skin, and feeding on the soft woolly substance inside. I also found similar larvæ hollowing out the inside of the currant galls of the oak catkin (galls of *Cynips Q. pedunculi*). These I fed upon the galls, and bred from them *Pædisca corticana*.

Feeding on one oak-apple I found a larva of *Thecla quercûs*, and this arrived at maturity upon the same food, but produced a very small imago.

These cases of casual inquilines in galls seem interesting, and tend to prove that the substance of the galls is of a similar nature to that of the leaves.—Chas. G. Barrett, Haslemere, 14*th November*, 1867.

A white-belted variety of Sesia culiciformis.—Whilst out collecting at Tilgate, last June, I was fortunate enough to capture a ♂ example of *S. culiciformis* with a white belt; it was *in copulâ* with a red-belted ♀. The species has been rather common this season.—E. G. Meek, 1a, Paradise Row, Old Ford, E.

*** I am unaware if this variety have previously been detected. Dr. Staudinger gives a var. "*abdominis segmentum 4, totum ochraceum* (*flavum*)." It is singularly interesting that this curiosity should have been taken *in copulâ* with the typical form.—H. G. K.

Notes on Sterrha sacraria.—I regret to say that I have not succeeded at all satisfactorily in my attempt at rearing *Sterrha sacraria*; and I am the more sorry,

as I am not able fully to account for the causes of my failure. I took in all six perfect insects in August—two females and four males, and I obtained twenty-six ova. Eight of these went to the Rev. J. Hellins, one of the larvæ disappeared when very young, and the other seventeen progressed very satisfactorily until they were full-fed: up to this time they looked perfectly well and healthy. Two of them spun up and changed to fine healthy-looking pupæ, in which state they now are; about eight more spun up, and died in the web; and the others died, without any apparent reason, without spinning.

I rather fear the food (*Polygonum aviculare*) which I gave them on Friday, October 4th, was touched with frost, as we had a very sharp frost on the nights of the 3rd and 4th; but whether that can have been enough to kill them I hardly know. The plants did not then exhibit any symptoms of being frost-bitten, or, indeed, at all differ outwardly from the food we were supplying regularly; but the frost then was undoubtedly sharp, and many plants felt it.

My gardener, who has charge of my larvæ when I am from home, is a very careful hand, and an excellent practical entomologist.—John T. D. Llewelyn, Ynisygerwn, Neath, *October 20th*, 1867.

Camptogramma fluviata near Folkestone.—My wife captured a specimen of this insect, on palings at Sandgate, last September.—H. Ramsay Cox, Lower Norwood, *16th October*, 1867.

Correction of an error.—The locality for the Tortrix (*Coccyx vernana*) which Dr. Knaggs described in the last number of the Magazine should have been "Darenth Wood," and not "West Wickham."—E. G. Meek.

*** I regret that, through "trusting to memory," I have made this blunder. —H. G. K.

Occurrence of Agrotis saucia in Scotland.—Of this species, which I believe is hitherto unrecorded for Scotland, I took one specimen at sugar, on October 6th, at Rannoch.

On returning to Perth, I found that my friend, Mr. J. Stewart, had taken two specimens at Perth, in the middle of the month, also at sugar.

Mr. Stewart has also bred (he believes from sallow) a specimen of *Oncocera ahenella*. He gathered the sallow in Forfarshire.—F. Buchanan White, M.D., Perth.

Chærocampa Celerio at Carlisle.—A poor specimen of *C. Celerio* was taken on the railway bank at Carlisle this autumn.—J. B. Hodgkinson, 31, Christ Church Street, Preston, *November 11th*.

Emmelesia unifasciata at Preston.—The old hedge yet stands out of which I took 40 specimens of *unifasciata* last year; and, very oddly, I have taken just the same number this year, and, as usual, few good ones.—Id.

Captures at Witherslack.—Another visit to Witherslack, at the end of July, produced several species I had not before met with in Westmoreland, viz.:—

Eupœcilia dubitana; *Catoptria Scopoliana*; *Adela minimellus*; *Asychna profugella*, 7 specimens (this species Mr. Stainton informs me is a scarce insect, and that but little is known of it); *Nepticula intimella* and *gratiosella*, also new to the district. I made up a very fair box in three days, although very unwell at the time. *Pterophorus tephradactylus* and *Bertrami* were still out, and *Löwei* just appearing. —Id.

Notes on the larva of Argynnis Aglaia.—On the 29th of June, 1867, I had the gratification of seeing this larva, which was most kindly presented to me by the Rev. Hallett Todd.

It was found with others after a strict search amongst *Viola canina*, and its mode of feeding on the leaves of that plant was peculiar; for, when eating, it kept advancing with every mouthful until it had got to the end of the leaf, and then quickly walked backwards to the point of commencement, and proceeded as before, always making a quick retrograde movement before again eating its way forward; and those operations were performed with such rapidity that half a large leaf quickly disappeared.

When its hunger was appeased, it usually retreated below the leaves, or rested on the stalks of the plant.

When nearly full fed it measured 1⅝ inches in length, and tapered a little towards the head, and more towards the anal extremity; it had six rows of black spines branched with short black hairs, viz., on each side a sub-dorsal, a lateral, and a sub-spiracular row, except as follows: the second, third, and fourth segments had but sub-dorsal and sub-spiracular rows, or four spines on each segment, the sub-dorsal being rather shorter than the others; and on the second segment they were simple spines, leaning over the head and curved slightly backwards. All the other segments had six spines in the order before mentioned, slanting a little backwards, and more so on the two last.

The head was black, shining, and hairy. The colour of the body a dark, shining violet-grey, thickly marbled with velvety black, the grey not very conspicuous except at the segmental divisions and along the spiracular region, where it formed an undulating interrupted line. The slender dorsal line black, and expanded in width near the middle of its course through each segment, and bordered on each side with a stripe of bright ochreous-yellow, which expanded in width just in advance of the widest part of the black central dorsal line; the spiracles black, delicately margined with grey, and close below each spiracle a blotch of bright orange-red, connected below with a thin line of orange-ochreous, that ran beneath the lowest row of spines; the belly and pro-legs blackish-brown.

The larva continued to feed until the 9th of July, when four or five of the rather large leaves at the top of the plant appeared to be slightly spun together, forming a kind of square tent-like enclosure, within which the larva had retired.

After the lapse of a week I broke a few of the silk threads in turning back part of a leaf so as to obtain a view of the occupant, and was much interested in seeing a very singular pupa suspended by the tail to the underside of a sloping leaf, its surface covered with a circular mass of silk, thickest in the centre, to which the anal hooks of the pupa were attached in a horizontal position, the back of the abdomen being so such curved round towards the leaf as to imitate the

upper two-thirds of the letter S. It had a deep depression on the back below the thorax, and a square form towards the head; the wing-cases were thick, with prominent edges below; the segmental divisions of the abdomen well defined, and on its upper surface two rows of blunt conical projecting points. The colour of wing-cases, head, and thorax, was pitchy-black, with some reticulations of brownish-ochreous, visible chiefly at the margins of the wings; the abdomen the same ochreous tint, mottled with brown, the prominent cones blackish, with ochreous points; spiracles black. Its whole surface shining, as though highly varnished.

The perfect insect (a ♀) appeared early on the morning of the 7th of August

Wm. Buckler, Emsworth.

Notes on the larva of Xanthia gilvago.—I feel greatly obliged to the Rev. J. Hellins, Mr. Albert Jones, and Mr. George Baker, of Derby, for their kindness in giving me, this season, the opportunity of figuring and describing the larva of this species, and also that of *Xanthia ferruginea;* and especially to Mr. Baker for his caution that the latter species might be amongst the larvæ of the former, otherwise I might have kept them together and been defeated.

But the extra trouble of figuring and keeping each larva separate has been rewarded, as it has enabled me to point out the distinction between two very similar larvæ, that may be easily mistaken for each other. The quotation from Guenée in the Manual says of *gilvago*,—"larva undescribed, because so common;" a passage I never fully comprehended until recently.

Both species of larvæ, obtained from seeds of wych-elm, were sent me as *gilvago*, from 6th to 8th of June, within a few days or week of their being full fed, and the perfect insects appeared from August 24th to September 5th.

The larva of *X. gilvago*, when full grown, is about one inch or an inch and an eighth in length, rather thick and plump behind, tapering a little gradually towards the head, and a little just at the anal segment.

The ground colour above is greyish-brown, having a pinkish tinge, darkest on the thoracic segments; the lines similar, but of a paler tint; head reddish-brown; a blackish-brown plate rounded behind on the second segment, through which run the pale dorsal and sub-dorsal lines; these lines are, however, on the third and fourth segments, generally much suffused with ground colour, and not always, though sometimes, very distinct on the rest of the body.

The dorsal line is in some entire, and in others interrupted in the middle of each segment by suffusion of the dark purplish-brown marks it travels through, but it is generally distinct at the beginning of each segment, being there broadly edged with blackish. The purplish-brown mark of each segment on the back is in the centre somewhat of a diamond form, truncated behind, especially on the eleventh and twelfth segments, with the addition of a wedge shape on each anterior side united with it, their points close to the beginning of each segment, and their broad ends forming part of the diamond shape. The sub-dorsal line paler than the ground colour, often suffused at the end, but visible at the beginning of each segment, being there edged above by a short blackish-brown streak, which forms the point of the wedge portion of the dark mark of the back. The sides slightly

mottled with purplish-brown, chiefly about the black spiracles, and close beneath them is a pale stripe of yellowish-grey, its upper edge still paler; the belly and legs of a similar tint, but a trifle darker. The four tubercular pale dots, ringed with dark brown, are situated within the dark marks on the back of each segment This is a distinction by which it may be readily identified.—Id.

Note on Pterophorus osteodactylus.—For years past, ever since I learned that larvæ could be beaten from various wild flowers, and that the golden-rod was good for certain *Eupitheciæ*, I had been puzzled with a little fusiform, brown-striped larva, which I often found on it, but could never rear to the perfect insect, as it always died in the winter. I remember at one time sending specimens to some five or six entomologists (not beginners like myself), by whom it was referred to as many different genera and families, not of Lepidoptera only, but also of one or two other orders,—much of course to my satisfaction.

However, on reading in a number of the "Entomologist" this year a note by Mr. Gregson on *osteodactylus*, I saw at once that he had solved my puzzle; and since then I have confirmed his observations by myself breeding, quite unexpectedly, three specimens of the moth,—one on July 8th, one on August 26th, and the third I found dead, not having noticed when it came out. I remember that last year two or three of these larvæ were on some golden-rod flowers, which I had picked for another species, but I took no care of them, expecting that, as usual, they would dry up in the winter. The only difference in their treatment was this, that they were left to take their chance (mostly outdoors in a shady corner of my garden), with their withered food in a flower-pot, the earth in which was covered with a thick growth of moss (*Hypnum sericeum*). I noticed that two of them, after walking about for a time on the covering of the pot, at last settled down for hybernation just where the lens and the moss creeping up to the rim met, and spun a thread or two to keep themselves somewhat protected. I did not watch them much after this, but imagine they left their hybernacula some time in April, for I know it must have been in that month that, as I was beating the sallows for catkins tenanted by *Xanthiæ*, one of these little golden-rod larvæ fell into my net, evidently being on his travels previously to spinning.

This capture raised my hopes of at last seeing the moth, so I tried him with various kinds of food then out in leaf, but could not see that he ate anything; and, having unfortunately squeezed him to death, I once more gave up the puzzle as a bad job. It was a great relief, therefore, to me to read Mr. Gregson's note, and still more so to breed the moths myself; for though in a general way I don't care much for "small things," finding plenty of occupation for all my spare time in trying to rear Macros, yet this little larva coming in my way year after year troubled me.

The moths seem to be on the wing in July and August: the larvæ feed through September and October, till the downy seeds of the golden-rod fly away, then hybernate till April, when, after moving about a little, they spin up.—J. Hellins, Exeter, *Sept.* 18, 1867.

P.S.—Since writing the above, I have been reminded by Mr. Buckler that three or four years ago I sent him some larvæ, beaten from the flowers and

seeds of Yarrow (*Achillea millefolium*) growing near the sea, which appeared identical with the larvæ on golden rod, now proved to be *osteodactylus;* and the mention of this fact has also made me recollect that I have occasionally beaten one or two of them from mugwort, *Artemisia vulgaris;* but in neither case did I succeed in breeding the moth.—J. H., *October 8th*, 1867.

Notes on Hyria auroraria.—This species is not one of the *unknowns*, still I venture to send you my notes on it, since the larvæ I have seen differed not only among themselves, but also from the description given in the Manual after Guenée.

In August, 1865, Mr. Batty, of Sheffield, sent me some young larvæ, which were then, and continued afterwards, of a very dark variety. In 1866, Mr. T. Brown, of Cambridge, sent me some eggs, the larvæ from which were very much paler than the former brood. I find the following dates recorded in my note-book:—Larvæ hatched July 12th; about half-an-inch long in October; began to feed after hybernation about the end of February; full-fed about the beginning of June; moths bred during the first half of July.

These larvæ fed on *Polygonum aviculare*, and, although very much of the *Acidalia* form and habit, did not, as many species of that genus do, show any preference for *withered* leaves over fresh. All, save one of the Sheffield brood, died during the winter of 1865-6, whilst, as far as I could see, the much sharper frost of last winter made no impression on the Cambridge brood, which fed up well, though about a third of their number died in the final change.

The Sheffield larvæ, when small, were very dark brown—almost black—all over, but with a lens a slightly paler sub-dorsal line could be discovered, as well as some black dorsal central spots placed in a slightly paler space. The Cambridge larvæ, whilst small, came near to the Manual description, for they were then dusky-brown, with the anterior segments pale ochreous on the back, and the middle segments having pale diamond marks enclosing a central dusky spot; but the full-grown appearance was quite different.

When full-grown, the larva is about ¾ inch long, slender, rather flattened along the spiracles, tapering towards the head, which is small and bifid; the skin a little wrinkled; in fact it is a *slender* form of the shorter (or *aversata*) type of *Acidalia*.

The ground-colour either brown or very pale grey; in either case the anterior and posterior segments are much tinged with ochreous; a dark, blackish, double dorsal line, commencing very fine and faint behind the head, but on segments 5 to 9 suddenly growing thicker both in the middle of each segment and at each segmental fold, so as to form a series of nine pairs of dark curved dashes (alternately curving inwards and outwards); on the segments 10 to 12 the dorsal lines become continuous again, but strong and distinct; the blackish sub-dorsal line distinct on the front and hind segments, but splitting into two or three faint irregular threads on the intermediate ones; one larva had also a strong black spiracular stripe beginning at the fourth segment, and ending at the anal pair of legs; spiracles black; the belly darker than the back, with a pale central line, and between it and the spiracles some curved oblique dark streaks, and a row of five black dots just below the spiracles on segments 5 to 9; the ventral and anal legs tinged with blue.

The larva makes the merest apology for a cocoon, just drawing together with the greatest economy of silk a few bits of moss and grass, between which the pupa can be easily seen; this is slender, cylindrical, very smooth, with the wing-cases short and distinctly marked; colour a pale dull ochreous, wings finely outlined in black.—Id.

Captures of Lepidoptera at light, &c.—Several additions have lately been made to our captures at light here. Lovely specimens of *E. tiliaria* figure in the list prominently; and I can assure any one who doubts the pleasures of lamp-scaling that it is no small satisfaction to bring down a specimen of this beautiful "thorn" from its elevation. My brother secured two fine males of *fuscantaria*, both in situations so disagreeably public as to furnish a very apt illustration of the motto consolingly quoted in the "Manual,"—"*quo plus difficultatis, eo plus honoris.*" *C. fluviata* has proved a constant friend; and, besides some well-preserved males, I secured a female—which furnished me with another brood of larvæ. The allurements of light brought *C. nupta*, *H. micacea* and *nictitans*, *H. chenopodii*, *N. C-nigrum*, *A. lunosa*, *T. batis*, *C. graminis*, *C. diffinis*, and *H. rostralis*, not within our reach, but into climbing range. For the first time in my lamp experience *P. lignata* put in an appearance, and on a lamp close by I found *E. porata*, *E. pumilata*, and *C. pinetellus*. *L. dictæa* fell to the lot of a friend, and *P. advenella* made a sort of balance thereto in my list. *P. costalis* and *P. stratiotata*, which are both common species in this district, studded the lamps pretty freely on every favourable night.

Our first experience of *E. fuscantaria* this year was by no means cheering. We had taken very little, and were returning home: the way was long, and the wind somewhat cold. A lamp exceptionally tall and thin presented itself, evidently with an occupant. With difficulty it was swarmed; and, nicely perched in the angle between two bars, was a fresh specimen of *fuscantaria*. Its position was impregnable: no pill-box could enter the niche; and so we "tried each art, reproved each dull delay," and finally dislodged him with a push that sent him out of sight, and we saw him no more.

Early in the season I took *H. W-latinum* at rest on palings, and the beautiful little *D. oliviella* in the same position; *P. rugosana*, *A. cnicana*, and *L. Smeathmanniana* flying at dusk, and *D. salicella* by day. *Tethea subtusa* was brought to me a few days since from some poplars in the garden, and *A. tritici* feebly represented the aristocracy among a host of plebeian *xanthographa* the other night at sugar.—J. B. Blackburn, Grassmeade, Southfields, 14*th September*, 1867.

Worcestershire captures and species bred in 1867, *with notes.*—The passing season has been the worst for *Lepidoptera* I ever remember; almost every species having been scarce. The cold rainy spring destroyed many larvæ, and the appearance of insects generally has been much retarded. For those who are interested, I beg permission to render the following account of some of the species captured. *C. miata* (hybernated), *L. hexapterata* (11), *H. barbalis*, *A. Baumanniana*, *L. sinapis*, *A. Selene*, *T. extersaria* (5)—I obtained eggs, the larvæ fed up, and are in pupæ; they vary much in the ground colour, from bright green to dark brown; *R. tumidella*, *C. bistrigella*, *E. porata*, *E. punctaria*, *C. nupta*, *X. pariana*, and *L. cinerana*. I have taken many of the latter in several seasons, in two localities, but I have never met with *L. nisella* in either of them. I consider them to be totally distinct. *(See Stainton's Manual.)*

Sugar has failed remarkably—perhaps on account of the scarcity of insects. I have sugared on three or four nights every week throughout the season, but have only captured the following thereat that are worth naming, viz.:—*H. genistæ* (3), *H. suasa* (2), *A. lunosa* (6), *A. saucia*, *X. semibrunnea*, *X. rhizolitha*, and *C. exoleta*, all of which were in fine condition.

I have bred *T. populeti* (3), *C. flavicornis* (5), *A. prodromaria*, *C. vinula* (30), *S. populi* (var. extraordinary), *A. berberata* (11), *P. lacertula* (25), *S. carpini*, *C. ocularis* (7), *S. lunaria* (3), *P. falcula*, *E. pendularia* (3), *E. orbicularia* (1), *C. rotundaria* (2)—the lines confluent, *A. leporina* (1), *S. apiformis*, *N. dromedarius* (3), *S. ocellatus*, and *B. quercûs* (both singular vars.), *G. papilionaria* (1), *T. retusa* (1), *T. betulæ* (6), *T. cratægi* (1), *C. xerampelina* (1).

I have captured in my garden a perfect *G. rhamni*, beautifully striped with alternate colours of the male and female.—Abraham Edmunds, Cemetery House, Astwood Road, Worcester, *October 24th*, 1867.

Heliothis peltigera at Haslemere.—On August 22nd last, I was looking round a clover field at the top of a hill for *Colias Edusa*, which is never common here, when a *Noctua*, evidently *not Plusia gamma*, rose at my feet and settled again a few yards off, allowing me to secure it. To my great surprise it proved to be *Heliothis peltigera*, in decent condition, a most unexpected piece of good fortune in that exposed situation, and so late in the season. I worked long and often for more, but without success.—Chas. G. Barrett, Haslemere, *13th November*, 1867.

Note on honey-suckle feeders.—It may be worthy of notice that, when searching honey-suckle last May for larvæ of *Limenitis Sybilla*, I found the larvæ of *Pericallia syringaria* feeding on that plant, and also several of the curious (apparently) long-tailed pupæ spun up on the dry twigs.

The larvæ of *Harpella nemorella* also occurred, feeding exposed on the shoots. —Id.

Phorodesma bajularia assembling.—One evening at the end of June, while taking *Phorodesma bajularia* in one of the broad rides of Woolmer Forest, I observed that several males fluttered one after the other over the same spot. Nothing was visible there, but, on disturbing the matted honey-suckle which covered the ground with my foot, a fine female—the only one I have taken—fluttered out, and was secured. She appeared to have as great a power of "assembling" as some of the *Bombyces*.—Id.

Tineina at Haslemere in 1867.—*Tinea ferruginella*—Several specimens flying in the afternoon among *Epilobium angustifolium*. An odd fancy for a *Tinea*.

Micropteryx Salopiella—Common among birch. *Sparmannella*—Generally found among stunted birch bushes on the hills.

Nemophora Metaxella—Rather common among alders in damp woods.

Yponomeuta vigintipunctata.—Larva common on *Sedum telephium* in September and October. In some cases the web was made on the ground, and the larvæ retreated among the moss and stones when disturbed.

Eidophasia Messingiella—Dr. Knaggs took a specimen when visiting here.

Depressaria assimilata—Flying commonly about broom bushes in a wood path, one evening in June. *Olerella*—in thatch, spring and autumn.

Gelechia scriptella—Blown off an apple-tree trunk in June.

Macrochila fasciella—May. Beaten from undergrowth near sloe bushes.

Œcophora tinctella—Common in an orchard, among the old apple trees, at the end of May.

Pancalia Latreillella—One specimen flying along a wood path on June 7th.

Rösslerstammia Erxlebella—Beaten from birch in the day-time, and also when beating for larvæ at night.

Tinagma resplendella—Flying among alder on Woolmer Forest.

Gracilaria phasianipennella—Beaten out of hedges in October.

Coleophora Fabriciella—Swept off the grass, or other plants, in a rank pasture.

Chauliodus Illigerella—Commoner than usual, in damp places in the woods. It flits gently about a little before dusk, settling on the dead stems of *Centaurea* and other plants.

Lithocolletis roboris—Swept off *Vaccinium* at night; and bred, after repeated failures, from oak.—Id.

Acidalia interjectaria and A. osseata.—*Acidalia osseata* is rare here, and I only know of one spot where it occurs. Specimens taken a few years since, which were evidently very fresh, had the costa decidedly ferruginous; but this colour faded soon after they were dead, as it does in some *Eupithecia*, &c. The ground colour of the wings was also yellower than in any specimens of *interjectaria* that I have seen.

The late J. F. Stephens mentions the red costa of *osseata* in his "Illustrations," but, as is well known, many of his descriptions were copied, without acknowledgment, from the works of continental authors.

Dr. Knaggs appears to have misunderstood M. Guenée's remarks upon these two species. In a note appended to the description of *interjectaria* he says—"Herrich-Schäffer has neither figured nor described this species in a recognisable manner. Delaharpe's description is much better, and leaves no room for doubt; he also correctly says that *osseata begins to appear when interjectaria is disappearing.*"

M. Millière, who has reared both species from the eggs, says that *interjectaria* appears three weeks or a month before *osseata*.—Henry Doubleday, Epping, *October 12th*, 1867.

Description of the manner of pupation of Cemiostoma scitella.—The full-fed larva emerges from the interior of the leaf, and crawls away and spins up, either to its food-plant or to any of the surrounding objects, just as its instinct or fancy dictates. It then commences the fabrication of the outer covering of its cocoon. This is accomplished by spinning a number of white silken threads, each thread being about the quarter of an inch in length; these threads are spun close together, and form, when complete, a thickish silken cable; the larva then spins another cable parallel with the first, but at the same time, however, having a slight space between the two; it then climbs up one or other of the cables and connects them together in the middle by fastening them with a number of silken threads, thus giving them the appearance of a rudely formed capital H; they, however, do not long retain this form, as the larva clambers on to the centre or connecting cords, and busies itself spinning other and additional threads, until it has imparted a somewhat arched

shape to each end of the central divisions; if approached too closely it relinquishes its work until the intruder has retired. When it has entirely completed the outer covering of its cocoon, it descends from its elevated position and commences underneath. How this cocoon is formed I am not in a position to say, never having been able to follow the larva's movements during its construction. A few days after the cocoon is completed, the larva turns to a little pale brown coloured pupa, its head being furnished with three or four little stumpy spines; the old larval skin being ejected from the cocoon. After an interval the pupa's head and anal segment turn dark brown, the back of the wing-sheaths also becoming clouded with dark brown, its antennæ and feet assuming a much deeper tone than the general colour of the body, the abdominal segments sink in, but the sides remain slightly raised, and the dorsal vessel is visible as a black dash down the centre of the 3rd and 4th abdominal segments. In this state it remains, though in a somewhat curved-up posture, until the following spring, when the lower half of the wing-sheaths, which at first become patched with black dashes, ultimately turn black all over. At this period the thorax has a slight bronzy look, surrounded with a darkish tint, and eventually the whole of the body changes to a similar colour. From my not having witnessed any movement on the part of the pupa, I am inclined to think that it remains immoveable throughout the whole period of pupation; neither am I acquainted with the full extent of the imago's life; one I kept watch over lived nine days, and became by that time very feeble, and, had it not been killed by accident, I question if it would have lived above a day or two longer.—Chas. Healy, 74, Napier Street, Hoxton, N.

Captures in the neighbourhood of Colchester.—The following is a list of the principal *Lepidoptera* captured in this neighbourhood up to the present date this year. It is to be understood that they were not all taken by myself, though I obtained specimens of most of them.

Rhopalocera.

Anthocaris cardamines (scarcer than usual), *Gonepteryx rhamni* (larvæ common on buckthorn), *Argynnis Adippe*, *A. Euphrosyne* (not common), *Selene* (by no means common), *Melitæa Athalia* (common, but very local), *Vanessa cardui* (larvæ common on thistles), *Limenitis Sibylla* (not rare), *Satyrus Egeria* (common at Hartley Wood, St. Osyth), *Thecla rubi* (larvæ on broom), *T. quercûs* (larvæ on oak), *Nemeobius Lucina* (Hartley Wood, St. Osyth), *Hesperia Sylvanus* (common), *H. linea.*

Sphingidæ.

Smerinthus ocellatus, *S. populi*, *S. tiliæ*, *Sphinx ligustri*, *Chærocampa elpenor* (bred), *Macroglossa stellatarum*, *Sesia tipuliformis* (not uncommon), *S. myopæformis*, *S. apiformis*, *S. bembeciformis.*

Bombyces.

Zenzera Æsculi, *Cossus ligniperda*, *Hepialus hectus* (excessively abundant), *Limacodes testudo* (several), *Calliyenia miniata*, *Lithosia mesomella*, *L. aurcola* (rarer than usual), *Chelonia villica* (one specimen, very scarce here), *Arctia mendica* (numbers of larvæ feeding), *Liparis salicis*, *Orgyia pudibunda* (common), *O. fascelina* (five larvæ on broom), *Trichiura crataegi* (larvæ on whitethorn), *Pœcilocampa populi* (larvæ on oak), *Eriogaster lanestris* (thousands of larvæ), *Bombyx neustria* (getting common again), *B. quercûs* (commoner than usual), *Lasiocampa quercifolia*, *Saturnia carpini.*

Geometræ.

Urapteryx sambucaria, *Epione apiciaria*, *Venilia maculata*, *Metrocampa margaritata* (common), *Eurymene dolobraria* (one worn specimen), *Pericallia syringaria* (two), *Selenia illunaria* (common), *S. lunaria* (three specimens, larvæ feeding), *Odontopera bidentata*, *Phigalia pilosaria*, *Amphidasis prodromaria* (a brood of larvæ just gone down), *A. betularia*, *Cleora lichenaria* (larvæ common, but very much ichneumoned), *Boarmia repandaria* (common), *Pseudopterpna cytisaria* (larvæ not rare on broom), *Iodis vernaria* (several), *Ephyra punctaria*, *Asthena luteata* (common), *Eupisteria heparata* (much commoner than usual), *Acidalia scutulata* (abundant), *A. bisetata*, *A. trigeminata* (common), *A. promutata*, *A. imitaria*, *A. emarginata* (bred from a larva on broom), *Corycia temerata*, *Aleucis pictaria* (not rare, but requires much looking for), *Macaria notata* (several), *M. liturata* (do.), *Panagra petraria*, *Fidonia atomaria* (common), *F. conspicuata* (one taken and two others seen, will probably turn up in greater numbers hereafter), *Minoa euphorbiata*, *Lidia adustata* (common), *Lomaspilis marginata* (abundant), *Larentia didymata*, *L. pectinitaria* (common), *Emmelesia affinitata*, *E. alchemillata*, *E. decolorata*, *Eupithecia centaureata*, *E. succenturiata* and *E. subfulvata* (took the former out-doors a month ago, just beginning to appear, the latter in-doors from larvæ found last autumn on yarrow), *E. cornata*, *E. rectangulata* (scarcer than usual), *E. fraxinata* (several), *Ypsipetes elutata*, *Melanthia ocellata* (bred freely), *M. albicillata* (several), *Melanippe hastata* (one at Hartley Wood, St. Osyth), *M. procellata* (not rare), *M. unangulata*, *Anticlea rubidata* (not uncommon), *A. badiata*, *Coremia propugnata*, *C. quadrifasciaria*, *Phibalapteryx tersata*, *P. vitalbata*, *Scotosia undulata* (several), *Cidaria picata*, *C. corylata*, *C. fulvata*, *C. pyraliata*, *C. dotata* (bred a long and splendid series), *Eubolia cervinaria* (larvæ on mallow), *Chesias spartiata* (larvæ common on broom).

Drepanulæ and Pseudo-Bombyces.

Platypteryx falcula, *P. hamula*, *Dicranura furcula* (obtained about forty eggs), *D. bifida*, *D. vinula*, *Petasia cassinea* (one larva, not common here), *Clostera curtula*, *Ptilodontis palpina* (bred 2 ♀), *Notodonta camelina*, *N. dictæa*, *N. ziczac*, *N. trepida* (one imago and one larva taken and one bred), *N. chaonia* (took seven larvæ), *N. dodonæa* (bred a nice series).

Noctuæ.

Thyatira derasa, *T. batis*, *Cymatophora diluta* (larvæ on oak), *C. or*, *C. ocularis* (one bred), *C. ridens* (bred a fine series), *Diphthera Orion* (one specimen only, at rest on oak), *Acronycta aceris*, *A. megacephala*, *Miana arcuosa*, *Rusina tenebrosa*, *Triphæna janthina*, *T. orbona* (larvæ in swarms), *Noctua plecta*, *Tæniocampa rubricosa*, *T. gracilis*, *Xanthia citrago* (took upwards of one hundred larvæ), *Dianthœcia capsincola*, *D. cucubali*, *Hecatera serena*, *Miselia oxyacanthæ* (larvæ), *Agrotis aprilina* (larvæ and pupæ), *Hadena protea* (larvæ abundant), *H. dentina*, *Xylocampa lithorhiza*, *Cucullia verbasci* (larvæ scarcer than usual), *Heliodes arbuti* (one bred), *Abrostola urticæ*, *Plusia chrysitis*, *P. iota*, *Amphipyra pyramidea* (larvæ), *Catocala nupta* (one larva), *Phytometra ænea*.

Deltoides, Pyrales, &c.

Herminia barbalis, *H. tarsipennalis*, *H. cribralis*, *Aventia flexula* (one), *Pyralis glaucinalis*, *Paraponyx stratiotalis*, *Botys lancealis* (about forty or fifty), *Ebulea*

sambucalis, E. verbascalis, Spilodes cinctalis, Phycis roborella, Melia sociella, Halias prasinana, H. quercana (of this lovely insect I have bred a number of specimens from larvæ found on oak), *H. chlorana, Phtheochroa rugosana, Argyrolepia Baumanniana* (took a dozen or so), *Tinea semifulvella* (one specimen), *Adela De-Geerella* (common), *Dasycera Oliviella, &c.*

I think that this long list shows that at any rate, so far as this district is concerned, this is not by any means a bad season, and I shall be very glad to learn that my brother collectors in other parts have been as successful as we have been here. I wish it to be distinctly understood that at present I offer no duplicates for exchange, and if I receive as many letters during the next week or two as I have received on former occasions when I have published lists of my captures, my correspondents must not blame me if some of them receive no answers.—W. H. Harwood, St. Peter's, Colchester, *July 18th.*

Notes on Coleoptera taken at Putney.—The few and short opportunities afforded to me for collecting since my removal to this place have convinced me that it is a first-rate locality for beetles; as I have already not only made acquaintance with divers species never before seen alive by me, but have also taken three or four new to my collection.

My best captures have been made out of and upon a large, very old, and long since dead beech-tree, much tenanted under its sheets of dry bark by *Onisci*, and (strange to say) by not a few large *Noctuæ*. Under this bark, nearly always accompanied by *Oniscus*, invariably adhering to the tree in preference to the bark, and mostly frequenting the under-side of the junction of some large limb with the parent trunk, or some other corner where a little extraneous damp had collected (for the inherent moisture of the tree had long since departed), I was lucky enough to "happen upon" *Brontes planatus*, hitherto represented in our catalogues, with the suspicion of doubt as to their British origin, by three specimens taken by my friend Mr. Douglas at Blackheath. There can, however, be no doubt that the insect is truly indigenous to this country; as I obtained several specimens, of both sexes, with the var. *pallida* (not immature), and larvæ; and the tree wherein I found them is amongst other undoubtedly British trees, not felled, and a long way from any habitation or cultivated ground. The majority of my specimens were found at some distance up the tree; though I lately obtained one or two under the bark below the surface of the ground, in company with the larvæ of *Pyrochroa*. The *Brontes* runs with great speed, and "twiddles" its antennæ rapidly about. I have a lively recollection of hanging on to a large bough, at a considerable elevation, with ancles and fingers, like a sloth; and, after tearing away the bark with one hand, and shutting my eyes to avoid the shower of dust, &c., of seeing five *Brontes* radiating at their best pace in different directions. However, I secured all (breaking, alas! three of them) by a rapid manual application of saliva.

Under loose bark covering a slight fungoid growth, on the same tree, I also found one specimen of the *Hallomenus fuscus* of Wat. Cat., which Mr. Crotch has recently informed us is *Anisoxya fusca*, Ill., and of which only two British examples were lately known; one taken by Dr. Power, and the other by Mr. Brewer, and now in the National Collection. I also took one or two specimens of *Tetratoma*

fungorum, lurking under the bark of the topmost branches, at a great height; and another example in grass at the roots of a neighbouring tree. The solid wood of this beech-tree was much drilled in many places by *Tomicus Saxesenii*, which I occasionally found alive and perfect, crawling on the surface, but more often dead and decayed under the bark or in the mouths of its burrows. Its drill-holes are very small and neatly cut. Decayed bark of the same tree swarmed with *Mycetophagus multipunctatus*; and I also saw many (but caught few) of *Ptinella denticollis* under similar circumstances. *Phlœopora reptans*, *Rhinosimus ruficollis*, *Homalota cuspidata*, *Omalium vile* (much varying), *Quedius cruentus* (with its variety with elytra dark, all but the suture), and such species of minor importance, constantly occurred.

Under bark of another tree, in Wimbledon Park, so long ago dead as to be undistinguishable by me specifically, I found one *Læmophlæus bimaculatus*, more *Tomicus Saxesenii*, *Phlœopora*, *Ischnoglossa corticalis*, the yellow var. of *Rhizophagus bipustulatus*, apparently quite mature, and mixed with full-coloured examples, *Euplectus Karstenii*, *Omalium iopterum* (also in dead leaves), and,—a strange tenant,—*Ocypus ater*, usually found under chalk at the sea-side. I have twice, and in localities at some distance from each other, found this species here under similar conditions. I have found the common *O. morio* and *O. compressus* also here, in their usual habitat; and one fine example of the (southernly) rare *O. fuscatus*, in "Judas' ear" fungus on a felled elm, accompanied by the commoner *Scaphisoma*.

Sifting refuse at the bottom of a hay-stack close to my small garden has produced *Stilicus geniculatus*, accompanied by two of its commoner brethren, in some numbers; also *Cryptophagus badius*, *C. affinis* (not uncommonly), and the pallid form of *C. scanicus*, a puzzler to beginners; *Aphodius porcatus*; *Philonthus debilis* (common), and *P. bipustulatus* (with a curious and apparently hitherto unrecorded variety, in which the red spots behind the middle are absent, but replaced by a distinct reddish hinder margin to each elytron;—the insect being quite distinct from *P. agilis*); *Quedius humeralis*, *Heterothops dissimilis*, *Haploglossa prætexta*; *Scydmænus hirticollis*, with the three apical joints of its antennæ equally anchylosed on each side, simulating an abrupt clava, and exciting wild hopes when seen crawling over the paper by the naked eye; *Onthophilus*, *Corylophus*, myriads of *Lathidius ruficollis*, and divers *Conuri*, *Steni*, *Oxypodæ* and *Tachini*, "quos nunc enumerare longum est."

Similar working at leaves, twigs, and cut grass on my own premises afforded me a male of the very rare *Homalota oblita*, *H. pagana* (of which I also found several specimens at the root of a willow near the river), *divisa*, *occulta*, *clientula*, *amicula*, *palustris*, *aterrima*, &c.; *Atomaria fuscipes*, *Tachyporus scitulus*, *Megarthrus*, *Micropeplus*, &c.

I also found *Zeugophora* and *Rhynchites populi* on young aspens—both unusual autumnal sights; and "fluked" *Gracilia*, *Leucoparyphus*, *Crioceris asparagi* and *Sitophilus oryzæ* in my house; *Elmis Volkmari*, crawling on the canvass of my sculling-boat, and reminding me of former work in Scotland; and *Staphylinus stercorarius*, on the wing, in Putney Station.

On barking trees by the river I bottled *Crepidodera Chloris*, which apparently abounds, and some very curious, dark, elongate forms of *Cryptophagus dentatus*, sufficiently puzzling. I was pleased to see again an old Hymenopterous friend of mine, the Siriciform *Xyphidria*, perforating one or two willows on the bank.—E. C. Rye, 7, Park Field, Putney, S.W., *November*, 1867.

Note on Coleoptera in Cheshire.—In January, in the burrows of *Hylurgus piniperda*, I met with a single specimen of *Haplocnemus impressus*. This must be a rare species near Bowdon, as I have met with but three others during the last few years, and these were beaten out of Scotch firs in June. *Ægialia sabuleti* occurred in sandy places on the banks of the River Bollen, and also in its tributary the Birkin; and in the same places, under decayed vegetation, I have taken some fine specimens of *Tropiphorus mercurialis*. *Elater balteatus* was exceedingly abundant on birch trees at Carrington Moss, about the end of June. *Phlœotrya rufipes*, 1 ♂ and 2 ♀, superb specimens, I met with in August, on a felled beech tree in Durham Park; along with them I took several specimens of *Abdera quadrifasciata* and *Melasis buprestoides*.—R. S. Edleston, Bowdon, Cheshire, *November 4th*, 1867.

Locality for Otiorhynchus maurus.—I captured about a dozen specimens of this local species on Skiddaw, in July.—Id.

Boreus hyemalis near Croydon.—If it be of sufficient importance, it may be noted that on the 3rd instant I found a male and female of this singular insect in moss growing on the ground under furze-bushes at Shirley, near Croydon. The bodies were pale greenish-yellow, which colour, according to Dalman (as quoted by Westwood), would indicate that the creatures are immature; yet they were very lively, and jumped about like *Haltica*.—J. W. Douglas, Lee, *8th November*, 1867.

[Mr. Scott has since taken a ♀ at West Wickham. Through the liberality of the captors all three specimens are now in my collection.—R. McL.]

Note on Platymischus dilatatus, Westw. ♀.—The ♂ only of this curious little insect has been hitherto observed. Finding it to be common among sea-weed on this coast, I have made it my business to unearth the other sex, and have at last, I firmly believe, succeeded. Although I have never seen the sexes in coïtu, yet the form which I wish here to introduce so exactly corresponds (barring sexual differences) with the well-known male, that, taking into consideration their peculiar habitat, and other circumstances hereinafter mentioned, I feel no doubt as to the correctness of my conclusion. Both sexes are abundant here, but not equally so at the same time. In the early spring the ♀ appears in great numbers, while the ♂ is only to be found sparingly. At the present time (Oct. 23) the case is exactly reversed. In order to complete the generic diagnosis, I have drawn up a new description, including both sexes.

Platymischus, Westw., Introd. vol. 2, Synops. p. 75; Först., Hym. Stud., 2, p. 121, 123; Halid., Nat. Hist. Review, vol. 4, p. 167.

Antennæ ♂ 14-articulatæ, scapo intus fortiter dilatato, fornicato, sub-triangulo, art° 3° 2° longiore, oblique inserto, artt. 4—9 sub-æqualibus, sub-globosis, 10—14 gradatim increscentibus, ult° oblongo: ♀ 12-articulatæ, scapo lineari, quartam partem totius membri constituente, art° 2° 3° longiore, 4—8 sub-æqualibus, sub-globosis, 9—12 clavam formantibus, art° ult° maximo, oblongo. Abdomen ♂ apice sub-truncatum; ♀ paulo longius, apice rotundatum, deinde abrupte apiculatum.—♂ ♀ Prothorax depressus, cum mesothorace arcte coalitus, sutura transversa fere obsoleta; parapsidum suturæ nullæ; metathorax vix declivis, et cum petiolo brevi, crasso, dense tomentosus. Scutellum deplanatum, vix conspicuum, fovea basali nulla. Ocelli nulli. Alæ nullæ. Pedes breviores quam *Diapriis*; femora incrassata; tarsorum articulus ultimus leviter dilatatus.

P. dilatatus, Westw., l. c., vol. 1, frontisp. fig. 5: cf. Wailes, Berl. ent. Zeits. 1859, vol. 3, p. 98; Walk., Ent. Mag., vol. 2, p. 117.

P. niger, nitidus, capite sub-depresso, thorace paulo latiore, supra parcius

punctulato. Oris partes rufæ. Antennæ ♂ nigræ, scapo, et interdum art° 2°, rufis; ♀ artt. 1—8 rufescentibus, cæteris nigris. Pedes cum coxis rufescentes, femoribus, tibiisque apicem versus, obscurioribus, tarsorum art° ult° fusco. ♂ ♀ Metathoracis et petioli lanugo fusca, brevis, velutina. Long. ½—1 lin. ♂ ♀.

The ♂ is sufficiently distinct from every other genus of *Diapriadæ* by the singular form of the scape. The ♀ requires only to be discriminated from those genera having, in that sex, 12-jointed antennæ. These are *Cephalonomia*, Westw.; *Idiotypa*, Först.,=*Mionopria*, Hal.; *Diapria*, Latr.; *Loxotropa*, Först.,=*Basalys*, Thoms., nec Westw.; and *Glyptonota*, Först. *Cephalonomia*, ♀, has ocelli, the head much broader than the thorax, and the antennæ shorter than the head. *Idiotypa* and *Glyptonota* have the parapsidum suturæ distinct. *Diapria* has ocelli, and a distinct fovea at the base of the well-developed scutellum; also the 3rd joint of the antennæ is longer than the 2nd. Lastly, the ♀ of *Loxotropa* has ocelli, &c., like *Diapria*. The present female insect is abundantly distinct from *Psilus fucicola*, Walk., Ent. Mag., 2, 117, which is a *Monelata*, Först.,=*Corynopria*, Halid., with 13-jointed antennæ. I believe the above considerations are amply sufficient to establish the ♀ of *Platymischus*, and to ensure its identification for the future.

I have some pairs to give away.—T. A. Marshall, Milford Haven, *October 23rd*, 1867.

Review.

Natural History of Devon, by Edward Parfitt. Part ii. *Coleoptera* (Exeter: W. Clifford; S. Styles; 2s.).

It is, apparently, the laudable desire of making a starting-point for a Fauna of his county that has induced Mr. Parfitt, in spite of the onerous duties necessarily attending his position at the Devon and Exeter Institute, and extending over all branches of Natural History, to publish the Catalogue now under notice. It is, however, simply *as* a starting-point that it can be considered of any use; recording, as it does, only the universally distributed (circ.) 1,000 species, with a few revived Leachian obscurities, &c. Such works as these,—undertaken under great difficulties, and probably with the mistaken idea that the application of a certain amount of energy will compensate for a comparatively trifling acquaintance with the subject,—necessarily redound but little to the credit of the author who travels out of his proper sphere. In the present instance, a glance at the "Introduction," and the two pages of Index, bristling with upwards of sixty outrageous mistakes in the names of the genera, will warn the reader that Mr. Parfitt must have had a hard fight in making up his Catalogue;—an idea amply proved by the very numerous blunders of every kind occurring throughout the body of the work. Under these circumstances, it seems almost a pity that the author should have considered it necessary to indulge in schemes of classification, and to introduce certain species on apparently no reasonable grounds. We regret the enforced tone of these remarks; as the Catalogue may still be of considerable use to beginners in Devonshire.

General Information.

Monograph of the British Neuroptera—Planipennia.—Mr. R. McLachlan is now engaged on this work, and will feel grateful to any gentleman who can lend him native examples of the genus *Raphidia*, which shall be taken great care of, and be returned promptly. He adopts this method of asking for materials in this genus, because, the species being so very closely allied, it is only by comparing considerable numbers that definite results can be arrived at.—Address, 1, Park Road Terrace, Forest Hill, London, S.E.

Complete Catalogue of described Coleoptera.—An important and very useful work is about to appear in Baron von Harold's "Coleopterologische Hefte," published at Munich. It is a complete Catalogue of all described species of *Coleoptera*, on which the author, in conjunction with Dr. Gemminger, has been engaged for the last ten years. The first instalment of the work will appear in Part. iii. of the "Hefte," early in the coming year, and will comprise the *Cicindelidæ* and part of the *Carabidæ*.

New French Entomological Magazine.—Mr. James Thomson, of Paris, has commenced a new serial under the title of "Physis." The first part contains three articles, all from the pen of the editor and proprietor, viz., 1—on a New Classification of Longicorn *Coleoptera*, in which the views of Schiödte are criticised, and some of his amendments introduced; 2—a Revision of the *Dorcadionidæ*, giving a review of 35 genera and 219 species comprised in the group; and 3—a description of a new species of *Chelonarium (Byrrhidæ)*.

Mr. Darwin's great work.—It must be gratifying to the cultivators of Philosophical Zoology to learn that no fewer than 1,200 copies of Mr. Darwin's new work on "Variation under Domestication" were subscribed for at Mr. Murray's autumn sale the other day. The work is the first section of the *magnus opus*, "the origin of species by variation and natural selection"—the development of the theory, with all details of experiment and observation—of which the small octavo volume previously published was only a brief summary. It is well known that a very large proportion of Mr. Darwin's illustrations of his theory is taken from Entomology.

Entomological Society of London, *November 4th*, 1867.—Prof. Westwood, Vice-President, in the Chair.

Mr. Bond exhibited some specimens of *Lepidoptera* new to Britain; viz., *Psyche crassiorella*, Bruand; *Catoptria ravulana*, Herrich-Schäffer; and *Coccyx vernana*, Knaggs.

Mr. McLachlan exhibted a rare species of *Mantispidæ*, *Trichoscelia notha* of Klug, from Bahia, remarkable for the strongly-dilated and flattened hinder tibiæ: also some cases of gynandromorphism and monstrosity; viz., an example of *Limnephilus striola*, Kolenati, in which the abdomen was female, but the rest of the organs combined the characters of both sexes, the right side being male and the left female; and a completely gynandromorphus specimen of *Dolerus madidus*, Klug (these two insects were exhibited on behalf of their captor, Mr. B. Cooke, of Manchester); a female of *Hylotoma fasciata* St. Fargeau, in which the left hinder tibia was divided by a constriction (or joint?) in the middle, the apical half being much dilated; and a specimen of *Tenthredo scalaris*, Klug, with three wings on the right-hand side, the intermediate one with the neuration partaking of the characters of both anterior and posterior.

Mr. Wood read a paper in which he endeavoured to prove that the tint of the pupæ of the White Butterflies, and *Papilio Machaon*, assimilated to that of the surface to which they were affixed, thus securing protection thereby. He exhibited numerous pupæ in support of his theory. A discussion ensued, in which Messrs. Weir, Butler, Stainton, and Bond took part, the latter gentleman asserting that, according to his experience, he could not agree with Mr. Wood's arguments.

Mr. Hewitson communicated a paper on new species of Diurnal *Lepidoptera*.

The Rev. Douglas Timins communicated a monograph of the genus *Thais*, accompanied by coloured figures of all the species.

Mr. E. Saunders read "A Revision of the Australian *Buprestidæ* described by the late Rev. F. W. Hope."

NOTE ON THE GENUS *PANDORA* (DIURNAL *LEPIDOPTERA*).

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

When Professor Westwood first defined this peculiarly-coloured genus of butterflies in Doubleday and Hewitson's "Genera of Diurnal Lepidoptera" in 1850, it consisted only of one species, then extremely rare, *P. Prola*. Since then, in 1853, Mr. Hewitson figured a second species, *P. Procilla*, in his "Exotic Butterflies," and a third, as the female of *Procilla*, from which an examination of several specimens has convinced me it is quite distinct, not only in colours and markings, but in the form of the antennal club; all the specimens examined moreover, proving to be males. These three species are found in the valleys of New Granada. Recently, in the "Journal of Entomology," vol. ii., p. 213, I have described, from a single example taken by myself on the Amazons, a fourth species, *P. Regina;* and I have lately received, from Pebas on the Amazons, a numerous series, not only of *P. Regina* and *P. Prola*, but of another new species, allied to *Procilla*. This last I propose now to describe, besides adding a few remarks on the other members of the group.

The genus, so far as is at present known, is confined in its geographical range to the sultriest portion of the wooded country of South America, lying near the equator, east of the Andes, and in the neighbouring Andean valleys. The range does not extend to the Atlantic coast, to Brazil or Guiana, and I am not aware that it comprehends Venezuela. In ascending the Amazons, I first met with species of the genus at a point 1,800 miles up the river, and one species has been recorded as reaching as far in another direction as the Upper Rio Negro. The large size, glossy metallic-green and black colours, and vermillion under-surfaces, make them most conspicuous objects; and they are easily captured, as they have the habit of flying into the muddy Indian villages, and settling boldly on the whitewashed walls. Although the differences between the species are not of that marked character which we see in many other genera of *Nymphalidæ*, I have been forced to the conclusion that they are none the less really distinct, from the constancy of the characters in all the examples I have seen, and from the total absence of intermediate forms in localities where three of the species occur abundantly together, as at Pebas on the Amazons.

The genus is allied to *Batesia* (Felder), and *Ageronia* (Bdv.), and forms part of the group of *Nymphalidæ* of which *Limenitis* may be considered the type. To *Batesia* it is very closely allied, but is well

distinguished by the two discoidal nervures of the fore-wing being parallel (as in most genera), whilst the upper one is flexuous in *Batesia*. *Ageronia* is distinguished from all genera by well-marked peculiarities of neuration, especially the strongly inflected lower disco-cellular nervule of the fore-wing.

1.—Pandora Prola.

♂. Doubd., Westw., and Hew., Gen. D. Lep., pl. 43, f. 5.
Felder, Wien. Entom. Monatschr., 1862, p. 112.

♀. Larger than the ♂. Fore-wing less produced at the apex; hind-wing more broadly rounded at the anal angle. Colour and markings of the upper and under-surface the same as in the ♂.

Female specimens from the Amazons differ from those received from New Granada, in the apical portion of the anterior wing being red; the same part in New Granada specimens being black as in the ♂.

The species is distinguished from all others by the clear pinkish-vermillion colour of the under-surface of the hind-wings, which have only a short black line along the lower disco-cellular nervule, and sometimes a sub-marginal dusky line extending from the anal border. Dr. Felder remarks (*l. c.*) that the specimen he received from the Upper Rio Negro differed from Bogota examples in being larger, and having the brassy-green belt of the hind-wings much narrower. All the Amazons specimens belong to this same local form.

New Granada, Equador, Upper Rio Negro, and Amazons from the village of St. Paulo westwards.

2.—Pandora Regina.

♂. Bates, Journ. of Entom., ii., p. 213.

Differs from *P. Prola* in being much larger, with the fore-wing more broadly rounded at the apex, and less incurved on the outer margin. The hind-wing has a row of three black spots in the glossy green belt. The under-side of the hind-wing is vermillion-red, clouded with blackish towards the apex, and marked with black lines as in *P. Procilla* (Hewits., Exot. Butt., f. 2). There is a row of ill-defined dusky ocelli across the hind-wing beneath, with black pupils. The tip of the fore-wing beneath is rich dark brown, and there are no red spots within the cell.

St. Paulo and Pebas, Upper Amazons. I have found the characters constant in the score or so of examples which I have examined.

3.—Pandora Chalcothea, *Bates*.

Hewits., Exot. Butt., Pand., f. 4, and description (as *P. Procilla* ♀).
New Granada and Southern Equador.

♂. This species may be distinguished from *P. Regina* on the upper-surface by having a blackish streak on the fore-wing within the sinuated part of the brassy-green belt (the same being clear and spotless in *P. Regina*), and in having a similar streak along the inner part of the corresponding belt of the hind-wing. Beneath it agrees with *P. Regina* in the absence of red spots from the cell of the fore-wing; the ocelli of the hind-wing, however, are much more distinct, having well-formed black rings to the irides.

4.—Pandora Divalis, n. sp.

♂. Larger than *P. Prola*, apex of the fore-wing less produced and more broadly rounded. Colours above the same, and black marks nearly the same in number and position. Beneath very similar to *P. Procilla*, having red spots within the cell of the fore-wing, and the apical portion ruddy-brown. The hind-wing differs in being rich dark purple-brown, redder towards the abdominal margin, and wanting the row of ocelli, which are indicated only by very small indistinct blackish rings. The antennal club is slender, and very gradually thickened.

Pebas, Amazons; about thirty examples.

5.—Pandora Procilla.

♂. Hewits., Exot. Butt., Pand., f. 1, 2.

Well distinguished from the other species by the thick and abruptly-formed club of the antennæ, and by the pale or tawny-brown hue of the under-surface of the hind-wing.

New Granada.

Kentish Town, *November*, 1867.

ON SOME BRITISH *CYNIPIDÆ*.

BY THE REV. T. A. MARSHALL, M.A.

(*Continued from page* 148.)

It is to be remarked that the name *Teras* has been used by Treitschke among the *Tortricidæ* (1830), and that consequently Hartig's genus (1840) cannot stand. Perhaps the discarded name *Diplolepis*, Geoffr., may here find a place, if the insect is to be separated from *Cynips*.

c. Scutellum indistinct. Maxillary palpi 5-, labial 3-jointed, the last joint appendiculated. Apterous.

Genus Biorhiza, Westw.

The ♂ unknown. Antennæ of the ♀ apparently 14-, really 15-jointed, the two last joints being connate; 3rd joint three times longer

than the 2nd. Head transverse, short, broader than the thorax. Thorax small, compressed; pronotum separated by a curved suture from the mesonotum; scutellum flat, inconspicuous; metanotum very short. Wings none. Abdomen three times longer than the thorax, elevated and carinated above, much compressed; the 1st segment forming a third of its entire length, the other segments nearly equal. Exserted part of the ovipositor as long as the abdomen, slightly curved upwards.

Biorhiza, Westw., Introd. Synops., vol. ii., p. 56.
Apophyllus, Hartig, in Germ. Zeits., ii., p. 193; iv., p. 409.
Walker, Ent. Mag., 3, 167, No. xxiv.; ♂ included by mistake.

Biorhiza aptera, Fab.

Testaceous; eyes, tips of the mandibles, antennæ in the middle, and often at the apex also, and the segments of the abdomen after the first, more or less, blackish. Glabrous above; the sides, coxæ and femora with pale pubescence. Head very finely and thickly punctulate. A short ridge extends from the origin of the antennæ nearly to the ocelli. Pronotum punctulate. Disc of the mesonotum oval, shining, very minutely punctulate. Metanotum less shining, and with three short elevated ridges. Petiole short, punctulate. ♀.
Long $2\frac{1}{4}$—$3\frac{1}{2}$ lin.

This insect is well known, and numerous references to authors who mention it might be given, although a detailed description can hardly be found. The subterranean monothalamous galls are attached side by side to the filaments of the roots of the oak and some other trees. They are of a woody consistance, oblong, and somewhat less than half an inch in diameter (see Westw. Introd., ii., p. 131). I once found them, with a considerable number of the living insects, in January, at the roots of an oak near Cheltenham, when the ground was partially covered with snow. Their appearance under similar circumstances is noticed by Laboulbène (Bull. Soc. Ent. de Fr., 1865, p. 5) and Guérin (Rév. et Mag. de Zool., 1865, p. 134).

d. Antennæ setaceous, not thickened towards the tips, 14—15-jointed (15—16-jointed, according to Hartig).

Genus Rhodites, Hartig.

Maxillary palpi 4-, labial palpi 2-articulate. Abdomen ovate, sub-compressed; 1st segment much the longest, occupying three-fourths or more of the entire length of the abdomen. Radial cell short, broad, triangular; areolet not exactly placed at the base, but removed nearer to the middle, of the radial cell; likewise more remote from the costa than from the middle of the wing. Areolet sometimes obliterated

Although this genus is placed by Hartig in his section 1,—"Area radialis angusta, areola basalis,"—it is far from exhibiting those characters typically. The system of neuration is rather transitional between the elongate radial cell of *Cynips*, with the areolet at its base, and the section of *Synergus*, &c.,—"Area radialis brevis, lata; areola intermedia."

According to Dahlbom (Onych. och Callasp. Tab. Synopt., ii., p. 5, B.) the two usual foveolæ at the base of the scutellum are obsolete in *Rhodites;* this is true of *Rh. rosæ*, but not of *Rh. nervosus*, in which they are faintly indicated.

These insects seem especially to affect the different sorts of rose-trees. The males are much rarer than the females. Five species have been described on the Continent:—*rosæ*, Lin.; *centifoliæ*, Hart.; *eglanteriæ*, Hart.; *caninæ*, Hart. (*spinosissimæ*, Taschenberg, nec Inchbald); and *rosarum*, Giraud. I have only met with one of these in England; but to them must be added *C. nervosa*, Curt., which is, judging from the descriptions, a distinct species.

RHODITES, Hart., in Germ. Zeits., ii., p. 194.
Walk., Ent. Mag., 3, p. 167, No. xxvii.

Rhodites rosæ, Lin.

Black; legs reddish, the coxæ, trochanters, and base of the femora black. Abdomen of the ♂ entirely black; wings slightly dusky, the base of the radial cell incrassated, and suffused at the edges with brown. Abdomen of the ♀ red, black at the apex; wings darker than those of the ♂, a pale brown tint covers the whole of the radial cell, and extends some distance beyond. Petiole ♂ ♀ red. Basal foveolæ of the scutellum obsolete. Long. $1\frac{1}{2}$—2; alar. exp. 3—$3\frac{1}{2}$ lin.

This common insect needs only a passing mention here. Its gall, the Bedeguar of the *Rosa canina*, is infested by several Chalcideous and other parasites. (See Zoologist, iv, 1359; v, 1661, &c.)

Rhodites nervosus, Curt.

♀. "Black, shining, obscurely punctured and slightly pubescent; antennæ 14-jointed, as long as the body, two basal joints brownish; ocelli very large; post-scutellum rugose, with three parallel ridges; abdomen very smooth and ochreous, the lower sheath brown: wings pale fuscous, iridescent, the nervures brown, edges of the marginal cell suffused; anterior legs pale ochreous, intermediate brown, hinder piceous, base of all the thighs darker, apical joint of tarsi fuscous."

"July; Dover. Distinguished from *C. rosæ* by the large ocelli, carinated scutel, dark hind-legs, the absence of the brown splash on the costa of the upper wings, and of the areolet."

Curtis, B. E., 688, pl. 320. Long. $1\frac{3}{4}$; alar. exp. $3\frac{3}{4}$ lin.

The ♂ is similar, with only the usual sexual differences in the antennæ and abdomen. Two small indistinct foveæ at the base of the scutellum serve also to distinguish it from *Rh. rosæ*.

The absence of the areolet, mentioned by Curtis above, is not a constant character; in some specimens it is visible, in others it is obliterated on one side only.

In Mr. Walker's collection and my own. Mine were taken in Epping Forest. The gall is at present unnoticed.

(*To be continued.*)

TWO SPECIES OF *PIMPLA*, NEW TO BRITAIN, REARED BY C. G. BARRETT, ESQ.

BY THOMAS DESVIGNES.

PIMPLA RUFICOLLIS, Grav., iii, 153, Fam. vi, sec. 3.
P. variegata, Ratz., Ichn. der Forstins. i, p. 118, No. 21.

Long. $3\frac{1}{2}$ lines. Reared both by Ratzeburg and Mr. Barrett from *Tortrix Buoliana*.

PIMPLA OPACELLATA, n. s. (Grav., iii, sec. 6).
Long 4 linearum.

Abdomine nigro. Coxis et trochanteribus nigris. Pedibus rufis, femoribus posticis apice nigris. Tibiis anterioribus externe fuscis, posticis tarsisque nigris. Antennis gracilibus, longitudine corporis parum brevioribus. Acubus trienti abdominis longitudine æqualibus.

Head—Much broader than long; face hoary, the margins adjoining the eyes perpendicular; forehead above the antennæ depressed, excavated. *Antennæ* slender, not so long as the body. *Thorax* gibbose, sub-cylindrical; metathorax strongly punctate. *Wings* clear; stigma and radius black, the former with a milky spot at the base; areolet oblique, sessile, all the nervures black. *Legs* red; coxæ, trochanters, apex of hinder femora, tibiæ and tarsi black. Anterior tibiæ exteriorly fuscous. *Abdomen* finely punctate; 1st segment with a broad, flat, elevated surface; the incisions between the segments rather deep and very distinct; the 5th segment narrow, but transverse; aculeus stout—one-third the length of abdomen.

This insect, apparently hitherto undescribed, was reared by Mr. Barrett, of Haslemere, from a pupa of *Psyche opacella*.

Mr. Barrett has kindly presented me with both species.

Woodford, *December 12th*, 1867.

A LIFE HISTORY OF *GRACILARIA SYRINGELLA*.

BY CHARLES HEALY.

(*Continued from page* 150.)

These larvæ show a great repugnance to feeding in an exposed situation, and, indeed, will not do it, possibly from a wholesome fear of ichneumons; if a larva be placed in a jar, on the outside of a leaf, and not covered by another leaf, it crawls underneath and spins a silken web, in which it then feeds; but if a second leaf be placed over the first, the larva is quite content to feed between the two, taking, however, the precaution of fastening them together with silk.

To recur, however, to the proceedings of the larva when it first ceases to be a miner. It pierces the upper cuticle, and draws its body through the hole and crawls to the under-side of another leaf, the tip of which it rolls downwards; this it effects by spinning and fastening silken cords until it pulls the tip of the leaf under, causing it to touch the under-surface of the leaf: the larva then firmly fastens the tip down with silk, and then creeps out of the roll and crawls along the leaf till it has arrived near the centre of the cone, it then rapidly spins several short silken threads, which it fastens to the rolled portion of the leaf, and to that portion which remains flat; it spins a number of such threads, and then climbs up to the middle of these threads, and, holding on by its prolegs, it stretches forth its anterior segments and spins and fastens other longer cords, its body, whilst thus occupied, being swayed backwards and forwards; when these silken buttresses are completed, they have a slight resemblance to the shoring of a house, but the objects of the two are diametrically opposed; the shoring of a house is to prop up and support,—but the silken structure fabricated by this larva is intended to pull down and retain in that position the rolled tip of the leaf; if the larva be then satisfied with the strength of the silken buttress, it descends and enters the rolled leaf, but if the silken stay be not sufficiently strong, it spins two or three little silken cords at nearly equal distances, on these it crawls and continues spinning similar silken cords till it reaches the ends of the outside of its future habitation: it then turns back, and passing over the newly-spun cords, climbs up the large silken buttress near the centre of the rolled leaf, it then strengthens the ties of the remaining portion in a similar manner; all this being done with singular address, the larva never once touching the leaf with its body: it then hastens back to the new-made domicile, and proceeds to close up the two ends; that done, it commences devouring the epidermes of both the upper and under-sides of the leaf, which, in the rolled part, are in juxta position.

On several occasions, when a rolled leaf containing several larvæ was just completed, I have broken it open to see the effect produced on the inmates. At first they all appeared in a state of consternation at the partial destruction of their abode, but in a short time, some larvæ, which appeared to be deputed by the others to attend to the external repairs, would crawl out from each end, and in a most business-like manner, immediately set to work repairing the damage by spinning another set of silken ropes, the larvæ remaining in the interior rendering their fellow larvæ their hearty assistance towards restoring the rolled leaf to its original position. When all was done, the outsiders hastened back to the interior, closed up the ends, and resumed their meal which had been disturbed by my curiosity.

After a few days' residence in the rolled leaf, the larva moults for the second time, and becomes much stouter; the colour and marking of the two first segments remains as before, but the other segments are now of a pale yellowish-green, and the dorsal vessel is pale green.

In a very short time after this, indeed, sometimes in two days, the larva moults again, the dorsal vessel then becomes dark green; four or five days later the larva is quite full fed, and the dark green colouring matter subsiding, the larva appears white, with a slight yellow tinge. It then quits its domicile, in which it leaves heaps of frass and its cast-off skins, and it descends by a thread to the ground, which it either enters, or spins up among dead leaves. Sometimes it penetrates below the surface of the ground to the depth of more than an inch, and there forms its cocoon. Shortly before the time for the exclusion of the imago the pupa emerges from its subterranean abode, and works its way slowly to the surface of the earth, in order to enable the imago to liberate itself; the pupa skins protruding from the ground give the surface of the mould in one's breeding jars a curious appearance, just as though so many little posts were sticking out.

This creature is very hardy, and may be kept indoors with impunity throughout the winter, and even if the mould in which the pupæ are buried becomes quite dry, if the pupæ are left *undisturbed* in their cocoons, the perfect insects fail not to make their appearance in the month of May. If the pupa, however, be turned out of its cocoon for the purpose of observation, the chance of rearing the imago is small.*

I apprehend that the natural habit of the larvæ is to enter the ground, but when they are kept in a jar or box unprovided with mould, but containing merely some leaves of the food-plant, they bow to

* The effect of the silken cocoons in excluding extremes of temperature or of moisture or dryness, is, no doubt, one of their main uses.—H. T. S.

the force of circumstances, and attach their cocoons either to the jar, or on one of the leaves.

The cocoon, however, so formed, is very different indeed from that constructed by the larva when at liberty to follow the promptings of nature.

(*To be concluded in our next.*)

ON A NEW SPECIES BELONGING TO THE EPHEMERIDEOUS GENUS *OLIGONEURIA* (*O. TRIMENIANA*).

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

The genus *Oligoneuria* was founded in 1843, by Pictet, on a curious insect (*O. anomala*) from Brazil, the founder probably little thinking that a then undescribed form pertaining to the same genus (*O. rhenana*, Imhoff,) swarmed in certain restricted localities in Switzerland. This latter species (or one very closely allied thereto) has since been found in other parts of southern and central Europe. When in Paris a few years since I saw a third in the Museum of Natural History there, from Mexico, but neglected to make a description of it. Mr. Roland Trimen lately presented me with a large species taken by him in Natal, which I here propose to describe as *O. Trimeniana*.

The genus is above all remarkable for the abortive condition of the legs, these organs being so greatly atrophied, that they must be nearly useless for the purpose of locomotion. And, indeed, the genus would appear to consist of insects which *par excellence* are "day-flies," a term which, when applied to most *Ephemeridæ*, is erroneous. But truly *Oligoneuria*, judging from its European representative, is destined to enjoy (in the winged state) a brief existence, the hours of which may be easily counted: and, as probably most of its short span of life is passed in the air, the defective legs can be of little consequence to it.

Oligoneuria Trimeniana, n. sp.

Testaceo-albida; alis niveis vix griseo-tinctis, anticis venis longitudinalibus absque costâ tribus, quarum secunda et tertia longe furcatis; setis caudalibus fere æqualibus albis, ad apicem pubescentibus (♀ imago?).

Hab. Natalia. Long. corp. 6‴; exp. alar, 19‴.

Head and thorax whitish-testaceous: vertex longer than broad, sub-triangular, obtuse in front, with a median raised line extending from the posterior edge to near the front, where it joins a similar transverse line; the anterior portion bears two large oval tubercles placed laterally and broadly margined with blackish, a line of which colour is

continued between them along the frontal margin: face with a membranous, semi-transparent, whitish triangular lobe standing out in front between the antennæ: antennæ with two inflated basal joints, and a long blackish inarticulate terminal seta; the basal joint is concealed on the inner side by a broad thin lobe-like production of the frontal surface. Thorax stout, polished above, with raised lines and depressed spaces. Legs whitish. Abdomen broad and depressed, the lateral margins produced into teeth; the colour in my example is dull greenish, which proceeds from the eggs showing through the integuments, and a mass of green eggs is protruded from the antepenultimate ventral segment; in the cavity of the last segment beneath is seen a longitudinal membranous lobe, produced into a rather long tooth. The three caudal setæ nearly equal, white, not so long as the abdomen, stout and glabrous at the base, all pubescent at the tips. Wings whitish, semi-opaque, with a slight smoky-grey tinge: the anterior pair long, triangular, with three strong longitudinal greyish veins (without counting the costa), the second and third of which are furcate from about the middle, all starting from the base; seven or eight transverse wavy veinlets between the first and second veins: posterior pair ovate, more transparent, veins white.

One female imago (?) of this fine species was taken by Mr. Trimen at light, at the Mapumulo Mission Station, Umroti District, Natal, on the evening of the 3rd March, 1867.

London: *6th December*, 1867.

A HITHERTO UNPUBLISHED DESCRIPTION OF A NEW *PTEROPHORUS*.

BY C. S. GREGSON.

PTEROPHORUS HODGKINSONII, Greg.

Alar expanse 7 to 8 lines; head, face, thorax, body and legs light, creamy, ashy-grey,—lightest towards the cleft; very slightly irrorated with darker atoms; the discoidal and cleft-spots scarcely perceptible. Under-wings rather darker than the upper-wings.

Pt. Hodgkinsonii differs from *Pt. Lowei*, to which it is nearly allied, in the general colour being lighter, the less irrorated or suffused appearance, its lesser size, and in its want of the light canary-coloured terminal costal edging to the tip; and also in its time of appearance;—from *Pt. plagiodactylus* in its smaller size, much lighter colour, the entire want of the bright buff and light ashy-white upon the thorax and body, the absence of the dark blotches so conspicuous upon good speci-

mens of that species, the absence of any light edging to the cleft, and in being devoid of any light colour upon the terminal joints of the legs;—from *Pt. bipunctidactylus* in its smaller size, more yellowish ashy-colour and lighter coloured legs, and from the spurs being of the same colour as the legs, whereas in *bipunctidactylus* the spurs are lighter than the legs.

While in company with my friend J. B. Hodgkinson, this species was first discovered in a small pasture-field at Witherslack, on the road from the Inn to the Moss, early in June, about the year 1860. Subsequently Mr. Hodgkinson met with three specimens on the juniper field, one of which he kindly gave to me to make up my pair, one he presented to Mr. Doubleday, and one went to Mr. Burney. Since then he has taken one or two more specimens, and these are all I know of. That the species is nearly allied to *Pt. Lowei* is self-evident; indeed, none but a practised eye would detect the differences; but this may be said of other species in this very peculiar group, wherein larvæ without the most remote apparent relationship in form, markings, or habits, produce entomological puzzles.

This description of *Pt. Hodgkinsonii* was read in a paper upon the British *Pterophoridæ* before the Northern Entomological Society, but was kept out of their Transactions to make room for other matter.

Stanley, Liverpool: *December*, 1867.

Notes on Sterrha sacraria.—I am sorry I can report no better success than Mr. Llewelyn with this species. The larvæ he so generously sent me fed up well, and *all* began to spin; two died without becoming pupæ, while the rest completed the change; and, had they behaved as satisfactorily as the famous half-dozen in 1865, they would have appeared in the perfect state during the latter half of October; but up to this date not an imago has emerged. I have examined two of my cocoons, and found dead pupæ in them; most likely there is nothing better in the rest, but with a lingering, desperate hope I am keeping them on in a room with a fire, unwilling to destroy the least chance there may yet exist of seeing a moth.

Mr. Llewelyn's brood were hatched two or three days earlier in August than the '65 brood; but on reference to a daily register of the temperature here in Exeter, I find they did not enjoy such a favourable time for their development. Throughout September and October, 1865, the thermometer stood several degrees higher than in the same months of this year, with the exception of one frosty night in October; and, as *sacraria* is believed to have its head-quarters in climates much warmer than our own, we may suppose that the greater success of the former brood is thus accounted for. At the same, if we allow that cold is so fatal to *sacraria*, we are met by the question—How then can it establish itself at all in this country? For we can scarcely suppose that the specimens taken year by year are fresh immigrants, or that their offspring are produced during the warmer months.

However, one point has been fairly settled this year, and that is a more correct description of the larvæ. From notes taken by Mr. Llewelyn and myself, it seems that nearly every individual of the whole brood of twenty-five presented some little peculiarity of its own, but that all might be fairly ranged under three main varieties.

1. I have taken for the type the form which has all the characteristic markings, yet without any exaggeration in the colouring. Ground colour on the back a soft delicate grey, on the belly a greenish-white; dorsal line paler than the ground, very finely but distinctly edged with blackish threads, which become stronger on segments 10—12; the sub-dorsal line also pale with fine edgings, and on segments 1—5 having a strong dark streak immediately below it, continued backwards as a dark thread. Sometimes the edgings of the lines are not so dark, but have a reddish tint; sometimes again the dorsal line is not of uniform width, but at the fold from 5—10 opens into a small white dot, immediately followed by a small black dot, which thus interrupts the line.

2. On one side of the type comes the variety described in 1865, the ground-colour of which is decidedly green, and the edgings of the lines red; some are blue-green, some full green, some bright green; and the edgings are dark red, bright rust-red, or pinkish. As before, the dorsal line varies in different specimens in being either of uniform width or else widened at the folds and interrupted.

3. On the other side of the type comes a plainer variety, in which the ground is more or less ochreous, sometimes becoming as warm in tint as a piece of clean fresh-cut cork; the belly sometimes whitish, sometimes paler ochreous than the back; the pale dorsal line still varying as before in width, and although occasionally darkly margined, yet more generally in this variety not so distinctly defined; in one or two specimens the lines were scarcely visible.

I noticed that the pupæ were darker than those of 1865—perhaps because they were sickly.—J. Hellins, County Prison, Exeter, *December 7th*, 1867.

Notes on the larva of Xanthia ferruginea.—Though a trifle larger, yet in form and structure this larva closely resembles that of *gilvago*, but with the following exceptions:—

The general colouring is of a browner tint, sometimes of an ochreous-brown.

The series of dark central marks on the back, with their dark wedges, assume together more compact forms of an urn shape, being attenuated behind, so that a constant character appears in the hinder pair of tubercular dots being outside the dark urn shapes. On referring to figures of this species of 1861 and 1865, the same characters are apparent, though two of them found under common ash varied much in colour, one being a grey variety, and the other a brighter and more distinctly marked example than any of those on wych-elm.—Wm. Buckler, Emsworth.

Notes on Tethea retusa.—I believe this species is not yet considered to be common, so perhaps it may not be uninteresting to state that we take it here in some seasons, by searching for the larvæ in the folded leaves and shoots of various kinds of sallows, about the end of May and beginning of June. At that time of the

year, indeed, numbers of common larvæ are to found in this way, such as *Tæniocampa stabilis* and *cruda*, *Orthosia lota*, *Cosmia trapezina*, *Epunda viminalis*, occasionally *Cerastis vaccinii* and *spadicea* (these two probably hiding in leaves spun together by other species), and always *Hypsipetes elutaria* and *Cheimatobia brumata*, as well as some of the *Tortrices*; but the only larva with which *retusa* is likely to be confounded is that of *viminalis*; I have therefore described the former rather fully, and pointed out the characters which distinguish it from the latter.

Retusa, when full-grown, is about an inch in length, tapering slightly towards each end, and flat beneath; the *head small*, rounded, and rather *flat*; *skin* very *delicate* and *thin*, so that the lines on it show almost as if ribbed or raised, and the internal organs partially show through it. The colour is a pale dull green, with a yellow tinge towards the head and tail; a broad dorsal stripe, a fine sub-dorsal, and an undulating spiracular line—all whitish in colour; the spiracles not visible; the *head* generally *yellowish-green*, but sometimes very *dark blackish-brown*; occasionally also there is a dark collar on the second segment; *young* larvæ sometimes have the *usual dots*, very visible and black, but *lose all trace of them as they grow bigger*.

The characters printed above in italics distinguish this larva from that of *Epunda viminalis*, which has a much firmer texture of skin, a thicker and more corneous head (which is pale grey with the lobes outlined in black); the lines more sharply defined, and two pairs of whitish dots on the back of each segment.—J. Hellins, *October 9th*, 1867.

Note on Ephyra omicronaria.—I hardly know whether it is worth recording, that of three larvæ which Mr. D'Orville gave me July 10th, 1866, two appeared as moths on 26th and 27th of the same month, whilst the third remained in pupa until May 8th, 1867. Also that in two of these three specimens, full-sized and otherwise perfect, the *omicron* is entirely absent from both fore- and hind-wings.—Id.

Notes on Tortrices.—There appears to be some uncertainty about the habits of some internal feeding *Tortrices*, their appearance at different and distant times leading naturally to the supposition that they are double or treble-brooded. One of these is *Penthina marginana*, which is to be found in this neighbourhood at intervals from the middle of May till late in August.

Last winter I met with a few plants of teazle, a rare plant in this neighbourhood, and found that several of the heads contained larvæ. These I preserved, but they produced nothing till June 26th, when two females of *P. marginana* emerged. I had, however, taken a female of this species as early as May 11th, and by June 1st had found males badly worn.

From these captures the natural inference would be that the May brood produced those found in July and August, yet larvæ found in the winter produced nothing till the end of June, and it seems reasonable to suppose, therefore, that there is but one brood, very irregular in its appearance.

There may be another solution of the difficulty—that we have two species under the name of *marginana*, and I am inclined to think that this is the case; but the whole history of the insect requires careful investigation, since it occurs most commonly in places where there are certainly no teazles for it to feed in.

I am inclined to think that the apparent double-broodedness of *Argyrolepia Dubrisana* is only caused by a retarded development; and the appearance of *Eupœcilia subroseana* every month or six weeks from May to September may be from the same cause.—Chas. G. Barrett, Haslemere, 13*th November*, 1867.

Curious food of Abraxas grossulariata.—In the middle of May I casually noticed a number of larvæ of *Abraxas grossulariata* feeding on the Orpine (*Sedum telephium*). That this was not caused by scarcity of their natural food was clear, since there was plenty of blackthorn growing close by. Being curious to see how they would turn out, I secured the larvæ and fed them up on the *Sedum*, and had the pleasure of breeding as ordinary a lot of imagoes as one could easily see, with, indeed, less than the ordinary amount of variation.

I found a very young larva on the same plant while collecting larvæ of *Hyponomeuta vigintipunctata* this autumn, from which it would appear that they feed up from the egg upon it.

This selection of a food-plant seems as curious as the instance recorded by Mr. Chapman, in which the larva of the same species was found on *Cotyledon umbilicus*, on Ailsa Craig. Mr. Syme, however, tells me that some botanists include the currant in the same group as the *Saxifrages*, to which both these plants, I believe, belong.—Id.

Acentropus niveus and other Lepidoptera at Haslemere.—On June 10th, passing a fir wood on one of the slopes of Hindhead, I dismounted to have a look for *Scotosia undulata*. It was a fortunate thought, for I soon found it in plenty. It was not, as I expected, on the tree trunks, but hiding among *Vaccinium* and the bramble and holly bushes, and was very restless and difficult to approach. However I secured plenty, with some *Hypena crassalis* not over fine, and *Penthina sauciana* among the *Vaccinium*.

After travelling for some hours among the hills I arrived at Frensham Pond, and went to work to find *Acentropus niveus*. *Paraponyx stratiotalis* swarmed along the margin of the pond, and *Hydrocampa stagnalis* occurred, but for some time I could find only drowned specimens of *niveus*.

At last, however, I found some faggots sunk with stones in one corner of the pond, leaving some of the twigs above water, and on the under-side of these twigs *niveus* swarmed, sometimes clustered four or six in a bunch. They were very sluggish, and, if knocked off a twig, only buzzed along the surface of the water till they found another, and if accidentally immersed in moving the twigs, took no notice whatever of the ducking.

At sunset I reached a marsh about a mile from the pond, and finished up my day's work by taking about fifty *Eudorea pallida* flying among rushes and long grass.—Id.

Note on Diadema Bolina, Linn.—As there appears to be some uncertainty as to this butterfly being indigenous in South America, I wish to note a new locality for it. In the Royal Dublin Society's Museum we have a specimen from Trinidad. There is nothing remarkable in this locality, except that all the known American

species (except one from Jamaica) are all from the same coast, the recorded American localities being Guiana, Surinam, and Cayenne.—W. F. Kirby, Royal Dublin Society, *November 25th*, 1867.

The white-belted variety of Sesia culiciformis.—The following extract from the diary of my esteemed friend the late Mr. Henry Hewitt may interest those among your readers who make Lepidopterous varieties their especial study:—

"June 5th, 1859.—Five *S. culiciformis* taken at Wickham, hovering over Spurge,—one white variety."

Through the kindness of his brother, Mr. George Hewitt, the example referred to now enriches my cabinet; and I shall have much pleasure in exhibiting it to any entomologist who may wish to inspect it.—Edward Hopley, 14, South Bank, Regent's Park.

Note on a white-belted variety of Sesia culiciformis.—In 1858 I had the pleasure of recording the capture of this interesting variety in the following words:—

"*T. culiciforme* was rather plentiful * * * * and my friend Mr. Linton took a specimen with a WHITE instead of the usual RED band."—Vide "Intelligencer," vol. 4, p. 83.—Charles Healy, 74, Napier Street, Hoxton, *December 2nd*, 1867.

Description of the manner of pupation of Chrysocoris festaliella.—Having arrived at its full development, the larva spins a beautiful network cocoon; it then assumes the pupal form, the larval skin being ejected from the interior of the cocoon through a little orifice left open for that purpose. In comparison to the size of the pupa, the cocoon appears full large. The little pupa is about 4 lines long, and of a beautiful green colour; the summit of its head and the back of the thorax are surmounted with several little black spines; the anal segment is likewise furnished with a number of brown coloured bristles. After a time the eyes become darkish, the extremities of the antennæ and feet turn pale brown, the two anal segments become whitish, and the dorsal vessel is of a darker green than the abdomen; the eyes then deepen into black, and the wings begin to assume a whitish aspect; the bases of the abdominal segments, becoming encircled with dark green pigment, present a striking contrast to the remaining portions of the abdomen. The dorsal surfaces of the first and second abdominal segments then possess a yellowish-green tint. The next day or so afterwards, the pupa's head and thorax become swollen, and the wings, from the shoulders downwards, have an iridescent appearance; the two anal segments by this time have deepened from whitish to dull brown, and the remaining segments have turned dull green; the antennæ of the little pupa become quite black. After a few hours' interval, the back part of the wings, down to their extremities, turn black, the remaining portions assuming a bronzy tint. Three or four hours afterwards, the tips of the wings become much clouded with darkish, and the pupa's head, thorax, and wing-sheaths then turn black: this is the last change. When quite ready, the imago bursts through its puparium, leaving the latter, which is quite white, projecting from the cocoon.

The perfect insect of this species, when at rest, imitates the habit *Stathmopoda pedella* has of doubling under its hind legs, and sticking them out sideways.—Id.

Description of the manner of pupation of Dictyopteryx Forskaleana, Linn.—On lifting up one of the neatly folded-over lobes of the Maple which are met with so frequently during the middle and end of the month of June, we observe underneath it the little yellow larva of this species lying at full length on a couch of white silk. Supposing we bring it home and watch it closely, we shall notice, about a week afterwards, that its three or four anterior segments become swollen, and, at the same time, that the larva loses all but the faintest power of motion, its ninth segment having an orange tint. After a time the larva is seen to pass slowly into the pupa state, and the whole of its larval skin remains collected in a little heap at the extremity of the abdomen; the pupa is at first quite white, having the tip of its anal segment covered with a cluster of little brown bristles, which act like so many little anchors, and enable the pupa to obtain a fair hold of the silk contained in its abode. On close inspection, a little brown spot is noticeable on one side of each of the eyes and in the centre, but situate at the bottom of the eyes a little dusky-coloured dot is dimly visible. At the expiration of a few hours we perceive that its head, thorax, and wing-cases turn to a pale amber-yellow, the abdominal segments retaining their original colour; in the centre of the dorsal surface of the pupa's abdomen a pale orange-coloured blotch has made its appearance, and furthermore the anal segment has a somewhat swollen, glassy look. After an interval of two or three days the eyes begin to turn pale brown, afterwards deepening into dark brown, and finally become quite black. After a suitable interval has expired, the head, thorax, and wing-cases become whitish, and the blotch on the dorsal surface of the abdominal segments deepens into a brownish tone. At the next phase of its economy the sides and base of the thorax assume a pale crimson hue, the crimson-coloured pigment spreading itself over the head, thorax, and wings, imparts a similar tint to them, ultimately, however, deepening to pale ochreous. While the immediately preceding part of its economy is taking place, each wing becomes mapped out (so to speak) by a net-work of little narrow canals, thus imparting to the wings of this little insect its beautiful reticulations; the decorations of the inner margin of the anterior wings then develope themselves; in some individuals they are represented by a largish black blotch on each wing, while on others they are seen simply in the form of a thin dark line or two or three little black spots only; consequently the markings on the anterior wings are dependent upon the presence, in more or less quantities, of this black-coloured pigment. The pupa gradually becoming more and more matured, its abdominal segments are observed to have a yellowish appearance; a little black dash is noticeable at each side of the basal portion of the pupa's thorax, this and the head having ochreous markings; the eyes then have changed from black to a dull blueish tint, each having a black central spot; the markings and colouration of the imago having finally settled down to their proper tone. The pupa, when disturbed, lashes its body about in a state of great alarm, especially so if brought in near contact with a lighted lamp. When sufficiently mature the imago escapes from its puparium, leaving the latter projecting. The puparium in most instances is whitish, at times quite white; sometimes, however, it is stained with a pale brownish tint.—Id.

Notes on the larva of Pterophorus plagiodactylus.—I have translated and abridged the following from Millière's Iconographie, etc., part 4, p. 209 :—

"Larvæ, almost cylindrical, becoming slowly narrower from the head to the last segment. The first segment is plainly less raised than the second and third. It is of a dull green on the back and sides, passing into a glaucous green beneath. The dorsal vessel, broad and continuous, is of a claret colour; the spiracular line is green, very little paler than the ground-colour, and is narrow, undulated. The whitish-grey hairs, which are abundant and rather long, so cover the larva that the stigmata cannot be seen even by the help of a good glass. The belly is without marks. The head is small, globular, retractile, of a testaceous yellow, and sprinkled on the top with a number of small black dots invisible to the naked eye. The three pairs of anterior legs are black, the others of the same colour as the body. This little larvæ, which is very slow in its movements, feeds on the flowers of *Globularia alypum*, using no concealment." Millière has found it abundantly in December in the neighbourhood of Hyères. It changes to a pupa in January, and the perfect insect appears four or five weeks after. "The pupa is conico-cylindrical, slightly elongated, brown and hairy." Then follows the description of the perfect insect, which need not here be translated, saving the part which refers to the variety *Millieridactyla*, a variety which was the cause of much confusion to myself, with regard to the diagnosis of the insect, and may perhaps be the same also to others.

"This variety," says Millière, "is only distinguished from the type of which it has exactly the general appearance, by a brown spot placed at the extremity of the upper division of the fore-wing. This very characteristic spot is large, oblong, rounded on the external side, surrounded on the right and left by a greyish-white border, and rests on the costa at the internal border of the upper division of the wing."

Millière suggests that it may feed on other species of *Globularia* besides *G. alypum*, which is an essentially southern plant. As it is found in England, and apparently not very rare in the Lake district, (since owing to the kindness of Mr. Hodgkinson I have a numerous series from there), it must feed on other flowers besides *Globularia*. Probably the larvæ would scarcely occur in our island in the month of December. Might it not be found on the primrose in March or April?—R. C. R. Jordan, M.D., 35, Harborne Road, Edgbaston, Birmingham.

Note on Ellopia fasciaria.—This insect occurs under two distinct forms, the one our common *fasciara*, the other of a bright green colour, but otherwise exactly similar. To this variety the name *prasinaria* is given.

Millière has proved their identity by rearing an intermediate variety, which he figures. He seems to attribute the variation to food; alleging that *fasciaria* feeds on *Pinus sylvestris, prasinaria* on *Pinus abies*. Here, then, is a case on which experiments may be made.—Id.

Dianthœcia capsincola at home in a town garden.—Having a small garden, I planted in it, amongst other wild flowers, a few plants of *Lychnis vespertina*. Although in the precincts of a smoky town like Birmingham, the very next year after their arrival they were tenanted by *Dianthœcia capsincola*, and it has often

been a great pleasure to me to watch the moths hovering around the flowers late in the Midsummer evenings. About ten o'clock on the evening of the 25th of June several of these insects were fluttering about the *Lychnis* flowers, which were then smelling very sweetly; yet no other *Noctuæ* seemed to visit them. The moth first hovered over the flower, then settling on it, vibrated her wings rapidly whilst she inserted her long telescopic ovipositor into its very depths, and deposited a single egg upon the future capsule: in only one example that I saw was the egg laid upon the petal, and then upon its claw: in none did I see it laid upon the male flower. The next day I examined the *Lychnis* carefully, and found many eggs, and on some plants the young capsules were already tenanted, as shown by the small round hole which marked the entrance of the larva, in this its first stage of growth, white and maggot-like. From this time the larva might always be met with, coiled around the central placenta of the capsule, which seems as if formed for their comfort. Some very nearly at their full growth were found as early as the 5th of July. They began to bury under ground early in August, and the perfect insects from them appeared in the May and June of the following season, the first coming out on the 27th of May. The second year after planting the *Lychnis*, *Emmelesia decolorata* also put in its appearance. *Digitalis*, in the same way, was followed by *Eupithecia pulchellata*; and ivy planted around the house was temptation enough to induce *Ourapteryx sambucaria* to come and take up its abode with me. I mention these facts to try and induce others to cultivate insects at home by naturalizing their food-plants in gardens.—Id.

Captures of Coleoptera in Yorkshire and Lincolnshire.—I have lately taken, at Studley-Royal, near Ripon, the following species:—

Trechus obtusus. This species is apparently more common here than *T. minutus*. *Oxypoda ruficornis*. *Homalota hepatica*, five specimens; two were found under stones, and the others among dead leaves. *Leptinus testaceus*, with two of *Agathidium nigripenne*, in moss at the root of an old holly-tree, in the dead wood of which I also met with several specimens of *Xyloterus domesticus*. *Liodes orbicularis*. *Amphicyllis globus*, one specimen only, of the uniformly red-brown variety, found in dead leaves. *Atomaria ferruginea*, one specimen, found under a stone. *Atomaria* sp.—?, three specimens, taken when sweeping: I sent this insect to London for identification, and am informed that it is distinct from any of the recorded British species. It bears considerable resemblance to *A. ferruginea*, but has three dilated joints to the club of the antennæ; is rather larger, less thickly punctured (and consequently more glossy), and of a darker colour, inclining to chestnut. *Triphyllus suturalis*. *Hoplia philanthus*. *Diacanthus metallicus*. *Helodes marginata*, by sweeping at the margins of the river. *Telephorus unicolor*. *Rhinosimus ruficollis* and *viridipennis*. *Choragus Sheppardi*: I found ten specimens of this insect (with *Sinodendron*) in a much decayed part of an old ash-tree. I was surprised at the jumping of the insect, which, *apparently*, has no peculiar structure fitting it for that habit. I kept a specimen alive, in a pill-box with a glass top, for more than a week: when a gentle tap was given to the box, the insect would leap, but I could not discover how the leap was effected. *Barynotus obscurus*. *Sitophilus oryzæ*, in the Indian corn used for feeding the pheasants. *Pogonocherus pilosus*.

Orsodacna cerasi, in blossoms. *Gonioctena pallida*: I found a few freshly disclosed specimens of this insect on hazel (!) very early in the month of June, accompanied by many green larvæ, feeding upon the leaves, and which I have little doubt belonged to the same insect. *Pteryx suturalis*.

Aleochara ruficornis and *Thymalus limbatus* have been found here this year by Earl de Grey and Ripon.

The following species were taken at Nocton, in Lincolnshire:—

Pterostichus oblongo-punctatus, *Falagria sulcatula*, *Leptusa ruficollis*, *Encephalus complicans*, *Phlœocharis subtilissima*, *Colenis dentipes*, *Liodes orbicularis*, *Amphicyllis globus* and *Agathidium atrum* (of each of which two last mentioned species I met with the uniformly red-brown variety only), *Epurœa melanocephala*, *Pocadius ferrugineus*, *Malthodes atomus*, *Byturus fumatus*, *Hedobia imperialis*, *Cis alni*, *Scaphidema metallica* (from dead sticks), *Mordellistena abdominalis*, *Brachytarsus scabrosus* and *B. varius*, *Rhynchites æneo-virens* (common), *Tropiphorus mercurialis*, *Rhytidosomus globulus*, *Amalus scortillum*, *Orobitis cyaneus*, and *Hylesinus oleiperda*.—Edward A. Waterhouse, Fountains Hall, Ripon, *November*, 1867.

Note on the occurrence of Coccinella labilis near Canterbury.—I took three specimens of this rare beetle by sweeping heath, &c., on the 19th April last, in the woods between Whitstable and Canterbury. I also took two in the same locality last year. At first I fancied they were mere large spotted varieties of the common *C. 7-punctata*, and did not know until lately that they were referable to the scarcer *C. labilis*.—G. C. Champion, 274, Walworth Road, S., 21*st November*, 1867.

[It will be remembered that Dr. Sharp has recorded the capture of *C. labilis* at Herne Bay.—E.C.R.]

Note on the capture of a species of Tomicus new to our list.—In February, 1866, I found several specimens of a small wood-boring beetle, which at the time I fancied might be *Dryocœtes (Tomicus) villosus*, under the bark of a decayed branch of a beech-tree lying on the ground in one of the woods near Prestwich, a small village in the environs of Manchester. These specimens were nearly all destroyed, when my cabinet was completely submerged during the serious inundations caused by the overflowing of the Irwell; but I captured a few more of the insect during the present year, at the same time and place, under the bark of recently felled beech-trees. Some of these I sent up to Mr. Rye, for his opinion as to their specific identity; and he informs me that he thinks it probable they are the insect intended to be signified by the *Tomicus (Ips) fuscus* of our countryman, Marsham; an insect which since the time of that author appears to have escaped observation in this country.—Thos. Morley, 29, John Street, Pendleton, Manchester, 9*th December*, 1867.

Note on Tomicus (Ips) fuscus, Marsham.—I think it not impossible that Mr. Morley's insect above recorded may be the true *Ips fuscus* of Marsham. Gyllenhal, after giving the beech as the habitat of his *fuscus*, states that he had the insect also from England, sent to him by Kirby, as the Marshamian species of that name. Now Gyllenhal's insect, according to De Marseul, is identical with the *bicolor* of

Herbst (Ratzeburg), who is prior to Marsham by a short period; and I certainly think that Gyllenhal's description is applicable to continental types of *Tomicus bicolor* in the Brit. Mus., which as certainly do not agree with (though closely allied to) Mr. Morley's insect. However, I think it not unlikely that the latter may really be Marsham's *fuscus*, and that Gyllenhal was in error in thinking it identical with his species. Apart from the very concise Marshamian description, there appear to be no means of identifying this species. Mr. Waterhouse, in his Catalogue, sinks it, with a query, as a synonym of *Tomicus bispinus*, Ratz.; noting, however, that the *fuscus* of Stephens' Illustr. cannot be referable to that species. The description in the "Manual" agrees well enough with Gyllenhal (being probably adapted from him), but the exponents of *fuscus* in the Stephensian cabinet, are, as pointed out in the synonomy of Wat. Cat., one *bispinus* and one *bidens*. I find no Marshamian type of *fuscus* in the Brit. Mus.; though a part of Kirby's collection, containing many Marshamian insects, passed to that Institution from the Entomological Society, when the latter body abandoned its museum. It has been considered that Marsham's insect is *villosus*,—on what grounds I know not; but, when we consider that Marsham knew that species well, and points out characters for his *fuscus* not reconcileable with it, and that Gyllenhal, who received an insect purporting to be a type of Marsham's species, was also well acquainted with *villosus*, that idea seems scarcely credible. It may be an argument (however slight) in favour of the consideration that Marsham's insect is not identical with Herbst's, that the former author, though quoting the latter in neighbouring species, makes no reference to his *bicolor*, with which he fails to identify his own insect. On the whole, the species being new to us, and, as far as I am aware, not described at all (if it be distinct from Marsham's *fuscus*; and certainly not adequately described, if it *be* that species) I think the better course would be to name it, provisionally, *Marshami*. This course will, probably, ensure our being soon acquainted with its correct specific appellation, if it be already described in any publication unknown to me.

Mr. Morley's insect, as far as I can judge from the examples that have come under my notice, varies in size from rather less than 1 lin. to 1¼ lin., or rather more,—equalling *T. bidens* in its average size. It is pitchy black in colour, with the elytra pitchy-red, often much lighter than the thorax; and is set with long, scattered, thin, pale hairs (which are most evident behind), with a thicker tuft in front of the head. The thorax is opaque, and transversely tuberculate-scabrous in front, the scabrosity gradually diminishing behind and not running into punctures; the hinder part is, however, slightly shining, especially in the middle. The elytra are much more shining and rather narrower than the thorax, cylindrical, elongate, parallel, and laterally somewhat abruptly rounded at the apex, which is unarmed in both sexes, and not perceptibly flattened, only rather abruptly rounded off. They are rather strongly and closely punctate-striate, the interstices being also evidently punctured, the punctures forming as it were rather irregular minor supplemental striæ. Compared with *bicolor*, it is less hairy, narrower, with the thorax behind not so shining, and tuberculated instead of punctured, wanting also the obsolete transverse depr ession behind the middle, and with the elytra not nearly so evidently (if at all) flattened obliquely behind.

I may observe that a specimen of Mr. Morley's insect was, soon after its capture in Feb., 1866, sent by a friend of his to Mr. G. R. Crotch for determination; but that gentleman, not being able to make it accord with *bicolor*, its evident ally, sent it to Mr. Janson (whose knowledge of the wood-feeders is unequalled in this country) for further examination. Mr. Janson now informs me that he has been too much occupied to give the insect his critical attention, and leaves the matter in my hands.—E. C. Rye, 7, Park Field, Putney, S.W., 10*th December*, 1867.

Note on Tomicus flavus, Wilkin, Wat. Cat.—When examining the Stephensian exponents of *T. fuscus* above alluded to, I noticed that the solitary example of this species (which is queried in Wat. Cat.) in Stephens' Cabinet is a large immature specimen of *T. dryographus*, Er., already included in our list.—Id.

Note on Myllæna minima, Ktz., a species new to our lists.—I have long doubted whether the exponent of *M. infuscata* in my cabinet was really attributable to that species; and now find, through the kindness of the Rev. A. Matthews, who has given me a specimen of the true *infuscata*, taken (very rarely) in Oxfordshire by him, that my insect is the *minima* of Kraatz (Ins. Deutschl., ii., 371). It is considerably narrower than *M. infuscata*, more uniformly coloured, with more slender antennæ (which with the legs are yellowish), and shorter elytra.—Id.

Note on the earlier stages of Cryptocephalus.—In the concluding livraison of Vol. iv. of "L'Abeille," M. Gabriel Tappes, of 25, Rue Blanche, Paris (who is collecting material for a work on the *Cryptocephalidæ*, and desires notes, &c., however trivial, relating to any of the species comprised in that family) makes, among others, the following interesting observations:—

"No Entomologist of the present day is unaware" (?) "that the females of all the species of *Cryptocephalus* have on the last segments of the abdomen a small cavity, almost oval in outline. The males, also, have very frequently a depression in the same place, but never so deep or of the same form as in the other sex. This cavity has (like every work of the Creator) a special object, which a recent observation of M. Rouget has discovered.

"The *Cryptocephali*, like the *Clythræ*, habitually envelop their eggs in their excrement, or at least in a secretion of the organ that produces it. It would seem that this operation is so necessary for the development of the larvæ, that those which by chance are deprived of their protecting covering waste and die in a few days time. For this enveloping operation the female necessarily uses it posterior legs only, and the egg would thus roll in all directions if it were not confined in some way. Here, then, the cavity comes into play. The female places it over the egg, which is thus as it were boxed in and immovable, and she can then work entirely at her ease in giving to its envelope, composed of little layers, those different and elaborated shapes which make it resemble certain buds or dried catkins.

"Thus, then, we have the egg protected by its envelope against all external attacks. The little larva which hatches from it is at first too soft to come out and search for food beyond its prison. In my opinion, it begins by feeding on its

covering, composed of semi-digested substance, extracting from its materials wherewithal to construct a second envelope or case (usually termed 'fourreau' by French Entomologists), destined to protect those parts of its body which remain least capable of resisting injury. This case increases with the growth of the larvæ, like the shell of the Mollusca, and ends by bursting the envelope, which falls off little by little, only leaving some slight traces at its lower extremity. The larva then presents almost the appearance of that of the *Phryganidæ*, as it drags along a kind of sack, containing all that part of its body which is not horny. It is most often found in ants' nests, where it devours the little twigs or particles of dried leaves, heaped together in large quantities in those places. Here, again, we find occasion to admire the ways of Providence. If the soft parts remained uncovered the ants would soon make a meal of them; but out of the case issue only a flat head, like a little square-cut disc (in *Clythra* the margins are rounded), as hard as iron, horny and pointed legs, and a first segment solid enough to afford no hold for the jaws of the ants; and at the least attack the larva can draw itself in, leaving only the ends of its legs and the flat surface of its head exposed.

"If any accident from without happen to make a breach in the case, it is soon re-constructed. The sack swells at its hinder part, in order to allow a recurving of the abdomen, as in the larvæ of *Lucanus*, *Melolontha*, &c.; the anal orifice is thus brought near the opening, between the legs, which seize the matters secreted and make use of them as swallows do of their nests. It is then only that the larvæ eat green leaves [I presume with the idea of obtaining a more hurried action of the intestinal canal.—E. C. R.]; for under all other circumstances they wait until the leaves are dry,—or, at least, prefer them in that state. As in snails, the covering is not attached to the animal, and can be separated from it without the larva receiving any injury. It becomes elongate little by little, through the successive additions made by the larva to its mouth, and in proportion as the larva increases in size.

"When the time arrives for the larva to undergo its change to pupa, it withdraws its head completely into the little mouth of the case, which it carefully closes up; but, since in its perfect state it could not obtain an exit at this orifice, it takes the precaution to turn itself round to face the largest end. Arrived at the limit of its metamorphosis, the perfect insect cuts, as cleanly as with a saw, a sort of cap in the bottom of the case, which lifts up like a valve."

M. Tappes also makes the somewhat unintelligible remark, that the striæ of the elytra seem almost always equal in number to the joints of the antennæ.—Id.

Note on Lebia (Lamprias) chrysocephala, Motschulsky.—This insect, referred to at p. 217 of the last part of the current vol. of "L'Abeille," seems to point strongly to the constantly small race of *L. chlorocephala* noticed by me as found at Shirley, unaccompanied by the type form. Motschulsky's insect (which occurs in the meridional part of France) is of the colour and build of *L. chlorocephala*, but smaller, with the elytra a third shorter, and the thorax cordate and less transverse. These characters are tolerably evident in my insects above referred to. The elytra are described as having the interstices with a series of fine scattered punctures: but this character is equally found in *chlorocephala*.—Id.

Captures of Lepidoptera in 1867.—The past season has been very unproductive in my locality (Chertsey), and I have consequently no captures of importance to mention.

For some reason which I cannot at all explain, moths would not come to sugar; even the commonest species were absent.

L. stramineola was, as usual, abundant by woodsides and ditches at the beginning of August; it is at Chertsey far more common than *L. complanula*, which last-mentioned moth is, however, seldom or never found in the moist situations to which *griseola* and *stramineola* are partial. I have a very strong suspicion that these two species are identical.

I also took *P. vitalbata*, near Marlow, June 9th; *H. rostralis*, abundant at sugar, Chertsey, August and September; *P. glaucinalis*, at sugar, Chertsey, August; *C. ligniperda*, in Ladbroke Square, Notting Hill, where it is only too common, June 30; *E. linariata*, Chertsey, July 2.—A. H. Clarke, 16, Furnival's Inn, E.C., *Nov. 4th*, 1867.

General Information.

The "Zoological Record" for 1866.—We are glad to announce the appearance of the volume of this valuable work, containing a record of what was done in Zoological science in 1866; its publication has been retarded owing to the illness of one of the recorders. The volume is less bulky than that of last year, but yet contains 650 pages, whereof 318 (or nearly half) are occupied by the Insecta, a proof that Entomologists are not deteriorating in fertility of publications. The proprietor, having received a guarantee of extraneous pecuniary assistance, will in future probably see his way clear towards continuing this invaluable work, which was languishing for want of sufficient support. We think also that there is a possibility of the book being sub-divided into two or three separate volumes after this year, a boon which Entomologists will not fail to appreciate.

Visits of foreign Entomologists.—Messrs. Grote and Robinson, the distinguished American Lepidopterists, have lately paid us a second visit *en route* for the States, after having studied the principal collections of the Continent. Baron von Nolcken, of the Island of Oesel, near Riga, a well-known Russian Lepidopterist, has left us after a short stay of less than a week.

Death of Professor Rennie.—Recent advices from Sydney, New South Wales, announce the decease there of this gentleman, at the advanced age of 81.

He was some time Professor of Zoology at King's College, and was well known in London, some thirty years since, as the author of "Insect Architecture," "Insect Miscellanies," &c.; and, though he was essentially only a book-maker, there are few Entomologists who have not derived at one time or other much useful information from the first-named work. The appearance of his "Conspectus of British Butterflies and Moths" occasioned the memorable law-suit between Mr. Rennie and the late J. F. Stephens for piracy of the "Illustrations" of the latter author. To the present generation of Entomologists the name of Rennie will appear as a thing of history only; but there are yet living those to whom the above-mentioned litigation was a cause of much excitement and regret.

Entomological Society of London, *18th November*, 1867; Prof. Westwood, Vice-President, in the Chair.

Fred. Bates, Esq., of Leicester, and H. J. S. Pryer, Esq., of Highgate, were elected Subscribers.

Mr. Bond exhibited two female examples of *Sterrha sacraria* taken by Mr. Rogers, of Freshwater, I. W., and eight specimens bred from eggs laid by them; these were all of a smoky drab colour, and exhibited no trace of scarlet markings. Their duration in the pupa state corresponded nearly precisely with that noticed in specimens bred in 1865 by the Rev. J. Hellins.

Mr. Higgins exhibited part of a collection received from Borneo, containing, amongst others, an example of *Ornithoptera Brookiana*, the rare *Prothoe Calydonia*, &c., &c.

Mr. Stainton exhibited an example of *Ebulea catalaunalis*, taken by Mr. W. C. Boyd at Cheshunt, and new to Britain.

Mr. Trimen exhibited a grasshopper of the genus *Pœcilocera*, from Natal, in which forms apparently pupæ were frequently found *in copulâ*.

Mr. McLachlan remarked that the singular *Boreus hiemalis* had been recently found by Messrs. Douglas and Scott amongst moss in the neighbourhood of Croydon.

Prof. Westwood gave some details as to the method of obtaining the "gut" used by anglers from the larva of a species of *Saturnia* in China. This "gut" was in reality the silk-reservoir of the larva, and lines from 20 to 30 feet in length were sometimes obtained from a single example.

Mr. Stainton remarked that he had just seen the case of a *Tinea* larva of large size, which fed in the substance of the horns of a South African antelope. Mr. Trimen said he had seen a similar larva which fed in the dried skull and also in the bony bases of the horns.

2nd December, 1867; Sir John Lubbock, Bart., F.R.S., President, in the Chair.

A. H. Haliday, Esq., of Carnmoney, Co. Antrim; Herbert Druce, Esq., of Enfield; Joseph Ince, Esq., M.R.C.S., of St. George's Place, Hyde Park; and W. C. Boyd, Esq., of Cheshunt, were elected Members.

Mr. Pascoe exhibited a new species of *Thysia* from Sumatra (*T. viduata*, Pasc.), also other interesting *Coleoptera* from Penang, Ceylon, Sumatra, &c.

Prof. Westwood exhibited a specimen of *Serropalpus striatus*, unique as British, captured some years ago at Sherwood Forest by Mr. Plant. He also exhibited a small spherical nest made of mud, found near Reigate on the occasion of the Society's excursion last year; it had proved to be the nest of *Eumenes atricornis*. Mr. Smith remarked that *atricornis* was a synonym for *coarctata*, Linné; and he exhibited a portion of a post with the nests of one of the leaf-cutting bees, *Megachile Willughbiella*; there being no less than ten separate galleries in the one small piece of wood. He also remarked on the diversity of materials sometimes used by *M. centuncularis* and *argentata* in constructing their nests; one portion of the cell would be formed from green leaves, and the other from portions of the petals of *Pelargoniums*, &c.

Mr. Pascoe read "Contributions to a knowledge of *Coleoptera*," part I.

Mr. Trimen read a paper on "Some undescribed species of South African Butterflies," including a new genus of *Lycænidæ*, remarkable for its pale and uniform yellowish-white coloration, which he termed *Deloneura*; new species of *Acræa*, *Panopæa*, *Zeritis*, *Lycæna*, *Aphnæus*, &c., &c.,—18 in all.

OCCURRENCE OF *NOROPSIS FASTUOSA*, GN.*, AT LIMEHOUSE.

BY J. B. LYNCH.

This moth was found by Mr. Fletcher at his premises, Union Dock, near the Limehouse entrance of the West India Docks, on a skirting board fencing the path to the dwelling-house, and close to the ground. It was fluttering its wings, and crawling, without attempting to fly, and appeared to have recently emerged from the chrysalis. It was easily caught on the finger, and killed immediately.

E.C.R.

Noropsis fastuosa, Gn.

No conjecture can be made by Mr. Fletcher as to its native country; the dock close to which it was found being constantly used for the repairs of vessels trading to and from all parts of the world; and it is easy to suppose that from some one of these it must have been thrown out in the chrysalis state, with the rubbish and dirt remaining after the delivery of the cargo.

The time of day was about one o'clock; the date the 19th of September, 1867.

The present is not the only instance in which foreign insects have been observed, under similar circumstances, in the yard where this was found.

The insect is in the possession of Mr. Wilson Messer.

AN ESSAY TOWARDS AN ARRANGEMENT OF THE GENERA OF THE FAMILY *SATYRIDÆ*.

BY ARTHUR G. BUTLER, F.Z.S.

The arrangement which I propose to adopt with the large group of insects comprised in the family *Satyridæ* is principally founded upon the structure of the discoidal cell of the hind-wings. I find that this character (if carefully adhered to) will separate the seventy-one Satyride genera into eleven sections, which I shall here distinguish as A to K.

I have restored the original names to some of the genera, they having undeservedly fallen into disuse; but, as I quote the type species of each genus, I have thought it unnecessary to introduce the synonymy of such genera in the present paper. Several of the scarcer types have not yet passed through my hands, and may therefore not be correctly placed.

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* The *hieroglyphica* of Cramer. This superb species, which belongs to the singular family *Glottulidæ*, inhabits Brazil, Columbia, Jamaica, &c.

The Family *Satyridæ* will now stand as follows :—

Family Satyridæ, *Swainson*.

Division A.

Cella discoidali alarum posticarum elongata et apicem ad nervulæ tertiæ medianæ originem formante ; venis omnibus bene separatis nec ad origines approximantibus.

Genus 1. *Cœrois*, Hübner (1816). Type, *C. Chorinæus*.
„ 2. *Melanitis*, Fabricius (1808). Type, *M. Leda*.
Sub-Genus *a*, *Hippio*, Hübner (1816). Type, *H. Constantia*.
* Sub-Genus *b*, *Cylloyenes*, Butler, Ms. Type, *C. Suradeva*.
Genus 3. *Gnophodes*, Westwood (1851). Type, *G. Parmeno*.
„ 4. *Amphidecta*, Butler (1867). Type, *A. pignerator*.
„ 5. *Taygetis*, Hübner (1816). Type, *T. Virgilia*.
Genus 6. *Euptychia*, Hübner (1816). Type, *E. Herse*.
† „ 7. *Cœnonympha*, Hübner (1816). Type, *C. Geticus*.
† „ 8. *Triphysa*, Zeller (1850). Type, *T. Phryne*.
„ 9. *Aulocera*, Butler (1867). Type, *A. Brahminus*.
„ 10. *Hipparchia*, Fabricius (1808). Type, *H. fagi*.
Sub-Genus *a*, *Cosmosatyrus*, Felder (1867). Type, *C. Leptoneuroides*.
‡ Sub-Genus *b*, *Satyrus*, Westwood (1851). Type, *S. Actæa*.
Section *bb*. *Minois*, Hübner (1816). Type, *M. Dryas*.
** Genus 11. *Elina*, Blanchard (1852). Type, *E. Vanessoides*.
„ 12. *Epinephele*, Hübner (1816). Type, *E. Janira*.
„ 13. *Tisiphone*, Westwood (1851). Type, *T. Hercyna*.
„ 14. *Leptoneura*, Wallengren (1857). Type, *L. Clytus*.
„ 15. *Erebia*, Dalman (1816). Type, *E. Ligea*.
Section *aa*. *Oreina*, Westwood (1840). Type, *O. Cassiope*.
Genus 16. *Pseudonympha*, Wallengren (1857). Type, *P. Hippia*.
†† „ 17. *Homœonympha*, Felder (1867). Type, *H. pusilla*.
†† „ 18. *Tetraphlebia*, Felder (1867). Type, *T. Germainii*.
†† „ 19. *Faunula*, Felder (1867). Type, *F. Leucoglene*.
†† „ 20. *Stygnus*, Felder (1867). Type, *S. humilis*.
†† „ 21. *Neosatyrus*, Wallengren (1858). Type, *N. Ambiorix*.
„ 22. *Callerebia*, Butler (1867). Type, *C. Scanda*.
„ 23. *Calisto*, Westwood (1851). Type, *C. Zangis*.
„ 24. *Zipactis*, Hewitson (1863). Type, *Z. Saitis*.
‡‡ „ 25. *Paramacera*, Butler, Ms. Type, *P. Conhiera*.

* Cella discoidali anticarum abbreviata, alarum forma et coloribus fere velut in *Elymniade* (*Eurytelidarum*) maribus plaga magna media anticis sericea obscura.

† Cella discoidali angustiore. ‡. nec Gödart (1819). ** Not examined.

†† I have not seen the types of these genera.

‡‡ Alis supra dense pilosis coloribus fere *Ameceræ* ; anticæ vena prima disco-cellulari concava brevi, secunda breviore sub-obliqua ; mediana angulariter irregulari : venis ad basin tumidis ; venis posticarum velut in *Euptychia*, sed secunda disco-cellulari minus obliqua. (Mexico.)

Division B.

Cella discoidali posticarum regulari, vena disco-cellulari inferiore transversa, venis omnibus fere æque distantibus.

Genus 1. *Idioneura*, Felder (1867). Type, *I. Erebioides*.
„ 2. *Heteronympha*, Wallengren (1858). Type, *H. Merope*.
* „ 3. *Gen. Nov.*, Salvin, Ms., allied to *Hætera*.

Division C.

Cella brevi, nervulis secundo et tertio medianis originem eandem ad cellæ finem habentibus, venis disco-cellularibus transversis.

Genus 1. *Hætera* (sic), Fabricius (1807). Type, *H. Piera*.

Division D.

Vena sub-costali secunda venæ medianæ inter nervulos primum et secundum medianos occurrenti.

Genus 1. *Pierella*, Westwood (1851). Type, *P. Nereis*.

Division E.

Cella venis prima et secunda sub-costalibus in mare ad origines valde approximatis et sub-parallelis; nervulis medianis originem idem habentibus.

Genus 1. *Anchyphlebia*, Butler, Ms. Type, *A. Archæa*.

Division F.

Cella venis prima et secunda medianis ad origines attingentibus vel approximantibus.

Genus 1. *Antirrhæa*, Westwood (1851). Type, *A. Philoctetes*.
„ 2. *Zophoessa*, Westwood (1851). Type, *Z. Sura*.
„ 3. *Zethera*, Felder (1861). Type, *Z. Pimplea*.
† „ 4. *Orinoma*, Westwood (1851). Type, *O. Damaris*.
„ 5. *Anadebis*, Butler (1867). Type, *A. Himachala*.
„ 6. *Neorina*, Westwood (1851). Type, *N. Hilda*.
„ 7. *Cœlites*, Westwood (1851). Type, *C. Nothis*.
„ 8. *Neope*, Butler (1867). Type, *N. Bhadra*.
„ 9. *Lethe*, Hübner (1816). Type, *L. Europa*.
„ 10. *Pararge*, Hübner (1816). Type, *P. Egeria*.
„ 11. *Amecera*, Butler (1867). Type, *A. Megæra*.

Division G.

Cella venis prima et secunda medianis ad origines approximantibus nec attingentibus.

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* This genus includes the *Esmeralda* and *Aurora* groups.

† This genus, though most nearly allied to *Zethera*, has some affinity to *Argc*.

*Genus { 1. *Idiomorphus*, Doumet (1861). Type, *I. Hewitsonii.*
2. *Bletogona*, Felder (1867). Type, *B. Mycalesis.*
„ 3. *Mycalesis*, Hübner (1816). Type, *M. Evadne.*
„ 4. *Erites*, Westwood (1851). Type, *E. Madura.*
„ 5. *Cœnyra*, Hewitson (1865). Type, *C. Hebe.*
„ 6. *Xois*, Hewitson (1865). Type, *X. Sesara.*
„ †7. *Ypthima*, Westwood (1851). Type, *Y. Lisandra.*
„ 8. *Oressinoma*, Westwood (1851). Type, *O. Typhia.*
„ 9. *Arge*, Hübner (1816). Type, *A. Syllius.*
„ 10. *Rhaphicera*, Butler (1867). Type, *R. Satricus.*

Division H.

‡ Cella posticarum vena superiore discocellulari obsoleta; venis prima et secunda sub-costalibus in pedunculum positis et furcam formantibus.

Genus 1. *Ragadia*, Westwood (1851). Type, *R. Crisia.*

Division I.

Cella tenui, venis sub-costalibus velutin præcedente; prima disco-cellulari elongata obliqua, secunda transversali brevi.

Genus 1. *Acrophthalmia*, Felder (1861). Type, *A. Artemis.*

Division J.

Cella elongata abrupte truncata, prima disco-cellulari elongata concava, secunda brevi transversali.

Genus 1. *Argyrophenga*, Doubleday (1845). Type, *A. antipodum.*
„ 2. *Argyrophorus*, Blanchard (1852). Type, *A. Argentus.*
„ 3. *Œneis*, Hübner (1816). Type, *O. Norna.*
„ 4. *Argynnina*, Butler (1867). Type, *A. Hobartia.*
„ 5. *Geitoneura*, Butler (1867). Type, *G. Klugii.*
„ 6. *Hypocysta*, Westwood (1851). Type, *H. Irius.*
„ 7. *Eteona*, Westwood (1851). Type, *E. Tisiphone.*
„ 8. *Lymanopoda*, Westwood (1851). Type, *L. Samius.*
„ 9. *Steroma*, Westwood (1851). Type, *S. Bega.*
„ 10. *Pedaliodes*, Butler (1867). Type, *P. Poesia.*
„ 11. *Gyrocheilus*, Butler (1867). Type, *G. Patrobus.*
„ 12. *Oxeoschistus*, Butler, 1867). Type, *O. Puerta.*
„ 13. *Lasiophila*, Felder (1859). Type, *L. Zapatoza.*
„ 14. *Dædalma*, Hewitson (1858). Type, *D. Dinias.*

* Not examined.

† Not Hübner.

‡ The genus representing this division has the hind-wing cell open.

„ 15. *Pronophila*, Westwood (1851). Type, *P. Thelebe*.
„ 16. *Corades*, Doubleday (1848). Type, *C. Enyo*.

Division K.

Cella posticarum elongata, apicem ad nervulæ tertiæ medianæ originem formante (velut in sectione A), cella autem anticarum, velut in *Eurytelidis*, perbrevi.

Genus 1. *Ptychandra*, Felder (1861). Type, *P. Lorquinii*.

This last genus may possibly not belong to the *Satyridæ*; the very short discoidal cell of the fore-wing brings it near to the *Eurytelidæ*.

British Museum.

A LIFE HISTORY OF *GRACILARIA SYRINGELLA*.

BY CHARLES HEALY.

(*Concluded from page* 177.)

The mode of procedure when the larva forms its cocoon on the surface of a leaf is this: it places itself at full length in a depression of the leaf, slightly raises the anterior segments, and moves its head from side to side, thus carrying a silken thread across, which it fastens to the leaf, till a sufficient number of these threads have been spun; it then raises itself up till the centre of its body rests on the threads it has spun, its hinder segments still resting on the leaf below; then, using its body as a measure, it stretches forth its anterior segments and begins the fabrication of one half of the outer covering of its cocoon; this is done by carrying silken threads from side to side of the depression in the leaf, the larva gradually retreating backwards. When the first half of the cocoon canopy is completed, the larva descends from its elevated position, turns round, and after inserting its hinder segments beneath the canopy just spun, it again raises its anterior segments and spins a few more silken threads, precisely as before, and, climbing on to them, it constructs the second half of the cocoon canopy like the first.

Whilst the larva is engaged in this occupation, as long as the observer keeps at a moderate distance, it continues its labours, but should he approach too near it ceases to work, and, after looking steadfastly at the intruder for a few seconds, retires under the partially formed canopy till the annoyance is discontinued, when it at once resumes its operations, and, if not interrupted, continues until it has entirely completed its task. The larva then crawls about on the

top of its cocoon covering, and inspects the strength, durability, and finish of its work, and may be seen spinning additional threads to such parts as require strengthening. Whilst thus occupied, we may observe that a vacant space is left in the centre of the cocoon covering, which space had been occupied by the body of the larva whilst at work. I apprehend this covering is only spun with the object of further indenting the leaf, so as to make it more suitable for the reception of the oval cocoon, as I have observed that when the larva makes its cocoon in the angle formed by the top and side of a box-lid, it often forms it without any covering whatever.

The larva now retires backwards through this identical opening on the cocoon canopy, which it does not trouble itself to close, and at once turning on its back, begins the construction of its cocoon proper directly beneath, but not attached to, the upper canopy; in this position it works away, spinning and carrying silken threads from side to side till it has formed the cocoon; it then turns over on to its feet and spins a white silken band all round the inner margin of its partially completed cocoon.

When I first perceived the silken band I conjectured that its object was to keep the larva snug and warm during the winter months, but, as I find that the summer broods of the larvæ construct similar silken bands, this can hardly be the object.

In the subterranean cocoons I do not perceive any silken band, or anything analogous. When the band is complete the larva sets to work to carpet the floor of the cocoon with white silk, as a soft couch on which to recline; it then again turns on its back, and continues actively employed in spinning additions to its cocoon, until this at last becomes so opaque that the movements within are no longer perceptible.

The time occupied by the larva in the construction of its cocoon is between nine and ten hours—hours of almost incessant labour. If turned out of its cocoon directly it is finished, the larva sets to work and constructs another cocoon complete in every respect like the first, but if it be again ejected after fabricating its second cocoon, its supply of silk being quite exhausted, it lies perfectly helpless, and a larva so treated very often dies, not having even strength to assume the pupa state.

If the larva be left undisturbed in its cocoon, its body soon becomes quite white, and a death-like trance steals over it (it may then be handled or turned about without its showing any power of movement),

and it gradually passes into the pupa state, the larval skin being deposited at one end of the cocoon.

The pupa, which is five lines in length, is at first quite white, but gradually a pale brownish tinge spreads over the back of the abdominal segments, and the head, thorax, and wing-cases turn whitish-yellow, the posterior portions of the 4th, 5th, 6th, 7th, and 8th abdominal segments become encircled with a reddish-brown tint, and the extremity of the anal segment also turns reddish-brown ; the bases of the dorsal surface of the 2nd and 3rd abdominal segments assume a brownish tint, the colouring matter confining itself exclusively to that quarter, and not encircling these segments like the 4th to 8th ; the centre of each eye shows a little dark speck, the tip of the head, which is decorated with two little black bristles, turns to a reddish-brown colour.

Twenty-four hours later the eyes assume a pale brown tint, and then gradually become black; afterwards the thorax becomes clouded; and eventually the markings of the future imago are slowly developed.

The imago, in its struggles to escape, forces the anterior end of the pupa through the end of the cocoon, and then releases itself, leaving the pupa-skin projecting from the cocoon.

The average duration of the life of the imago is from four to nine days. I carefully watched the movements of one imago that had reached the ninth day of its existence; on the morning of that day it was apparently well and tolerably active, but a great change came over it by the evening ; it had then lost all power of flight, and moved with a shuffling gait about the bottom of the breeding-cage. When the cage was suddenly shaken or tilted on one side it rolled over and over, but generally regained its feet ; in some instances it remained for a time on its back, the only signs of life being a slight movement of the antennæ or a faint tremulous movement of the anterior legs. On being turned over it endeavoured to walk, but was only able to stagger along with a crab-like movement for a short distance. One hour afterwards it died.

Hoxton, 1867.

Description of the larva of Agrotis puta.—Thanks to the kindness of the Rev. J. Hellins and Dr. Hearder, the larva of *Agrotis puta*, that has so long remained unknown, is now figured and described.

Eggs were sent by Dr. Hearder to Mr. Hellins, August 29th, 1867, from which larvæ were hatched, September 2nd, and, as they showed at first a preference for lettuce, they were reared on that plant, varied occasionally with slices of the root of garden carrot.

Mr. Hellins tried some of them in a flower-pot with growing plants of dandelions and knot-grass, both of which plants were eaten, but apparently not so freely as the lettuce; but the worst part of the business was that the soil in the pot was infested with little earth-leeches, which destroyed most of the larvæ. The rest were treated in the same manner as we had been accustomed to deal with *A. ripæ*; *i.e.*, placed in a large pot with a quantity of sea sand, their food being laid on the surface, and here they prospered satisfactorily.

On October 21st, some had grown about five-eighths of an inch long, and at that date figures were taken, and again on November 14th, when the most advanced had attained its maximum growth of one inch and one eighth in length. On the 24th December I had more examples of similar dimensions.

The larva has a small head and anal segment, the body being plump and cylindrical, with a rather semi-circular inflation on the region of each spiracle; the segmental divisions deeply cut; the legs and prolegs small in proportion.

The colour of the back is at first dark ochreous brown, but changes gradually with its growth to brownish ochreous or dull ochreous; this tint is bounded on either side by the dark brown edge of the sub-dorsal line; there is a delicate mottling of rather darker brown of a pear shape on each segment, its broad end in front, through which runs the dorsal line, which is of the brown colour (paler when the larva is quite full grown), and is very thin at the beginning but expands almost into an elongated diamond form at the end of each segment, and is distinctly edged with darker brown, particularly at its widest part.

The sub-dorsal line is dark brown, having close beneath it a mere thread of very pale greenish grey; and from this to the spiracles, the sides are greyish brown; another pale thread, much interrupted, running a little above the spiracles.

Below the spiracles is a very faint trace of a double dirty whitish line, all the rest of the lower and under surface being a pale greenish grey tint and semi-translucent.

The head brown, the lobes and mouth marked with darker brown, and very shining. A dark brown plate on the second segment having three pale longitudinal lines.

The spiracles are black, and the tubercular warty dots very dark brown each furnished with a very minute short hair.

On the 14th January, 1868, I observed one larva no more than half grown, whilst the full grown larvæ had lost much of their distinctive markings by becoming more unicolorous in tint, a proof of their being now full fed.

William Buckler, Emsworth.

Correction of an error.—I suppose I must have fair-copied my *sacraria* note in a hurry, for I see that the last sentence on page 179 does not express what I meant to say: "For we can scarcely suppose that the specimens taken year by year are fresh immigrants, or their offspring produced during the warmer months." This is what I meant to write—perhaps it would have been clearer if I had made it longer:—"are fresh immigrants, or the offspring of immigrants, which arrived in time to secure sufficient warm weather for the perfecting of their broods.—J. Hellins, Exeter.

ON SOME BRITISH *DIAPRIADÆ*.

BY THE REV. T. A. MARSHALL, M.A.

Genus Spilomicrus, Westw.

Westw., Introd. vol. ii, Synops. p. 75.

Hal., Ent. Mag., ., p. 274; N. H. Rev., vol. iv, p. 171.

Förster, Hym. Stud., ii, pp. 123, 125.

Thoms., Öfv., 1858, p. 369.

Antennæ ♂ ♀ 13-jointed; in the ♀ clavate at the apex, the club 5—6-jointed, much shorter than the body; in the ♂ not longer than the body, 2nd joint shorter than the 3rd, 3rd joint longer than the 4th. Mesonotum with or without two longitudinal impressed striæ originating at the scutellum, and becoming obsolete anteriorly. Scutellum with two deep oblong basal foveæ. Metathorax emarginate behind, the angles produced into two small teeth, carinated down the middle. Wings with a costal nerve and a sub-costal, which unite before the middle of the margin into an oblong punctiform stigma, the apex of which is produced obliquely and acuminated downwards in the direction of the disc, emitting from thence a short branch turned inwards towards the base, and sometimes slightly produced also towards the apex of the wing; the other nervures wholly indistinct. 2nd segment of the abdomen smooth and polished, embracing and concealing the apex of the petiole above; furnished (like the petiole) with white villosity at its base laterally and beneath. Anterior tibiæ at the inner apical angle with a long curved spur.

The other genera of this group possessing 13-jointed antennæ are *Paramesius*, Westw., and *Hemilexis*, Först. (= *Entomacis*, Först.), in both sexes,—the males of *Idiotypa*, Först., and the females of *Monelata*, Först. *Paramesius*, ♂, is distinguished from *Spilomicrus* by having the 3rd joint of the antennæ less than half as long as the 4th; the ♀ of *Paramesius* has the apex of the abdomen narrowly produced and acuminated, which in *Spilomicrus*, ♀, is rounded and comparatively blunt. In *Hemilexis*, ♂ ♀, the 2nd segment is grooved at the base, and the wings have no costal nerve. *Idiotypa* is similarly distinguished. The ♂ of *Monelata* has 14-jointed antennæ; the ♀ has the last joint remarkably large, forming a club of itself; and the minute size of the insects (much less than a line) renders them unlikely to be confounded with *Spilomicrus*.

A. Antennæ of the ♀ having the apical joint smaller than the preceding.

a. Mesonotum bisulcate at the base.

1.—Spilomicrus stigmaticalis, Westw.; Thoms., Öfv., 1858, p. 369.

Black, shining, antennæ abruptly clavate, the club 5-jointed; wings slightly infumated; legs, with the coxæ, ferruginous. ♀. Long. 1 lin.

♂. Antennæ a little longer than the thorax, 2nd joint not much shorter than the 4th, legs fuscous.

The antennæ of the ♀ have the 2nd joint somewhat longer and thicker than the 3rd, 4—8 equal, moniliform, the club abrupt; petiole rather longer than the hind coxæ.

I have seen no specimens exactly answering the above description, taken from Thomson, who expresses no doubt as to the species being the type-insect of West-

wood. He must have had some additional means of identification beside the original diagnosis, "Niger, nitidus, pedibus obscure piceis, alis pallide flavescenti-fuscis, stigmate nigro,"—which is equally adapted to some other species of the genus.

2.—Spilomicrus basalyformis, n. sp.

Niger, politus; antennæ nigræ; articulus 2 *totus, cæteri apice, ferruginei. Alæ amplæ, corpore longiores, flavo-hyalinæ; ramus stigmaticus a stigmate extrorsum non productus; nervus transversus conspicuus, ut in genere* BASALYS. *Tegulæ rufæ. Mesonotum lineis* 2 *basalibus impressis. Scutelli foveæ fere in unam confusæ. Metathorax rugulosus, dentibus* 2 *conspicuis. Petiolus* 4*-sulcatus,* 5*tæ parti abdominis longitudine æqualis. Pedes ferruginei; tibiæ apice leviter infuscatæ; coxæ, femora medio, tarsique apice, nigra.* ♂. *Long.* 1¼; *alar. exp.* 3 *lin.*

Described from five specimens, in Mr. Walker's collection and my own. They may possibly be the same as the preceding, but do not agree with the descriptions.

Taken in Leicestershire, and near London.

3.—Spilomicrus hemipterus, n. sp.

Niger, politus; antennarum articuli 2—8 *rufescentes, clava* 5*-articulata. Alæ perbreves, capite cum thorace haud longiores, ramo sub-stigmaticali obsoleto, fusco-hyalinæ, breviter pilosæ. Tegulæ rufæ. Caput et pronotum antice pallido-villosa. Pedes cum coxis rufescentes, hirti; tarsi apice fusci. Mesonotum supra planiusculum, basi bi-impressum, striis* 2 *curvatis antice divaricantibus. Scutellum lævе, basi biforcolatum; postice punctis nonnullis ante marginem transversim impressum. Metanotum opacum, sulcatum, dentibus* 2 *longiusculis. Petiolus bisulcatus, opacus. Abdomen thorace latius, lævissimum, ellipticum, apice parce villosum; oviscapti valvulis exsertis.* ♀. *Long.* 1⅓; *alar. exp.* 1¾ *lin.*

I took this insect in the Metropolitan district. It differs from any described species in being sub-apterous, and in the form of the striæ of the mesonotum, which are nearly entire, and regularly curved outwards from the basal foveæ, instead of proceeding longitudinally towards the middle of the disc. It approaches nearest to *flavipes*, Thoms. Also found by Mr. Walker.

4.—Spilomicrus abnormis, n. sp.

Niger vel piceo-niger, politus, hujus generis minimus. Antennæ corpore breviores, scapus basi, articulique 2—8 *picco-rufi, artic.* 2^dus 3^o *fere duplo longior et latior, ovatus,* 3 *haud transversus; clava* 5*-articulata; artic.* 9 *sequente duplo minor, artic. penultimus ultimo haud longior quidem, sed duplo latior. Caput subcubicum, thoraci latitudine æquale. Mesonotum glabrum, sulcis basalibus tantum inchoatis. Alæ abdomine longiores, subfumatæ, stigmate brunneo, costa vix cernenda, nervo subcostali distincto, ramo substigmatico nervoque transverso pallidis, inconspicuis. Abdomen thorace latius, breviter ovatum, depressum. Pedes cum coxis ferruginei; femorum et tibiarum clavæ cum tarsorum apice, picescentes.* ♀. *Long.* ⅔; *alar. exp.* 1⅓ *lin.*

♂ *differt antennis corpore paulo longioribus, moniliformibus, fusco-ferrugineis, scapo obscuriore, articulo ultimo lineari, penultimo longiore, articulo* 2 4^o *breviore,* 5—12 *æqualibus, haud transversis; mesonoti sulcis profundioribus; abdomine thorace angustiore.* *Long.* ¾; *alar. exp.* 1¾ *lin.*

Several specimens are in Mr. Walker's collection. Resembles a *Læotropa* or an *Entomacis*, but belongs undoubtedly to this genus.

aa. Mesonotum not bisulcate at the base.

5.—Spilomicrus integer, Thoms., Öfv., 1858, p. 369.

Black, shining; legs with the coxæ testaceous; club of the antennæ sub-5-articulate, the 8th joint broader than the preceding; wings very slightly infumated. ♀.

♂. Antennæ longer than the thorax, 4th joint almost twice as long as the 2nd.

The ♀ is distinguished from *flavipes*, Thoms., by the antennæ, which have the 9th joint conspicuously narrower than the 10th, the 8th transverse, broader than the 7th.

Not uncommon in England. In Mr. Walker's collection and my own.

(*To be concluded in our next.*)

Description of a new species of Dryinus, Latr.—While entomologizing last June on the barren and sunburnt slopes of the Spanish Pyrenees, near the village of Torla, I took, running on the ground, what seemed a large *Gonatopus*, but differing from others that I have met with in having wings, and in the length of its antennæ. Subsequent examination, with the aid of various books, convinces me that I have here an undescribed species of the real *Dryinus*, Latr., not to be confounded with *Dryinus*, Nees. (Mon. 2, 370), or *Dryinus*, Walk. (Ent. Mag., 4, 413). As the present condition of Latreille's genus is very unsatisfactory, owing to the extreme rarity of types, and its confusion with other allied forms, and with *Methoca* and *Tengyra*, I have thought it worth while to bring forward and describe the present insect. Latreille himself admitted that his genus was founded upon a single mutilated specimen, and it is far from clear that the individuals subsequently used by him in connecting the diagnosis were identical with the first, or even that they were anything more than *Gonatopus*, Ljungh.

Dryinus, Latr., Gen. Cr. et Ins., iv, p. 40.

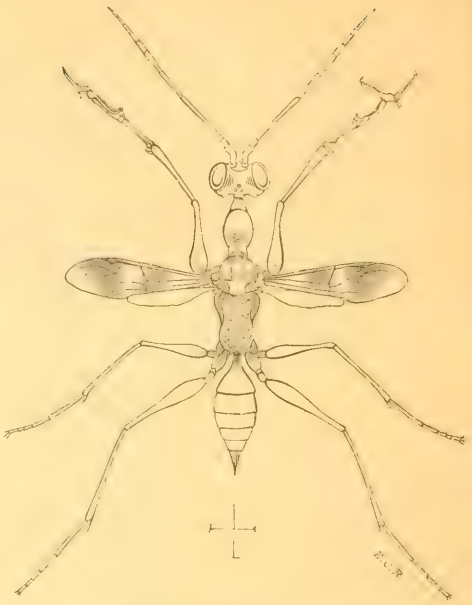
Partium statura eadem fere ut in *Gonatopide*, sed antennarum art. primus arcuatus, 3tius longissimus, sequentibus 3 bussimul sumptis æqualis; 4-5 elongati, lineares, 4tus 5to sesqui longior; 6-9 subæquales, paulo incrassati, ultimus præcedente longior, acuminatus. Prothorax *Gonatopidis*; mesothorax optime determinatus, elevatus; scutellum sat conspicuum, sutura basali transverse impressum. Metathorax elongatus, convexus, supra planiusculus, non-nisi apice declivis. Alæ angustæ, abdomine breviores; nervus subcostalis stigma attingens; nervus basalis in discum declivis ramulo occurrit nervi humeralis ex apice orto, et paulo etiam ultra in discum excurrit. Stigma elongatum, lineare, apice incrassatum. Nervus radialis incurvus, incompletus, sed nervo spurio ægre cernendo continuatus, cellulam cultriformem, alæ apicem fere attingentem claudit; ramulum etiam retrorsum sub stigmate rejicit, quo cellula cubitalis unica quasi innuitur. Abdomen, pedes, cætera omnes, eadem quæ in *Gonatopide*.

Dryinus Tarraconensis, n. sp.

D. niger, segmento 1^mo^, *ore, antennarum articulis* 2 *basalibus totidemque apicalibus, rufis; alis fusco bifasciatis; femoribus nigris; tibiis tarsisque rufis, illis linea nigra superne, his apice nigris.* ♀.

Long. 3¼; *alar. exp.* 3 *lin.*

Hab. Hispaniam borealem.



Dryinus Tarraconensis, Marshall.

Antennæ aterrimæ, articulis 2 primis cum basi tertii, duobusque ultimis totis, testaceis. Oris partes cum clypeo, oculorumque orbitæ internæ anguste, testaceæ. Caput reliquum nigrum. Vertex subtiliter rugulosus, carina longitudinali ocellos cum clypeo conjungente. Collum (quo scilicet caput prothoraci inseritur) testaceum. Prothorax aciculatus, subobscurus, niger, lateribus et basi incerte rufescens. Mesothorax et scutellum nigra, lineato-rugosa. Metathorax niger, fortius rugoso-punctatus. Abdomen elongato-ovatum, lævе, nitidum, subtilissime parcius punctulatum, apice decurvum, acuminatum; nigrum, segmento primo (praeter petiolum marginemque posticum), piceo-rufo; ano testaceo. Femora omnia (antica fortius) clavata, nigra, apice ipso rufo; tibiæ 4 anteriores rufæ, linea extrorsum nigra, posticæ nigræ, basi ipsa rufæ; tarsi antici rufi, unguibus raptoriis pallidioribus,* medii et postici testacei apice fusco. Alæ hyalinæ, bis fusco fasciatæ; nervi fusci, basi et medio decolores; stigma nigrum, dimidio basali albo; spatium etiam latum sub stigmate albidum, enerve.—T. A. Marshall, Milford Haven, *November* 1*st*, 1867.

Capture of Neuronia clathrata, a Trichopterous insect new to Britain.—Amongst my captures of last season are three specimens of a Phryganideous insect, which my friend Mr. B. Cooke tells me is *Neuronia clathrata* of Kolenati. They were taken in Bishop's Wood, Staffordshire.—Joseph Chappell, 18, Sheffield Street, Hulme, Manchester, 24*th December*, 1867.

*** Through the liberality of the captor one of these specimens (they are all males) is now in my cabinet. It is one of the most striking of the European

* The right-hand anterior tarsus in the fig. has the raptorial claws open. In the left-hand anterior tarsus, the stout, curved, and strongly toothed inner claw is shut down upon the fourth and third joints; its point fitting against a sort of "trigger guard" springing from the latter.—E. C. R.

Phryganidæ. Old specimens are in the British Museum, from Children's collection, without locality, and very doubtfully British. The two other European species, *N. reticulata*, Fab., and *N. lapponica*, Hagen, might be reasonably supposed to occur here; the former was noted as British by Turton. *Clathrata* may be immediately separated from *reticulata*, to which it is very closely allied, by all the tibiæ being yellow, whereas in the latter the posterior pair only are of that colour; the appendices are also different. *Lapponica* has a somewhat different aspect, is larger, and wants the rich orange tint on the wings; the posterior pair also shew little trace of the dark median band present in the other two; this is indicated by Zetterstedt as a Lapland form of *reticulata*; vide "Insecta Lapponica," column 1061. All three species are very handsome, and present a striking contrast to the plain and common *N. rufescens*, from which they cannot be generically separated. All frequent lakes and deep pools.—R. McLachlan.

Stenophylax alpestris, Kolenati; a Trichopterous insect new to Britain.—Since his previous communication Mr. Chappell has sent me a box of *Trichoptera* for names, and in it are three fine specimens of the above-mentioned insect, new to this country, and which had only hitherto occurred, so far as I know, in Carniola and Austria proper, in mountainous districts. It is very much smaller than any of our previously recorded species of *Stenophylax*. The ground-colour of the anterior wings is grey with whitish markings, viz., a large "fenestrated spot," a spot at the base of the 3rd, 4th, 5th, and 6th apical cells, a small one at the arculus, and many small indistinct dots most evident in the apical portion. The appendices are recognisably figured by Brauer in the "Neuroptera Austriaca," figs. 48 and 49. This interesting species was taken in Burnt Wood, Staffordshire. Mr. Chappell sends also a pair of *Anabolia cœnosa* of Curtis, a rare species. These are from a now uncertain locality, but probably from the Manchester district, where Mr. Cooke has found it.—R. McLachlan, Forest Hill, London, 18*th January*, 1868.

Descriptions of the British species of Protinides.—Originally intending only to make a few observations upon *Megarthrus Bellevoyei*, it occurred to me that it might be useful to some of our readers if I were to describe briefly the other species of the genus to which that insect belongs; and, when commencing to act upon that idea, I have thought it still more likely to be of assistance if I were to extend my descriptions to the few other members of the *Protinides*. This group, of small extent, is very well represented in our country; as we possess all the recorded European species with the exception of *Megarthrus nitidulus*, which, as it is found in Germany, I think is not unlikely to occur here.

As originally characterized by Erichson, the tribe of *Proteinini* included (besides the mostly exotic *Glyptoma*), in addition to the genera to which it is now restricted, *Micropeplus*, and (with doubt) *Pseudopsis*. Dr. Kraatz revised it in the Berlin Ent. Zeit., vol. i. (pp. 45—53), and in the Ins. Deutsch. ii., 1019, gives the following characters for it:—Under-side of thorax horny behind the anterior coxæ; prothoracic stigmata hidden; 2nd segment of the abdomen beneath with a longitudinal ridge-like elevation in the middle of its base; anterior coxæ transverse, but little prominent, posterior coxæ transverse. The insects composing it are

small and obscure, the largest being only a line in length; and they occur in fungi, under vegetable refuse, and at the damp foundations of hay-stacks, often in profusion. I have never under any circumstances found *Megarthrus* or *Phlœobium* near bark, in spite of the habitat given for these genera by the usually precise Erichson (and as to the latter of them echoed by Kraatz). The structure of *Phlœobium* is, however, very suggestive of sub-cortical habits; and, indeed, like *Trogophlœus*, and apparently equally erroneously, it must have been named under the idea that it was in some way connected with trees.

All our *Protinides* seem to point somewhat strongly towards the *Nitidulidæ* in the *Necrophaga*, both in the structure of their anterior coxæ and in the commencement of a club to their antennæ,—a character very evident in the allied *Micropeplus*, which has been, and still is, balloted about from one section to another.

The 1st genus, PROTINUS, Latr., comprises certain very small, ovate, moderately convex, shining black insects, gregarious, and frequenting fungi. In it the *three* apical joints of the antennæ are enlarged, the apical joint being the largest; and the ridge on the 2nd segment of the abdomen is very slight In the males the penultimate segment of the abdomen is emarginate.

1. P. BREVICOLLIS, Er., Ktz. This, the largest and most abundant species, is, when not dried up in setting, fully 1 line (English) in length. It is black, shining, rather flattened, with reddish testaceous legs, and *entirely* pitchy-black antennæ. The elytra are sometimes pitchy-brown, the humeral callus being often lighter than the rest of the elytron. There is every probability that this is the *P. ovalis* of (Kirby) Stephens; but the "thorax with hinder angles faintly notched" of that author's description is almost enough to remove his insect out of the genus.

2. P. BRACHYPTERUS, Fab., Er., Kr. Compared with *P. brevicollis*, this species is smaller (averaging scarcely $\frac{3}{4}$ of a line), shorter, more convex, with less evidently punctured elytra, and with the *basal joint* of the antennæ testaceous, the second joint also being sometimes not quite so dark as the remainder. It is almost as common as *P. brevicollis*.

3. P. MACROPTERUS, Gyll., Er., Kr. This insect, much rarer than *C. brachypterus*, is also smaller, being scarcely $\frac{2}{3}$rds of a line in length. It may readily be distinguished by the *two basal* joints of its antennæ being testaceous, and by its thorax being less rounded at the sides, and gradually narrowed from the base (not from the middle) towards the front. Its elytra, also, are rather lighter in colour.

P. ATOMARIUS, Er., Kr. Easily known by its very small size (scarcely $\frac{1}{2}$ a line) and pitchy-brown colour, and by its antennæ being, with the exception of the pitchy club, entirely testaceous. It seems to be as rare as *P. macropterus*.

The next genus, MEGARTHRUS, Kirby, has the apical joint only of its antennæ enlarged, the 2nd and 3rd joints of its maxillary palpi swollen, and equal in width, and the hinder angles of its thorax notched out. The ridge on the 2nd segment of the abdomen extends, according to Kraatz, over the whole depth of the segment, but it seems to me not to reach the hinder margin; and the males afford conspicuous sexual characters in the middle and hinder legs, as well as in the underside of the penultimate and ante-penultimate segments of the abdomen.

The species of this genus are rather larger, flatter, and less oval than the

Protini, and would appear to have a varied range of habits; for, though always found by me in fungi, hot-beds, or other vegetable matter, Erichson, as above mentioned, states that they live under bark, and Mr. F. Smith has observed that one of them is parasitic upon *Saperda populnea*. The latter peculiar habit is recorded in Westwood's Introduction, vol. i., p. 365 (note). Kraatz erroneously quotes Westwood as stating that the *larva* of a species of this genus is parasitic upon the *Saperda*; but, whether larva or perfect insect, it seems to me that any connection between the *Staph.* and *Longicorn* could only have been through an accidental association.

1. Megarthrus depressus, Payk., Er., Kz. This very abundant species may be described as a type with which the others are to be compared. It varies slightly in size, the largest being 1¼ lin. in length, and is dull black in colour, almost entirely opaque, and very delicately pubescent, with the legs reddish-ferruginous, except the femora, which (and especially those of the hinder pair) are pitchy-black; the elytra, also, are of a pitchy-brown tinge. The thorax (in the outline of which the principal superficial distinctive characters of these insects are to be looked for) is scarcely, if at all, wider than the elytra, and has a very distinct longitudinal medial channel; its anterior angles are obtuse and its sides gently rounded, the hinder angles being slightly notched out, with the angles formed by the lateral and basal ends of the emargination slightly obtuse.

In the male all the legs are stouter than in the other sex; the posterior femora are thickened, with the tibiæ slightly curved. Erichson and Thomson omit any reference to the ventral characters, which are, however, pointed out by Kraatz; the penultimate segment of the abdomen beneath (which, with the apical segment, is abruptly ferruginous-testaceous in colour) having a nearly semicircular notch in the middle of the hinder margin, and the ante-penultimate segment being slightly cut out in a somewhat semicircular way for its entire width, so that it is shallowest in the middle.

The entirely dark colour of this insect will serve to separate it from all our recorded species but *M. sinuatocollis*, from which, however, it may be easily separated by the absence of any indication of angulation in the sides of its thorax, which, moreover, is narrower, its greater opacity, the incurved middle tibiæ in the male, &c.

2. M. nitidulus, Kraatz, Ins. Deutschl. ii, 1028, 2. This insect, not yet recorded as British, does not appear to have been observed out of Germany, judging from De Marseul's last European Cat.; it seems also to have been unknown to de Saulcy. Kraatz states it to be allied to *M. depressus* in the structure of its thorax, but to be readily distinguishable from that species through its legs and the basal joints of its antennæ being red. It seems also, apart from thoracic characters, to differ from *M. sinuatocollis* in its somewhat narrower form, stronger punctuation, sparser pubescence, and less opacity. The structure of the middle and hinder femora and tibiæ of the male appear to be the same as in the same sex of *M. hemipterus*.

3. M. sinuatocollis, Boisd. et Lac., Er., Kr. As the name of this species can hardly fail at times to be confused with that of *M. denticollis*, when quoting from

memory, it may be of use to remember the insect to which it refers by a mental inversion of the two names: *sinuatocollis* having the sides of its thorax much more toothed than *denticollis*, in which insect they are simply sinuate.

M. sinuatocollis is apparently equally common with *depressus*, from which it may be distinquished by the characters already given. It is also on the average rather larger and more robustly built than that species (for I fail to see that it is somewhat narrower, as Kraatz remarks; indeed, it seems to me to be just the reverse) with the thorax shallower and more transverse, and with a less distinct middle channel, the legs entirely red, and the punctuation of the elytra much stronger and not so close, so that they are much more shining. Although the entire insect (with the exception of its legs) is pitchy-black, the sides, and especially the hinder angles of the thorax, are of a lurid tinge, owing to their thinness, and not to any actual colour. The anterior angles of the thorax are obtuse; close behind them is a distinct point; the side is then rounded until the middle, where there is another and rather wider point, followed by a shallow emargination, the posterior and obtuse point of which forms the upper end of the large notch at the posterior angles of the thorax, the lower end of such notch forming at its junction with the base a very sharp point. The base itself is slightly emarginate over the scutellum, with a wider and more evident emargination on each side, meeting the lower end of the notch of the posterior angles. This structure of the base is more or less evident in all the species.

In the male the middle and hinder femora are thickened, with their tibiæ considerably curved; beneath, the penultimate segment has a rather wide semicircular emargination, and the ante-penult. is slightly hollowed out for its entire breadth. The emargination of the penult. segment is not so strong as in *M. depressus*. These male characters appear to have escaped both Erichson and de Saulcy.

4. M. Bellevoyei, de Saulcy, Ann. de la Soc. Ent. de Fr., 4me série, 11 (1862) 69, pl. 2. This insect appears to be common in certain parts of the London district: I get it in my garden here, unaccompanied by any other of its congeners. Its characters are very exhaustively given by de Saulcy, loc. cit. (who figures the thorax in all its allies), who compares it with *M. denticollis*, to which it is not so closely allied as to *M. sinuatocollis*. He appears to have found it very rarely; but M. Ch. Brisout de Barneville (whom nothing appears to escape), at p. xlviii of the Bull. of the same vol. of Ann., records it as equally common with the latter species near Paris, and points out its true affinity. It is, I suppose, in consequence of the comparison with *M. denticollis*, that de Marseul (or his "Brachelytrologist") in the 2nd Ed. of his Cat. sinks *M. Bellevoyei* as synonymous with that species: in his more recent Cat. he omits it altogether. Either course would appear almost an impertinence, in the face of so careful and correct a description as that of de Saulcy. The insect was first introduced into British lists by Mr. G. R. Crotch, who, in the 1st Ed. of his Cat., records it as synonymous with *sinuatocollis*, and in his 2nd Ed. places it (as *Bellevoyii*), as distinct, next to *sinuatocollis*.

M. Bellevoyei is about the size of *sinuatocollis*, and exhibits the same thoracic angulation as in that species, but in a very much less degree. The thorax, moreover, is not so wide, and has distinct reddish lateral margins. The entire thorax and

elytra have also a lighter pitchy-brown tone, the apical margin of the elytra being often pale, and the two apical segments and hinder margin of the ante-penult. being always, and the lateral margins of all the segments sometimes, ferruginous-testaceous. It is not nearly so shining as *sinuatocollis*, being almost as closely punctured and opaque as *depressus*.

In the male the apparent sexual characters are of very slight development; the posterior femora and tibiæ exhibiting no increase or curving, and the intermediate femora being very slightly enlarged, with the tibiæ scarcely perceptibly curved. The male, in fact, is scarcely distinguishable from the female. Beneath, the abdomen exhibits the emarginations of *sinuatocollis* in a more marked degree.

From *M. denticollis* it may be known by its greater opacity, the dark base of its antennæ, the more angulated sides of its thorax, slightly developed male characters, &c.

M. de Saulcy probably does not intend to rank any of his countrymen as superficial observers; but he does so by stating that *M. Bellevoyei* has been confounded with *M. depressus* (!), on account of the colour of its antennæ.

5. M. DENTICOLLIS, Beck, Er., Kr. Readily to be distinguished by the two basal joints of its antennæ being yellow (the second joint being, however, sometimes pitchy), and its strong, almost asperate, punctuation. In colour it resembles *Bellevoyei*, but is rather lighter than that insect. The anterior angles of its thorax are somewhat flatly obtuse, and the sides very slightly and gradually sloped to the merest indication of a point in the middle, and thence in a similar way backwards to the notch of the posterior angles, which is sharp and rectangular at both its corners.

In the male the middle and posterior femora are strongly thickened, the middle tibiæ curved, and the posterior tibiæ thickened and emarginate on the inner side before the apex, which exhibits a stout spur. The trochanters of the hinder femora are very stout and forked at the apex, reaching half-way along the underside of the femora. The penult. segment has a wide emargination, and the antepenult. is strongly and semicircularly hollowed out.

Though found under similar circumstances with the preceding species, *M. denticollis* appears to be rarer than any of them.

6. M. HEMIPTERUS, Ill., Er., Kr. This insect is very suggestive of certain species of *Epurœa*, having even been described under the name of *nitiduloides* by Boisduval. Its larger size (often 1½ lin.) and (with the exception of its black head) entirely ferruginous colour readily separate it from all the other species. It occurs at Mickleham and elsewhere near London, in fungi, &c., but cannot be considered common.

In the male the middle tibiæ are slightly curved near the base, the posterior femora are thickened, and the posterior tibiæ are thickened, curved and produced in the middle of the inner side into a stout and sharp tooth, between which and the apex is a very evident semicircular notch. Kraatz notices the emargination of the 6th and 7th abdom. segments, which appears to have escaped both Erichson and Thomson, possibly on account of there being no occasion to search for other than superficial distinctions for this species.

The genus PHLŒOBIUM, Dej., as in *Megarthrus*, has the apical joint only of its antennæ incrassate, though scarcely so evidently as in the majority of the species of the latter: and the keel of the 2nd abdom. segment is sharper than in *Protinus*. Its single species, *P. clypeatum*, Müll., Er., Kr., is at once to be known by its possessing a single ocellus (or polished round prominence resembling an ocellus) in the middle of the vertex, between the true eyes. It somewhat resembles a very long and narrow specimen of *M. hemipterus*, with the head, in petto, of a *Scarabæus*, the anterior margin being strongly produced, and widely hollowed out in the middle. It averages 1½ lin. in length, and is very dull, strongly punctured, and entirely testaceous, except the eyes and antennæ, which (barring the apical, and sometimes the basal, joint) are pitchy-black. It is not uncommon in cut grass, &c.

In the male the middle and hinder femora and tibiæ are slightly thickened, the latter being curved, and, as it were, constricted on the inner side just below the middle.

It appears to have escaped the observation of Erichson and Kraatz (Thomson not recording the species), and possibly for the reason above suggested with regard to the same characters in *M. hemipterus*, that in the male of this insect the apical segment itself has an evident longitudinal groove, the penult. segment has an angular emargination, the sides of which are thickened and elevated, so that the groove of the apical segment is, as it were, carried on to the penult. segment, and the ante-penult. segment is deeply hollowed out in a semicircular way for its entire width.—E. C. Rye, 7, Park Field, Putney, S.W., *January*, 1868.

Notes on Coleoptera at Barmouth, &c.—Last August I bred a considerable number of *Cryptarcha strigata*, from a couple of large pear-shaped puff-balls, found on flat sandy pastures near the coast at Barmouth. This seems to be a very curious locality for the insect, which usually occurs under bark, at sap, or in *Cossus*-burrows, and is generally considered a tree-species. I also took commonly, in small silvery-grey puff-balls, in similar sandy places, the larvæ of *Dorcatoma bovistæ*, from which I bred a good series of the perfect insect. On the sand-hills themselves I found the usual coast beetles commonly; *e. g.*, *Cicindela hybrida*, *Anomala* (one of the green var.), *Microzoum*, *Phaleria*, *Saprinus maritimus*, *Oxytelus maritimus*, *Aleochara obscurella*, &c.

On Chatmoss I found a pair of the usually littoreal *Philonthus umbratilis*, at the sap exuding from a freshly-cut fir-stump; and in October I took a pair of *Harpalus rupicola* on muddy deposits of the Mersey, two or three miles from Manchester, and far from any chalk.—J. Kidson Taylor, Thorn Cottage, Lime Grove, Longsight, Manchester, 1*st January*, 1868.

Captures of Lepidoptera in the Isle of Wight.—The season of 1867 is past, and I can aver that insects here have not been nearly so plentiful as in 1866. The following remarks may not be uninteresting. Sallows were particularly unproductive, although I worked very hard at them from February 23rd to April 1st. I could take nothing but common species, *T. miniosa* being the best. June produced several dozens of *M. Cinxia*, *L. Adonis*, and *A. luctuosa*. Autumn turned out more favourable. *C. Edusa* was plentiful, and I took two fine specimens of the var. *Helice*. On August 21st I found eggs of *Edusa*, which hatched *five* days after-

wards, and the larvæ fed well; I reared one (a ♂), which emerged on October 7th On August 23rd I took *S. sacraria*, close to St. Helen's Churchyard, on Hemp-Agrimony, and another on the 28th, near the same place, on the same plant. I was walking on the side of Brading Down, and, while beating among a quantity of *Reseda lutea* growing in the chalk-pit, was agreeably surprised to see a female *P. Duplidice* flutter into my net. *A. saucia* was plentiful at sugar, and also the common *A. suffusa*, *C. diffinis*, &c., &c. In September *A. pyramidea*, *C. nupta*, *X. silago*, &c., appeared at sugar. In this month blackberries produced *X. cerago*, *silago*, *citrago*, *ferruginea*, *A. lunosa*, and one *C. exoleta*, besides a host of commoner species. Ivy was very unproductive and very late in blossoming. I took only two *D. rubiginea* this season, although I was searching every night for more than a month; the first on October 19th, the second on November 17th.—James Ingram, Nettlestone, Ryde, *December 16th*, 1867.

General Information.

Death of Robert Bakewell, Esq.—This gentleman died on Christmas-Day last, at the age of 57. He was originally a Nottingham man, and was there engaged in the wool trade; but he afterwards resided in the Australian colonies for many years, and there formed a very extensive collection of insects. After his return he assiduously added to his collections, and became possessed of the celebrated collection of Lamellicorn *Coleoptera* formed by the Marquis de la Ferté, including those of Dejean and Reiche. The most important part of this collection has been acquired by the British Museum. The Australian insects have been bequeathed to Dr. Howitt, of Melbourne, in whose hands we hope they will serve to instruct the numerous band of entomologists springing up in Australia. Mr. Bakewell was a Fellow of the Linnean Society; he joined the Entomological Society of London in 1857, and that of France in 1860. We are not aware that he published any memoirs, but his name is connected with the specific appellations of several Coleopterous insects.

The American Entomological Society.—Under this more general title, the old Entomological Society of Philadelphia will henceforth be known; and its "Proceedings" have been correspondingly altered.

American State Entomologist.—We have every reason to believe that the State of Illinois is about to appoint to this newly-erected office, a gentleman in every way qualified for it; one who has for years tried to induce his fellow-countrymen to adopt more rational remedies for the injuries inflicted upon agriculture and horticulture by insect pests. We mention no name, as the appointment is hardly yet confirmed. The salary will be about £400 per annum.

Entomological Society of London, *6th January*, 1868.—Sir John Lubbock, Bart., F.R.S., &c., President, in the Chair.

Professor Newton, M.A., F.L.S., &c., of Magdalen College, Cambridge, G. A. J. Rothney, Esq., of Addiscombe, and Stephen Barton, Esq., of Bristol, were elected Ordinary Members; and Baron Edgar von Harold, of Munich, a Foreign Member.

Mr. Smith exhibited two examples of the species of *Polistes* taken at Penzance, alluded to in the "Entomologist's Annual" for 1868, pp. 87, 88. He was unable to determine the insects as a described species, but they were closely allied to two

South American forms; and he could not imagine by what means they had been introduced into Cornwall, supposing them to have been imported: he remarked upon the singular circumstance that they had been found two years in succession. Mr. Bates gave some details on the habits of the genus as observed by him in Brazil, tending to show that they were not likely insects to be accidentally introduced into Europe.

The Rev. Douglas Timins exhibited an example of *Charaxes Jasius* bred in England from a continental pupa; and also some very curious varieties of *Argynnis Lathonia*.

Mr. McLachlan exhibited an example of *Neuronia clathrata* of Kolenati, a handsome Trichopterous insect new to this country, being one of three taken by Mr. Joseph Chappell, in Staffordshire, in 1867.

The Secretary exhibited pieces of the coffee-tree attacked by the "borer," and the larva, pupa, and imago of the insect, which was reported to have done great damage to the coffee plantations of Southern India. The insect in question was a species of *Clytus*.

The following papers were read: "Remarks on Mr. Wallace's *Pieridæ* of the Indian and Australian Regions," by Mr. Hewitson. "On *Burmeisteria*, a new genus of *Melolonthidæ*," by Mr. Frederick Schickendantz. "On the 'Borer-pest' in the coffee-districts of Southern India," by the Rev. G. Richter, of Coorg.

A discussion arose on a question of the right of privately-printed descriptions to carry priority, with especial reference to a pamphlet on *Buprestidæ* printed for, and distributed by, the late Rev. F. W. Hope, but never actually published. The majority of the Members present were of opinion that the names there given by Mr. Hope were not entitled to priority.

ASPECTS OF INSECT LIFE IN SOUTH-EASTERN AFRICA.

BY ROLAND TRIMEN, M.E.S.

The naturalist has many pleasures incident to his special study; but few of these equal the delight with which he views for the first time a region in which he is about to meet Nature in a garb that, though it may not be wholly strange to him, is yet, in essence and reality, new to his mind and senses. By none of the votaries of Nature is this pleasure more keenly felt, both in anticipation and realization, than by the entomologist. To him, indeed, Nature is more prodigal of her treasures than to any other, and it would be strange if his grateful appreciation of her favour were not proportionate.

It was with some such feelings as these that, towards the end of January last, I watched, from the deck of the mail steamer, the long line of sandy coast, and the lofty "bluff" on either side of the narrow entrance of the Bay of Port Natal. The background was closed by a long range of densely-wooded hills, suggestive of inexhaustible entomological novelties. Our arrival was signalised by a thunderstorm of

tropical grandeur; but the floods of rain that were falling did not prevail with the steamer's captain to postpone for a little the disembarking of his Natal passengers,—a process of extreme simplicity in that part of the world. It must be understood that the steamer lies outside in the open ocean, and that a clumsy cargo-boat comes out to her, across the bar, from the inner anchorage. Into this cargo-boat the passengers, with their baggage, are graciously allowed to drop or scramble, as well as the long rollers of the Indian Ocean will admit of their doing. This accomplished, away goes the steamer (if, as usual, late with the mails) for Mauritius or Port Elizabeth, as the case may be, and the boat, with its forlorn human freight, flounders and wobbles through the waves, and risks the dangers of the bar, before *terra firma* can be reached.

But it is not my object to dilate upon these incidents of travel, and I will accordingly proceed to give some account of my impressions of the entomological aspect of Nature in Natal. And first, let me describe a winter's day at Port Natal itself.

The reader, then, will be pleased to imagine himself with me in the Botanic Gardens at Port Natal, a spot where an entomologist might profitably spend a lifetime. Let no one imagine this to be a trim and ordered garden such as he is accustomed to see in Europe. From the dense forest which clothes the long, low hill-range of the "Berea," encircling the greater part of the lagoon, a limited space has been gradually won by sheer labour of fire and steel. The principal native trees have wisely been left standing *in situ*, and interspersed among them are trees, shrubs, and flowers, not merely from the adjacent regions of Africa, but from all the warmer parts of the world. The dark back-ground of forest shuts in the garden on the north and west, a road skirting the southern side; but eastward one looks from the highest part of the slope, over a wide view of the lagoon, the town of D'Urban, and the open sea beyond. Here, then, we must suppose ourselves stationed, about 7 a.m., fronting the newly-risen sun, which is dispersing the mists that still cling to the wooded hills. The silence of the morning is only broken by the voices of birds, and the occasional distant shouts of Kafirs going to work. Insect life is yet perfectly dormant; the nocturnal tribes have retired, and those that love the day are not yet aroused. It is in vain that one examines leaves and flowers, or beats the branches of trees just at this time; there seem to be no insects alive. An hour passes, and by this time the sun is at some altitude, and his rays begin to penetrate the trees and undergrowth. You turn from looking at the sun, and lo! diurnal insect life

has suddenly begun. Not only are flies buzzing about you, but active *Hesperiidæ* (the last of butterflies to retire to rest, and the earliest to rise) are darting about the sun-lit leaves of the mango and orange trees. As you watch one of these "skippers," which is conspicuous from its size and white markings, you are surprised to find him abruptly disappear. You watch for a little, and he is about again in a wonderful bustle, but only to vanish as mysteriously as before. On this occasion you mark the exact leaf on which he seemed to settle for an instant; when you are close to it, you see the leaf quiver a little,—there is something underneath it:—you stoop to look, and there is the butter fly clinging to the underside of the leaf, with all his wings expanded as neatly as those of one in your cabinet.* This is no freak of an individual, for you soon observe several others conducting themselves in precisely the same manner. And now the *Pieridæ* begin to appear; first the white and yellow *Pieris Agathina*, and, soon after, *P. Severina;* and these, with an occasional *Danais Echeria* floating about, hold the ground till the forenoon is well advanced. Then a grand outburst of *Lepidoptera* takes place, quite bewildering one with their number and variety, but chiefly belonging to the *Pieridæ*. Among the herbage numerous bright yellow *Terias* are slowly flitting, the more active species of *Pieris* and beautiful red-tipped *Anthocharis*, pursue each other about the flowers, while swift white or yellow *Callidryades* and *Eroniæ* hurry past like meteors. The *Nymphalidæ* are tolerably numerous in species, though not in individuals; four *Junoniæ*, two *Diademæ*, *Eunica Natalensis*, and an occasional rapid *Nymphalis* or *Philognoma* contributing to swell the Rhopalocerous gathering; while numerous *Lycænidæ*, perched on the blossoms, or chasing each other in the air, add their colour and life to the scene. Nor are butterflies alone conspicuous; several day-flying moths, more than rivalling them in brilliancy, are whirring through the clear air, or busily rifling the nectaries of flowers; the most striking being the large, glittering "Burnet," *Glaucopsis formosa*, and the splendid *Egybolia Vaillantiana*, shot with metallic green and purple, and barred with intense orange.

You are struck with the scarcity of active Coleopterous life at this season; though, as will be seen hereafter, at a later period of the year there is no ground for complaint in this respect. At present, the smaller *Cetoniidæ* principally attract notice, with their heads buried among the florets of composite flowers. You must dig among decaying wood, if you would see the larger members of the *Lucanidæ*, *Elateridæ*, and other forest-loving beetles.

* This habit, even more than their rapid—but much-interrupted—flight, must be of great service to the numerous *Hesperiidæ* that exhibit it, in enabling them to escape from pursuing or observant enemies. It is only constant among those that carry all the wings fully expanded when settled, and which are thus most liable to attract notice.—R. T.

But let us leave for awhile the brilliant sunshine, with its life and colour, and endeavour to realize in the shades of the wood that this is *winter* time! Here are pathways cut through the underwood, and the shade cast by trees so dense that it is like darkness to you at first. How much colder it feels here! One sees but little insect life till one watches carefully. But look at all those very long-bodied, slender dragon-flies that are slowly steering their way about the low plants: what thorough creatures of the shade are they, and how different from their swift brethren of the waterside! Moths of various kinds rise from the dry leaves and herbage on which you tread; and then suddenly rises up the large red-brown *Cyllo Leda*, a butterfly that never voluntarily leaves the "dim, religious light" of the woods, and delights to settle in the darkest corners on the dead leaves to which it bears so close a resemblance. Where the sunshine breaks through the screen of foliage, yellow-banded and spotted *Hesperiidæ* are merrily darting about; and even dark *Satyridæ* of the genus *Mycalesis*, quitting for a few minutes the shades they love, chase each other slowly over the moist earth. Long files of large ants, with most vicious-looking mandibles, traverse the ground in a determined and business-like manner; one energetic set is dragging along a huge dark crimson *Iulus*, which has been partly crushed by some passing foot, but retains sufficient life to struggle against its myriad foes. Plainly, the aspect of the woods only serves to convince the entomologist that there is no "winter of *his* discontent" on the coast of Natal.

And now let us glance at the richer, fuller life of summer in the same region. To do this, we will transport ourselves to the wider and less broken forest that lies at the back of the Berea. It is almost the "deep mid-noon," and, in the *open* where you stand, the sun pours down a flood of heat that makes you glad to rest awhile under the friendly shade of a large "flat-crown" *Acacia*. The heat, however, does not at all discompose your Kafir collector, who has encountered a sable friend, and squats with him in the full sunlight, glad of any excuse to do nothing. The indispensable snuff is produced on both sides, from a small fur bag which is carried, *faute de poche*, in a neat roll thrust through the lobe of the ear. No word is uttered for a little, each gixing himself up to the full enjoyment of the snuff, which educes long-drawn sighs and copious tears of delight. In the conversation that ensues, it is plainly to be gathered that the friend is much puzzled by your Kafir's net and collecting box, and notably by the contents of the latter; but though your "intelligent Zulu" is not much more enlightened on the meaning of insect-collecting than was *Punch's* chaw-

bacon on that of "Protection," he has no difficulty in explaining, to his acquaintance's admiration, that you are a great chief who allows him so much a month besides his food, and gives him very light work. It is ten to one, after this, that the two set up a barbaric chant in your honour, the object of which is to extract from you a "pen," or penny, which in Kafir computation means a threepenny bit. As you amusedly watch the two Africans, and admire their symmetrical proportions and easy flow of language, you half envy them their simple enjoyment of life. They have no cares, they take no thought for the morrow. Tailors' bills are as much unknown to them as tooth-ache. No wonder they are always laughing and singing. It is doubtful whether, if they could be brought to understand them, they would vex their brains much over theories of "natural selection," "centres of creation, "glacial"—.

A deep red butterfly, floating slowly past just in front of you, cuts short your philosophical reflections. It settles on a leaf of the bush to your right, where it lazily basks with open, slightly-wavering wings. It is the beautiful *Acræa Petræa;* and as you look up at the wall of tree-foliage and twiners behind you, you find the place alive with this butterfly. Conspicuous as they are, they lazily float through the warm air, or settle in the most exposed situations, with the utmost security. Other butterflies hurry about, scarcely giving themselves time to take food, or seem, if slow fliers, to seek concealment among the foliage. But these *Acrææ* are the very aristocrats of the Rhopalocera; they will not hurry themselves for anything. Flash! comes a great dragon-fly, glittering in mail of blue and green, right through the fluttering throng. Surely he has one of the idlers in his jaws, as he settles on a bare twig at some distance. You cautiously approach;—the victim is no *Acræa*, but a luckless yellow *Pieris*, and *Æschna* the terrible is making short work of her. While you are wondering what was the reason or this selection, one of the *Acrææ*, perfect in depth of colour, passes within such easy reach that you net him without effort. The first thing the captive does is to feign death in a very admirable manner; but, knowing the gentleman previously, you are not taken in by this. Finding this of no avail, he suddenly struggles mightily to escape, but your practised fingers close upon him. This treatment induces him to try his last and (usually) most effective means of disgusting his captor, and he forthwith, from various joints of his body, suffers to ooze forth a clear yellow liquid, which exhales a disagreeable odour, and strongly stains your fingers. But you are proof against this even, and he is securely pinned in your box, after the administration of what you consider a very sufficient pinch of the thorax.

Your much-besnuffed Kafir here approaches, exhibiting with pride a mangled assortment of captures, the majority of which consists of *Danais Chrysippus* and *D. Echeria*. As you clear the pins of most of these useless specimens, you have the pleasure of acquiring a large amount of a similar kind of yellow fluid to that so liberally bestowed by the *Acræa*. The Kafir's pinches are no joke, as too many ruined rarities have often convinced you; but such is the elasticity of these *Danaidæ* that nearly all of them, on the withdrawal of the retaining pins, flag off in a *nonchalant* manner as if nothing had befallen them, and the remainder only appear rather stupified. The Zulu now indicating that there is something to be seen close by, you follow him to an inlet of the open, where there is a large thorny bush covered with sweet-scented white flowers. And the flowers are covered with insects of all orders. Strong *Cetoniidæ* jostle aside the slender *Callichromæ*; flower-like *Mantidæ* have not long to wait for their prey; in imitation of these the Neuropterous *Mantispa* lifts its long arms; and black-and-red *Reduviæ*, of malignant aspect, lurk for victims among the corollas. Above the bush, now hovering, now settling, are swarms of *Lepidoptera* and *Diptera*, most of them eager for nectar, and through the crowd there ever and anon bursts a great heavy *Xylocopa* with her angry buzz. The broad, painted wings of the *Lepidoptera*, apart from their reckless activity, of course render them the most conspicuous members of this assemblage. It is evidently here that the Zulu has taken his *Danais Echeria*, for that butterfly abounds on and about the flowers. Catch a few specimens; you find them behave precisely as the *Acræa* did. Try another, that floats above you, just within reach. How active this fellow is; he won't "sham dead" in the least. And surely he is much stouter about the thorax; besides, what a big head and palpi! Why, it's a *Diadema*—and not a *Danais* at all!! Yes, turn it over as much as you please, you can't make anything else of it; and yet you could have taken your oath it was an *Echeria*. After this discovery, you keep on catching the *Danais*, and make your Kafir do the same, in the hope of getting others of the delusive *Diadema*; but your combined efforts are in vain, and you begin to understand that you have taken a rarity.

After filling almost all your boxes from this favoured spot, a tremendous chorus of *Cicadæ* attracts you towards a neighbouring Acacia. When you are close to the trunk, the sharp ring of the insects' note makes you certain that these musicians are sitting just before your eyes, but, for the life of you, you can't see them. At length, when

your nose is all but touching the tree, *wuz-squeak-wuz!* a fellow takes the alarm and is off, just brushing your face. Another follows; and the concert stops in your immediate vicinity. A few minutes' patience, and they strike up again. You are getting to know the trunk now,—you scan it narrowly—something moves; and lo! the whole choir is at last visible—half-a-dozen stout, bull-headed individuals, sitting close together, with their abdominal plates vibrating most rapidly. You no longer marvel at the difficulty of discovering them, for their bodies are coloured with greenish and grey, so as closely to imitate the surface on which they sit; and their wholly transparent wings, which cover the abdomen, obscure any distinct outline of the insect.

A fluttering above your head makes you look up. Two large butterflies, which you at once recognize as species of *Nymphalis* (*Charaxes*) are hovering about a moist spot on one of the branches, and the beating of their strong wings against the adjacent twigs causes the sound which you heard. They settle, and you at once see that there is quite a cluster of insects on that particular part of the branch, all sucking away at the exudations from the bark. Besides the two species of *Nymphalis*, there are half-a-dozen examples of *Eunica Natalensis*, several of *Eurytela Hiarbas*, a fine *Philognoma*, and a sturdy little *Loxura*. Beetles, too, are busily feeding: the fine "Goliaths," *Eudicella Smithii* and *Amaurodes Passerinii* are in great force, not to mention several smaller *Cetonias;* while every available space is occupied by *Diptera* and *Hymenoptera* of various sorts. Towering above them all, a very skeleton at the banquet, is a monstrous green *Mantis*, with a half-devoured butterfly in its paws. This is indeed a chance for making a good "bag;" and you accordingly get the long bamboo from your Kafir and fix the hoop-net to the end. The bamboo is fortunately of sufficient length, but, as you steady it, you soon perceive that to capture the whole company "at one fell swoop" will be impossible, from the nature of the branch. You therefore specially keep your eye on the Goliaths and *Nymphalis Brutus*, as you make your stroke. The net sweeps along the branch, dispersing all the revellers and capturing some seven or eight. While securing the specimens, you observe a little space sprinkled with the wings of butterflies and other insects, lying just beneath the branch. On examining these, you notice that some of them are gnawed at the base, and others have portions of the thorax still adhering to them. This is clearly the work of that big *Mantis* which you saw eating a butterfly on the tree, and which is now kicking about at the bottom of the net. Butterflies of most Families have their remains scattered here; but you observe no wings of *Danaida*

or *Acræidæ*. Is the absence of the latter due to those butterflies not frequenting the universally attractive liquid that exudes from these Acacias, or must we suppose that the *Mantis* does not approve of such strong-scented and probably distasteful food? Further observation must decide this point; but, judging from the abundance of the two Families in question, and their custom of constantly taking nourishment, it would seem improbable that they should entirely forsake a food so generally sought by other *Rhopalocera*.

Before you have safely bestowed the last of your captures, insects are again eagerly crowding to the white, gummy secretion on the lofty branch. If you return to the spot again and again, you are pretty sure to find something worth having.

As you make your way back through the woods toward the town, you are probably struck by the variety of *Acræidæ* that cross your path. Besides *A. Petræa*, eleven other species haunt these forests, and most of them are very common. The rarest, perhaps, is *A. punctatissima*, the smallest and least conspicuous of all; but even this should rather be termed *local* than rare.

You will do wisely to take a look round the Botanic Gardens before going indoors for your dinner, and afternoon's work of setting out and registering your captures. The Gardens (which we have already seen in winter time) are a grand resort for all kinds of insects; and, more than that, you are certain of a hearty welcome and a cool drink from the Superintendent, who is, moreover, a practical naturalist and collector, and will put you up to many an entomological wrinkle.*

Here you will notice, entomologically, considerable changes, as compared with your winter visit. The higher temperature has brought to birth a crowd of insects that did not then appear. This is specially noticeable in the *Lepidoptera*. If there are fewer of the *Pieridæ* which were formerly so common, their place is more than filled by others of the same family, and some that were scarce then are abundant now. The thickly-blossomed rows of *Vinca rosea*, that border the long paths, are alive with butterflies, and notably with the fine *Papilio Demoleus* and *Eronia Cleodora*. It is worth a journey to Natal, to see and capture in its perfection the snowy-white *Anthocharis Ione*, with its wing-tips of glittering-violet and black. This lovely creature abounds in the woods adjoining the Gardens, but is much less easily taken there, flowers being so much scarcer. The black *Papilio Nireus*, striped with

* I may be permitted to mention that the gentleman to whom I here allude is Mr. M. J. M'Ken, to whose energetic efforts D'Urban is indebted for its fine series of exotic plants, and the principal British and Colonial Gardens for the botanical treasures of Natal and the adjacent regions.

blueish-green, which is common through nearly all Southern Africa, seems to attain its maximum of development at Natal, and may be taken in dozens. Flitting about leaves or flowers, and constantly settling, may frequently be seen the beautiful "Blue," *Iolaus Silas*, the under-surface of whose wings is satiny-white with a single blood-red streak; and occasionally the rare *Loxura dermaptera* bears him company.

Coleoptera, too, form a much more marked feature of the scene than formerly. Large red-and-black Longicorns are constantly on the wing in the hot sunshine, awkwardly sailing past with every limb stretched out; and the beautifully variegated *Lamia Bohemanni* is common about *Erythrina*-trees. *Phytophaga* are likewise active; the burnished "pearly-gold" of the *Cassidæ* particularly striking the eye. *Cetoniidæ* are more numerous than of yore; and an occasional member of the *Buprestidæ* shames even them by its brilliant hues.

You are hurrying from the too seductive scene, when you come full upon a great mass of *Lantana* in flower, and are straightway rooted to the spot. What lepidopterist, what entomologist, nay, what naturalist of any description, could pass by such a sight as this? All that you have hitherto seen of insect abundance is nothing to what is now before you. Every head of blossom on the great bank of *Lantana* has its eager visitants, nearly all of them lepidopterous. The numbers confuse you at first, but you soon begin to master the details. Those numerous *Sphingidæ* reduce themselves to two species, the clear-winged *Sesia Hylas*, and the brown-and-orange *Macroglossa Trochilus*. The proboscis of the former is so short, that you see he has to rest his fore-tarsi on the edge of a flower while he pumps up the honey; but none of the many specimens of the *Macroglossa* have to do this. The bulky, bustling *Hesperidæ*, that are feeding about the lower flowers, belong to the genus *Ismene;* there are three species, and it is difficult to say which of them is the most impudent and pugnacious. The lofty summit of the bush is astir with the incessantly-vibrating wings of *Papilios;* besides your common friends *Nireus* and *Demoleus*, there are the many-spotted *P. Leonidas* and the scarce and delicate *P. Pylades*, not to mention a stately *P. Merope* with his long tails. But why does the last-named *Papilio* trouble himself to give chase to one of the many *Danais Echeria* hovering near? See, here they both come back; now's your time to net them together. What a nuisance! You have only netted the *Echeria*. But stop a minute: *is* it *Echeria?* No! by all that's wonderful, another *Papilio*, and none other than *P. Cyrea* of Stoll. When you get home, expand side by side the *Danais*,

the *Diadema* that you took in the forest, and this *Papilio*, and then ask any ordinarily intelligent person whether he or she sees any difference between them: he or she will almost certainly reply that you are joking, and that *of course* they are all the same butterfly. After this, you had better proceed to ask yourself what this wondrous imitation of a common butterfly by two scarce ones of entirely different groups means.

But it would be tedious to recount all the forms of interest and beauty which crowd this limited flowery space; how you mistake the female of *Diadema Bolina* for the *Danais Chrysippus* near which she sits; or how you capture, for the first time, the splendid *Junonia Anacardii*, the living gloss of whose pearly wings contrasts strangely with your memory of some ancient and battered specimens that have hitherto represented the species in your cabinet. It is high time to change the scene.

Remove we, then, to the uplands at some distance from the coast. On these undulating grassy downs, extending far and wide to the boundary-ranges of mountains, how clear and exhilarating is the air, how bright the wayside flowers and dew-laden herbage. Nature seems to rule here with a more placid and cheerful sway than on the torrid coast. The very oxen that draw the cumbrous waggon, which you have learned to regard as your home for the nonce, feel the relief of this high plateau, and step out quite briskly, without need of the incentive usually supplied by the loud crack of the driver's whip. You walk on ahead, enchanted with this charming climate, and almost induced by the beauty of the orchids and *Gladioli* around to abjure your profession and swear allegiance to Flora.

Beetles evidently have it much more their own way up here. On the grass-grown waggon-track that you are following *Ateuchi* and other *Coprophaga* are hard at work, bearing witness to the fact that another waggon has passed not long since. Slow *Heteromera*, of a grave and venerable aspect, are also perambulating the path: they remind one of nothing so much as elderly gentlemen taking a "constitutional," for they seem to have no particular object in view, and stop occasionally in a vague manner, as if for want of breath, or perhaps pondering whether they have walked far enough. The rugose *Rhyncophora* that toddle about are even slower, and seem the very tortoises of the insect world. A rapid *Anthia* or *Cicindela* now and then hurries past at a very different pace; they are evidently on business, and look as if they feared to be late for their train.

If you wander from the track among the long grass, you are sure

to put up some huge Myrmeleons, of the genus *Palpares*, the spotted and variegated aspect of whose long wings will probably cause you to mistake them for moths. Though much like those other conspicuous members of their Order, the Dragon-flies, these great insects are very unlike *Libellulidæ* in their flight, flapping wildly and irregularly about, as if their muscular apparatus were too weak to wield their stretch of wings. In repose, the wings are folded above each other so as to form an acute-angled roof above the abdomen. They differ in this respect from the long-horned *Ascalaphi*, which deflect the wings on either side, and hold the abdomen erect, or nearly so.

As for Grasshoppers, they are in legions, but chiefly of one kind—a large green-and-brown species; though now and then a slender, long-legged and long-headed *Truxalis* starts up almost from under your feet, and flies for a short distance with a sharp clicking sound.

Butterfly life differs widely in this treeless region from its aspect on the wooded coast. The only *Papilio* that appears is *P. Demoleus*, and there seem to be but stray specimens of that. The ubiquitous *Danais Chrysippus*, of course, is prevalent; but the *Pieridæ*, so numerous in the lowlands, here find their only representatives in *Colias Electra* and *Pieris Hellica*, both insects of wide distribution. Two beautiful *Acrææ*, very rare on the coast, have their head-quarters in these parts, viz., *A. Nohara* and *A. violarum*, both red, with rows of black spots; but for the numerous coast species, with the exception of *A. serena*, you look in vain. But the great feature of these green expanses, as in similar parts of the Cape Colony, is the multitude of *Erebia Sabaeus*. Far as you can see, hundreds of this sober-tinted Satyride are flitting about the grass, or basking on the flowers. Nor must the richly-painted *Junoniæ* of the hills be forgotten; the blue-and-red *J. Amestris;* its duller but more harmoniously-coloured ally, *Anchesia;* the large dark-red *Octavia;* and the gaily-varied *Ceryne;* all add a charm to the scene, and by their boldness and activity cannot fail to attract notice. Then, if you are in luck's way, at some point where the road cuts into the side of a hill higher than ordinary, you may fall in with the *Meneris Tulbaghia*, settling under the edge of the bank, and may profitably speculate whether you should class it with the *Nymphalidæ* or the *Satyridæ*.

* * * * * * *

I feel it to be necessary to close this series of rambling reminiscences of insect-collecting in Natal, or I shall run on indefinitely. "*Caviare* to the general," as they must ever prove, I can at least submit them to the readers of this Magazine, resting assured that,

faintly as my words reflect that which I would describe, they will awaken in many minds kindred memories of happy days in the past. And if, in addition to this, they afford to any one a useful hint for future work, or suggest a fruitful thought, their object will have been attained.

London: *December*, 1867.

ON SOME BRITISH *CYNIPIDÆ*.

BY THE REV. T. A. MARSHALL, M.A.

(*Continued from page* 174.)

Genus Diastrophus, Hartig.

Maxillary palpi 5-, labial 3-jointed, the two last joints appendiculated. Antennæ of the ♂ 14-jointed, somewhat thickened towards the apex, the 3rd joint half as long again as the 4th; of the ♀ 13-jointed, the 3rd joint only a quarter as long again as the 4th; the joints from the 4th to the penultimate, in both sexes, decreasing gradually in length; the last joint longer than the preceding, lanceolate. Body glabrous in *D. rubi* (pubescent in *D. scabiosæ*). Mesothorax large, elevated, gibbous, with two deep longitudinal sutures, hardly converging posteriorly, and a medial suture abbreviated in front; all the sutures punctulate; interstices shining, but with very minute and shallow punctures. Scutellum separated from the mesothorax by a transverse suture, rugose, pubescent, nearly hemispherical as seen from above, with two small basal foveolæ. Metathorax rugose, perpendicular. Abdomen of the ♀ compressed, the first segment occupying one-half of its length, the following gradually shorter; ovipositor directed upwards and outwards, shorter than half the height of the abdomen; in the ♂ the abdomen is smaller, less compressed, and the 3rd and following segments are retracted within the 2nd, except the apical one, which projects in a short cone. Wings ample; nervures as in *Cynips;* areolet small, basal; the sub-costal beyond the middle, the base of the radial cell, and the two complete sides of the triangular areolet, incrassated.

Diastrophus, Hart., in Germ. Zeits., 2, 194; 4, 410; Tasch. Hym., 123.

Diastrophus rubi, Hart.

Black; parts of the mouth, antennæ at the base, squamulæ, and legs, ferruginous; extreme base of the coxæ and apex of the tarsi, black.

Face, and sides of the thorax partially, aciculated. Abdomen nigro-piceous; of the ♀, often reddish beneath. Wings hyaline, nervures reddish-brown. ♂ ♀. Long. 1—1⅓; alar. exp. 3⅔—4¼ lin.

Var. a. With a fulvous patch on each side of the thorax, before the tegulæ.

Var. b. With a fulvous patch as in *var. a*, and with the disc of the mesothorax and scutellum variegated with fulvous or testaceous. An extreme example of this variety is described, by mistake, on p. 101, as *Andricus Hartigii*. That name must be suppressed, and the description considered as referring to this place.

Not to be confounded with *Cynips rubi*, Schrank, Ins. Austr., p. 320, No. 646, which is a *Callimome*, probably parasitic in the bramble-gall. Another parasite is *Eurytoma habrotani*.

D. rubi forms the strumous enlargements frequently seen on the stems of *Rubus cæsius*. These galls are figured by Reaumur, Ins., t. 3, pl. 36, f. 1—5. Fig. 4 represents the larva magnified; it has two oval brown spots on the last segment but one.

Beside the preceding, two other species of *Diastrophus* have been described; *D. aceris* (Först), Kaltenbach, Ver. nat. Ver. d. pr. Rheinl., 1856, p. 171; and *D. scabiosæ*, Giraud, Verh. Zool. bot. Gesellsch. Wien, 1859, p. 368,—which are both likely to be found in this country.

Genus Spathegaster, Hartig.

Antennæ ♂ 15-jointed, longer than the body, slender, filiform; 3rd joint nearly twice as long as the 4th; 4—14 gradually decreasing in length, 14 and 15 equal, the latter acuminated; of the ♀ 13-jointed, hardly longer than the head and thorax; 3rd joint as in the ♂, 4th longer than the 5th, 6—13 much shorter, and gradually incrassated to the apex. Mesothorax convex, gibbous, hardly shining, sub-coriaceous, with three obsolete longitudinal sutures; at each hinder angle is a foveola. Scutellum separated from the mesothorax by a wide, sinuated depression; oblong, sub-coriaceous, faintly margined, hardly shining. Metathorax nearly perpendicular. Petiole of the ♂ one-third as long as the hind coxæ; of the ♀ very short. Abdomen of the ♀ much compressed, the dorsal ridge rising above the scutellum; viewed laterally, sub-orbicular, truncated behind; ovipositor hardly exserted. Abdomen of the ♂, viewed from above, linear, compressed, much smaller than that of the ♀, its dorsal ridge not rising nearly as high as the scutellum; viewed laterally, spathuliform, its upper edge convex, the lower edge straight. Wings as in *Neuroterus*.

Spathegaster, Hart., in Germ. Zeits. 2, 194; Tasch. Hym. 123.

This genus differs from *Neuroterus* in having the maxillary palpi 5-, and the labial 3-jointed (which in *Neuroterus* are respectively 4- and 2-jointed), and from *Trigonaspis* in having the disc of the mesothorax sub-coriaceous instead of glabrous, the labial palpi without apical appendages, and 3- instead of 2-jointed (cf. p. 125 of this vol., *N. Malpighii*). The length of the petiole in the ♂ *Spathegaster* is also a good distinctive character.

Spathegaster baccarum, Linn.

Black, shining; abdomen glabrous, the rest of the body covered with fine irregular striæ and punctures; the elevated portions of the thorax and scutellum nearly glabrous. Antennæ fuscous, straw-coloured at the base. Ocelli red. Wings very ample, sub-hyaline, pubescent, having the same nervures as *Neuroterus Malpighii*, suffused with brown and incrassated, but more deeply, and the radial vein more distinct. Legs straw-coloured; coxæ at the base, and tips of the tarsi, blackish.

♂ ♀. Long. 1—1½; alar. exp. 4—4¼ lin.

The synonymy of this species appears to be as follows:—

Cynips quercûs-baccarum, Lin., F. S., 1522; Fab., S.E., 2, 101; Piez., 144; not of Cuv., R. An. Ins., pl. 113, f. 3, nor ? Fonscol., Ann. Sc. Nat., 26, p. 197.

Cynips quercûs-pedunculi, Lin., F. S., 1524; Fab., S. E., 2, 102; Curt., in Gard. Chron., 1844, p. 499, fig. with gall; Westw., in Loudon's Arboret. Brit., vol. 3, p. 1824; etc.

Cynips interruptrix, Hart., in Germ. Zeits., 2, 207 (gall only).

Spathegaster interruptor, Hart., in Germ. Zeits, 3, 341.

Figures of the gall are also to be found in Malpighi, pl. 16, f. 56, and Reaumur, Ins., vol. 3, pl. 40, f. 1—6. The gall is of two kinds, one the globose, pellucid pea-gall found on the under-side of oak-leaves (*Q. baccarum*), the other occurring on the male flowers of the oak, in clusters, which "resemble in form, size, and colour, bunches of the champagne currant. Oaks are sometimes covered with them as thickly as currant-bushes with their fruit. They once occurred at Coombe Wood in profusion in the middle of May; also at Wingham, in Kent, and Enfield." (Curt., Gard. Chron., l. c.) It is to this latter gall that the name of *Q. pedunculi* refers. Hartig first observed that the insects hatched from both galls are identical. Having found both kinds myself abundantly last spring on the same tree in this neighbourhood, and having reared the flies, I am enabled entirely to corroborate this

observation. The galls are, in fact, identical in form and structure, and differ only in their situation. *Callimome flavipes*, Walk., and *Platymesopus tibialis*, Westw., are Chalcideous parasites of this species. It is found throughout Europe, but seems to be rather local in England.

Spathegaster tricolor, Hart.

Black; mandibles, 2nd and 3rd joints of the antennæ, squamulæ, two spots on the metathorax, and the petiole, rufous. Legs bright yellow, apical joints of the tarsi fuscescent. Wings hyaline, obscurely infumated towards the apex, the nervures suffused with black. Petiole one-third the length of the abdomen, ♂.— ♀? with two lateral testaceous spots at the base of the abdomen; wings less infumated than those of the ♂. Long. 1 lin.

On the oak. I named this species from specimens sent to me for identification, and, as they are no longer in my possession, I can only translate Hartig's description in Germ. Zeits., 3, 341.

(*To be continued.*)

Occurrence in Cumberland of two species of Fossorial Hymenoptera (Pompilus melanarius and Passalœcus monilicornis) not previously recorded as British.

Pompilus melanarius, Van d. Lind; Dahlbom, Hym. Europ. 46, 25.

Female—Black, smooth, but little shining; head and prothorax with long diverging black hairs; clypeus and mandibles with a fringe of rigid hairs; antennæ about as long as the head and thorax, stout; an impressed line runs from the anterior stemmata to the base of the clypeus; the posterior margin of the prothorax slightly elevated and angulated, the metathorax with a distinct longitudinal impression; wings hyaline, slightly clouded at the apical margins; second and third sub-marginal cells nearly equal in size, sub-quadrate; trochanters and legs with a slight silvery pile, intermediate and posterior tibiæ with a double row of spines, anterior tarsi slightly ciliated; abdomen with a few long black hairs beneath, and on the apical segment; the second and third segments with a band of silvery pile at their hinder margins.

Nearly allied to *P. niger*, but easily separated from that species by being less glossy, by the long hairs on the head and prothorax, and by the larger and sub-quadrate sub-marginal cells of the wings.

Dahlbom's description (loc. cit.) is very unsatisfactory, and without Mr. F. Smith's assistance I should not have ventured to refer my specimen to his insect. This specimen, a female, was taken in the east of Cumberland, in July, some years ago. Mr. Smith informs me of a second specimen, taken last year by Dr. Sharp, near Dumfries. The male appears to be unknown.

Passalœcus monilicornis, Dahlb., l. c. 243, 144; Wesmael, Rev. Crit. Hym. Foss. de Belg., 122, 2.

Black: vertex of the head, mesothorax, scutellum, and abdomen shining.

Male—Head finely reticulate, opaque in front; mandibles pale yellow, rufo-piceous at the apices; clypeus sparingly covered with silvery hair; antennæ rather long, sub-fusiform, the joints of the flagellum sub-moniliform, the scape in front white; mesothorax and scutellum very finely reticulate, the former having from four to six indistinct longitudinal scratches; metathorax coarsely rugose; tubercles white; tegulæ fusco-testaceous; wings slightly iridescent, the nervures pitchy; the apices of the femora, the tibiæ, and tarsi ferruginous, the hinder tibiæ more or less stained with fuscous; abdomen impunctate, with the base of the first segment constricted, and the last segment terminating in an up-curved spine. Length 2½—3 lines.

Female—This sex appears to differ from the male in being somewhat larger (3—3½ lines), with the antennæ not thickened, and the legs paler, and in wanting the up-curved spine at the apex of the abdomen.

The thickened sub-moniliform antennæ readily separate this species from its congeners. It appears to be not uncommon in Germany, and in Scandinavia, occurring in July and August. Wesmael says that it is very rare in Belgium, the male only having occurred.

I captured four males of this species, entering the cracks in a gate-post near Wall-holme, East Cumberland, in July, several years ago; these I have submitted to Mr. F. Smith, who confirmed my opinion as to their identity with *P. monilicornis*, Dahlb.—Thos. Jno. Bold, Long Benton, Newcastle-on-Tyne, *January 21st*, 1868.

ON SOME BRITISH *DIAPRIADÆ*.

BY THE REV. T. A. MARSHALL, M.A.

(*Concluded from page* 203.)

AA. Antennæ of the ♀ having the apical joint longer than the preceding; mesonotum with two furrows impressed at the base and obsolete anteriorly.

6.—Spilomicrus nigripes, Thoms., Öfv., 1858, p. 370.

Black, shining; antennæ and legs nigro-piceous; club abrupt, 6-jointed; wings slightly infumated. ♀.

♂. Antennæ one-third shorter than the body, 4th joint twice as long as the 2nd.

Var. Legs testaceous, antennæ in the middle, and the clavate portions of the femora and tibiæ, pitchy.

The antennæ of the ♀ have the 2nd joint longer and thicker than the 3rd; 4—7 equal; 8th distinctly broader than the preceding, but somewhat narrower than 9th; wings longer than the abdomen; substigmatical branch produced both ways, but more obscurely towards the apex of the wing. Tegulæ black. Metathorax rugulose, acutely carinated in the middle, the margins elevated; denticulated at each hinder angle. Petiole in length about one fifth of the abdomen, 4-carinated, the interstices smooth. Abdomen widest a little behind the middle.

♂ ♀. Long. 1½—2; alar. exp. 2½—4 lin.

Note 1.—One ♂ of this species, sent me by Mr. Rye, is entirely apterous. The wings may have been lost by some accident, but no torn stumps are visible.

Note 2.—This species is very variable in size, and easily confounded with others. The full-sized males are the largest insects of the genus. The distinctive characters of the species are the 4th joint of the antennæ, which in the ♂ is twice, or more than twice, as long as the 2nd; in the ♀ the apical joint, which is longer than the preceding; and in both sexes the black tegulæ.

Common in several parts of the country; near London, Cheltenham, &c. In Mr. Walker's collection and my own.

7.—Spilomicrus nigriclavis, n. sp.

Niger, politus; antennæ artt. 3—7 rufescentibus, clava 6-articulata, parum discreta. Alæ abdomine breviores, augustæ, infuscatæ, volatui vix idoneæ; posticæ, costa ciliata. Tegulæ nigræ. Caput parce griseo-pilosum. Pedes rufescentes, coxis, trochanteribus, femorumque clavis medio nigris. Tarsi articulo penultimo præter basin, ultimo toto, nigris. Abdomen apice griseo-villosum.

♀. *Long.* $1\frac{3}{4}$; *alar. exp.* $2\frac{3}{4}$ *lin.*

Most resembles *nigripes*, which is distinguished by having the striæ of the mesonotum impressed at the base, by the developed wings, colour of the legs, and structure of the antennæ. The present species has the thorax villose at the sides and shoulders, and the tibiæ clothed with pale concolorous hairs. From *stigmaticalis* it differs in having the apical joint of the antennæ larger than the preceding; and from *integer* in having the mesonotum bisulcate.

This remarkable species, from the London district, was given to me by Mr. Rye.

Genus Loxotropa, Förster, Hym. Stud., ii., pp. 122, 123, 126.
Basalys, Hal., N. H. Rev., vol. iv., p. 171.
Basalys, Sect. B, Thoms., Öfv., 1858, p. 368.

Antennæ of the ♂ larger than the thorax, 14-jointed, 4th joint not longer than the 3rd, sinuated at the base; of the ♀ 12-jointed, clavate, the club abrupt, 3—4-jointed. Mesonotum without dorsal lines. Scutellum depressed, margined at the sides, with a basal foveola. Abdomen somewhat depressed, 2nd segment without a basal furrow, not conically produced and acuminated in the ♀. Femora and tibiæ clavate. Wings ciliated, sometimes abbreviated or wanting; costal nerve none; sub-costal ending before the middle in a punctiform triangular stigma; the basal transverse nerve distinct. Pronotum and petiole lanate.

The males of *Diapria*, Latr., and *Basalys*, Westw., have 14-jointed antennæ, but the wings of the former are without a basal nerve, and in the latter genus the 4th joint of the antennæ is distinctly longer than the 3rd. Again, the females of *Glyptonota*, Först., *Diapria*, Latr., and *Idiotypa*, Först., have the antennæ 12-jointed, but the two former genera have no basal transverse nerve, and the last has the mesonotum bisulcate, and the club of the antennæ 5-jointed. The type of *Loxotropa* is *Psilus antennatus*, Jurine. There are several British species, only a few of which have been indicated.

I. Club of the antennæ 4-jointed. ♀.

1.—Loxotropa antennata, Jur., Hym., p. 319, pl. 13; *Diapria*, *id.*, Nees, Mon. ii., 329; *Basalys*, *id.*, Thoms., Öfv., 1858, p. 368.

The ♂ is unknown. Not common. In Mr. Walker's collection and my own.

II. Club of the antennæ 3-jointed. ♀.

2.—Loxotropa tripartita, n. sp.

Picea, nitida, capite nigro, supra obscurior. Antennæ cum pedibus testaceæ; clava abrupta, picea, 3-articulata, articulus 9nus 8vo paullo latior. Alæ subhyalinæ, abdomine longiores. Abdomen ellipticum, depressum, thorace latius, medio latissimum, piceum, nitidum, apice sub-testaceo. Petiolus brevis, lanatus. Alarum stigma triangulum, apice subtilissime appendiculatum; nervo transverso tenuissimo, fusco. ♀.

Long. 1¼; *alar. exp.* 2 *lin.*

This is the largest of the females with a tri-articulate club; it differs from *dispar*, Nees, in its greater size, pale colour, complete wings, and differently shaped joints of the antennæ.

In Mr. Walker's collection.

3.—Loxotropa tritoma, Thoms., Öfv., 1858, p. 368 (*Basalys*).

♂ ♀. Common. In Mr. Walker's collection and my own.

4.—Loxotropa abrupta, Thoms., Öfv., 1858, p. 368 (*Basalys*).

♀. In Mr. Walker's collection.

5.—Loxotropa dispar, Nees, Mon., ii., 328 (*Diapria*); Thoms., Ofv., 1858, p. 368 (*Basalys*).

♂ ♀. Common. In Mr. Walker's collection and my own.

6.—Loxotropa exigua, n. sp.

Minima; nigra, nitida, antennis pedibusque ferrugineis; clava abrupta tri-articulata, scapo longitudine æquali, nigra; articulus 9nus 8vo non latior, 2dus 3tio triplo longior et crassior, 4—8 *globosi,* 9 *vix transversus, ultimus oblongus, penultimo paullo longior, apice obtuso, Alæ hyalinæ, abdomine longiores.* ♀.

♂ differt antennis nigricantibus, corpore paullo longioribus, artt. 3° *et* 4° *oblongis,* 4° *extus ad medium usque emarginato,* 4—9 *globosis, ultimo ovato; femoribus tibiisque medio piceis.* *Long. vix* ½; *alar. exp.* 1 *lin.*

Resembles *Basalys parva*, Thomson, which, however, has the wings shorter than the abdomen.

In Mr. Walker's collection.

III. Of the following species the ♀ is unknown.

A. Apterous.

7.—Loxotropa nigricornis, n. sp.

Nigra, nitida; antennarum articulo 2do, scapa basi, pedibusque, testaceis, femoribus tibiisque medio nigris. Antennæ corpori longitudine æquales, crassiusculæ; artt. 3tius *et* 4tus *lineares,* 4tus *præcedente dimidio brevior,* 5—13 *æquales, subrotundi, ultimus ovalis, penultimo haud longior. Pronoti latera antice et petiolus lanugine brevi grisea vestita. Alarum ne vestigium quidem. Scutellum parvum, foveola basali rotunda. Caput pronoto latius. Metathorax compressus, abdomine multo angustior; hoc ellipticum, parum depressum, thoraci cum petiolo longitudine æquale.* ♂. *Long.* ⅔ *lin.*

This is the only apterous male that I have met with; the contracted metathorax and imperfect scutellum show that the wings have not been lost by accident. The antennæ, which are neither verticillate-pilose, nor irregularly bristly, afford the only character which forbids the insect to be placed with *Diapria*, as limited by Förster. In Mr. Walker's collection.

AA. Winged.

8.—Loxotropa rufiscapa, Nees, Mon., ii., 330.

♂. Common. In Mr. Walker's collection and my own.

Milford Haven, *December 7th*, 1867.

Re-occurrence of Dytiscus lapponicus in Mull.—During the month of July, 1866, I spent some days in the island of Mull. Recollections of fine "doings" there, some years ago, raised sanguine hopes; but, on the present occasion, beetles seemed to have left the island.

Such *Lepidoptera* as *E. Blandina*, *C. Davus*, *A. Aglaia*, and *S. alpinalis* were common; but, with the exception of an occasional *Carabus glabratus*, or *Pterostichus æthiops*, beetles were at a premium. The various lochs in the neighbourhood were searched for *Hydradephaga* with hardly any result. The reason was soon discovered. The lochs were absolutely swarming with trout, so that beetles had no chance. Compelled, therefore, to lay aside the net, I consoled myself with the rod. Let the Coleopterist note, that trout and beetles go in inverse proportions. From the top of one of the hills, looking down on the beautiful sound of Mull on the one side, and on Staffa and Iona on the other, I counted some sixteen lochs and tarns, all of which I searched with care.

The last evening of my stay in the island arrived, and *Dytiscus lapponicus*, one of the chief objects sought, had not been seen. I felt disappointed. There was one small tarn which I had not visited, and in regard to which I felt uncomfortable. So, starting off late in the afternoon, through a drenching rain, over bog and stream, I reached the spot. It was gloomy enough. The loch lay in the bottom of what might once have been the crater of a volcano. No trout were visible: everything had a dead look.

No stream apparently issued from the loch, so my hopes began to rise. Where no stream goes out, trout have a difficulty of getting in. Soon a newt appeared, wriggling along. Hope rose rapidly; for, from former experience, newts and *D. lapponicus* I know to be great friends (perhaps the newts would say *enemies*).

Shortly after, a magnificent "Devil's coach," with graceful curve, hove in sight. All right now. He was secured, and the search began in earnest. A few minutes, the wished-for sight appeared. There he came, slowly paddling along, keeping close to the bottom; the elytra of a strange pale green, with the yellowish streaks appearing very distinctly. In a few seconds he was safely landed and gloated over. Then came another, and another. My bottles were soon full. I was obliged to tie them up in a pocket handkerchief, and, finally, in a corner of the net. Darkness coming on, I was compelled to desist; but in about an hour and a half I had the satisfaction of capturing some 45 specimens of *D. lapponicus*. It was somewhat strange that, with very few exceptions, all were males. Along with the *Dytisci* were also taken *Agabus arcticus* (common) and *A. congener* (sparingly).—J. E. Somerville, M.A., 11, South Park Terrace, Glasgow.

Further captures of Coleoptera in Yorkshire and Lincolnshire.—In the No. for last January I recorded the capture of some *Coleoptera* at Studley Royal, near Ripon, and at Nocton, in Lincolnshire. Since then, the following have come under my notice.

Taken at Studley Royal, near Ripon—*Bolitochara obliqua*, *Homalota excellens*, ♀, *Coryphium angusticolle*, *Colon brunneum*, *Anisotoma ovalis* and *calcarata*, *Scydmænus exilis*, *Omosita depressa*, *Ptinus crenatus* (in quantities), *Apion cruentatum*, and *Apteropeda globosa*.

Taken at Nocton, in Lincolnshire—*Gyrophæna gentilis*, *affinis*, and *manca*, *Anisotoma litura* (pale form), *Colenis dentipes*, *Colon serripes* and *brunneum*, *Scydmænus Sparshallii*, *Cœliodes ruber*, and *Aspidophorus orbiculatus* (one specimen, found in a dead stick).—Edward A. Waterhouse, Fountains' Hall, Ripon, *January*, 1868.

Note on Hylesinus crenatus.—This beetle (which, though widely distributed and abundant when it does occur, after the manner of the *Xylophaga*, seems to be anything but generally common) was very plentiful last year in an ash tree at this place. Latterly I have not noticed it in such numbers; but, on examining the tree higher up (it has been blown down during the recent gales) I still find it in some quantity. All stages of the insect occur together, many of the beetle having evidently only recently left the pupal state, from their light colour. The beetles are found closely packed together, eating galleries in the inner side of the bark, for what purpose I cannot quite understand. The galleries are apparently not those made by the larvæ: and the powerful mandibles of the perfect insect are capable of committing great havoc. The bark of this tree is nearly completely destroyed; but the beetle does not enter the solid wood. With it I found its common little congener, *H. fraxini*; and, in rotten parts of the same tree, *Dorcus*, *Sinodendrum* and larva, and the larvæ of *Pyrochroa* and some *Elater*. The pretty little *Dromius 4-notatus*, also, frequents the bark.—T. Algernon Chapman, M.D., Abergavenny, *February*, 1868.

Note on the food-plants of Sitones linëellus and Barypithes sulcifrons.—I observe that the food-plant of *Sitones linëellus* is generally unknown. Some time ago, it was suggested to me by a friend that thistles might probably afford its ordinary pabulum. After carefully noting the result of frequent sweepings last autumn, I came to the conclusion that not thistles, but bird's-foot trefoil (*Lotus corniculatus*), or white clover (*Trifolium repens*), or perhaps both, for the two plants were always together, sustain the species. Most, if not all its congeners, I believe, are likewise partial to the *Leguminosæ*.

On the 9th inst., I went in search of *Barypithes sulcifrons*, to a spot in Berwickshire, where I had taken that beetle many years ago, and found about a dozen specimens, a pair of them *in cop.* Both there and near Edinburgh it frequents sheeps' Fescue-grass (*Festuca ovina*), growing upon trap-rocks. The insect is seldom found in summer, and is then usually broken.—R. Hislop, Blair Bank, Falkirk, 16*th January*, 1868.

Occurrence of Anthicus bimaculatus at Southport.—A single example of this rare species was taken by my friend Mr. Broadhurst on the Sandhills, about a mile beyond the New Hotel at Southport, Lancashire, in the early part of June, last year, and kindly presented by him to me.—T. Morley, 29, John Street, Pendleton, Manchester, 21*st January*, 1868.

Occurrence in Britain of Agabus Solieri, Aubé.—I have found among my Scotch *Agabi* a single specimen undoubtedly belonging to this species. It is very closely allied to *A. bipustulatus*, but the characters pointed out by Schaum suffice readily to distinguish it. In *A. bipustulatus* the sides of the thorax are gradually broader from the apex to the base, and the base on each side is slightly excavate, so that the posterior angles are prominent and acute, whereas in *A. Solieri* the sides of the thorax are rounded, and the base straight, so that the posterior angles are obtuse; my specimen (a female; so that I am unable to speak as to the form of the claws in the male, which Schaum says differ from those of *A. bipustulatus*) was taken by me in Invernesshire, high up on Mamsoul, in company with *A. arcticus* and *A. congener*, and a species of *Hydroporus* new to us (the *H. brevis* of Mr. Crotch's Catalogue). I can find no other example of *A. Solieri* among my *bipustulatus* from Rannoch and other parts of Scotland; and, though some of these are even smaller than *A. Solieri*, they present no approach to it in the form of the thorax. Specimens of this insect from Scotland were described by M. Reiche as *A. sexualis*; but hitherto I believe British entomologists have been unable to make out the insect. The *Patrobus Napoleonis* and *Ocypus Saulcyi* of the same author are still enigmas to us, in a similar way. Can no Scotch entomologist find them for us?—D. Sharp, M.B., Bellevue, Thornhill, Dumfries, *February 8th*, 1868.

Descriptions of Patrobus Napoleonis, Reiche, and Ocypus Saulcyi, Reiche.—The above note of Dr. Sharp's suggests to me that it might possibly be of help to Scotch Coleopterists if they had before them descriptions of the two enigmas to which he refers. I accordingly add the following translation of M. Reiche's original descriptions, published (in the French 'Annales' for 1857, Bull. viii. and ix.) in an account of the new species taken during the expedition in 1856 to the Arctic seas under the direction of Prince Napoleon (synchronous with Dr. Staudinger's visit to Iceland).

(1) *Patrobus Napoleonis.* Long. 8—9, lat. 3—3½ mill.—Wingless, pitchy, lighter beneath, with the mouth, antennæ and legs reddish-ferruginous. The head rotundate, longitudinally punctate-sulcate on each side towards the eyes. The thorax rather wider than the head, transverse, rounded at the sides, but little narrowed behind, with acute angles, channelled, and with a fovea on each side. The elytra ovate, widest in the middle, and sub-acuminate at the apex.

Hab. Thorshaven, Island Feroë.

(5) *Ocypus Saulcyi.* Long. 13—15, lat. 3—3½ mill.—Rather flattened, dull black, pubescent. The head and thorax rather brassy, shining; the third joint of the antennæ longer by more than half its length than the second. The palpi brown; with the last joint of the labial palpi hatchet-shaped. The mandibles black, sickle-shaped, toothless (*i.e.*, on the middle of the inner side), the head wider than the

thorax, transversely orbiculate, closely punctured. The thorax narrower than the elytra, longer than broad, rather narrowed behind; with straight sides, the anterior angles almost acute, the posterior rounded, and a polished medial longitudinal line. The elytra shorter than the thorax, and, with the scutellum, exceedingly closely punctured. The abdomen thickly and delicately punctured. The legs pitchy-black, with the tarsi and the tips of the tibiæ rather testaceous.

Hab. Peterhead, Northern Scotland.

No comparison of either of these species with any other of those previously known in their respective genera is made by M. Reiche; and, seeing how closely the *Patrobi* known to us are allied, I confess I do not imagine any one is very likely to find M. Reiche's first description of much avail. The species stands in De Marseul's Cat. between *excavatus* and *assimilis* (*clavipes* Thoms.) In the same Cat. the *Oxypus* is located between *morio* and *compressus*.—E. C. Rye, 7, Park Field, Putney, S.W., *February*, 1868.

Notes on the gall of Spiræa ulmaria.—During the months of summer, the leaves of *Spiræa ulmaria* (common Meadow Sweet), are often thickly beset with a minute gall. On the upper-side of the leaf it is hemispherical, nearly smooth, pinkish in hue, and about the size of half a mustard seed. Under the leaf they are quite different, being produced into a short snout-like cone. This is very pubescent, and its apex is slightly dilated, as in the gall of the cornel leaf. On opening the gall with care, and inspecting it with a lens, a minute urn-shaped case exactly the form of a cone shell may be seen. Its texture is papery; its colour yellowish-pink. The larva within this case is of an orange colour when the gall is in an advanced stage. The sharp point of the base of the cases often, if not always, projects from the dilated end of the snout-like development mentioned above. The larvæ sometimes quit their galls, but whether this is usual, or only takes place when the galls are gathered, I do not know. In 1865 I obtained galls on July 25th. The first gnats emerged on August 29th. Galls obtained on August 1st, 1866, produced gnats on the 10th, 13th, and 16th of the same month. About this date the galls disappeared, but on October 13th I obtained a good supply. These I take to be a second brood of gnats. The body of this lively little *Cecidomyia* is a light reddish hue, nearly approaching that of the leaf stalk of the Meadow Sweet.—H. W. Kidd, Godalming, *February*, 1868.

*** These little galls are the work of *Cecidomyia ulmariæ*, Bremi. *Vide* Bremi, "Beiträge zu einer Monographie der Gallmücken" (1847), p. 52, 9; Wimertz, "Beitrag zu einer Monographie der Gallmücken," in the Linnæa Entomologica 1853, p. 240, 27; &c.—R. McLachlan.

The larvæ of Stathmopoda pedella at Stettin.—On a dry part of the fortifications at Stettin there is a plantation of grey alders (*Alnus incana*), a species of tree which, as far as I know, does not grow wild there. At the end of last September I sought here, in company with Dr. Schleich, for the larvæ of *Stathmopoda pedella* in the alder berries. We soon ascertained that the brown or black spots which were distinctly visible in the gathered berries, were caused by the larva which

lived in the interior of the berry. But as there were also brown-spotted berries, which did not contain larvæ, we found it safest and most convenient to gather a number without any special investigation. The conjecture that the larvæ would remain in the berries throughout the winter has not been confirmed; they quit the berries and spin an elongate silken cocoon on the surface of the ground, in which they remain unchanged. Hence the pupa state is not assumed till the winter is over. The larvæ appear to be very numerous in proportion to the number of the perfect insects which we generally see, but probably many of them perish during the winter.

In the Prater, at Vienna, the perfect insects were abundant at the beginning of August on the *Alnus incana*, which is there so plentiful; in what multitudes must the larvæ occur there in Autumn! It also occurs on *Alnus glutinosa*, since the imago is found on that tree in localities where there is no *Alnus incana*.—Professor Zeller, Meseritz, *February 2nd*, 1868.

A yellow-banded variety of Sesia culiciformis.—Noticing the interesting account of the capture of varieties of *Sesia culiciformis* in recent numbers of the Magazine, I have thought it might be worth while recording that I was myself fortunate enough to capture one with a broad yellow band. It was sunning itself on a large newly-cut birch stump. On the day after, Mr. Chas. Linton captured his example (I was with him at the time). I should be happy to show mine to any gentlemen who are interested in varieties.—James Bryant, 63, Old Broad Street, E.C., *Jan. 14th*, 1868.

Macroglossa stellatarum at the end of November.—A very good specimen of *Macroglossa stellatarum* was sent me from Southsea on the 27th November. I am told it had been seen for a day or two before, flying about in the garden, and had eventually flown in at a window. Is not this very late? The weather was very cold and frosty, but fine.—L. M. S. Pasley, Admiralty House, Portsmouth, *December 26th*, 1867.

Review.

Coleoptera Hesperidum, *by T. V. Wollaston, M.A., F.L.S.; London, J. Van Voorst*, 1867.—This little volume is indispensable to all who possess the former works by its distinguished author on the Madeiran and Canarian *Coleoptera*, as it concludes the three groups of Sub-African Atlantic Islands, by treating of the Cape Verde Archipelago. The general conclusion to be arrived at from its perusal is, as suggested by Mr. Wollaston, that what that gentleman has termed the "Atlantic type" is still preserved in the Cape Verde Islands, though so enormously distant from, and more Southernly than, the Madeiran and Canary groups. This conclusion, with other considerations, proclaims (according to the author, and apparently with great reason) that all these islands are the unsubmerged portions of a vast province, different from the African continent. Three salt-marsh and sandy islands of the Cape de Verde group remain yet to be investigated, but from the six others examined by Mr. Wollaston 278 species only have resulted, of which the

Heteromera (closely pressed by the *Brachelytra*) predominate, with 49 exponents; the *Hydradephaga* being at the bottom of the list, with 7 species, while the *Longicornes* are utterly absent. The meagre nature of this list is apparently caused by the utter aridity of the soil, the comparative absence of vegetation, and the unfavourable time at which the islands were visited. Enough, however, has been done to shew that, with trifling exceptions, the relative proportions of groups here are nearly the same as in the other islands of the Atlantic type. The most characteristic forms seem to be *Orycara* and *Trichosternum*, both heteromerous, and (though individually less abundant) a Rhynchophorous genus enunciated as *Dinas*: the familiar *Scymnus* appears also to be very well represented. Ten new genera are established in the volume now being noticed (of which *Nematoscelis*, a long-legged *Oligota*, seems the most anomalous), and 153 species are described as new; but it must be observed that the author, with exceeding candour, himself suggests in many instances the possibility of certain of these being only isolated or modified forms of other species. In this respect, as in all others where there would appear to be the slightest room for doubt, his utter lack of dogmatism and most evident desire to arrive at the truth, irrespective of theory, are very conspicuous. Of the insects recorded, the following list of British species appears interesting, and can be compared with the corresponding list in the Review of Col. Atlant. in this Magazine. *Blemus*, *Cyclonotum*, *Philhydrus melanocephalus*, *Sericoderus*, *Carpophilus*, *Monotoma spinicollis*, *Trogosita*, *Silvanus surinamensis*, *Crytophagus scanicus* and *dentatus*, *Latridius minutus*, *Myrmecoxenus*, *Typhæa*, *Dermestes vulpinus*, *Aphodius lividus*, *Corynetes rufipes*, *Mezium sulcatum* (concerning which, the idea formerly expressed, as to its being aboriginal to the Atlantic islands, receives further corroboration in this volume), *Anobium paniceum*, *Sitophilus granarius* and *oryzæ*, *Coccinella 7-punctata*, *Tribolium*, *Gnathocerus*, both *Alphitobii*, *Anthicus floralis*, *Homalota coriaria* and *clientula*, *Leucoparyphus*, *Philonthus scybalarius*, *ventralis* and *discoideus*, *Leptacinus parumpunctatus* and *Lithocharis ochracea* and *obsoleta*. Many of these are, of course, almost cosmopolitan; but one can appreciate the disgust with which a British entomologist, landing on one of the Cape de Verdes, and longing for strange forms, would renew his acquaintance with these "old familiar faces,"—especially if they all turned up at once.

There is an Appendix to the volume now being noticed, consisting of additions to and corrections of species noticed in the Coleoptera Atlantidum, &c. Amongst the corrections, we notice two to which it occurs to us to object; viz., those referring to the *Ocypus atratus* and *Homalium sculpticolle* of Wollaston. M. Fauvel, according to the Appendix, states that the former is absolutely conspecific with *O. ater*; but Mr. Wollaston (Can. Col., 567; Col. Atl., 189), in comparing it with that species, notes that *its mandibles are simple internally* (in *O. ater* they have a strong and sharp tooth on the inner side), that its head is shorter, or more straightly truncate behind the eyes, and that its thorax is a trifle longer, with the posterior angles less completely rounded off. From an examination of the three types of *O. atratus* in the Can. Col., Brit. Mus., the following comparative characters must be added: it is more depressed altogether, the mandibles are much less robust, the thorax is apparently broader: the eyes reach nearer to the

hinder part of the head; the basal joints of the middle and posterior tarsi are less elongate; and the suture of the elytra is reddish, and not elevated as in *O. ater*. It is impossible to define the limits to be accorded to a species, without knowing the liberal or conservative (*quâ* Darwin) opinions of an author; but it seems to us that larger camels than this have been swallowed before now in the land of the Gaul. The *Homalium*, in like manner, is accorded by M. Fauvel to *H. Allardii*: but, as Mr. Wollaston's species resembles an exaggerated form of *H. fossulatum*, it was patent that there must have been some error on this point; and we are now informed by Mr. Wollaston that M. Fauvel intended to refer *H. ocellatum*, Woll., to *H. Allardii*. *H. ocellatum* is, indeed, somewhat close to the latter insect (as will be seen by the note at p. 522 of Col. Atl.); but the type of it in the Mad. Col., Brit. Mus., being compared with *H. Allardii*, appears to be lighter, shorter, and broader than that insect, with bright yellow ocelli and clear testaceous legs, a more transverse thorax, of which the sides are more rounded and more contracted behind, and the hinder angles more prominent (the fovea there being deeper), rather shorter and less parallel elytra, which are less strongly and scarcely rugosely punctured, and the abdomen not so dull, but with evident scattered punctuation. If Mr. Wollaston's insect is, in spite of these discrepancies, to be considered identical with *H. Allardii*, it will not disturb any references; as *H. ocellatum* was described in Ins. Mad., 1854, and Fairmaire's species in the French "Annales" for 1859.

General Information.

Italian Entomological Society.—A movement, from which we anticipate great results for entomological science, is now on foot in Italy for the establishment there of a Society to be called the "Societa Entomologica Italiana." A committee has been formed of all the prominent entomologists in the principal towns and cities—Turin, Florence, Bologna, Milan, Naples, Vicenza, Genoa, Ascoli, Parma, Imola and Lucca. The local secretary at the latter place—who is also secretary of the committee—is our well-known countryman, A. H. Haliday, Esq. The committee has issued a circular, stating the objects of the Society, and fixing the Annual Subscription at 10 lire (francs); it is intended to publish a Journal of the memoirs read.

Death of Professor O. G. Costa.—This Neapolitan entomologist died very recently, but we know not, at the present moment, at what age; he must have been advanced in years. In conjunction with his son, Achille Costa, and separately, he has published many entomological memoirs, one of the latest of which was on the Ailanthus silk-worm (*Bombyx Cynthia*) which has lately attracted so much attention. The two Costas were perhaps the only entomologists of note in Southern Italy. The change of dynasties does not at present appear to have exercised any very beneficial influence upon natural science in that portion of the peninsula.

Entomological Society of London; *27th January*, 1868 (Anniversary Meeting); Sir John Lubbock, Bart., F.R.S., President, in the Chair. The following gentlemen—Messrs. Grut, O. Salvin, W. W. Saunders, and Trimen, were elected Members of Council for the present year in the place of those removed. H. W. Bates, Esq., F.Z.S., was elected President; S. Stevens, Esq., Treasurer; and Messrs. Dunning and McLachlan, Secretaries.

The Chairman read an address on the progress of entomological science in 1867, and the proceedings closed with votes of thanks to the officers and retiring Members of Council; with an especial acknowledgment of indebtedness to Mr. Dunning for his munificent gift of 100 guineas towards liquidating the heavy expenses incurred in publications during the past year.

February 3rd, 1868. H. W. Bates, Esq., F.Z.S., President, in the Chair.

Mr. Bond exhibited a female example of *Drilus flavescens* (Snail-beetle) which had been found by Mr. Harting, on the 1st April last, at Harting, Sussex, amongst a number of shells of *Helix ericetorum*. Also a singular specimen of *Bombyx quercûs*, exhibiting the colour of both sexes in longitudinal bands on the wings. Also a number of cast skins of *Dermestes* larvæ, which latter had caused great damage by devouring the bladder used to cover jam-pots: with reference to these larvæ, Messrs. Janson, Smith, and McLachlan mentioned instances in which they had bored into and fed upon wood; the latter gentleman remarking that he had found them far in the interior of ship-timber.

Dr. Wallace exhibited two examples of *Bombyx Yama-mai* bred in England last season; also *B. Pernyi* from China, another oak-feeding and silk-producing species; and *Pachypasa otus*, an Acacia-feeder from South Africa, which promised to be of little value to sericiculture.

Mr. Smith exhibited a number of examples of the "Bugong" moth of New South Wales (*Agrotis spina*), and read a letter from Dr. Bennett, of Sydney, in which that gentleman stated that last year they had appeared in immense swarms, filling the houses and churches to such an extent as to interfere with Divine service. Dr. Bennett said they appeared to be all of one sex, but the specimens sent were about equally male and female. He also exhibited examples of the Australian form of *Pyrameis cardui*, captured off Cape Otway, where it had appeared in great quantities.

Mr. Trimen exhibited a specimen of the very rare *Apatura Ionia* from Asia Minor, and made some remarks on its affinities.

The Hon. T. De Grey exhibited a number of examples of *Hypercallia Christiernana* which he had captured last season in Kent, between Shoreham and Sevenoaks; likewise specimens of *Acidalia rubricata* and *Opostega reliquella* from Suffolk.

Mr. Dunning exhibited an example of the rare spider, *Pholcus phalangioides*, taken by Lord Cawdor at Stackpool Court; and read a letter from Mr. Blackwall, stating that he possessed a gynandromorphous example of an Indian species, *P. Lyoni*.

Mr. Smith exhibited a beautiful new species belonging to the genus *Oryssus*, from the Gold Coast.

Mr. Hewitson communicated a letter from Dr. Felder respecting the date of that gentleman's work on the Butterflies of the "Novara" voyage, and stating that the work was actually published (text and plain plates) at the time stated on the title page, and that the doubt as to the correctness of this, expressed by some English entomologists, was owing to the fact that coloured copies only were ordered from England, and these had to be prepared, thus accounting for the delay. The President also read a letter from Dr. Felder to the same effect.

Mr. Smith read "Observations on the economy of some Brazilian insects" from

the notes of Mr. Peckolt, of Cantagallos. He exhibited the insects, which were chiefly *Hymenoptera;* but there were also two species of *Diptera*, a *Musca*, and a *Trypeta*, which annoyed the natives by entering their nostrils, &c., when asleep.

Mr. McLachlan read a monograph of the British *Neuroptera-Planipennia*, describing 49 species.

BRITISH *HEMIPTERA*: ADDITIONS AND CORRECTIONS.

BY J. W. DOUGLAS AND JOHN SCOTT.

GYMNOCERATA.

GEODROMICA.

Section 1.—Scutatina.

Family 1.—Cydnidæ.

Genus 1*.—Æthus, Dall.

Cat. Hem. i, 110 (1851).

Oval, slightly convex; sides of the head and pronotum set with projecting hairs.

Head broad, deeply inserted in the pronotum, in front rounded, entire, margin incrassated, not reflexed; lobes of the face of equal length; under-side with a rostral channel. *Antennæ* inserted on a tubercle near the base of the eyes, short, 2nd joint longest, 5th (at least) petiolate. *Eyes* scarcely projecting beyond the circumference of the head, posteriorly touching the pronotum. *Ocelli* small, distant, inserted near the posterior margin of the head. *Rostrum* long, slender, 3rd joint longest.

Thorax—Pronotum trapezoidal, almost quadrate, emarginate in front. *Scutellum* large, triangular, longer than broad, apex lobate, at first raised and then deflected, reaching beyond the inner angles of the coria. *Elytra—Clavus* narrow; *Corium* broad, anterior margin incrassated, posterior margin straight; *membrane* short, thin. *Sternum—prosternum* deeply sulcate transversely at the sides; *mesosternum* with a broad keel. *Legs* stout, fossorial; *thighs* compressed; *tibiæ* all furnished on the upper-side and apex with strong spines in rows; 1st pair anteriorly dilated on the inner side; 3rd pair more slender than the others; *tarsi* slender, filiform, 2nd joint shortest, 3rd longest; claws long, slender.

Abdomen—Very convex beneath.

Species 1.—Æthus lævis, Doug. & Scott.

Black, shining; *pronotum* without transverse depression, very finely punctured, except on a large smooth space on each side of the middle anteriorly; *scutellum* and *corium* finely punctured, with two

rows of strong punctures next the claval suture, and two others near the anterior margin; *membrane* hyaline, whitish at the base, nerves brownish. *Antennæ*, *rostrum*, and *legs* piceous.

Head—Delicately punctured, but with deep, irregular punctures close to the anterior margin; central lobe extending backwards nearly to the base of the head, narrow, sides parallel. *Antennæ* pale piceous, last joint darker, 3rd and 4th joints slightly clavate, 5th fusiform. *Eyes* triangular both above and beneath, piceous. *Rostrum* pale piceous. *Under-side:* the rostral channel extending the whole length of the head, the sides sharply raised.

Thorax—*Pronotum* slightly convex, narrowed a little, and gradually, to the front, anterior angles rounded off to the eyes; anterior margin deeply and squarely cut out for the reception of the head, *on* the margin, behind each ocellus, a deep fovea; disc very finely punctured, except on a large smooth space on each side of the middle anteriorly. *Scutellum* convex at the base, flatter posteriorly, covered with very fine, but distinct, distant punctures. *Elytra*—*Corium* outwardly piceous, disc punctured like the scutellum, but with smaller punctures, two straight lines of stronger punctures parallel to the claval suture, and two others, larger and deeper, and black, near the anterior margin; *membrane* hyaline, yellowish-white at the base, the colour spreading into a blotch beneath the apex of the scutellum, nerves indistinctly fuscous. *Legs* piceous; *tarsi* pale. Length 2 lines.

Several examples, of which only two or three were mature, were taken under stones, on grassy, sandy slopes near the sea at Whitsand Bay, near the Land's End, on August 20th, 1864, by Mr. J. C. Dale, who has kindly communicated specimens and the information.

Dr. Fieber has seen a specimen, and corroborates our conviction that the species is new. He remarks that "it resembles *Cydnus nigrita* in form, and *C. punctulatus*, Costa, in the slight convexity of the pronotum, but the membrane is differently marked."

Section 5.—Lygæina.

Family 1.—Rhyparochromidæ.

Genus 3.—Calyptonotus, Doug. and Scott.

Species 2*.—Calyptonotus lynceus.

Cimex lynceus, *Fab.*, Mantis. ii, 302, 134 (1787).

Lygæus „ *Fab.*, E. S. iv, 166, 107 (1794); S. R. 231, 137 (1803); *Fall.*, Hem. Suec. i, 52, 7 (1829).

Pachymerus lynceus, *Schill.*, Beitr. i, 66, 3, t. 5, fig. 7 (1829); *Hahn*, Wanz. i, 44, t. 8, fig. 28 (1831); *H. Schf.*, Nom. Ent. i, 45 (1835); *Panz.*, F. G. 118, 10.

Pachymerus (Pachymerus) lynceus, *Flor*, Rhyn. Liv. i, 273, 24 (1860).

Rhyparochromus lynceus, *Fieb.*, Europ. Hem. 194, 6 (1861); *Stål*, Öfv. K. Vet. Akad. Handl., 221, 3 (1862).

Elliptic, black, dull; sides of *pronotum* flat, broadly pale ochreous throughout; elytra ochreous, closely punctured with black; *corium* at the inner posterior angle with a large sub-rhomboidal black spot, with a small white spot attached posteriorly.

Head—Unpunctured, clothed with extremely fine, appressed, yellowish hairs. *Antennæ* comparatively short and slender, finely pubescent, 1st joint with two or three strong, projecting hairs, the base of the 1st joint and the junction of the 1st and 2nd, and 2nd and 3rd, narrowly yellowish. *Rostrum* black.

Thorax—*Pronotum* broad, very slightly convex, with almost imperceptible yellowish pubescence; sides nearly straight, but rounded off anteriorly, flat, foliaceous, broadly clear pale ochreous throughout; disc, on the 1st two-thirds black, unpunctured, the last third ochreous, with large, confluent black punctures which extend to the posterior angles in a streak. *Scutellum* depressed, black, with distant, very small, yellow hairs, the sides posteriorly with a long ochreous line. *Elytra* ochreous: *clavus* with three rows of large, black punctures, mostly confluent and forming lines; *corium* similarly punctured, the nerves clear, but margined with a narrow black line; anterior margin mostly clear; in the inner posterior angle a large, sub-rhomboidal, black spot, to which outwardly and posteriorly is attached a clear white triangular spot margined outwardly with a black line; the inner posterior angle of the black spot has on it a very small white line, and on the upper-side of the spot a whitish spot juts into the black: *membrane* fuscous, with a sub-lunate white spot under the apex of the corium; nerves dark, on the basal half whitish, on the two outer ones clearer and diaphanous; on the posterior margin, between the nerves, large, triangular, whitish, diaphanous spots. *Sternum*—at the base of each coxa a yellowish spot. *Legs* black; the junction of the thighs and tibiæ narrowly rufous; *thighs*, beneath, with one stout, short, sharp spine; *tibiæ*, 1st pair straight, rufous, on the 1st two-thirds beneath with fine spinose hairs; 2nd and 3rd pairs with fine projecting spines; *tarsi*, hairs and claws brown.

Abdomen—Beneath, with delicate black pubescence. Length 3—3½ lines.

A single ♀ taken at the base of the palings, under fir trees, at Dartford Heath, 5th May, 1867 (*Scott*); one in the Isle of Wight (*Pascoe*); and several of both sexes, hybernating in tufts of grass and rushes in an old sand-pit at Shirley, near Croydon, in November last (*Doug. & Scott*).

Differs from *C. Pini* in being shorter, more oval, broader in proportion to the length, in the shorter antennæ, in the broadly yellowish sides of the pronotum, in the angular white spot attached to the black spot on the corium, and in the lighter colour of the membrane.

Although *C. lynceus* is stated to have been originally described by Fabricius from an English specimen, yet, as we had seen no authentic

native example, we thought it best to include it in the list of "Reputed British Species," and we are glad now to give it a place as a true Briton.

Species 2**.—Calyptonotus quadratus.

Lygæus quadratus, *Fab.*, E. S. Supp. 541, 111 (1798); S. R. 232, 141 (1803).

Pachymerus quadratus, *Schill.*, Beitr. 66, 4, t. 5, fig. 6 (1829); *Hahn*, Wanz. i, 50, t. 8, fig. 31 (1831); *H. Schf.*, Nom. Ent. i, 45 and 80 (1835); *Fieb.*, Weit. Beitr. i, 346, 26, t. 2, fig. 22 (1836); *Bohem.*, K. Vet. Akad. Handl. 246 (1851).

Rhyparochromus quadratus, *Sahlb.*, Geoc. Fen. 55, 2 (1848); *Stål*, Öf. K. Vet. Akad. Förh. 221, 4 (1862).

Beosus quadratus, *Am. et Serv.*, Hem. 254, 212, 1 (1843); *Fieb.*, Europ. Hem. 196, 2 (1861).

Oblong, black, shining. *Antennæ* black; 2nd joint, except the ends, testaceous; 3rd brownish. *Pronotum*—Sides entirely and the posterior portion broadly, pale testaceous; on the anterior margin three very small testaceous spots. *Elytra* pale testaceous, the disc with black punctured striæ, and near the inner angle a sub-rhomboidal black spot, or two contiguous, thick, black streaks; *membrane* obscure yellowish, the nerves, and a broad longitudinal dash, fuscous. *Thighs* black; *tibiæ*, except the apex, testaceous. *Abdomen* beneath with a metallic gloss.

Head—With fine golden pubescence on the sides. *Antennæ* slender; 1st joint black, apex testaceous, the extreme base and the last third black; 3rd obscurely yellow-brown on the basal half; 4th black. *Eyes* and *rostrum* black.

Thorax—*Pronotum* long, almost quadrangular, sides very nearly straight, the margins wide, not reflexed, clear pale testaceous throughout; disc convex in front, posteriorly flatter, the anterior portion (about three-fifths) unpunctured, black, the colour sharply defined both at the sides and behind; posterior portion pale testaceous, with fine brown punctures; posterior angles, within the margins, raised into a distinct callus, on each side of which is a series of brown punctures; posterior margin roundly emarginate, depressed in the middle. *Scutellum* black, finely punctured, more strongly at the sides. *Elytra* pale testaceous; *clavus* in the middle clear, on each side a row of black punctures; *corium*—margin reflexed, clear; disc more or less obscured by long black dashes, one of which, next the margin, extends to the apex, and near the posterior inner angle a sub-rhomboidal black spot, or two short, thick, contiguous black streaks; nerves clear, the intervals with rows of black punctures; *membrane* obscure yellowish, the nerves, and a broad longitudinal dash, fuscous. *Sternum*—the posterior margin of all the segments—of the metasternum broadly—and a large spot close to each coxa whitish. *Legs*—*thighs* black, apex testaceous; on the under-side the inner edge

with one large spine, the outer edge finely dentate; *tibiæ* testaceous, the extreme base, and the apex broadly, black; *tarsi* black, the basal half of the 1st joint more or less obscurely testaceous.

Abdomen—Beneath densely clothed with very fine whitish pubescence, which shines with a metallic lustre. Length $2\frac{1}{4}$—$2\frac{1}{2}$ lines.

Five specimens in Dr. Power's collection, taken by Mr. Sidebotham, at Llandudno, in June, 1867. The species was reputed to be British, but until now we knew of no authentic examples.

Note.—The lighter coloured portions of the upper-surface and the legs appear to be darker in the examples before us than in those described by continental authors, except Dr. Stål, otherwise there is no difference.

Genus 4.—Eremocoris, Fieb.

Species 2.—Eremocoris plebejus.

Lygæus plebejus, *Fall.*, Hem. Suec. 59, 18 (1829).

Lygæus silvestris, *Panz.*, F. G. 92, 10 (nec *Lin.*).

Pachymerus silvestris, *Schill.*, Beitr. 73, 14, t. 6, fig. 1 (1829); *Burm.*, Handb. ii, 296, 8 (1835).

Pachymerus sylvestris, *Hahn*, Wanz. i, 54 (1831).

Pachymerus sylvaticus, *Hahn*, Wanz. i, t. 9, fig. 33 (1831).

Pachymerus plebejus, *H. Schf.*, Nom. Ent. i, 44 (1835).

Rhyparochromus plebejus, *Sahlb.*, Geoc. Fen. 61, 11 (1845).

Pachymerus (Pachym.) plebejus, *Flor*, Rhyn. Liv. i, 249 (1860).

Eremocoris plebejus, *Fieb.*, Europ. Hem. 188, 2 (1861); *Stål*, Öfv. K. Vet. Akad. Handl. 219, 2 (1862).

Black, dull; body with long projecting hairs, seen especially at the front and sides of the pronotum. *Pronotum*—Sides straight, the margins scarcely widened inwardly at the middle, disc punctured only posteriorly. *Elytra* red-brown, with an elongate, central black spot; *membrane* fuscous, with a white lunate spot at the outer basal angle, and a round one on the anterior margin. *Tibiæ* piceous, pilose, not spined.

Head—with a few scarcely perceptible punctures. *Antennæ* black, scarcely pubescent. *Eyes* black. *Rostrum* piceous, the junction of the joints pale.

Thorax—*Pronotum*, front and sides with long, fine, projecting hairs, sides straight, the margin narrow, brown, very slightly widened inwardly beyond the convexity of the disc; disc anteriorly smooth, posteriorly finely but distinctly punctured. *Elytra* red-brown; *clavus* with three rows of fine black punctures; *corium*, the nerve adjoining the clavus on its hinder half, an elongate spot near to it, the posterior margin and round the apex, and a dash within the posterior outer angle,

black; the disc with punctures like those on the clavus, fine, disposed in rows, anterior margin clear; *membrane* fuscous, darker at the base, near the outer basal angle a distinct lunate white spot, and one rounded and less distinct posteriorly on the outer margin; the 2nd inner nerve whitish near the base. *Sternum* with yellowish hairs. *Legs*—*thighs* black; *tibiæ* piceous, black at the apex, 1st pair curved throughout, 2nd and 3rd pairs not spined, but thickly set with very fine projecting hairs; *tarsi* piceous.

Abdomen—Beneath, clothed with yellowish projecting hairs.

A single ♂ (described above), in the collection of Dr. Power, was taken by Mr. Hislop, in Scotland (locality not noted).

Note.—This species, also a reputed native of Britain, appears to vary in colour, for some authors make no mention of the black spot in the corium, describe yellowish spots near the base of the coxæ, and say that the 2nd or 2nd and 3rd joints of the antennæ are brown-red. In Hahn's figure the hairs of the antennæ are represented as long and strong, and the colour of the tibiæ and 2nd joint of the antennæ is yellow, in which particulars his own description differs.

Genus 10*.—Lampronotus, Doug. & Scott, n. g.

Oblong, sides parallel.

Head 5-sided, triangular in front, the base much narrower than the pronotum, into which it is deeply set: *Face*—middle lobe elongate, prominent, side lobes compressed, pointed. *Antennæ* long, slender, 1st joint thickest, three-fourths the length of the head, half the length, at least, reaching beyond the apex of the face; 2nd one-fourth longer than the 1st; 3rd about the length of the 1st; 4th a trifle longer than the 3rd; the 1st, 2nd, and 3rd very slightly thickened to the apex, the 4th long-fusiform. *Eyes* small, touching the pronotum. *Ocelli* very small, rather nearer to the eyes than to each other. *Rostrum* slender, reaching to the 2nd pair of coxæ.

Thorax—*Pronotum* trapeziform, broad, almost quadrate, anterior margin cut out for the reception of the head; anterior angles rounded; sides very slightly sinuate, the margins, extending the whole length, narrow, distinct, scarcely reflexed; disc in front (rather more than half the length) very convex, smooth, posteriorly depressed, hinder angles raised into a callus; posterior margin concave. *Scutellum* large, longer than broad, apex pointed, disc at some distance from the sides raised into a V-form, the centre of which is deeply depressed, and from the apex a sharply defined keel extends to the apex of the scutellum, forming altogether a

raised Y. *Elytra* flattened, greatly depressed about the region of the claval suture: *Corium*—the anterior margin, outside the first nerve, beyond the first third, considerably widened and deflected; nerves strong: *Membrane* (in all the extant examples) abbreviated, not covering the abdomen. *Legs* slender; *thighs*—1st pair only moderately incrassated, beneath, in the ♀, anteriorly and outwardly with two very small, acute spines; in the ♂ these are almost obsolete; *tibiæ* with fine, short, projecting, spinose hairs: 1st pair straight, the hairs finer and shorter, and on the under-side only; *tarsi* long, slender; the 1st joint on the 1st pair of legs as long, on the 2nd pair longer, on the 3rd pair much longer, than the 2nd and 3rd joints together.

This genus mostly resembles *Drymus*, Fieb., from which it differs in the antennæ being longer and more slender, the 1st joint much longer and the others differing in their proportions, in the different form of the pronotum, in the spines on the thighs of the ♀ only, in the fore-tibiæ being straight and furnished with hairs beneath, &c.

Species 1.—Lampronotus Sharpi, *Doug. & Scott* (pl. 2, fig. 1).

Black, shining; *pronotum* anteriorly polished, sides delicately ciliate; *elytra* piceous, *corium* black inwardly and posteriorly; *legs* dark testaceous.

Head—with fine irregular punctures. Antennæ clothed with very fine projecting pubescence; 1st joint piceous, 2nd and 3rd black, 4th piceous, towards the apex pale testaceous. *Rostrum* piceous.

Thorax—*Pronotum* anteriorly glossy, unpunctured (except a row of punctures on the anterior margin and sides); posterior portion deeply, roughly, and irregularly punctured; sides with delicate pale cilia; side margins, posterior margin, and the callus at the hinder angles smooth, unpunctured, piceous. *Scutellum* deeply punctured, more roughly at the sides, the Y impunctate. *Elytra* piceous; *clavus* with three rows of deep punctures; *corium*—inwardly a black shade gradually widened posteriorly, and extending more or less along the posterior margin to the apex; nerves with black punctures along their sides, the 1st exterior nerve with a row on the outside only; disc more finely and irregularly punctured; *membrane* (abbreviated) pitchy-black. *Legs* pitchy-testaceous, hairs black.

Abdomen black, shining, with scarcely perceptible yellowish pubescence.

Length 2—2½ lines.

Dr. Sharp, the well-known coleopterist, to whom we have dedicated the species, found one ♂ and two ♀ examples, last autumn, on the shore of Dabton Loch, near Thornhill, Dumfriesshire, and kindly presented them to us.

Section 6.—Tingidina.

Genus 3.—Dictyonota, *Curt.*

Species 1*.—Dictyonota Fieberi (pl. 2, fig 2).

Dictyonota Fieberi, (*Först.*) *Fieb.*, Europ. Hem., 127, 4 (1861).

Above pale ochreous, without hairs, the reticulation brown, in places black. *Head* black, with four ochreous spines. *Antennæ* ferruginous, closely covered with darker granules, each ending with an extremely fine hair; 1st and 4th joints black. *Pronotum* brown, side margins broad, widened to the front, there broadly rounded, reticulation anteriorly in three rows. *Legs* ferruginous. Body black, covered with a whitish gloss.

Head—black, finely granulated; *crown* and round the eyes whitish; the two basal spines ochreous, the two anterior darker. *Antennæ* ferruginous, closely covered with small, somewhat pointed, darker granules, each ending with an extremely fine hair; 1st and 4th joints black, on the last the granulation very small; sides of the rostral channel ochreous. *Eyes* black.

Thorax—*Pronotum* light brown, anterior angles black; hood short, prominent, but little produced in front; disc distinctly punctured, apical portion ochreous, with black reticulation; keels parallel, the middle one deepest, scarcely deeper behind than in front, with square meshes; the outer keels dwarf; side margins much reflexed, broad, rounded, widened gradually to the front, where the angles are produced and broadly rounded, pale ochreous, reticulation pale brown, black in places, on the anterior half in three rows, the meshes of the inner one small, of the 2nd largest, irregular, of the outer row sub-quadrate. *Elytra* pale ochreous, reticulation brown, in places black; anterior margin with two rows of large meshes, the inner one larger and less regular than the outer one. *Sternum* black, punctured, with a whitish gloss; posterior margin of the segments pale ochreous. *Legs* ferruginous; *thighs* darkest, very finely granulated; *tarsi*, 1st joint ferruginous, 2nd black.

Abdomen—Beneath, black, punctured, with a whitish gloss. Length 2 lines.

Professor Westwood has two or three specimens, taken by himself many years since (he believes at Coombe Wood); and a single specimen was taken by Dr. Power at Weybridge, in August last, by sweeping, and is now in his collection.

Comes next to *D. crassicornis*, Fall., from which it differs in being larger and lighter in colour, with longer, more slender and ferruginous antennæ, the side margins of the pronotum rounded in front, not straight, and having three rows only of meshes; in the reticulation of the anterior margin of the elytra being in two rows throughout, and less regular in form, &c.

Note.—Fieber's description of *D. Fieberi* fits so extremely

well, that there is no room to doubt the identity of our species. The only discrepancy is in the length, which Fieber gives as $2\frac{2}{3}$ lines, while our insect is only 2 lines: but a larger series of examples would probably show that this is the range of the length of the species.

(To be continued.)

DESCRIPTION OF *AULOCERA WERANG*, A NEW SPECIES OF BUTTERFLY BELONGING TO THE FAMILY *SATYRIDÆ*.

BY CAPTAIN A. M. LANG.

The genus *Aulocera* was formed by Mr. Butler (Ent. Mo. Mag., Nov., 1867, p. 121) to contain the Indian group of *Satyri*, consisting of *Padma* (Kollar) and allies.

Of this group, 5 species have been described, viz.:—*Swaha*, *Saraswati*, *Padma*, *Avatara*, and *Scylla*.

Of these, the four first named occur in the North-Western Himalaya, while the last is recorded only from near Sylhet, far from the head quarters of the genus.

In the Simla and Kunàwur districts of N.W. Himalaya (with which I am familiar) *Swaha* abounds during the rainy season, *i.e.*, from July to October, from the outer spurs overlooking the Indian plains for 200 miles into the interior of the mountain ranges towards the treeless regions of Spiti and Tibet.

Saraswati is not quite so widely spread, appears later, and disappears earlier. In August these two species swarm, in localities affected by them, amongst the luxurious grass pastures on the less wooded slopes of the hills.

Padma and *Avatara* I have always found in company, and they have appeared to me as ♀ and ♂ respectively of the same species. They frequent quite different ground to the two former species, and appear at a different season; flying in May and June on the borders of oak and rhododendron forests at the summits of ranges of from 8,000′ to 10,000′ altitude. A second brood appears in July in the same localities. They fly with much bolder Nymphalidan flight than their tamer congeners *Swaha* and *Saraswati*, and they do not extend out of the Simla district into Kunàwur.

Scylla (described by Mr. Butler, *loc. cit.*) has never been seen by me.

A sixth (undescribed) species of the genus has been taken by me, and I diagnose it as follows:—

Aulocera Werang, n. s.

♂ et ♀. Alæ supra nigro fuscæ, albo fasciatæ; velut in A. Padma, Swaha, &c., colore autem minus nigro: fasciâ discali albâ, anticarum maculari, ad apicem bifurcatâ, et maculam nigram ovalem includente; posticarum arcuatâ, tenui, apud angulum analem sub-obsoletâ; ciliis albis ad venarum fines nigro-variis.

Alæ subtus vix pallidiores, fusco strigosæ: posticæ ad basim virescentes, extus minime ochraceæ: anticarum maculâ sub-apicali puncto minuto albo; posticarum fasciâ discali marginem analem attingente, et serie exteriore trium punctorum sub-obsoletorum albidorum.

Alarum anticarum costa et margo exterior magis convexæ, apicesque rotundati.

Corpus nigrum. Antennarum apices subtus obsolete ochracei.

Expans. 2″ 6‴.

Habitat. Upper Kunàwur (Werang Pass), Cashmere (Goolmurg.)

This species is most nearly allied to *Swaha*: but is of a much paler colour, being dark brown instead of velvety-black: it is much more rounded in outline, and consequently a more feeble looking insect. The fascia is of a purer white, much more slender, and is slightly curved on the posterior wings.

It differs from *Scylla* (*loc. cit.*) by its paler colour, larger size, more sinuated margins, and the want of the exterior series of white, black-encircled spots: the whitish dots of *Werang* being only two or three in number, very small and indistinct.

This species occurs in Upper Kunàwur, beyond the range of the four first-named species. It appears, however, to be very rare, as I have seen but three individuals; these were all taken by me at an altitude of 12,000′, about 1,000′ below the bleak and bare summit of the Werang Pass, amidst the rocky, grassy ground just clear of the forests of *Pinus Gerardiana* and *Cedrus Deodara*.

Amongst a small series of insects lately taken by Dr. Jerdon at "Goolmurg" (altitude 9,000′ above the valley of Cashmere), was one specimen of this species.

The head quarters of the species is probably intermediate between Upper Kunàwur as an eastern, and Cashmere as a western limit, far in the interior of the Himalayan ranges, and at high altitudes.

Lucknow: 8*th February*, 1868.

[Captain Lang has forwarded coloured figures of his species, which the editors have kindly allowed me to examine, and I have compared

them and the description with the type of *A. Scylla;* the two species are nearly allied, but I think quite distinct.

One distinctive characteristic occurring in *Scylla*, and not mentioned above, does not appear to exist in *A. Werang*, and I think it as well to notice it as additional evidence of their specific distinction, viz.:—the veins on the under-side of the hind-wings in *Scylla* are powdered with whitish scales.—A. G. Butler, Brit. Mus.]

Lepidoptera at Rannoch in 1867.—The well-known entomological locality of Rannoch is that part of N. W. Perthshire surrounding Loch Rannoch, a lake about eleven miles in length, and lying east and west. Immediately from its shores rise hills, whose slopes are covered with native thickets and woods of birch and alder, with an undergrowth of heath and heather (*Erica cinerea*, *E. tetralix*, and *Calluna vulgaris*), our four native *Vaccinia*, *Myrica Gale*, &c.

In one part a large forest of pine (*Pinus sylvestris*) extends for about three miles along the southern shore of the loch, and is aptly termed, from its sombre appearance, the "Black Wood."*

Why Rannoch should be so much richer in insects than other places apparently as suitable is not altogether easily accounted for satisfactorily. I believe, however, that its elevation, its undisturbed surface thickly but openly wooded, and its *western situation*, must all be taken into consideration. On consulting a map it will be seen that Rannoch lies decidedly in the western half of Scotland, and this is confirmed by the occurrence of insects and plants that are rarely, if ever, found in the eastern half.

More especially I allude to *Acidalia fumata*, &c., and to *Drosera intermedia* and *Hypnum flagellare*.

Perhaps another reason for Rannoch's superiority may be owing to the great extent to which it has been "worked." Every year some species are added to its Fauna, and not always are these Boreal insects, but sometimes, species that seem (at least in Britain) to affect a more southern range, *e. g.*, *Stilbia anomala*† and *Sterrha sacraria*, discovered as Rannoch insects by the Messrs. Blackburn this season.

No one who has studied the "Manual" can have failed to have noticed a great similarity between the Fauna of the Lake District in England and that of Rannoch in Scotland. In the Lake District we have a similar elevated region of lakes and mountains, with a like western situation. The Lake District, however, far outnumbers Rannoch in the variety of the species it produces; but this may be accounted for by its far greater extent (two counties and part of a third), its more southerly situation, its climate, and its larger Flora.

Rannoch, as far as my observations have gone, does not possess many more than 280 flowering plants, while the Lake District has nearly three times that number (721).

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* Not "Black Forest," as often stated. A "forest" in the Highlands is often entirely destitute of trees, and simply means a tract of country set apart for the red deer.—F. B. W.

† Has this not been taken at Rannoch before?—Eds.

Another fact perhaps worth noticing about Rannoch is, that while it seems to appropriate to itself most of the Alpine and boreal insects, yet it possesses but few (and these the commonest) Alpine plants; while the neighbouring district of Breadalbane, lying immediately to the south, has more Alpine and boreal plants than any other place in Britain, and yet but few Alpine and boreal insects. Breadalbane, however, has higher mountains and less wood, which may perhaps account for the difference.

The following list only contains species that have come under my own observation at Rannoch, and does not include nearly all the *Lepidoptera* found at Rannoch, nor even all the species taken there this year. I have, however, mentioned every species (except among the *Micros*) that I have seen, as it may be of some interest to note how many common insects are conspicuous by their absence.

Pieris brassicæ, *rapi*, and *napæ*; *Argynnis Aglaia* and *Selene*; *Vanessa urticæ*, hybernated specimens of which were abundant in the beginning of July. Of this I think there would be only one brood in the year. *Erebia Epiphron (Cassiope)*, near Kinloch Rannoch. I was unfortunate with this species, only discovering it when rather *passée*, although I had been on the ground very shortly before and seen nothing of it. It appeared this year at the end of July! The Messrs. Blackburn took it at Grayvel, and also on Ben Lawers in Breadalbane. A friend of mine met with it abundantly near Killin. *Chortobius Pamphilus*. *C. Davus*, common and variable. Most specimens were the usual pale form, commonest in Scotland. Some of the dark English type also turned up, July 8th and August. *C. Typhon* ditto, and var. *Isis*. *Thecla rubi*, one specimen in the Black Wood, June 28th. *Lycæna Alexis*, *L. Agestis*, var.? *Artaxerxes*, Kinloch, June 27th; sparingly, and, as usual, associated with *Helianthemum vulgare*. I am inclined to agree with those who consider this only a climatic variety, and not a distinct species; yet the difference of the food-plants of the variety and of the type is striking, *Helianthemum vulgare* and *Erodium cicutarium* belonging to widely different orders. The former plant only occurs at Rannoch; but on Arthur's Seat at Edinburgh, and on Kinnoull Hill at Perth, where *Artaxerxes* is common, both plants are common; but I never saw the butterfly show any predilection for *Erodium*. I hope next spring to obtain some larvæ, and try the experiments that Professor Zeller suggests. *Smerinthus populi*, larvæ on sallow in September. *Cossus ligniperda*, larvæ of all ages in birch trees. I know not of this having been met with in the county before, nor do I know where else it occurs in Scotland. Its satellite, the beetle *Soronia punctatissima*, occurs in the burrows not uncommonly. Mr. T. Blackburn attacked one tree with such Entomological ardour in pursuit of beetles, that I was not greatly surprised one day, when passing, to see that it had fallen! I endeavoured to obtain for such ejected *Cossi* as I could find a habitation in a neighbouring tree. *Hepialus velleda*, June 27th. *H. humuli*, June 25th. *Chelonia plantaginis*, July 8th. *Arctia fuliginosa*, very common in the larva state. *Orgyia fascelina*, larvæ. *Demas coryli*, larvæ on hazel; two on sallow. About Perth the larvæ affect birch and beech. *Poecilocampa populi*, larvæ on alder; imago appeared October 14th. *Bombyx rubi*, larvæ very common. *B. callunæ*, common, June 19th; larvæ in autumn, on heather, sallow, and oak. *Endromis versicolor*, larvæ in September, on alder; I always thought this preferred birch. I could not find any, however, on

that tree. *Saturnia carpini*, larvæ not rare. *Metrocampa margaritata*, July 19th. *Rumia cratægata*, *Ellopia fasciaria*, July 8th. *Crocallis elinguaria*, August 6th; *Dasydia obfuscata*, July 26th. This insect is very partial to resting on small rocks, where it is often easy to box it without using the net. *Acidalia fumata*, July 8th; *Scodionia Belgiaria*, Kinloch, July 2nd; *Fidonia atomaria*, *F. piniaria*, June 20th. *F. brunneata*, middle of July. I did not see it in good condition. In the Black Wood it is common, and flies gently in the sunshine over the hillocky masses of *Vaccinium* and heather, sometimes resting on the twigs. *Cabera pusaria* and *C. exanthemaria*, June; *Halia wavaria*; *Hybernia aurantiaria*, ♂ Oct. 7th; *Cheimatobia boreata*, larvæ abundant upon birch in July; first imago came out October 19th. *Oporabia dilutata*, September; *Larentia didymata*; *L. cæsiata*, July 19th, abundant and variable. *L. rujicinctata*, Larigan-Lochan and Glen Lyon, in Breadalbane. I did not see this species at Rannoch. *L. salicata*, June 20th; common on the hills. *L. pectinitaria*, July 7th; *Emmelesia alchemillata*, June 30th; *E. albulata*, June. *E. ericetata*, July 22nd; more widely distributed but scarcely so abundant as the last and the following. *E. blandiata*, June 25th; common, but apparently confined to two small stations. In one of these *albulata* was very abundant, and perplexing from its likeness to its rarer cousin. I found, however, that both species were in the habit of resting during the day on a paling that ran across the meadow, and so I could conveniently pick out the *blandiata* and leave *albulata*. *Eupithecia nanata*, common on the moors; *E. rectangulata*, &c., &c. *Ypsipetes elutata*, common, and, as usual, variable; *Thera variata*; *Melanthia rubiginata*; I found one variety nearly black; *M. ocellata*, June 25th. *Melanippe tristata*, June 21st; *M. unangulata*; neither of these two species were rare. *M. montanata*, *M. biriviata*; *Coremia munitata*, July 25th; *C. ferrugata*, June 20th; *Camptogramma bilineata*; *Cidaria psittacata*, October 11th; *C. miata*, September; *C. corylata*, June 20th; *C. russata*, *C. immanata*, *C. prunata*, *C. testata*, *C. populata*, some very dark forms; *Eubolia palumbaria*, July 2nd; *Anaitis plagiata*, July 26th; *Tanagra chærophyllata*; *Platypteryx falcula*, larvæ on birch in September. *Dicranura furcula* and *D. vinula*, larvæ common on sallow in August and September. *Clostera reclusa*, do.; *Notodonta camelina*, larvæ on alder; *N. dictæa*, one larva on birch. *N. dromedarius*, larvæ on birch. *N. ziczac*, larvæ on sallow and rarely on alder. All the above larvæ were found in Aug., and Sept. *Acronycta myricæ?*, larvæ on *Myrica Gale*, and once or twice on *Salix caprea*; one eating the seeds of *Juncus lamprocarpus*. I am not certain that this will turn out to be *myricæ*; the moth will, however, prove that. If not *myricæ* it is *menyanthidis*, but I am not aware that the latter is found at Rannoch. *Hydræcia nictitans*, on flowers during the day-time in September; *H. micacea*, October 22nd, came to light. *Xylophasia rurea*, *X. polyodon*; *Charæas graminis*, on flowers; *Apamea basilinea*, July 7th; *Caradrina cubicularis*; *Agrotis suffusa*, at sugar, in October. *A. saucia*, October 6th; one at sugar. I fancy this species is hitherto unrecorded as a Scottish species, though being found in the Lake District, it is natural to suppose that it should occur at Rannoch. *A. segetum*, *A. exclamationis*, *A. porphyrea*, June 27th; *Triphæna orbona*, *T. pronuba*; *Orthosia macilenta*, October 5th, common at sugar; *Anchocelis litura*, *Cerastis vaccinii*, *Scopelosoma satellitia*; *Xanthia cerago* and *X. silago*, September; *X. ferruginea*, October, at sugar; *Cosmia trapezina*, October 16th; surely very late for this species. *Polia chi*,

October 7th; also late. *Epunda nigra*, October 10th, at sugar and at rest; *E. viminalis*, bred from larvæ on sallow, and also beaten out of bushes; *Miselia oxyacanthæ*, *Agriopis aprilina*, *Phlogophora meticulosa*, at sugar; *Hadena protea*, ditto, and bred; *H. dentina* and *H. pisi*; *Cloantha solidaginis*, September, beaten out of a birch. *Calocampa vetusta* and *exoleta*, October; the former the commonest at Rannoch. At Perth *exoleta* is much the commoner. *Anarta melanopa*, June 24th; *A. cordigera*, June 20th; both near Kinloch-Rannoch. *Abrostola urticæ*, June 30th; *Plusia interrogationis*, July; not rare among the heather, but not very easy to be taken. *Amphipyra tragopogonis*; *Phytometra ænea*, June 28th; not rare. *Herbula cespitalis*, *Botys fuscalis*, *Pionea forficalis*, July 7th; *Scopula alpinalis*, August; on all the high mountains of Perthshire probably. *Stenopteryx hybridalis*, September; the first taken in Perthshire that I know of. *Scoparia pyralalis*, *atomalis*, and others not yet determined. *Crambus ericellus*, August; in various places in the district. *C. pascuellus*, *C. margaritellus*, August; *C. tristellus*, *Melia sociella*, July 28th; *Tortrix viburnana*, common; *Lithogramma cinerana*, August 5th, at Dall; *Pædisca solandriana*, very common and variable; *Oxygrapha scotana*, October; *Pamplusia monticolana*, August 13th, near Loch Ericht; *Teras caudana*, October; *Œcophora similella*, July; Kinloch and Camachgouran. *Depressaria subpropinquella*, &c., &c.—F. Buchanan White, M.D., Perth, 1867.

Notes on the earlier stages of Dasypolia Templi.—This larva, discovered by Mr. W. R. Jeffrey, has, I am aware, been described by Mr. Newman, in Zoologist, 8788; yet, as it scarcely seems to be reckoned common at present, a few notes, which I have put together from the observations of myself and my friends, may not be uninteresting.

In the latter part of the year 1865, Mr. H. Doubleday obtained living impregnated ♀ moths from Mr. Varley, of Huddersfield, and succeeded in keeping them alive through the winter; one even survived a journey to M. Guenée, and, as well as the two retained by Mr. Doubleday, deposited eggs about March 20th, 1866, which he distributed to his friends, Mr. Hellins and myself amongst them. They were laid on the under-sides of some leaves of *Heracleum sphondylium* (then grown out to a foot in length), which were put in a box to induce them to commence laying. Perhaps in a state of nature, when the *Heracleum* leaves are backward, the females may deposit on the dry stems of last year's plants. The egg is not so flat as the usual *Noctua* shape, but stands up rather higher, ribbed, at first yellowish in colour, afterwards turning flesh colour, with a pinkish-brown spot on the top, and a ring rather above the middle; finally turning blackish a day or two before the hatching of the larva. The larvæ appeared about April 20th; at first they were of a dingy olive colour, with black heads, rather longish-looking in shape.

Mr. Jeffrey having made the entomological world acquainted with the food, we had all provided some *Heracleum* plants ready at hand in our gardens, and put out on them the larvæ immediately upon their appearance; nor had we to wait long in suspense as to their powers of eating. Some began by attacking the leaf itself and afterwards the stem; others made at once for the stem, and commenced eating their way into the interior and drinking the sap which flowed into their little tunnels: from this point their habits as internal feeders made it difficult to watch their growth, but the following observations were made.

It seemed that on reaching the centre of the stem they proceeded downwards, at first giving no sign of their presence; but at the end of a month—about May 23rd—they had reached the bottom of the stems and the crown of the roots, and several of the plants began to show signs of decay. On the 4th of June one larva was extracted from near the bottom of a stem, and by that time measured about five-eighths of an inch. Being placed on another plant it made itself at home there also, and fed and grew till July 10th, when it was again examined, and being found then to measure one inch and three-eighths, was sent to me to be figured.

It appeared very uncomfortable when taken out of its food-stem and exposed to light while being depicted, and when replaced on the stem soon found its hole and disappeared within.

I attempted to rear it on a cut stem of *Heracleum* inserted in a pot of moist earth, but after a few days it left the stem and died in a very flaccid condition.

Meanwhile the larvæ which had been undisturbed seem to have eaten away and grown more rapidly, penetrating even into the main root of the plants, and causing them to wither. By July 10th Mr. Doubleday examined one larva which was nearly full-grown, and about this time probably most of them became restless and wandered off in search of fresh food, for about the 18th of the month neither Mr. Hellins nor I could find one left in any of our plants, and Mr. Doubleday had but few remaining.

However, on the 19th he most kindly sent me a large root with two larvæ, then about one inch and five-eighths long, and on the 25th another—a fine fellow, two inches long, and apparently full-fed.

Before describing the larva I may here at once say that neither of us succeeded in rearing an imago; those larvæ that did not run away became infested with parasites (*Microgaster alvearius*), and thus perished miserably.

However, M. de Graslin (to whom Mr. Doubleday had sent eggs) was more fortunate in France, and succeeded in rearing several fine moths.

The shape of the larva (after it has attained some size) is moderately stout, cylindrical, tapering but little at either extremity, smooth and shining; the folds and segmental divisions very slightly indented, a triangular inflation round the spiracles; the tubercular warty spots slightly raised and shining, and all the legs well developed.

In colour the *half-grown* larva is of a dull flesh tint, tinged with green beneath and at the segmental divisions, but much suffused with a deep dull pink on the back; the warty spots blackish. When *two-thirds grown*, it is wholly of a deep but dull flesh colour, slightly suffused on the anterior segments with a dull red.

The *full-grown* larva is flesh colour, having the dorsal pulsating vessel visible as a stripe of a darker tint of the same. The head is, as in the other stages of growth, brownish-red, and the mouth dark brown. The reddish shining plate on the back of the second segment is divided down the centre by a thin line of flesh-colour, and is thickly margined in front (where it is widest), and more delicately behind, with dark brown. On the anal segment there are four brownish-red plates, thus placed: on the anterior part above the fold of the anal flap a central semi-circular plate margined with dark brown, and on each side of it at an obtuse angle a small narrow oblong plate; the fourth and largest plate is on the anal flap, and has its anterior edge undulating, and margined with dark brown, its anal

extremity ending in two very small points. The anterior legs are brownish-red, and the prolegs slightly tipped with brown; the oval spiracles whitish, outlined with blackish. The brown tubercular spots generally round, but sometimes oval on the third and fourth segments: on these segments also they are placed in a transverse row on the back, and end at the sides in a triangular group of three larger spots. Altogether, there are twelve spots on each of these thoracic segments. The other segments, to the twelfth inclusive, have the usual two pairs on the back of each, and the thirteenth one pair; the anterior larger than the posterior pair; and all gradually diminishing in size from the fifth to the eleventh segment, but on the twelfth they become larger again, and are there transversely oval in shape.

Each spiracle has a large round spot above and below it, another behind and a small one in front of it; these two last-mentioned are sometimes both small, and sometimes one of them is absent; but the two that are above and below the spiracles are larger than any on the back.

The last larva (sent me on July 25th) I retained, and noticed that before August commenced it had entered the earth to change; but, at the end of August or beginning of September, instead of a moth, I observed a myriad of small winged creatures emerging, and, on digging, found a long, conical, whity-brown cocoon which the little parasitic larvæ had constructed over the remains of their victim. These, as mentioned above, were *Microgaster alvearius*, and it seems a mystery how this parasite can lay its eggs upon the larva of *Templi*, boring as it does into the leaf-stalks or stems of *Heracleum* as soon as hatched; and the minute orifice it then makes being soon closed by the exudation of sap. Neither does it show itself again (unless the plant fails to supply sufficient food), but in nature gnaws a hole just below the surface of the earth for its escape.

Mr. Doubleday most kindly procured for me two pupa-cases from which the moths had emerged, but which were in excellent condition, so that I could take a good figure of them. The pupa is barely an inch long, strong in texture, moderately stout and uniform in bulk, tapering gradually near the abdominal tip, which is terminated by a thick blunt spike; the rigns of the abdomen very plump and deeply divided; the anal spike is black, all the rest of the surface purplish-brown, but shining with a leaden hue, as though covered with plumbago.

I understand M. de Graslin bred his moths in August, but in Yorkshire they are seldom found till the third week in September.—Wm. Buckler, Emsworth.

Note on the larva of Zygæna lonicerœ.—Early in June, 1867, I had the pleasure to receive from my kind friend, Mr. Doubleday, a dozen larvæ of this species feeding on the yellow vetchling (*Lathyrus pratensis*); they fed well for about a week, and then began to spin their cocoons,* some yellow and others white, and the perfect insects came forth from the 7th to 16th of July.

When full-grown they were nearly one inch in length, very plump, with the segments deeply divided; and may all be described as follows:—The body of almost uniform thickness, the head very small and retractile, black and shining; the mouth ochreous-yellow margined with black; the palpi yellow at their bases, with

* It seems the *colour of the cocoon* cannot be used to distinguish our five-, from our six-spot Burnets, when in the pupa state.

black tips; the anterior legs black; the ventral legs of the ground-colour of the body—a velvety blueish-green.

Longitudinally there are sub-dorsal and spiracular rows of black velvety blotches, and between them, at the end of each segment, is a transverse pale yellow semi-transparent oblong mark.

Looking sideways at the larvæ, the sub-dorsal row of black blotches is seen to be composed of two forms in regular order on each segment, viz., anteriorly a thick oval blotch, followed after a short interval by a thinner reniform blotch. The spiracular row follows a similar order, but the blotches differ in shape, being thinner and more of a curved wedge form, with a tendency to unite in a curve below. At the side of the belly above the feet is a fine black interrupted line. The tubercles green, and placed on the green ground-colour in the usual order, bearing fascicles of short whitish hairs.

Specimens of the following variety were obtained when quite small on clover, by the Rev. Hallett Todd, who most kindly sent them to me on the 3rd May. They fed up on clover and *Lotus corniculatus*, and the moths appeared from July 5th to 25th. When full-grown their green ground-colour was a little paler than in the foregoing, and rather a yellower green; the sub-dorsal black blotches on each segment were anteriorly a thick, irregular, oblong blotch, inclined to be pointed above, followed after a slight interval by another similar in shape, but rather thinner below.

The spiracular row rather shorter, and similar, though more pointed at top, and meeting below by a curve from the anterior blotch, and the hinder blotch having a little tail at the bottom: an interrupted fine black line above the feet. Ventral legs broadly ringed with black above, and their extremities tipped with black; anterior legs black.—Id.

Notes of some species of Tineina captured in 1867.—*Diplodoma marginepunctella.* West Wickham, June 22nd. One specimen (♂) on the Bishop's palings, and two cases, from which I bred one ♀.

Ochsenheimeria vacculella. Dartford Heath, July 25th. Baldwyn's fence, one example.

Hyponomeuta plumbella. Dartford Heath, July 25th. Two specimens on Baldwyn's fence.

Prays Curtisellus (var. *rusticus*). Took specimens of this black variety of the insect; one at Box Hill, July 31st; and another at West Wickham, Aug. 17th.

Cerostoma sylvella. Ruislip-park-wood, Middlesex, September 7th. One specimen.

Cerostoma scabrella. Sanderstead, August 5th. One specimen.

Gelechia leucatella. Dartford Heath fence, July 25th. One specimen.

„ *albiceps.* Hampstead and Highgate, in July and August. Common on fences.

„ *nanella.* Dartford Heath fence, July 25th. One specimen.

„ *dodecella.* Do. do. Several.

„ *lucidella.* Ruislip Reservoir, Middlesex, July 22nd, by sweeping *Typha latifolia.* Rather common.

Gelechia ericinella. West Wickham, August 5th, amongst heath.

Ypsolophus maryinellus. Mickleham and Sanderstead Downs, July 31st, August 1st and 5th. Beaten from junipers; very common.

Dasycera Oliviella. Dartford Heath fence, July 25th; and Epping Forest, July 20th.

Œcophora tinctella. West Wickham Wood, June 1st. Two specimens amongst heath.

Œgoconia quadripuncta (*Kindermanniella*). Hampstead. Six specimens on street gas lamps, in August.

Butalis senescens. Mickleham, July 31st. Two specimens.

Argyresthia Andereggiella. Epping Forest, July 20th. One specimen.

„ *aurulentella*. Sanderstead and Mickleham, August 1st and 5th. Several specimens beaten from junipers.

Zelleria hepariella. Box Hill, July 30th and 31st. Three specimens beaten from Yews.

Coleophora badiipennella. Hampstead, June 25th.

„ *Fabriciella*. Box Hill, July 31st. Two specimens.

„ *currucipennella*. Epping Forest, July 6th. One specimen.

Opostega salaciella. Near Hampstead, August 6th, swarming on a gas lamp.

Bucculatrix Boyerella. Hampstead, June 15th. One specimen.

—Percy C. Wormald, 35, Bolton Road, St. John's Wood, N.W., 22*nd Nov.*, 1867.

Note on Agrotis suffusa.—In the November No. of the Ent. Mon. Mag., p. 134, Dr. Jordan and I, although agreeing that *saucia* is double-brooded, differ as to *suffusa*. I will now give the grounds for the opinions we then expressed, and confess that his has much stronger support than my own.

Dr. Jordan concluded that *suffusa* is *double-brooded*, from having been accustomed to take specimens of it (in company with *segetum* and *exclamationis*) on flowers in May and June, as well as in the autumn. Mr. Doubleday also tells me that he has taken specimens in the month of June, in good condition, but smaller and paler than those appearing later in the year. And I understand that M. Guenée speaks of two broods—on the wing in June and September.

For my own opinion that *suffusa* has but *one brood* in the year, I have no other confirmation than the following dates, recorded in my diary for 1862. On 24th March, at Sallows, I captured a pair ♂ and ♀ of *suffusa*, apparently hybernated, I shut them up together in a box. By 7th April the ♀ had laid a number of eggs; on 30th April the larvæ were hatched; they ate lettuce and radish leaves, and become full-fed sometime in the first half of July. Being entirely subterranean in their habits, nearly all of them managed to escape from the flowerpot by the hole at the bottom, without my knowing it, and I bred only one moth, which appeared about the middle of August.

Perhaps there is some irregularity in the number of broods, depending on the character of the seasons. Mr. Doubleday in 1846 captured moths, apparently *fresh from the pupa*, as early as the last week in February, a fact to be accounted for neither by Dr. Jordan's view, nor by mine. And Mr. Buckler in 1861 figured a larva about two-thirds grown on Sept. 30th.—John Hellins, Exeter, 28*th Jan.*, 1868.

Captures of Lepidoptera in Galway.—In November last, Mr. Smith (known to Mr. Birchall) brought to be named a box of insects, most of which were taken by his cousin, Miss Nugent, in Galway. Among them were *Pyrgus malvæ** (new to the Irish list), *Triphæna subsequa*, and *Halias quercana* (inserted doubtfully in Mr. Birchall's List). Of the last named we have an old specimen in the Society's collection, from the late Mr. Furlong's collection; but, being without a label, it is impossible to say if it were taken in Ireland or not.—W. F. Kirby, Dublin.

Note on the economy, &c., of Eupœcilia subroseana.—I am rather puzzled about the economy of *Eupœcilia subroseana*. The 'Manual' gives as its localities "Ambleside and near Airthrey, in heathy places."

Now I find it in this neighbourhood in certain low-lying and warm copses where the underwood is of two or three years growth, and in the open places and paths. Here it occurs—rarely to be sure, for I never took a dozen in a season—at intervals all the summer. Its times of appearance seem to be, middle to end of May and beginning of June, end of June and beginning of July, beginning and end of August and beginning of September.

Whether there are three or four broods, or only one appearing at long intervals seems hard to say, and equally so to guess at its food plant, for if it has a preference it seems to be for oak bushes. Altogether these habits seem singular for a northern heath insect. Of heath there are hundreds of acres in this neighbourhood, and I have worked them carefully, but never met with *subroseana* on or near them, and although there are here and there in the woods in which it is found small patches of heath, it seems most sedulously to avoid them.

I find I am not alone in the difficulty about this species, for one friend was inclined to unite it with *roscana*, and another doubted its distinctness from *ruficiliana*, of which two species the food plants do not grow in the woods where *subroseana* is found.

I shall therefore feel much obliged if any one who has taken *subroseana* among heath will kindly send some notice of its habits either to me or to the Magazine, and still more so if he will kindly favour me with one or more specimens for comparison.—Chas. G. Barrett, Haslemere, 25*th January*, 1868.

Nyssia hispidaria at Manchester.—Some ova I had of this species hatched on the 29th April last year. The larvæ fed up rapidly on oak, all having changed to pupæ by the 27th of May; the imagos appeared from the 14th February to the 4th of the present month, and are very fine specimens.—C. Campbell, 14, Blackburn Street, Hulme, Manchester, 11*th March*, 1868.

Observations on the British species of Heterothops.—This genus (the members of which can be at once distinguished from those of *Quedius* or *Philonthus* by the subulate apical joints of their palpi) contains four European species (*H. prævius*, Er., *binotatus*, Steph., *dissimilis*, Grav., and *quadripunctulus*, Grav.), superficially resembling certain small *Quedii*, and not exceeding 2½ lin. in length. These four species are recorded as inhabiting this country, but seem for the most part to be of considerable rarity, and not easily distinguishable *inter se* by beginners; on which account I propose to give short characters for the insects which I refer to them.

* Commonly known as *S. alveolus*.—Eds.

According to the orthodox scheme of tabulation, *H. prævius* and *binotatus* have the elytra rather longer than the thorax, whilst in *H. dissimilis* and *quadripunctulus* the thorax and elytra are about of equal length: some little care must, however, be taken, before working on the basis of this formula of separation, as the proportionate difference in the length of the elytra is, at best, not very conspicuous, and is, of course, less perceptible when there is any undue hiatus between the thorax and scutellum, or when the compared specimens are not set evenly, and in a similar manner. I may here observe that the reiteration by Erichson, in his descriptions, of the longitudinal row of three punctures behind—and the puncture on the inner margin of—each eye, and the two transverse punctures behind the vertex, is not unlikely to mislead a beginner; since these characters are common to all the species.

H. PRÆVIUS, Er. (the *Quedius caliginosus* of Stephens), appears to be of very great rarity here; indeed, I can only at the present moment refer to two modern examples of it, one in Mr. G. R. Waterhouse's collection, and another taken, in my company, by Mr. C. O. Waterhouse, in the month of January, 1863, at the bottom of a hay-stack, near Highgate Ponds.* Mr. E. A. Smith, however, informs me that he believes he has taken more than one example of it in nests of *Formica fuliginosa* near Highgate; but he cannot be sure of the identity of his insect, as he has lost the specimens. This species, apart from the above-mentioned character, is to be distinguished from *H. dissimilis* (the most abundant and widely distributed in the genus, and which usually represents *H. prævius* in collections,—as first remarked, I believe, by Mr. E. W. Janson) by its broader head and shorter and stouter antennæ, the joints whereof are sub-obconic, the apical joints being not longer than broad, and the basal joints pitchy-red,—and by its much more finely and closely punctured abdomen and darker legs. It is shining black, with pitchy-brown elytra, which are more or less rufescent at the apical margin, the reddish tone being widely suffused over the sides also in one of the above-mentioned specimens. The hinder margins of the segments, and the entire apex, of the abdomen are also rufescent, and the legs pitchy-red, with decidedly dark tibiæ.

Kraatz (Ins. Deutschl., ii, 484), in his diagnosis of this species, says of it, "*elytris thorace paulo brevioribus.*" This is, of course, a mistake; and is, indeed, contradicted by the subsequent description.

Thomson's *H. prævius* (Skand. Col. ii, 180) does not exactly agree with Erichson's species, since he describes the head as *oblong-ovate* (the same as in *dissimilis*), instead of short-ovate,—the base of the antennæ and the entire legs as testaceous (qualified, however, by the "*obscurè testaceis*" of his diagnosis), instead of pitchy-red,—and the elytra as "*limbo testaceo.*" He states, moreover, that the antennæ are "*capite duplo longiores;*" whereas, according to Erichson, they should be "*capite sesqui longiores.*" Thomson's description seems, indeed, almost to suggest *H. binotatus*; especially as the large size he mentions (2⅓ lin.) accords better with that species than with *H. prævius*.

* The occasion of the capture of this specimen is impressed upon my mind by the enormous number of hybernating *Steni* then occurring at the bottom of the above-mentioned hay-stack. I see from my note-book that a selection of them made by me, and taken home for examination, resulted in 275 specimens, of about 13 species. My (unsuccessful) object was to find *S. Argus*; which Mr. G. R. Waterhouse had formerly obtained in that neighbourhood.—E. C. R.

H. BINOTATUS, Steph., the largest in the genus, is not uncommon under seaweed at certain parts of our southern coasts. It differs from *H. prævius* in having a less convex thorax (of which the sides are not so straight, being gradually and perceptibly contracted from the base towards the front) and the base of its antennæ of a lighter testaceous colour. The antennæ, also, are longer, with the joints more conic, the penultimate being rather longer than broad; the legs are rather lighter in colour, the elytra are margined with testaceous at the apex, and the abdomen is not so closely punctured. Its broader head, longer elytra, and widely different habitat, will serve to separate this species from *H. dissimilis*.

In Erichson's description the word *scutellum* in the last line of p. 516 should, obviously, be *abdomen*.

I possess a specimen of this insect (given to me by its captor, Mr. Brewer) in which the elytra have no light apical margin.

H. DISSIMILIS, Grav., is frequently found in abundance at the bottoms of haystacks, in company with *Haploglossa prætexta*, divers *Stilici*, *Monotomæ*, small bugs (pallid, ghost-like, but of the genuine "*bouquet*"), *Cryptophagi*, *Typhæa*, &c. It somewhat closely resembles some of the smaller *Quedii* (e. g., *boops* and *semi-æneus*), but may be readily known on the collecting-paper by a certain snake-like attenuation of its head and thorax, and by its very rapid movements and ashy-pubescent appearance. Its oblong-oval head easily distinguishes it from its congeners, from which it differs also in being of a lighter colour,—its elytra often having the lateral and apical margins widely testaceous or reddish-testaceous, and its thorax being sometimes pitchy, instead of deep black. Its abdomen is less closely punctured than in the other species, and the joints of its antennæ are slightly longer than in *H. binotatus*.

H. QUADRIPUNCTULUS, Grav. (or, rather, the insect which I refer to that species), seems to be next in rarity to *H. prævius*. There are three specimens of it in Mr. G. R. Waterhouse's cabinet and two in my own; and Mr. E. A. Smith and Mr. J. A. Brewer appear to have taken it in the month of June, in nests of *Formica fuliginosa*, at Hampstead and Tilgate Forest. It is about the size of *H. dissimilis*, from which, as from all its congeners, it may be known by its almost entirely black colour, the head and thorax being deep and polished black, and the antennæ entirely dark, even at the base: the only light parts appear to be the legs, which are pitchy-testaceous (in my specimens they are pitchy-brown). Compared with *H. dissimilis*, the head is less oblong, the abdomen is more closely and delicately punctured, the elytra are less closely punctured, and the penultimate joints of the antennæ are not quite so elongate.

Kraatz (l. c., p. 486) seems rather to obscure his description of this species by terming its antennæ "*graciles*" and "*schlank*" (adjectives not to be entirely reconciled with his further account of those organs, which he particularizes as being slightly thickened towards the extremity), and by referring to the head (and thorax) as somewhat longer and narrower than in *H. dissimilis*. These characters, as regards the antennæ, seem scarcely supported by his own description; and, as regards the head, are contradicted by the terms of the diagnosis given by him for each of the two insects in question, for therein he terms the head of *quadripunctulus* ovate, and of *dissimilis* oblong-ovate,—in accordance with Erichson in each case.

In his description, however, of the punctuation of the elytra and abdomen of *quadripunctulus*, he appears to be at variance with the latter author. Some light may be thrown on the apparent contradiction in the terms applied by Kraatz to the antennæ in this insect, by his (rather curious) statement that there is an occasional variation in the width and length of their penultimate joints.

Thomson in a measure follows Kraatz, by stating the antennæ in *quadripunctulus* to be longer and more slender than in *dissimilis*; but in other respects the characters given by him agree with those mentioned by Erichson,—who does not, however, infer or call attention to any such superior length of antennæ in the former insect.

According to Fairmaire (Faune Ent. Fr., 533), *H. quadripunctulus* is less than *H. dissimilis* (a character not recorded by other authors), with the abdomen and elytra less punctured, and the head much narrower than the thorax. The punctuation seems right as to the elytra, but not as to the abdomen; and the extreme narrowness of the head is not corroborated by other authors (save, perhaps, by Kraatz, as above mentioned, but who contradicts himself in that respect).—E. C. Rye, 7, Park Field, Putney; *February*, 1868.

Note on Gyrophæna strictula, Er., a species apparently new to Britain.—The insects under this name already in our lists seem to me (on account of their comparatively light colour and more uniform antennæ) to be *G. polita*, Grav., Ktz. The true *G. strictula* should be much darker, without the obsolete double series of thoracic punctures, and with the six penultimate joints of the antennæ getting gradually stouter. I have detected a single specimen, presenting these differential characters, among some beetles sent to me for names by my friend Mr. T. Wilkinson, of Scarborough.—Id.

Note on Galesus cæcutiens, Marshall.—Among some Hymenopterous "odds-and-ends" sent to me by my friend, Mr. T. J. Bold, of Long Benton, I find an example of the above species, taken near Newcastle. This makes a third locality for this curious insect, the peculiarities whereof I in vain brought before our local *savans*; and which, had it not been for our energetic Milford correspondent, would probably have remained unmentioned in this country, until described by some continental author.—Id.

A few words on bad spelling.—The publication of a Catalogue of British Insects under the auspices of a scientific society, offers an opportunity for getting rid of a number of the more flagrant instances of cacography in names, which it is to be hoped will not be neglected. It is often urged that these little blunders have become so endeared to the entomological mind, that to weed them out would be almost sacrilegious; and that a considerable number of excellent entomologists are not Greek scholars, and would not recognise many familiar appellations, if presented to them with the right number of letters in proper sequence. Surely this is very insufficient reasoning. A word would seldom be so much changed as to be wholly irrecognisable. And if at first some violence were done to the feelings, they would

soon recover,—like those of a patient after the extraction of a carious tooth,—and acquiesce in a better state of things for the future. Much space would be required to treat this subject at large, but a few points may be made in illustration. The ill-used letter H might be easily reinstated in such words as *Abrostola*, *Arma*, *Arpactus*, *Omalus*, *Ormocerus*, &c., and, above all, in *Yponomeuta*, *Ypsipetes*, *Ypsolopha*. Printers' errors, which are numerous, might be rectified; as *Acœlius* for *Acœlius* (the confusion of œ and œ is very common), *Smiera* for *Smicra*, *Leucospis* for *Leucopsis*, and *Cephalonomia* for *Cephalonomœa*,—the last in spite of a note by the author indicating the real spelling. So also we have *Argyrotoza* for *Argyrotoxa*, *Rogas* for *Rhogas*, *Arœophus* for *Araopus*, *Oxyrhachis* for *Oxyrrhachis*, *Eysarcoris* for *Eusar[co]coris*, and a thousand more. The above are only a few types of large classes of common mistakes, copied from book to book, and now become inveterate eye-sores. A few are occasionally hounded out, but the mass remains. The rectification of compounds would generally involve the creation of a new word in each case, and has long been past praying for. One monstrous class of vocables deserves especially to be denounced; type of the class,—*Temnostethus*. This barbarism includes a verb in the first person singular; or, in other words, the substitute for the pronoun ego actually enters into the compound, the inventor of which only desired to employ the root "cut," apart from any such accessories as time, mood, or person. *Tmetostethus* is not easy to be pronounced, but *Stethotomus* might have served.* Lastly, a vicious practice has been imported from the Continent, and is daily gaining ground. It is that of making genera which end in -toma, -oma, or soma, neuter, instead of feminine. This extraordinary and illogical vagary seems founded on some confused notion that all Greek words ending in -oma must be neuter, because soma, "body," is so. In a catalogue of *Hemiptera* we find Acanthosoma *hæmorrhoidale*, *dentatum*, *lituratum*, &c. It seems necessary to point out that the gender of the different nouns forming a compound can have no influence on the gender of the compound when formed. The latter depends for gender upon its own termination, and nothing more.† *Acanthosoma* is feminine by the form of the word, irrespective of the gender of *Acantha* or *Soma*; to make it neuter, is to misunderstand the use of words. It would not be more ludicrous to argue that a carriage must be feminine because it has a lady inside. Nevertheless, a German illuminato has gravely propounded this rule, and by way of correction, as a legitimate principle in nomenclature.—T. A. Marshall, Milford, *March*, 1868.

Note on Gelechia costella.—Mr. Stainton, in his most interesting instructions how to find the larva of this species (p. 115), alluding to certain small larvæ noticed by him in the month of October, observes "they could scarcely attain the perfect state before December." That the imago is to be bred during the month of December I can positively assert from actual observation. On the 16th of September last I collected four of the larvæ; about the 14th or 16th of

* Among the advertisements of the "Field" newspaper is one referring to the Neurasthenippon-skelesterizo; which, from collateral evidence, appears to be a lotion for horses' legs. It is melancholy and humiliating to reflect that many names in entomology emulate the terseness and perspicuity of this word. Yet the would-be-classical horse-breaker probably intended a joke (having ideas of his own upon jocularity); while the authors of similar entomological names must be presumed be quite serious.—T. A. M.

† And is, moreover, supposed to be *Latin*, whatever its derivation.—Eds.

November the first imago made its appearance. The specimen was duly boxed and placed on one side; at the end of a month it was alive and uninjured, having remained all that time quite quiet. About a week after the emergence of the first specimen the pupa of another commenced colouring, occupying *three weeks* before its entire coloration was effected; the perfect insect coming out on the 14th of December. These two insects were then sent off by post to a friend. I bred the third specimen on the 21st of December; the fourth has not yet put in an appearance, and is possibly dead. The third was very sluggish, seemingly in a state of semi-torpidity; this specimen was sent through the post alive, a distance of nearly 60 miles; possibly by the time it reached its destination, owing to the almost constant jolting through the post, it may have exhibited something of the liveliness of movement for which the insects in this genus are famous. I cannot help thinking but that it is the natural habit of the creature to appear thus late in the season, the more so as all three of my specimens were bred under circumstances most favourable to their early development, namely, indoors, in a comparatively warm room.—Chas. Healy, 74, Napier Street, Hoxton, N., 23*rd January*, 1868.

Reviews.

British Social Wasps; an introduction to their Anatomy and Physiology, Architecture and general Natural History, by Edward Latham Ormerod, M.D. (Longman and Co., 1868.)

We have long and anxiously waited for the publication of this book, the author having, in his occasional papers on wasps, intimated his intention of giving, in a collected form, his observations and labours on the subject of those insects; and the work more than realizes our expectations, bearing, as it does, that stamp which is only impressed on the labours of those who, like the author, pen each topic "as freshly suggested by nature."

Henceforth, Dr. Ormerod's book will take its place as a standard work, which may be added to by subsequent observers, but must always form an integral part of all future histories of the wasp.

If the work did not contain any oversights, it would not be the production of an enthusiast,—in other words, of one in love with his subject: thus, at page 26, Dr. Ormerod speaks of the "two species" of solitary wasps that represent the *Eumenidæ* in this country; whereas, their number is thirteen. The "two species" should have read "two genera," as our author unquestionably knows.

The chapter on the architecture of wasps is full of original observations; and, if carefully studied, will enable anyone to determine the species by which any nest has been constructed; there can be no necessity for seeing the architect, the impress of the work of the seven species being so graphically portrayed that mistake is scarcely possible. In this chapter the various theories respecting the construction of the hexagonal form of the cells of bees and wasps is alluded to, and the author refers it to instinctive impulse; the walls of cells, he observes, are "raised at once in accurate outlines, each building-pellet being applied with great exactness to three sides, two of one cell and another of an adjoining cell."

In the chapter on the social economy of wasps, their life-history is most elaborately traced from the egg to the perfect insect. The only part of the wasps' history which does not appear to have fallen under the author's own observation is that relating to the diseases to which, in their different stages of development, they are subject; for instance, in the larva state, a disease, similar to that which is well known to bee-keepers as "foul-brood," frequently destroys the entire brood, *Vespa rufa* being apparently most subject to it. Neither does the author appear to have been troubled with the loss of any portion of his broods through the attacks of parasites; as no reference is made to the Coleopterous *Rhipiphorus*, the various species of the Dipterous genus *Volucella*, *Chyronomon vesparum*, or any of the *Chrysididæ*; some of which, particularly *Volucellæ*, frequently commit extensive ravages among wasp brood.

The chapter on Anatomy and Physiology, which occupies more than one-third of the volume, is, in a scientific point of view, the most important; this we commend to the careful study of all entomologists.

The book is embellished with 14 plates, 10 of which are devoted to representations of the nests of the different species, in their various stages of construction; and, although these are somewhat feeble in execution, yet they have the great value of being faithful and characteristic representations.

We could have wished that the same value attached to the 4 plates of figures of the different species of wasps: the first plate of these is by far the best, but the other figures, although executed with a certain degree of nicety, are sadly wanting in truthfulness of character; we should, indeed, scarcely have recognized *Vespa vulgaris*, as the female of that species is here represented of much too large a size, and the male is portrayed with such a pair of wings as no male of this species ever possessed; the worker of *Vespa rufa*, moreover, appears to have changed heads with some Dipterous insect.

The American Naturalist; a popular illustrated Magazine of Natural History. (Salem, Massachusetts; published by the Essex Institute. London; Trübner & Co.)

No more convincing proof of the rapidly spreading taste for Natural History among general readers could be adduced than that of the numerous serials devoted to this subject now published in all the more highly civilized countries; and to the greater part of these must be accorded the praise that scientific accuracy is in them combined with a popular rendering of the subjects treated upon. And the American Naturalist exhibits this attribute in its highest degree. The Essex Institute is well known as one of the foremost American scientific societies, and its popular publication has the benefit of being edited by some of its best naturalists. Each monthly part contains over 50 pages of sound reading printed in the best possible manner, with a multitude of wood-cuts, and several well executed plates; and this at a price (3 dollars per annum) that appears marvellously low. Entomology naturally receives a large share of attention, and many of the papers on this subject are of the highest value. We cannot doubt that, when this Magazine shall have become more generally known, it will enjoy an extended circulation in this country, especially as the North American fauna and flora are strikingly akin to our own. The least we can say to its credit is that the American Naturalist is a model worthy of being copied by British publishers.

Entomological Society of London, 17*th February*, 1868. H. W. Bates, Esq., F.Z.S., in the Chair.

Linnæus Cumming, Esq., and E. P. R. Curzon, Esq., both of Trinity College, Cambridge, were elected members.

Mr. McLachlan exhibited a large oval earthen cell containing a living male of *Lucanus cervus*. This had been found a few days previously, with others, by Mr. Backhouse, of Teddington, when digging in his garden. The cell contained also the puparium or cast-off larval skin, shewing that the insect had emerged from the pupa therein. Mr. Eaton said he had once seen a similar cell dug up in October in a potato-field, also containing a perfect insect. Mr. Janson was of opinion that the beetle assumed the perfect state in the autumn, and remained in the cell until the next summer.

Mr. Latham, of Manchester, sent for exhibition the nest of a social Lepidopterous larva from Natal; this nest consisted of a stout and tough outer covering, inside which were a number of smaller cocoons. Mr. Trimen said they had been formed by *Anaphe reticulata*, one of the *Liparidæ*. Mr. Latham also sent a cluster of cases attached to the extremity of a twig, also from Natal. These were those of some insect allied to *Oiketicus*.

Mr. Pascoe exhibited a beetle from New Zealand, which he described as *Dryocora Howittii*. He regarded it as belonging to the family *Cucujidæ*, but it was a very extraordinary form, inasmuch as the tarsi were 4-jointed in both sexes.

The President requested that any Members engaged in breeding insects from the egg would carefully note the relative numbers of males and females obtained. This information was wanted by Mr. Darwin, who was engaged upon the subject of sexual selection in animals. A discussion on this question ensued, in which several members took part, and the general opinion seemed to be that the females were really not less numerous than the males, but were less frequently observed on account of their more retired habits. Mr. Stainton said that according to his experience in breeding *Micro-Lepidoptera* the females were far more abundant than the males, although the reverse was the case in examples caught at large. Mr. Smith alluded to the extreme abundance of the females of some *Tenthredinidæ*, whereas the males were very scarce or quite unknown.

Mr. Stainton read a paper entitled "A Few Observations on the Synonomy of *Tinea alpicella* and *Zelleria saxifragæ*.

Mr. Eaton read "Remarks upon the homologies of the ovipositor in insects," in which he drew a comparison between the last segment of *Agrion* and the sting of the honey-bee.

Mr. Pascoe read a further portion of his "Contributions to a Knowledge of *Coleoptera*."

2*nd March*, 1868.—Captain Lendy, of Sunbury, and G. A. Lebour, Esq., of the Geological Survey, were elected members.

Mr. Pascoe exhibited a new genus and species of *Prionidæ* from Mr. Swanzy's Cape-Coast-Castle collection; this he characterized as *Eudianodes Swanzyi*; also a species of *Oxycorynus* sent by Mr. Schickendantz from Catamarca, South America; this he described as *O. Hydnoræ*.

Mr. Wood exhibited the pupæ of various *Lepidoptera* from West Africa, pertaining to the genera *Chærocampa*, *Sphinx*, *Antheræa*, &c.

Mr. E. Saunders exhibited various *Buprestidæ* which he had compared with the Fabrician types in the Banksian collection, and also those species that had been considered by authors as identical with those of Fabricius, according to the descriptions; in many cases there were considerable discrepancies between these latter and the actual types.

Mr. Dunning announced the death of Mr. Wilson Armistead, of Leeds, who had been engaged on a work on galls.

Linnean Society, *March 5th*, 1868; G. Bentham, Esq., F.R.S., President, in the Chair.—A paper "On some remarkable Mimetic Analogies among African Butterflies" was read by Mr. Roland Trimen. The author, after some remarks on the length of time during which instances of extraordinarily close resemblance between butterflies of wholly different structure had been allowed to pass without any attempt at explanation of their meaning, referred to Mr. Bates's well-known treatise "On the *Heliconidæ* of the Amazons Valley" as containing the only reasonable elucidation of these remarkable phenomena that has been offered up to the present time. He also alluded to the fact that a similar series of phenomena in India and the Malayan Archipelago had been recorded by Mr. Wallace, who accounted for them on the same theory as that advanced by Mr. Bates. Some general remarks followed, showing that the conditions under which the cases of mimicry occurred in Africa were quite similar to those recorded with respect to the two other warm regions of the earth; and the personal observations of the author in Southern Africa were adduced in support of the statement that the butterflies that are the objects of mimicry (the *Danaidæ* and *Acræidæ*) were protected races, and in great measure exempt from persecution by birds and other devourers of insects. Eleven of the more striking instances of imitation were tabulated and described in detail by Mr. Trimen; the most remarkable of which is perhaps the case of *Papilio Merope*, a butterfly that, according to the author's belief, presents in Africa four forms of female (all very widely differing from the male), three of which are manifest mimickers of three prevalent species of *Danais;* while in Madagascar a local race of the same *Papilio* occurs in which the female differs but slightly from the male.

The results of an examination of the conditions under which the cases of mimicry occurred were then briefly enumerated, as tending in every respect to confirm Mr. Bates's view that such imitations are brought about by natural selection, *i.e.*, by the perpetual preservation of individuals possessing any protective variation of colouring and outline approximating them in aspect to the defended *Danaidæ* or *Acræidæ*, and the destruction of all those not favoured in like manner, —and by the gradual development of the advantageous characters by inheritance during numerous generations.

The paper concluded with the expression of the author's conviction of the harmonious relation existing between the theory of the mutability and gradual origin of species and what is now universally admitted as regards inorganic matter, viz., that geological changes, however profound, are the result of the gradual operation of the forces and agencies still at work under our eyes, and not of vast convulsions of nature or general cataclysms.

BRITISH *HEMIPTERA*: ADDITIONS AND CORRECTIONS.

BY J. W. DOUGLAS AND JOHN SCOTT.

(*Concluded from page* 246.)

The name *Lamproplax* is now submitted by us, instead of *Lampronotus*, for the genus characterized at p. 243 of the present Volume, the latter name having been previously used by Curtis in the *Hymenoptera*.

L. Sharpi is possibly identical with *Pachymerus* (*P.*) *piceus*, Flor, Rhynch. Liv,. i, 251, a species which Fieber admits as distinct, and refers to his genus *Megalonotus* (*Rhyparachromus*, Curtis), Wien. Ent. Monats., vii, 55; but it does not agree with the characters of that genus.

Family 4.—Phytocoridæ.

Genus 4.—Phytocoris, Fall.

Species 3a.—Phytocoris populi, Lin.

Cimex populi, *Lin.*, F. S., 963 (1761); S. N. v., 503, 110 (1767).

Lygæus „ *Fab.*, E. S. iv., 174, 138 (1794); S. R., 237, 171 (1803).

Phytocoris „ *Fall.*, Hem. Suec. i., 84, 16 (1829); *Burm.*, Handb. ii., 268, 9 (1835); *H. Schf.*, Nom. Ent. i., 47 (1835); *Meyer*, Caps., 42, 1, p. 7, fig. 4 (1843); *Sahlb.*, Geoc. Fen., 90, 1 (1848); *Kirschb.*, Caps., 38, 16 (1855); *Fieb.*, Europ. Hem., 260, 8 (1861); *Flor*, Rhyn. Liv. ii., 594, 3 (1861).

Dark greyish-yellow, with large irregular almost black patches, clothed with longish, depressed, pale yellowish hairs, intermixed with shorter black ones; on the corium some few of the patches of hairs are silvery-white; anterior margin of the corium with long black spots of irregular length.

Head brownish-yellow. *Crown* generally, on each side of the centre, next the posterior margin, with two short slightly curved streaks. *Clypeus* more or less fuscous towards and at the apex. *Face*—side lobes margined with black. *Antennæ* black, considerably longer than the entire body; 1st joint longitudinally striped with pale yellow, the black portions with one or two yellow spots, clothed with longish, erect, pale hairs; 2nd three-fourths longer than the 1st, with a narrow yellowish band about one-third of the length from the apex; 3rd narrowly pale at the base, about half the length of the 2nd; 4th three-fourths the length of the 3rd. *Eyes* black; on the under-side, below the eyes, a short black streak. *Rostrum* yellow, apex black.

Thorax—Pronotum black, in the middle towards the collar more or less broadly brownish-yellow, sometimes with a reddish tinge; collar brownish-yellow, on each side of the centre, posteriorly, frequently a black spot; hinder margin narrowly whitish or yellowish-white. *Scutellum* brownish-yellow, very convex, considerably raised above the clavus; the basal angles, the middle of the anterior portion, and a streak on each side before the apex, black. *Elytra—Clavus* black, the inner margin generally yellowish, more or less interrupted with black spots; disc with one or two pale spots. *Corium* with large irregular black patches, generally covering the entire disc, and leaving here and there a

few pale spots, which are more or less confluent in the centre; anterior margin with long black spots of irregular length; at the apex, between the bifurcation of the 1st nerve, a somewhat trapezoidal white patch; at the inner posterior angle a black spot. *Cuneus* pale greyish-yellow, base narrowly pale, disc more or less covered with small, brownish, confluent patches, which, as they reach the apex, become black; extreme apex pale. *Membrane* white, disc with numerous minute, irregular, blackish spots and lines, more or less confluent, varying in form in different individuals; on the anterior margin, a little below the apex of the cuneus, a small, blackish, somewhat oblique patch; cell nerves pale yellow, lesser cell nerve and margins black; large cell more or less black at the base.

Sternum—Prosternum—xyphus, pale yellowish or greenish-yellow; sides at the base broadly black, above which, and near the base of the coxæ, a longitudinal brown-black line. *Mesosternum* almost entirely black. *Metasternum* on the sides black. *Legs* pale yellow or greenish-yellow. *Coxæ*, 3rd pair, at the base on the outside, with a brownish spot. *Thighs*, 1st and 2nd pairs longitudinally spotted with black, thickest at the apex, almost forming two lines extending throughout their entire length; 2nd pair, at the apex on the under-side, with two oblique, transverse, pale bands; 3rd black at the apex, and spotted with black along the upper and under-sides; before the apex an oblique pale band. *Tibiæ*, 1st pair with three broad black rings,—one a little way from the base, another *at the apex*, and one nearly midway between the other two; on the outside, a very narrow black line extends from the base to the second black band; on the inside, at the base, a blackish spot; 2nd pair with three broad black rings,—the first about its own breadth from the base, third the same distance *from the apex*, the second nearly midway between the other two; 3rd pair with three broad black bands,—the first *at the base*, twice as broad as either of the other two, the second a little beyond the centre, and the third a little before the apex, which last is narrowly black; the first band only half encircles the limb; on the outside, a narrow, somewhat interrupted black line extends from the base to the third band; all the tibiæ with longish, fine, somewhat spinose, pale brown hairs. *Tarsi*, 1st joint brown, 2nd yellow, 3rd black. *Claws* piceous.

Abdomen greyish or greenish-yellow; margins of the segments, on the sides, more or less broadly black. Length 3¼ lines.

Hitherto very scarce with us, and, even now, only taken singly on the trunks of poplars, generally in company with *P. distinctus*. It lies close in the cracks of the bark, and in nearly every case is found with the head downwards. It has occurred at Lewisham, Blackheath, and Darenth, in August and September. The Rev. T. A. Marshall has taken two examples,—one at Cheltenham, and the other in the New Forest. The ticket attached to the former says, "On an oak-tree in November." At Rannoch, by Dr. Buchanan White, in the autumn.

Note.—It is difficult to describe the form assumed by the dark markings on the membrane in this and some of the other species, as they are so various; and the best idea which occurs to us, to render it intelligible, is that of colour being spread upon a greasy surface.

Family 6.—Litosomidæ.

Genus 1.—Litosoma, Doug. & Scott.

Species 13.—Litosoma bicolor, Doug. & Scott, pl. 2, fig. 3.

Elongate, narrow. Green, somewhat thickly clothed with fine, short, depressed, whitish hairs, intermixed with longish erect black ones.

Head—*Crown* generally brownish or fuscous. *Antennæ*, 1st and 2nd joints greenish, apex of the latter brown; 3rd and 4th fuscous. *Rostrum* greenish, apex piceous.

Thorax—*Pronotum* brownish or fuscous, lateral margins green. *Scutellum* convex, raised above the clavus, brownish or fuscous. *Elytra*—*Clavus* brownish or fuscous. *Corium* green; next the claval suture sometimes very narrowly, and between the apex of the clavus and the inner posterior angle, brownish or fuscous. *Cuneus* green, of the same colour as the corium. *Membrane* blackish, iridescent; large cell nerve blackish, lesser cell nerve yellowish. *Sternum*—*Mesosternum* blackish, anterior and posterior margins and a central line yellow. *Legs* greenish-yellow, clothed with fine whitish hairs. *Thighs*, 1st pair with a row of fine, erect, longish brown hairs. *Tibiæ* with long, erect, somewhat spinose brown hairs; apex brown. *Tarsi*, 1st and 2nd joints brownish-yellow, 3rd and *claws* black.

Abdomen underneath green, clothed with fine depressed whitish hairs.

Length—♂ 2, ♀ $1\frac{3}{4}$ lines.

In the ♀ the head and pronotum are green, and the brownish or fuscous markings on the scutellum and elytra never so decided as in the ♂.

Not uncommon by beating furze bushes at Esher in August. The males are exceedingly active.

Family 11.—Oncotylidæ.

Genus 2.—Macrocoleus, Fieb.

Species 1*.—Macrocoleus solitarius, Meyer, pl. 2, fig. 4.

Capsus solitarius, *Meyer*, Caps., 83, 62, t. 5, fig. 4 (1843).
Capsus seladonicus, *Kirschb.*, Caps., 80, 103 (1855).
Macrocoleus solitarius, *Fieb.*, Europ. Hem., 321, 8.

Elongate, grey-greenish or grey-yellowish, clothed with stout erect black hairs; the nerves of the elytra naked, pale.

Head elongate, pointed, greenish-yellow. *Crown* convex. *Antennæ* dingy green, clothed with short black hairs; 2nd joint at the apex narrowly, and 3rd and 4th, brownish. *Rostrum* brown, apex piceous.

Thorax—*Pronotum* greenish-yellow; callosities not divided, their hinder margin emarginate; posterior margin at least three times as wide as the anterior; disc convex. *Scutellum* raised above the clavus, with a transverse channel

before the middle, to which the anterior portion is deflected; posterior portion convex, with a faint central keel. *Elytra* grey-greenish or grey-yellowish. *Corium*, on the cuneus suture with a narrow blackish streak, divided before reaching the anterior margin. *Cuneus* slightly paler than the corium. *Membrane* fuscous-black, leaving a broad greenish-white patch around the outside of the large cell; between the apex of the cuneus and the lesser cell nerve a triangular greyish-white patch; below the latter, and extending to the apex of the anterior margin, a triangular patch darker than the colouring of the disc; underneath the lesser cell nerve a short, slightly curved *black* streak. *Cell nerves* white; *cells* fuscous-black; sometimes the large cell is only broadly fuscous-black next the lesser cell nerve, the remaining portion partaking of the greyish-white colouring bounding the outside of the large cell. *Legs* greenish or greyish-green, clothed with short depressed black hairs. *Tibiæ* with fine erect blackish hairs, apex narrowly brown. *Tarsi* and *claws* black. *Abdomen* underneath pale greenish. Length 2½ lines.

Dr. Flor, in his description of *C. seladonicus*, Fall. (Rhyn. Liv. i., 607, 85) refers the *C. seladonicus*, Kirschb., to that insect; but as Fieber says he has seen Kirschbaum's *original*, and gives it as identical with the *C. solitarius*, Meyer, we apprehend Flor is in error.

Three specimens taken in Headley Lane, Mickleham, by Dr. Power in the middle of July last, by sweeping.

Species 2.—Atractotomus pityophilus.

Capsus (Capsus) pityophilus, *Flor*, Rhyn. Liv. i., 597, 77 (1860).
Atractotomus pini, *Doug. & Scott*, Brit. Hem. i., 436, 2.

The synonomy will have to stand as above; specimens received from Dr. Flor proving that his earlier described species is the same as ours.

Family 20.—Stiphrosomidæ.

Genus.—Stiphrosoma, Fieb.

Species 2.—Stiphrosoma lurida, Fall.

Phytocoris luridus, *Fall.* i., 112, 69 (1829).
Capsus luridus, *H. Sch.*, Wanz. iii., 87, fig. 312, 53 (1835); Nom. Ent. i. (1836); *Meyer*, Caps., 109, 101 (1843).
Capsus (Capsus) luridus, *Flor*, Rhyn. Liv. i., 559, 52 (1860).
Stiphrosoma lurida, *Fieb.*, Europ. Hem., 281, 2 (1861).

♂ ferruginous or reddish-brown, ♀ greyish-yellow, clothed with fine, sub-erect, pale yellowish hairs.

Head—*Face*, central lobe not unfrequently piceous. *Antennæ* yellowish-white, clothed with fine pale hairs; 1st joint black at the base; 2nd, base broadly, and apex narrowly, brownish or blackish; 3rd and 4th black. *Eyes* pitchy-black. *Rostrum* brownish-yellow, apex black.

Thorax—*Pronotum* finely wrinkled transversely, with two short brown streaks next the anterior margin in a line with the eyes; callosities generally brown *Scutellum* convex, finely wrinkled transversely, the anterior portion concealed by the posterior margin of the pronotum, with a red or red-brown central streak. *Elytra* flattish-convex, a little longer than the abdomen, finely wrinkled transversely, almost horizontal as far as the cuneus and membrane, which are considerably deflected. *Clavus*, inner margin very narrowly dark brown. *Corium* posteriorly with two reddish-brown streaks, one on each side of the first nerve; the inner one generally of a triangular form, with its base at the posterior margin. *Cuneus* a little paler than the corium. *Membrane* blackish, faintly iridescent. *Cell nerves* yellowish-white; the large cell nerve exteriorly, in ♂ examples, frequently with a dark margin; cells yellowish. *Legs* reddish-yellow. *Tibiæ* yellow, with short, stout, erect, somewhat spinose black hairs. *Tarsi*, 1st joint yellow, 2nd and 3rd black. Length 1¾ line.

Not uncommon at Weybridge, end of June and beginning of July on the flowers of *Jasione montana* (Doug. & Scott). Dr. Power also took it at the same place on 16th August. The males are much darker than the females, and the patch in the corium of the former, unless the elytra be raised, appears to be almost black, owing to the shining through of the upper-surface of the abdomen. Of the basal joint of the antennæ, Fieber says, "brown, base and apex yellow;" but not one of our specimens has this character. Meyer also states, at the end of his description, as follows:—"with the exception of the smooth shining "head and the black callosities on the thorax, *deeply punctured;*" which is a mistake.

HYDRODROMICA.

Section 1.—Hydrometrina.

Family 1.—Hydrometridæ.

Genus 1.—Hydrometra, Fab.

Species 1*.—Hydrometra rufoscutellata.

Gerris rufoscutellata, *Lat.*, Gen. iii., 134, 2 (1807); *Schum.*, Beitr., 32, 2, t. 3, fig. 1, 2, t. 4, fig. 1, 2, 14—19 (1832); *H. Schf.*, Nom. Ent. i., 62 (1835); *Burm.*, Zool. Hand Atlas, t. 29, fig. 21 (1843).

Hydrometra lacustris (majora), *Fall.*, Hem. Suec., 159, 1 (1829).

„ rufoscutellata, *H. Schf.*, Wanz. ix., 69, t. 300, fig. 924 (1850); *Flor*, Rhyn. Liv. i.. 736, 3 (1860); *Fieb.*, Europ. Hem., 106, 1 (1861).

Upper-side (except the head and front part of pronotum, which are black), *antennæ*, and *legs*, ferruginous; *sternum* white, in certain aspects brassy; *abdomen* black, spines of the connexiva long, acute; in the ♀ as long as the genital segments, in the ♂ half the length.

Head black, with yellowish pubescence. *Antennæ* long, slender, ferruginous; 1st joint considerably longer than the 2nd, 3rd as usual very small, 4th scarcely so long as the 2nd, 5th sub-equal with the 2nd. *Eyes* brown-black. *Ocelli* ferruginous. *Rostrum* black, 3rd joint, except the base, ferruginous.

Thorax—Pronotum very slightly convex, finely punctured, light ferruginous, with a lighter fine central line throughout the length, widest in front, scarcely perceptibly raised except on the scutellar process; anterior region, except on the middle line, black; the tubercle at the hinder angles small, fuscous; scutellar process convex, its flat margin fuscous. *Elytra* dark ferruginous; nerves black, with golden hairs. *Wings* fuscous. *Sternum* white, the sides in certain aspects with a pale brassy tinge; next the pronotum, on the whole length, a distinct black streak, outwardly bordered with silvery-white; *prosternum* black in the middle, sides yellowish. *Legs* dull ferruginous, 3rd pair scarcely shorter than the 2nd, the thighs of the 3rd pair longer and the tibiæ shorter than in the 2nd, but the tarsi of the 2nd pair are double the length of those of the 3rd; coxal sheath above diagonally black; *tibiæ*, 1st pair beneath with a narrow black line.

Abdomen beneath black, with a whitish gloss; 6th segment posteriorly with a deep rounded excision, deeper in the ♂ than in the ♀; the points of the connexiva long, acute, reaching in the ♂ about half the length of the genital segments, in the ♀ of equal length. *Genital segments*, the 1st in both sexes carinate, in the ♀ compressed at the sides. Length, ♀, 7 lines.

We are indebted to Mr. J. A. Brewer for a specimen from the collection of the late Mr. Heysham, of Carlisle, which there is good reason to believe was taken by him in that locality. Mr. J. B. Hodgkinson, of Preston, writes in answer to our enquiry,—"There can be no doubt "that Mr. Heysham's *Hydrometra* is British. Mr. Heysham had no "idea of anything foreign, and rarely, if ever, bought any insects but "such as were taken near Carlisle. He was a reserved, exclusive, and "most laborious naturalist, and no one helped him in any order except "*Lepidoptera*."

The species is found in France, Italy, Germany, and Russia: therefore it is likely to occur in Britain; but although the name was introduced into the British List by Stephens and Curtis, the insect to which it was applied was *H. thoracica*, Schum., as Curtis's description (B. E. xii., 553, 3) shows.

CRYPTOCERATA.

AQUATILIA.

Section 5.—Corixina.

Genus 1.—Corixa, Geoff.

Species 17*.—Corixa Scotti, Fieb. (in litt.)

Head above finely rastrate, black, with fine yellow markings. *Crown* piceous; *face* ochreous, the facial depression in the ♂ slight, with thickened edges anteriorly, and a row of punctures at the side, continued up to the base of the crown.

Thorax—Pronotum short, piceous, with five yellow lines. *Clavus* with the first four or five lines straight, entire, the rest mostly sinuate, and all more or less shortened inwardly, sometimes quite obsolete; the inner margin distinctly, the outer indistinctly, yellow. *Corium*, marginal channel blackish, the lines on the disc apparent only on the outer and inner margins as spots, down the middle short twisted lines, sometimes connected at their ends, forming a distinct hieroglyphic series; apex outwardly, and the membrane-sutural line, yellowish. *Membrane* black, the inner margin whitish, and at some distance from the margin, round to the apex of the corium, a row of short whitish lines, spreading out here and there into hieroglyphic characters. *Sternum* wholly pale yellow.

Abdomen ochreous, first three segments (except the margins) and the genital segments black. *Legs* ochreous: *palæ* of the ♂ round-cultrate; middle *tibiæ* brownish, cilia of posterior *tarsi* black. Length 2—2¼ lines.

Taken in the small loch near Kirn, Argyleshire, in May, 1866 (Scott), and again at the same place in September of the same year, in plenty (Douglas and Scott).

This species, which approaches *C. fossarum*, could not be made to agree with any published description; but, to be absolutely certain it was new, specimens were sent to Dr. Fieber, who says it is undescribed, and names it *C. Scotti*.

Lee, S.E., *April*, 1868.

ON SOME BRITISH *CYNIPIDÆ*.

BY THE REV. T. A. MARSHALL, M.A.

(*Continued from page* 226).

Genus Trigonaspis, Hartig.

Antennæ of the ♂ 15-jointed, longer than the body, slender, filiform, the 3rd joint curved, and emarginate for two-thirds of its length on the outer side, half as long again as the 4th; 4—6 sub-equal, 7—15 slightly decreasing in length and diameter, the last lanceolate; of the ♀ 14-jointed, stouter, not longer than the body, the 3rd joint entire, 4—14 of equal thickness, but gradually shorter, except the last,

which is as long as the preceding. Maxillary palpi 5-jointed; labial 2-jointed, the 2nd joint appendiculated. Mesothorax very convex, gibbous, glabrous, shining, with two longitudinal punctured sutures, and a faint medial depression. Scutellum rugose, with two glabrous basal foveolæ, distinctly margined at the base, and obscurely also at the apex; viewed from above, semi-elliptical; viewed laterally, triangular, with the apex rounded. Metathorax nearly perpendicular. Petiole of the ♂ distinct, but much shorter than the hind coxæ; that of the ♀ concealed. Abdomen of the ♂ compressed beneath; viewed from above, elongate-ovate, accuminated; viewed laterally, sub-pyriform, truncate behind; only half as broad, and little more than half as long, as the thorax; the 2nd segment covering one-half the abdomen, the 3rd and 5th each twice as long as the 4th (see Hartig, in Germ. Zeits. 3, pl. 1, f. 1). Abdomen of the ♀ broader, sub-orbiculate above, ovipositor concealed. Neuration of wings as in *Spathegaster* and *Neuroterus*. For differences between *Trigonaspis* and *Spathegaster*, see p. 225.

Trigonaspis, Hart., in Germ. Zeits., 2, 195; Tasch. Hym. 123.

Cynips, Panz.; Walk., Ent. Mag., 166 (partim).

Trigonaspis megaptera, Panz.

Black, shining; parts of the mouth, two basal joints of the fuscous and villose antennæ, squamulæ, abdomen and legs, testaceous. Coxæ at the base, and abdomen at the apex, blackish. Wings ample, longer than the body, finely hairy and ciliated, the usual veins incrassated and dark brown; with two suffused pale brown spots, one very indistinct in the hinder basal angle of the first cubital cell, the other on the anal nervure, just beyond the medial transverse vein, more distinct; at this spot the nervure is interrupted. Tarsi scarcely darkened at the tips.

♂ ♀. Long. $1\frac{1}{2}$—2; alar exp. 5 lin.

Cynips megaptera, Panz., 79, 7, ♀.

Trigonapsis crustalis, Hart., in Germ. Zeits., 2, 195; Tasch. Hym. 135.

The galls of this species are monothalamous, soft, spherical, red, varying in size from that of a pea to that of a hazel-nut, and placed either in crevices of the bark of old oaks, or on the lateral shoots of younger trees. Even those which appear upon the bark are based, according to Hartig, upon an incipient shoot. Not uncommon in woods near London, the New Forest, &c. Panzer's figure is unmistakeable;

but its recognition seems to be due to the English writers, as no German author refers to it. The antenna of the ♂ is figured by Curtis, B. E., 688, with *Rhodites (Cynips) nervosus.*

Genus Aulax, Hartig.

Antennæ of the ♂ 15—16-jointed, not longer than the body, 3rd joint not emarginate, not longer than the 4th; the rest equal, not tapering towards the apex; of the ♀ 13—14-jointed, shorter than the body. Maxillary palpi 5-, labial palpi 3-articulate. Mesothorax glabrous, coriaceous, or sub-rugulose, gibbous; the longitudinal sutures often obsolete in front. Scutellum short, semi-orbicular. Petiole rugose, not striolated as in *Synergus*, consisting of one piece only. Abdomen sub-globose, not compressed; the 2nd segment concealing nearly all the rest. Wings with the radial cell short, broad, sometimes imperfectly closed; the areolet placed nearer to its middle than to its base.

Aylax, Hart., in Germ. Zeits., 2, 195; *Aulax*, ibid. 3, 343; Tasch. Hym. 122.

Aulax, Osten-Sacken, Proc. Ent. Soc. Phil., Vol. iv.

The few specimens of this genus that I have before me (including some German individuals of Mr. Walker's collection, named by Förster), are in so bad a state as to render any conclusions formed from them rather doubtful. The characters of the genus are, however, nearly the same as those of *Synergus*, except the structure of the petiole. In *Synergus* this consists of two cylindrical pieces, the first fitting into the second and larger one, which is conical, having the small end behind. As at present constituted, *Aulax* forms a transitional group, connecting the *Psenides*, or true gall-makers, with the *Inquilini*, or those which "lodge" at the expense and in the habitations of the former. The habits of the species are alternately those of either class. They are classified by Hartig according to the superficial texture of the mesothorax.

i. Disc of the mesothorax aciculated, almost rugulose.

Aulax sabaudi, Hart.

Black; antennæ dusky red, darker at the apex, joints 1—3 blackish; of the ♂ 15-, of the ♀ 14-jointed. Abdomen and legs ferruginous, the former blackish above, the latter with the coxæ, trochanters, and base of the femora, black. Anterior coxæ of the ♀ more or less reddish. Mesothoracic sutures obsolete, except near the scutellum; the latter aciculated like the thorax. Areolet sub-obsolete, its lower vein nearly obliterated. ♂ ♀. Long. ⅔—1; alar. exp. 2 lin.

Aylax sabaudi, Hart., in Germ. Zeits., 2, 195.

? *Cynips Hieracii murorum*, Lin., F. S., 1519 (*Galla faciem muris hirsuti gerit*).

? *C. Hieracii*, Bouché, Naturg., 164.

Forms red, hairy, polythalamous galls on the top, or in the middle, of the stems of *Hieracium boreale* and *sabaudium*. Found in Scotland and near Scarborough by Mr. P. Inchbald, who sent me the insects for determination. He has described the gall, and given Hartig's diagnosis from a copy which I sent him, at p. 46 of Vol. ii. of this Magazine.

Aulax Brandtii, Ratz.

Black; antennæ of the ♂ testaceous, the two first joints and the last black; of the ♀ fuscous, paler at the tips, the scape black. Sides of the thorax aciculated. Legs ferruginous; coxæ and the tips of the tarsi black. ♂ ♀. Long. 1 lin.

Aylax Brandtii, Ratz., in Brandt and Ratz. Darstell. d. offic. Thiere; Hart., in Germ. Zeits., 2, 196.

I have no specimens, but admit the species as British on the authority of Westwood, Rose Insects, in Gardener's Magazine of Botany, 1850, Vol. i., p. 193, &c. The insects named *A. Brandtii* by Förster, in Mr. Walker's collection, do not answer to Hartig's diagnosis given above, and are probably of the genus *Synergus*. They appear to be identical with *Cynips rosæ spinosissimæ*, Inchbald, Zoologist, xix., p. 7824—which is not to be confounded with *Rhodites spinosissimæ*, Giraud, Verh. d. Zool. bot. Gesellsch. in Wien, 1859, p. 367. The latter inhabits small red galls armed with several spinous projections; the galls described by Mr. Inchbald are smooth. Giraud's insect is doubtless British, as I have several times found the galls, but failed to obtain from them anything but a *Synergus*. *Aulax Brandtii* is a parasite of *Rhodites rosæ*, thus connecting by its habits the present with the following genus.

ii. Disc of the mesothorax coriaceous, obscurely shining.

Aulax glechomatis, Hart.

Black; the 14-jointed antennæ and legs chestnut-red; coxæ and base of femora obscure; antennæ with the two basal joints black, but paler at the apex; wings hyaline, with blackish nervures; areolet wanting. Medial lobe of the mesothorax with two anterior longitudinal furrows, obsolete before the middle. Scutellum rugose. Base of the 2nd segment narrowly ferruginous.

♀. Long. 1⅔—2; alar. exp. 3 lin.

Aulax glechomæ [read *glechomatis*], Hart., in Germ. Zeits., 3, 342 ; 4, 412.

The largest species, distinguished by the thick, globose abdomen, and slightly shining mesothorax, the coriaceous appearance of which is due to very minute punctures, with glabrous interstices. It forms galls from one to three-fourths of an inch in diameter, beset with whitish hairs, in the axillæ of the leaves of *Glechoma hederaceum*, L., the common ground-ivy. These galls are well figured by Reaum., Ins., iii., pl. 42, f. 1—5 ; and Malpighi, Opera omnia, pl. 9, f. 24. The Linnean description of *Cynips glechomæ* [sic], F. S., 1520 ; Syst. Nat., 2, 917 ; and Fab., E. S., 2, 101, "*Fusca, thorace villoso*," must refer, as remarked by Hartig, to a different insect,—probably a *Synergus*,—as the present species has the thorax totally free from villosity. *Aulax glechomatis*, Hart., is not uncommon in England. I possess the inner gall and the insect, through the kindness of Mr. P. Inchbald.

iii. Disc of the mesothorax entirely glabrous and shining.

Aulax brevicornis, Curtis ?

"♀. Black, shining; abdomen bright ferruginous; legs bright ochreous, tips of tarsi fuscous ; mandibles and antennæ ferruginous, the latter brownish towards the apex, not much longer than the head and thorax, 13-jointed (?), terminal joint longest. 1⅓ lines. Dover." Curtis, B. E., 688, 19 (*Cynips brevicornis*).

The apex of the abdomen is more or less dark above. The antennæ are sometimes much darker than "ferruginous," and vary in having 13—14 joints. The mesothoracic sutures are abbreviated in front. Mesothorax very black and shining. Radial cell more or less imperfect ; in one specimen completely obliterated on the right side only.

♀. Long. 1—1¼ ; alar. exp. 2¼ lin.

? *Cynips brevicornis*, Curt., *l. c.*
? *Cynips potentillæ*, Villers.
? *Aylax splendens*, Hart., in Germ. Zeits., 2, 196.

Hartig gives the antennæ as 15- (*i. e.* 14-) jointed. Notwithstanding the apparent disagreement of his and Curtis's diagnoses, I cannot but think the insects identical. Five German specimens in Mr. Walker's collection are ticketed *A. splendens*, in the handwriting of Förster, but the determination must be incorrect, as they have not the "Mittelbrustrücken vollkommen glatt und glanzend." I consider them to be *A. sabaudi*, Hart.

Of unknown habits, but taken occasionally amongst oak trees.

(*To be continued in Vol. V.*)

DESCRIPTIONS OF THREE NEW SPECIES OF *CTENOSTOMA* (TRIBE *CICINDELIDES*.)

BY H. W. BATES, F.Z.S., PRES. ENT. SOC.

The curious tiger-beetles forming the family *Ctenostomidæ* have always been regarded with especial interest by coleopterists, on account of their rarity, and the singularity of their appearance; these insects having a greater general resemblance to ants than to their near relatives, the *Cicindelæ* proper. This resemblance is due to the globular form of the thorax, the constricted base of their elytra, and their dark bronzed colours; and it is so great, that, when the insects are seen prowling in search of prey along the slender branches of trees, they can scarcely be distinguished from large ants of the *Poneridæ* group. In Lacordaire's classical work, the "Genera des Coléoptères," the tropical American forms of the *Ctenostomidæ* were divided into three genera,—*Procephalus*, *Ctenostoma*, and *Myrmecilla*,—distinguished from each other chiefly by the form of the elytra, which was parallelogrammical in the first, dilated behind and gibbous in the second, and simply dilated behind in the third. To this character were added, in the case of the genus *Myrmecilla*, a transverse labrum, undilated 2nd joint of the maxillary palpi, and greatly elongated 3rd joint of the labial palpi; but the new species which have been discovered since the date of this work have proved the inapplicability of these characters, for some species (*e. g.*, *C. obliquatum*, Chaudoir) have the labrum and elytra of *Ctenostoma* and the palpi of *Myrmecilla;* and the three genera have been sunk into one (as long ago proposed by Erichson) in a revision of the group published by Baron Chaudoir, in the Bulletin des Naturalistes de Moscou, vol. 33, 1860. As a further proof of the untenability of the three genera, may be instanced *C. corculum*, described below, which resembles *Myrmecilla* in labrum and labial palpi, but has the elytra of *Procephalus*.

I took myself eleven species of *Ctenostoma* on the banks of the Amazons. As a hint to future travellers, I may mention that they are to be searched for at the close of the dry season, from November to February, and that the only way of finding them is to walk slowly along the pathways of second-growth forest, and examine carefully all the slender branches. When a specimen has been detected, the bushes may be beaten over an open umbrella, and thus made to yield all their contents.

Twenty-seven well-defined species have been described by authors; the three here added will bring the number to 30.

Ctenostoma ebeninum.—Long. 5½ lin.; lat. elytr. 1¾ lin. ♂. Cylindrical, deep black, shining; elytra rather thickly covered throughout with distinct punctures, and marked in the middle of each with a narrow, oblique, slightly waved, white fascia, which reaches neither the suture nor the lateral margin: apex of the elytra broadly edged with testaceous-white.

The species belongs to the section *Procephalus*, having cylindrical elytra, not tumid behind, and distinct shoulders. The upper-surface is destitute of hairs. The head is narrow, glossy, and impunctate, gradually narrowed behind, and without constriction at the neck; near each eye are two longitudinal impressed lines, with a narrow raised line between them: the labrum, palpi, mandibles, and four basal joints of the antennæ are black, the remaining antennal joints brown. The thorax is narrow, equally and moderately constricted before and behind, with the intermediate part oval; the anterior part is not wider than the posterior; it is glabrous and impunctate. The elytra are tolerably evenly and moderately punctured, from the base to the apex: the central white line is placed obliquely from the suture backwards, and is impunctate; the apical spot is punctured; the apex of each elytron is emarginate-truncate, with the sutural angle obtuse, and the external prominent and acute. The under-surface is glossy-black, and clothed with black bristles.

One example, Ega. The only described species which resembles this in colours and markings is *C. succinctum*, of Castlenau (Rev. Ent. Silberm. 2, p. 36); but the white mark of the elytra in this is described as lying before the middle, transversal, and arcuated.

Ctenostoma corculum.—Long. 2¾ lin.; lat. elytr. ⅝ lin. ♂. Cylindrical, pitchy-black, shining; elytra with distinct shoulders, evenly convex, not dilated behind, clothed with a few long black bristles, punctured throughout, the punctures much coarser towards the base, a narrow straight transverse fascia before the middle, the apex and sutural region near the apex tawny-white, legs rusty-testaceous, basal half of femora and the trochanters nearly white: sides of the crown behind the eyes greatly dilated and obliquely elevated.

Not closely related to any known species. It resembles in some features *C.* (*Myrmecilla*) *pygmæum* (Lacordaire), but is easily distinguished by its square shoulders; the dilated sides of the crown behind the eyes give the head the same angular appearance in both, but the structure of this part is essentially different in the two species. In *C. pygmæum*, the

crown behind is flat, or rather depressed, and is simply dilated and prolonged into an acute angle on each side; but in *C. coreulum*, each side forms a very broad elevated rim, rounded behind, separated from the crown by a deep groove, and overhanging the eye. The head is considerably wider than the broadest part of the thorax, glossy-black, with the labrum pitchy-red, and palpi reddish-testaceous; it is separated from the neck by an impressed line: the antennæ have the four basal joints testaceous (the basal joint darker in front), and the apical joints blackish. The thorax is constricted before and behind, with the anterior rather wider than the posterior part, and the central portion oval, convex. The elytra have distinctly squared shoulders, and are as broad in this part as posteriorly; the surface is equally convex, and the sides are rather abruptly narrowed a little before the apex; the latter is deeply emarginate-truncate, with both angles acute and moderately produced, the external one longer than the sutural; the whole surface is punctured, but much more strongly so towards the base, where the large impressions tend to form rugæ; the central band is narrow, and lies across the elytron, nearly touching both suture and margin; it is partially punctured, and of a tawny hue: the apex is broadly pale, the colour advancing along the suture nearly to the middle, and becoming more rufous. The under-surface is reddish, the abdomen darker. The legs have very few and long bristles.

Bahia; discovered by Mr. Reade.

Ctenostoma asperulum.—Long. 3¾ lin.; lat. elytr. ⅔ lin. ♀. Elongate, dilated behind; bronzed-piceous, shining: elytra very narrow at the base, dilated beyond the middle, but not gibbous; surface very coarsely punctured, with the interstices towards the base raised in numerous conical tubercles, the middle crossed by a straight pale testaceous fascia, and the posterior part of the suture and apex broadly pale-testaceous; each elytron sinuate-truncate, with both angles prolonged into spines: posterior angles of the crown slightly dilated behind the eyes.

A small species, very similar in shape and colours to *C. pygmæum*, but differing in the tuberculated surface of the elytra and their bispinose apices. The dilatation of the head behind the eyes is obtuse, and of small dimensions; it is separated from the neck by a depression. The thorax is distinctly broader before than behind, and the intermediate portion is oval and very convex. The elytra are of a pitchy-bronze hue, clothed with a few long black hairs; the sutural spine is rather longer than the external one. The legs are pitchy-red, rather darker

on the tibiæ and tarsi; they are clothed sparingly with very long hairs. The under-surface is dark red. The antennæ have the joints 1 to 3 dark red, 4—6 black, 7—8 clear red, and 9—11 black. Palpi pitchy-red.

Villa Nova, Lower Amazons. I took several specimens in dry weather during January and February, running along slender branches of trees in the forest, in company with *C. Jacquieri* (Dej.).

London, *April*, 1868.

DESCRIPTION OF AN UNDESCRIBED SPECIES OF WASP AND ITS NEST, RECEIVED FROM HAKODADI, IN JAPAN.

BY F. SMITH.

Within the last few years many species of insects, new to science, have been forwarded to this country by our friend Mr. Geo. Lewis, the well-known coleopterist; and, about twelve months ago, he very obligingly sent a beautiful wasp's nest for my own collection. Being anxious to make the collection of the nests of insects in the British Museum as complete as opportunities will allow, I there deposited it. It pertains to one of the large species which are known as hornets. The dimensions are as follow:—length 12 inches, diameter at the widest part 9 inches. The outer envelope is composed of a very coarse reddish-brown paper, laid on in overlapping folds, somewhat resembling in shape a series of scallop-shells; these are composed of alternate layers of dark brown and white, the materials apparently having been obtained from decayed woods of those colours; this mode of construction gives the whole a pretty, variegated appearance. It is attached to a branch in a similar way to the nests of the *Vespa Norvegica* of this country. The wasp, as will be seen from the dimensions given, must be about the same size as the British hornet. We have only seen males extracted from the cells, and know nothing of either female or worker.

Vespa Japonica, male. Length 10½ lines. Black: the head and thorax with pale yellow pubescence; the clypeus, mandibles, and lower portion of the cheeks ferruginous; the scape fulvous, and the flagellum fulvous beneath. The anterior tibiæ and tarsi pale ferruginous, the former black beneath; the intermediate and posterior tibiæ and tarsi fusco-ferruginous, the apical joints of the tarsi palest. The wings fulvo-hyaline, with the front margin of the anterior pair fuscous. The apical margins of the segments of the abdomen with yellow fasciæ, the two apical segments entirely yellow.

The lower comb of the nest is entirely occupied by cells of male wasps; from these a number of the insects were extracted. Our description will therefore probably be in some degree inaccurate, when perfect disclosed specimens are obtained; the colouring of the head and thorax would very probably be considerably brighter.

Another wasp from Hakodadi, received through another source, may prove to be the worker of this species: a description of it is therefore added.

Vespa simillima. Length 1 inch. Head reddish-yellow, the mandibles and clypeus bright yellow; the face black from the insertion of the antennæ up to the summit of the eyes, the emargination of the eyes being yellow; a triangular yellow shape between the antennæ, which are bright fulvous beneath, and fuscous above; the anterior margin of the clypeus slightly emarginate; the teeth and inner margin of the mandibles black. The thorax black, covered with a short golden down, and, as well as the head, thinly sprinkled with erect fulvous hairs; a ferruginous spot on each side of the prothorax, and a triangular one beneath the wings; a minute spot of the same colour on each side of the metathorax, near the scutellum; the tibiæ and tarsi reddish-yellow, with the claws black; the wings sub-hyaline, the margins of the anterior pair ferruginous. Abdomen yellow; the basal segment black, with a narrow yellow margin; the second and following segments black at their basal margins, each one more narrowly so than the preceding; the base of the two apical segments scarcely, if at all, visible; the abdomen covered with a fine golden down, and sprinkled with erect fulvous hairs.

British Museum, *April*, 1868.

A few more words on bad spelling.—By way of further illustrating the subject glanced at in my note at p. 259 of vol. iv. of this Magazine, I have applied some simple corrections to the nomenclature of British *Hetcroptera*, as given in the latest Catalogue. If these were adopted, the whole system of names would be reduced, as far perhaps as is practicable, to the ordinary classical standard. In the other Orders it would be easy to effect a similar reformation. The barbarisms may be collected under the following general heads:—

(1) Words without meaning, as Jalla, Miris, Beosus, etc.,—Verlusia, Arvelius (anagrams of Valerius),—and all those formed by Amyot and Serville from Chinese, Sanskrit, Hebrew, and Arabic roots, diversified by fancy spelling, are incurable, and are here omitted.

(2) Genders of genera. ODONTOSCELIS *fuliginosus* for *-nosa*; GRAPHOSOMA *lineatum* for *-ata*; DIPSOCORIS *alienum* for *-cus*;* ACANTHOSOMA *hæmorrhoidale* for *-dalis*; ACETROPIS *carinatus* for *-nata*; CAMPTOBROCHIS *punctulatus* for *-lata*. The Greek KORIS, "bug," is masculine; other forms ending in *-is* should be feminine, except in a few special cases. MIRIS is a fancy-word, and has no gender.

(3) Compounds involving verbs in the 1st person singular present indicative, instead of the radix. They may in general be easily rectified:—

PIEZODORUS	should be written	PIESTODORUS.
PIEZOSTETHUS	,,	PIESTOSTETHUS.
TEMNOSTETHUS	,,	TMETOSTETHUS or STETHOTOMUS.
SYSTELLONOTUS	,,	SYSTOLONOTUS.
PLATYNOPUS	,,	PLATYPUS (if not preoccupied in *Mammalia*).

(4) Compounds of two nouns, whereof the first is a mutilated form of the nominative case, instead of the radix. Substituting this latter, we obtain—

For EUSARCORIS,	. . . .	EUSARCOCORIS.
,, TROPICORIS,	. . . .	TROPIDOCORIS.
,, RHAPHIGASTER,	. . .	RHAPHIDOGASTER.
,, ELASMOSTETHUS,	. . .	ELASMATOSTETHUS.
,, MYRMECORIS,	. . . .	MYRMECOCORIS.
,, CERALEPTUS,	. . . .	CERATOLEPTUS.
,, TROPISTETHUS,	. . .	TROPIDOSTETHUS.
,, MYRMEDOBIA,	. . . .	MYRMEDONOBIA.

(5) Hybrid words, half Latin and half Greek; *ex. gr.*, ARENOCORIS for PSAMMOCORIS.

(6) Compounds of two nouns, in which the subject is placed first, and the subordinate idea last, thereby destroying the sense. Let anyone try this inversion upon the English compounds "*London-Bridge*," "*watch-pocket*," "*sheep-stealer*," "*black-beetle*," "*black-guard*," etc., and the result will be similar to that of—

CORIMELÆNA	for	MELANOCORIS.
DEREPHYSIA	,,	PHYSODERA.

(7) Compounds of two nouns, of which the first is not in the radical form, and which are not joined by the proper letter of connection, viz., O in Greek, and I† in Latin. Nearly the same as class (4). *Ex. gr.*:—

CYLLECORIS	for	CYLLOCORIS.
ACETROPIS	,,	ACOTROPIS.
GONIANOTUS	,,	GONIONOTUS.
CARDIASTETHUS	,,	CARDIOSTETHUS.

* It may not be entirely useless if I explain here (though explanation is, perhaps, scarcely required) the reason for the masculine termination of the species of genera compounded of the word KORIS, as my previous remarks on *Acanthosoma* may possibly seem at variance with this correction.

DIPSOCORIS = "thirst-bug;" a compound noun substantive, which, therefore, must have *some* gender or other. It takes its gender from the *subject* (*i. e.*, "bug"), and not from the accessory idea.

ACANTHOSOMA = "spiny-bodied;" a compound noun adjective, agreeing with some substantive understood, or supposed to be understood, and, in this instance, from the termination, supposed to be feminine. If it were masculine, we should have required *Acanthosomus*; if neuter, *Acanthosomum*.

It will be readily seen that there is no analogy between words like *Dipsocoris* and words like *Acanthosoma*. The former involves both subject and predicate; the subject is a *bug*, whereof it is predicated that he is *thirsty*. In *Acanthosoma* the subject is not contained, but understood, and conventionally made feminine; and of this subject it is predicated that it has a *spiny body*. Body is not the subject, but part of the predicate.—T. A. M.

† Yet *albo-maculatus*, *nigro-cinctus*, etc., are admissible; being in fact two words, and not compounded. As compounds, we should write *albipes*, *nigriceps*, etc.—T. A. M.

(8) Incorrect substitution, transposition, or omission of letters. *Ex. gr.* :—

Arma	for	Harma (neuter).	*arenicolus*	for	*arenicola* (masc.).
Apariphe	„	Aparyphe.	*merioptera*	„	*?* (no sense); *spissicornis*, [Fab.
Dichroosycitus	„	Dichrooscytus.	*pallicornis*	„	*pallidicornis*.
Ætorhinus	„	Aëtorhinus.	*dolobratus*	„	*dolabratus*.

Corimelæna is not only impossible as a compound, but the adjective is in the wrong gender, for Koris is masc. Æliodes should be Ælioides: the termination -odes means "full of;" similarity is expressed by -oides. Tinicephalus involves a verb this time in the present infinitive (*teste* Fieber), and mutilated: the correct form would be Cephalotenes or Cephalotonus. Embletheis is an unusual participle, but may stand; it is masculine; the right word would have been Embolimus. Pionosomus is a solœcism; for pion belongs to a class of adjectives never compounded: it should be Piosomus, from the alternative form pios. Colliocoris has no meaning as spelt, and cannot be corrected. Derephysia is trebly wrong: (1) the subject is misplaced; (2) the words are not connected by the letter O; and (3) the termination is from a verbal inflexion instead of a root. Corixa and Corisa, being fantasias on the word Koris, may be spelt according to taste.

I have taken the trouble to rake together this rubbish, in hopes of preventing some of it at least from returning to disfigure our books. I shall be well pleased with even the most partial success.

I observe a "printer's error" in my communication on this subject in the last No. of the Magazine, p. 260, l. 8, where Cephalonomœa should be Cephalanomœa.—T. A. Marshall, Milford, *April 8th*, 1868.

Vanessa Atalanta at light.—While searching for moths on the gas-lamps in Love Lane, Lee, at about ten o'clock on the night of September 4th, 1867, I was rather surprised to find a fine specimen of *V. Atalanta* sitting on one of the glasses. Twice when I drove it off it returned, but ultimately settled on a tree at a short distance, where I left it.

I should like to know if it be a habit of this butterfly to come to light.—R. Adkin, Blackheath, S.E.

[Similar instances of butterflies coming to light have been recorded; but they must always be looked upon as accidental. In some cases the fact may be owing to the creature having chosen the immediate vicinity of the light as a resting-place.—Eds.]

Vanessa Antiopa at Cambridge.—I have just come into possession of a fine specimen of *Vanessa Antiopa*, taken in a garden in this neighbourhood last autumn. —Linnæus Cumming, Trinity College, Cambridge, *25th March*, 1868.

Pyrgus malvæ (alveolus) possibly not Irish.—I regret to find that I assumed too hastily that all Mr. Fergus Smith's insects were collected in Galway. I now find that *H. quercana* was taken by Mr. Smith himself in Queen's County; and on making further inquiries respecting *P. Malvæ*, I have ascertained that the specimen belongs to Miss Nugent, who does not remember from whence she obtained the insect, and does not think she took it herself.—W. F. Kirby, Dublin, *April 3rd*.

Additions to the Lepidoptera of Ireland.—The following 13 species have been observed in Ireland since the completion of my list in this Magazine for January, 1867.

Several of the species have already been noticed separately; but I think it will be convenient to publish a complete list of the additions made during 1867.

Syricthus alveolus—Galway, Miss Nugent. [*Vide supra.* Eds.]

Sesia muscæformis—Howth, C. S. Gregson; Ent. Mo. Mag., August, 1867.

Lithosia complana—bred by myself from larvæ captured at Howth, June, 1867.

Bombyx quercûs—at Queenstown, by Mr. Bond. Mrs. Battersby, of Rathowen, Co. Westmeath, has also bred specimens exactly corresponding with the *B. quercûs* of Southern England.

Apamea fibrosa—captured at Killarney by myself; Ent. Mo. Mag., Feb., 1867.

Dianthœcia cæsia—bred by Mr. Warren Wright from larvæ found feeding on *Silene maritima* at Tramore, July, 1866; "Entomologist," October, 1867.

Ennomos tiliaria—Hon. Emily Lawless, County Kildare; Ent. Mo. Mag., Jan, 1867.

Plusia interrogationis—Mrs. Battersby, Rathowen, Co. Westmeath.

Ennychia anguinalis—Galway, captured by myself.

Phycis subornatella—Howth, C. S. Gregson, Ent. Mo. Mag., August, 1867.

Halias quercana—Galway, Miss Nugent. Was included in original list on doubtful authority; now ascertained to be indigenous.

Peronea hastiana—Mrs. Battersby, Rathowen, Co. Westmeath.

Ephippiphora tetragonana—Howth, Mr. Barrett.—Edwin Birchall, Airedale Cliff, Leeds, *March 9th*, 1868.

Early occurrence of Hydradephaga.—The following list of water-beetles, taken by me on the 18th inst., appears to me rather curious; whether as shewing that the present season is very forward, or that they come out of their winter quarters sooner than I have hitherto supposed: *Colymbetes exoletus* and *Grapi; Ilybius guttiger* and *sex-dentatus; Agabus agilis, uliginosus*, and *abbreviatus; Noterus semipunctatus; Hydroporus decoratus, dorsalis, erythrocephalus, rufifrons, planus, nitidus, angustatus, umbrosus, Scalesianus, palustris, lineatus* and *granularis.*

I have not met with *H. nitidus (oblongus)* for two or three years; and I only got six examples in several hours workings, and but one solitary *H. Scalesianus.* I suppose it is true that *H. nitidus* is a very early insect, but I am surprised to find so many others equally early.—W. Hey, Clifton, York; *March*, 1868.

Occurrence of Agabus Solieri near Dumfries and Clova.—Last year I captured a single female specimen of *Agabus Solieri* near Dumfries, at an elevation of over 1800 feet. Two *Agabi* were taken, one of which was *A. bipustulatus.* The water was only about three yards long, and full of weeds. In August, 1865, I also took a single ♀ of *A. Solieri* near Loch Brandy, Clova.—W. R. McNab, Southern Counties Asylum, Dumfries, *7th April*, 1868.

Note on a new British Hydroporus.—Amongst some *Coleoptera* taken on a moor near Lancrcost, Cumberland, I have found a male specimen of *Hydroporus*

elongatulus, Sturm, Schaum, which is, I believe, new to the British Fauna. It closely resembles *H. tristis*, but is rather larger, flatter, and more obscure than that species, and has a wider head and thorax, and the elytra more pubescent. I have compared my specimen with continental types kindly lent me by Mr. Crotch, with which it agrees in every respect, excepting in its slightly smaller size.—Thos. Jno. Bold, Long Benton, Newcastle-on-Tyne, *April*, 1868.

Note on a new British Haliplus.—I occasionally find, in large ponds here, a *Haliplus* which I think is *H. varius*, Nicol., Schaum. It is of the same pale testaceous hue as *H. obliquus*, with the elytra lineated with black; the black lines next the suture nearly complete, and those towards the margin very slightly twice interrupted. Its smaller size and proportionately larger and more convex thorax separate it from *H. obliquus*, whilst the small size and pale colour clearly distinguish it from *H. lineatus*.—Id.

Note on Nomada xanthosticta and Nomada mistura.—*Nomada mistura*, Smith is, I believe, the male of *Nomada xanthosticta*, Kirby. Both appear at the same time of year, and frequent the same localities. Both Mr. Wailes and I have taken them flying about the burrows of *Andrœna analis*, near Haltwhistle, Northumberland, in July. In the same month I again met with the *Nomada* near Naworth Castle, Cumberland, also in company with the same *Andrœna*.—Id.

Note on Nomada borealis.—The handsome *Nomada borealis*, Zett., is in this district rather an abundant species, occurring wherever *Andrœna Clarkella* is to be found. The *Nomada* varies very much both in size and colour: I have examples not more than one-third the bulk of others, and in these small specimens considerable variations of colouring are to be found. Typically, the female has nearly a totally black head and thorax; but specimens are not unfrequent which are nearly as much maculated with ferruginous as dark examples of *ruficornis*. The two species, however, may be easily separated by the spines on the posterior tibiæ: in *ruficornis* the tibiæ can scarcely be said to be spinose, having merely a row of weak pale-coloured hairs, whilst *borealis* has the tibiæ thickly set with strong black spiny hairs. In the latter, too, the head and thorax are of a deeper black, much less pubescent, more glossy, and more distinctly impressed behind than in *ruficornis*.

Can it be that the great difference in size of this species is caused by the size of the *Andrœna* to which it is attached? I have often taken it flying about colonies of *A. albicans*, and in other places where there was no trace of its usual patron, *A. Clarkella*; and would thence infer that it is not exclusively attached to one, but adopts itself to several, species, as some of the other species of the genus are known to do.—Id.

Review.

On the Distribution of Lepidoptera in Great Britain and Ireland, by Herbert Jenner Fust, Jun., M.A. Transactions of the Entomological Society of London, 3rd Series, vol. iv., part 4, 1868. (The Society, or Longmans & Co.)

It has always been a standing reproach that, out of the probable number of 1500 collectors of *Lepidoptera* in Britain, not one fiftieth part attend to aught that occurs outside the narrow limits of these islands; a practice fraught with many objections, as it occasions a self-chosen ignorance of the broad principles of entomological science, and tempts the too often unscrupulous dealer to palm off imported insects as native-born. A continental entomologist of any country very seldom confines his attention solely to home productions; and, though he may profess to make only an European collection, his ideas of the exact boundaries of the regions beyond which he will not deign to inquire are usually very vague. Thus we find so-called European collections containing insects from the African shores of the Mediterranean, from Asia Minor, Siberia, and even from Greenland. Contrast this with the practice that excludes the productions of the Channel Islands from the British Fauna, and then consider which is likely to entertain the more philosophical ideas,—a British or a Continental entomologist! However, "out of evil cometh good;" and owing to our isolation, mentally and physically, no country has probably a more clear notion of its peculiar Fauna and Flora than Britain: and in Mr. Fust's elaborate paper this is still further concentrated. Extending the system elucidated by Mr. Watson in his "Cybele Britannica," he divides Britain into 18 provinces and 38 sub-provinces, with an addition of 4 provinces representing Ireland. Hence there are three series of tables,—one for provinces, a second for sub-provinces, and a third indicating the "type" (*e. g.*,—"Germanic," "Atlantic," &c.) to which each species is supposed to pertain: this latter table is, to our mind, of the least value, the typical divisions being probably chimerical. For the best of reasons the tables are carried only as far as the end of the *Crambina*. The work has occupied Mr. Fust's attention for many years, and must have occasioned great labour in its compilation, inasmuch as his information has not only been derived from the lists sent to him by many of our principal Lepidopterists, but also from the records scattered through the myriad of existing and extinct publications devoted entirely or partially to Entomology. It appears to us to be most carefully worked out, and should be in the hands of all who aspire to be something more than "collectors." Some of the negative evidence is curious, not to say ludicrous: thus *Pieris rapæ* is not noticed as occurring in a considerable portion of the Scotch Highlands, simply of course from want of information, not from absence of the insect.

We cannot afford space for a longer notice of this valuable contribution to Entomology. To the isolated 'Britisher' it will prove of much service in helping him to an answer to the *cui bono* of his localising tendencies; to the entomologist of more extended views, who will carefully compare it with continental local lists, it will be found suggestive of much fruitful speculative thought. Those who are fond of light reading in science will probably find little in it to interest them; it is *par excellence* a book for the study.

Entomological Society of London, *March 16th*, 1868. H. W. Bates, Esq., F.Z.S., President, in the Chair.

C. Carrington, Esq., of Westwood Park, Forest Hill, was elected a Member.

Mr. Smith exhibited a cocoon of the size of a man's head, constructed by a

social Lepidopterous larva at Cantagallo, in Brazil: this contained a number of pupæ, each enveloped in a particular cocoon. The larva which was said to form this structure was also exhibited. It was spiny, and resembled that of a *Vanessa*, or *Acræa*; but it was remarked that it was improbable that a Butterfly larva should spin a cocoon of this nature.

The President called attention to the first part of Von Harold and Gemminger's Catalogue of all described *Coleoptera*, containing the *Cicindelidæ*, now on the eve of publication. The genera are to be arranged in their natural order, and the species alphabetically, this appearing the best plan by which to avoid the conflict of opinion as to relative specific position.

Mr. Stainton noticed a short paper by Herr Hartmann, in the new part of the Stettin Zeitung, recording the breeding of three Lepidopterous insects, viz., *Sesia cephiformis*, Staudinger, *Grapholitha interruptana*, Herrich-Schäffer, and *Gelechia electella*, Zeller, from galls on the stems of Juniper.

Mr. Smith read an extract from the "Guardian," published originally in 1713, relative to the habits of ants, and this notice appeared to be the origin of the idea as to these insects storing up grains of corn and biting off one end to prevent their germination. The writer gravely detailed as facts from personal observation what are now known to be fallacies; and he seemed to have built up a superstructure of fiction on the mistaken notion that the pupæ of these insects were in reality grains of cereals.

6*th April*, 1868. H. W. Bates, Esq., F.Z.S., President, in the Chair.

Mr. Stainton exhibited some mines of a species of *Nepticula* in leaves of *Euphorbia dendroides* just received from Mr. Moggridge from Mentone; he remarked that the creature remained a long time in the pupa state, for from larvæ, collected by himself at the early part of last summer, he had only recently bred the moths.

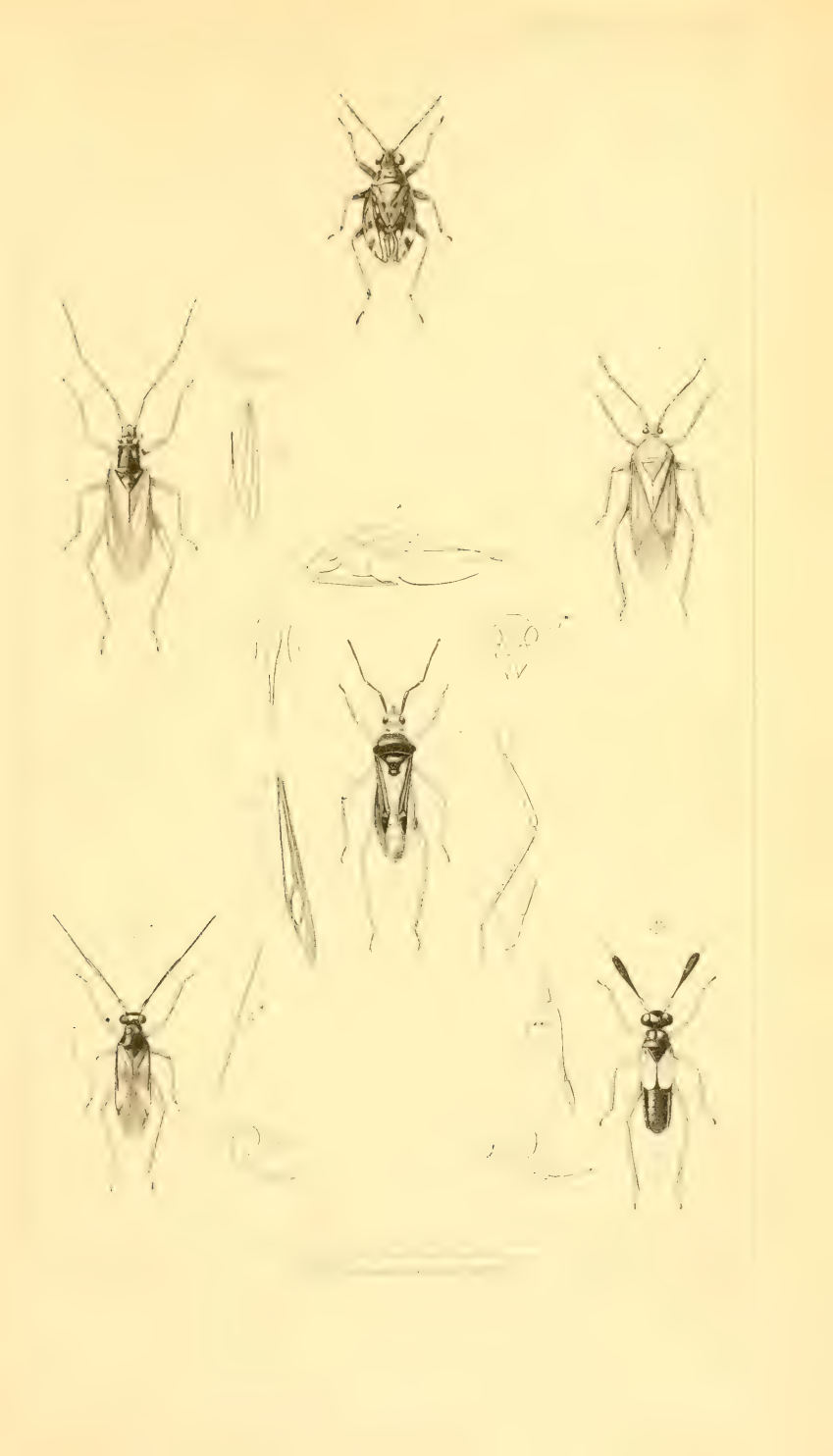
Mr. Boyd exhibited a dark variety of *Stenopteryx hybridalis* from Hertfordshire.

Mr. Druce exhibited part of a collection of Butterflies sent by Mr. Pearson from Peru; the most noticeable species were *Papilio Zagreus*, *Morpho Aurora*, and three forms of *Euterpe*.

Mr. Weir exhibited several varieties of *Lycæna Corydon* and *Alexis*, and an insect which he thought might be a hybrid between *Alexis* and *Adonis*.

Mr. Stevens brought for exhibition the type specimen of *Nemophora Carteri*, described by Stainton in the "Insecta Britannica." Mr. Stainton remarked that the species had been excluded from the European Catalogue, and he had thought that it might possibly have been American; a close examination of the specimen now induced him to believe that the head and fore-wings belonged to one of our common species, and that the hind-wings and abdomen were those of a *Cerostoma*, and had been artificially affixed; the species was therefore in reality a nonentity.

Mr. Smith remarked that in the collection of insect productions in the British Museum was a portion of a pollard-oak, sent there three years since by Mr. Kidd, as exhibiting a great number of the now common round galls. This had been placed in a glass case with a large lump of camphor, yet each spring there were bred from this oak numerous examples of *Clytus arietis*, on the larvæ and pupæ of which beetle the camphor seemed to have no effect.



E.W.Robinson, Del et Lt. 1868.

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